

SLAGSCHADUWSTUDIE - WINDENERGIEPROJECT

Groep Bolckmans Green – Gent

24/04/2024

ALGEMENE PROJECTGEGEVENS

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Doel van de studie	Toetsing van de slagschaduweffecten van het beoogde windproject aan de normen conform de VLAREM-regelgeving en het addendum R20.1.6 van het Omgevingsvergunningsbesluit.
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Versie	1

Niets uit deze uitgave mag overgenomen of gekopieerd worden zonder schriftelijke toestemming van Encon.

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1 INLEIDING

1.1 ALGEMEEN

De energie die we kunnen halen uit fossiele brandstoffen is eindig. We zijn onze aarde aan het uitputten en de stoffen die we verbranden, komen niet meer terug. Bovendien schaadt de verbranding van fossiele brandstoffen het milieu. Als we de uitputting van onze planeet willen stoppen én niet verder willen vervuilen, dan is het gebruik van natuurlijke en onuitputtelijke energiebronnen zoals wind, zon en de warmte van de aarde de toekomst. Qua CO_2-uitstoot is windenergie veruit een van de meest interessante hernieuwbare energiebronnen.

1.2 RAPPORTSPECIFIEKE INTRO

In het kader van de opmaak van een MER-ontheffingsnota en aanvraag van een omgevingsvergunning voor het plaatsen van 1 windturbine, heeft de initiatiefnemer Groep Bolckmans Green, studiebureau Encon de opdracht gegeven om een slagschaduwstudie uit te voeren voor deze windturbine gelegen op de terreinen Groep Bolckmans Green in de haven van Gent.

In deze studie wordt de slagschaduwimpact van het windpark op de omgeving berekend en geëvalueerd door middel van een simulatie van slagschaduweffecten ter hoogte van relevante en representatieve slagschaduwgevoelige objecten.

De slagschaduwgevoelige objecten (vb. huizen en kantoren) worden in de berekening voorgesteld alsof ze volledig uit glas bestaan (‘serres’) waarbij er geen rekening wordt gehouden met de werkelijke grootte en positie van raampartijen, het werkelijk gebruik van de binnenruimtes, noch met eventuele afschermende effecten van aanplanting of gebouwen. Deze manier van berekenen betreft een worst-case berekeningsscenario, wat wil zeggen dat in de realiteit bijna altijd minder slagschaduw zal worden waargenomen.

De resultaten worden getoetst aan de VLAREM-regelgeving.



Figuur 1 : Slagschaduw windturbines

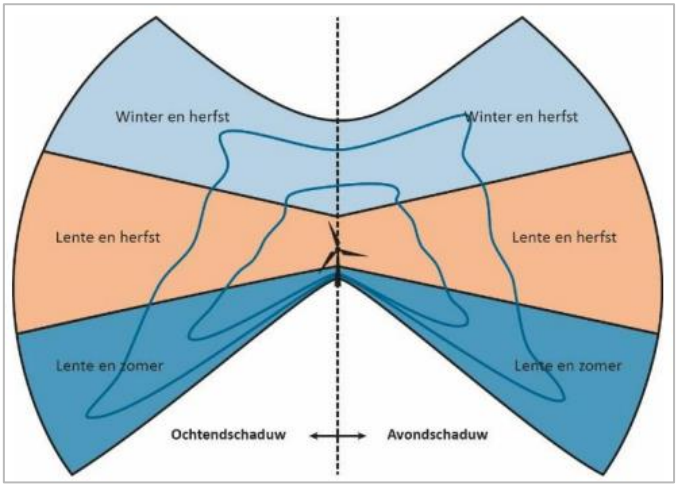
2 REGELGEVING EN DEFINITIES

2.1 WAT IS SLAGSCHADUW?

Slagschaduw van een windturbine kan onder bepaalde omstandigheden zorgen voor hinder. Naast de statische schaduw veroorzaakt door de mast van de windturbine, ontstaat er ook een dynamische schaduwvorming ten gevolge van de draaiende wieken. Het is vooral deze laatste schaduwvorming die hinder kan veroorzaken. De afwisselende verandering in lichtsterkte kan storend zijn in binnenruimtes waar veelvuldig mensen aanwezig zijn en in het bijzonder waar activiteiten worden verricht die concentratie vragen (vb. bureauwerk, assemblage,..).

Een **slagschaduwgevoelig object** wordt door de regelgeving dan ook gedefinieerd als een binnenruimte waar slagschaduw van windturbines hinder kan veroorzaken zoals woningen en kantoorgebouwen. Niet elk gebouw met raampartijen is dus een slagschaduwgevoelig object, zo zal er geen hinder optreden indien er geen menselijke activiteiten plaatsvinden (tijdens de periodes waarin slagschaduw kan voorkomen), indien de raampartijen niet gericht zijn naar de windturbine(s) of indien er een afscherming plaatsvindt van slagschaduw (vb. tussenliggende gebouwen, immergroene hagen/bomen).

De zone waar slagschaduw kan voorkomen is afhankelijk van de periode van het jaar en het tijdstip van de dag. In de zomerperiode staat de zon hoger aan de hemel en zal de slagschaduw minder ver reiken dan in het najaar en voorjaar. Hetzelfde principe gaat op voor het midden van de dag versus de vroege ochtend- en late avonduren. In de zone ten zuiden van windturbines komt geen slagschaduw voor. Slagschaduw gevormd door windturbines vertoont in het noordelijk halfrond een typische '**vlindercontour**' zoals geïllustreerd in onderstaande figuur:



Figuur 2 : Slagschaduwcontouren windturbines (illustratie: Antea Group)

2.2 REGELGEVING EN TOETSINGSKADER

Deze studie werd opgesteld, op basis van en conform met, de ministeriële omzendbrief OMV/2023/1 samen met de meest recente VLAREM-regelgeving die in het Staatsblad werd gepubliceerd en in werking trad op 23 juli 2023.

Volgens artikel 5.20.6.2 van VLAREM II en Addendum R20.1.6 van het Omgevingsvergunningsbesluit dienen de relevante slagschaduwgevoelige objecten binnen de contour van 4 uur verwachte slagschaduw per jaar geanalyseerd en getoetst worden aan de norm van maximaal 8 u/jaar en 30 min/dag aan slagschaduw voor woningen en maximaal 30 u/jaar en 30 min/dag voor slagschaduwgevoelige objecten in industriegebied, met uitzondering van woningen. Slagschaduwgevoelige objecten buiten de contour van 4 uur verwachte slagschaduw, zijn niet opgenomen in de analyse aangezien buiten deze contour de norm van 8 uur nooit overschreden kan worden.

	Maximale slagschaduwduur per jaar	Maximale slagschaduwduur per dag
Slagschaduwgevoelig object in industriegebied (geen woningen)	30 u/jaar	30 min/dag
Woningen	8 u/jaar	30 min/dag

Tabel 1 : Slagschaduwnormen (VLAREM)

Conform de VLAREM-regelgeving zijn een aantal relevante slagschaduwgevoelige objecten geselecteerd die representatief zijn voor alle slagschaduwgevoelige objecten binnen de 4-uur slagschaduwcontour. Voor de relevante slagschaduwgevoelige objecten die niet als een representatief object geselecteerd zijn, wordt telkens aangegeven door welk geselecteerd slagschaduwgevoelig object zij vertegenwoordigd worden. De berekeningen werden uitgevoerd conform de specificaties vermeld in punt 1e van het addendum R20.1.6 van de aanvraag van een omgevingsvergunning**.**

Bij indienstname van de windturbine zal een meer uitgebreide en gedetailleerde slagschaduwstudie uitgevoerd worden, waarbij alle slagschaduwgevoelige objecten binnen de 4-uur contour opgemeten en berekend worden. Hierbij wordt rekening gehouden met de reële in plaats van de worst-case situatie. De slagschaduwstudie ten behoeve van de exploitatie zal dan ook rekening houden met de werkelijke grootte en positie van de raampartijen, het werkelijk gebruik van de binnenruimtes en de eventuele objecten die de raampartijen afschermen van slagschaduw (vb. immergroene hagen/bomen, gebouwen/constructies).

2.3 BEREKENINGSWIJZE

2.3.1 THEORETISCHE SLAGSCHADUWIMPACT

In deze studie worden de slagschaduweffecten bepaald aan de hand van een rekenmodel waarmee enerzijds het astronomisch maximum aan slagschaduw en anderzijds de werkelijk te verwachten hoeveelheid slagschaduw wordt bepaald ter hoogte van representatieve slagschaduwgevoelige objecten. De berekeningen worden uitgevoerd aan de hand van het softwarepakket **WindPro versie 3.6.**

Het **astronomisch maximum aan slagschaduw** is enkel gebaseerd op de astronomische kalender waarbij er dus geen rekening wordt gehouden met het voorkomen van bewolking (= de zon schijnt altijd). Deze parameter wordt gebruikt om de maximale duurtijd van slagschaduw per dag te bepalen.

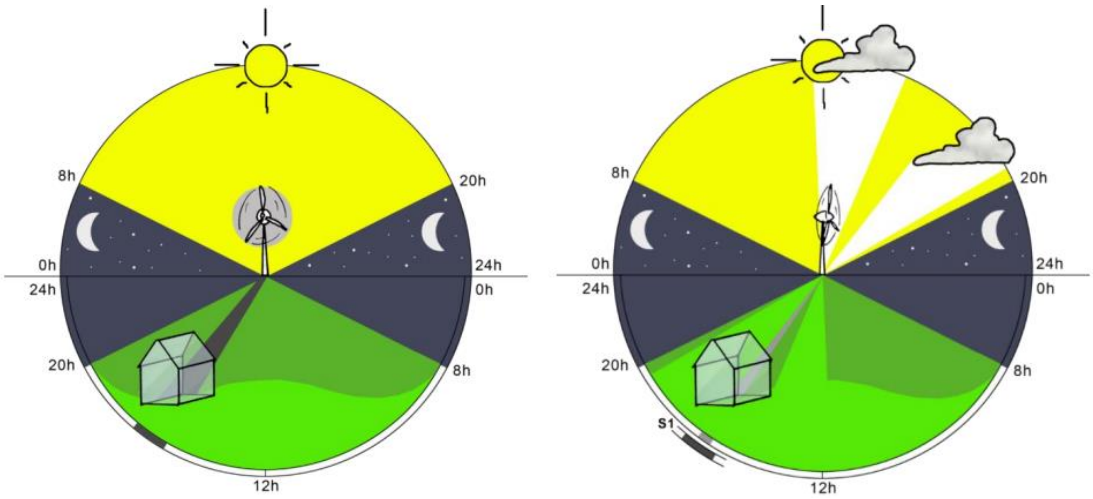
De **realistisch te verwachten hoeveelheid slagschaduw** is gebaseerd op de statistische data van het gemiddeld aantal uren zonneschijn per jaar zoals gebaseerd op het meest nabijgelegen meteostation, zijnde Melle. Deze parameter wordt gebruikt om de te verwachten cumulatieve duurtijd aan slagschaduw op jaarbasis te bepalen. Bij het bepalen van de realistisch te verwachten hoeveelheid slagschaduw wordt ook rekening gehouden met stilstanden omwille van o.a. onderhoud en de gemiddelde windrichting voor de oriëntatie van de wieken. De realistisch te verwachten slagschaduwduur bedraagt typisch slechts 15% tot 30% van het astronomisch maximum.

JAN	FEB	MAA	APR	MEI	JUN	JUL	AUG	SEP	OKT	NOV	DEC
2,00	2,90	4,40	6;30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Tabel 2: Gemiddeld aantal zonuren per dag per maand in Melle

De geselecteerde representatieve **slagschaduwgevoelige objecten** worden voorgesteld als serre-objecten. In de berekeningen wordt hierbij uitgegaan van glazen gevels van 2 m x 5 m op een hoogte van 1 m boven maaiveld. Daarnaast wordt de aanname gemaakt dat er geen obstakels zijn die het object kunnen afschermen van licht of schaduw (vb. andere gebouwen, bomen,..).

De principes van de te verwachten slagschaduwduur en het serre-object worden geïllustreerd in onderstaande figuren:



Figuur 3 : Illustratie astronomisch maximum aan schaduw (links) versus realistisch te verwachten slagschaduw (rechts) op een serre-object (bron figuur: Windkracht Vlaanderen)

De berekeningen worden verder uitgevoerd rekening houdend met de volgende parameters en aannames.

- Bij de slagschaduwberekening wordt de slagschaduw van de draaiende rotor in beschouwing genomen vanaf een instraling van 120 W/m² op een vlak loodrecht op de invalsrichting van de zon. Zonnestanden kleiner dan 3° ten opzichte van de horizon, worden niet beschouwd als slagschaduw;
- Er wordt rekening gehouden met slagschaduwgevoelige objecten als ‘serre-objecten’;
- Er wordt rekening gehouden met de maximale tiphoogte en rotordiameter van de windturbine;
- Er wordt rekening gehouden met het reliëf van het terrein;
- Voor de bepaling van de realistisch te verwachten hoeveelheid slagschaduw wordt gerekend met de klimatologische maandnormalen van het gemiddeld aantal uren zonneschijn, en de verdeling van de windrichtingen;
- Voor de bepaling van het astronomisch maximum (hypothetische situatie) wordt aangenomen dat de zon altijd schijnt van zonsopgang tot zonsondergang, dat de windturbine altijd draait en dat de rotor steeds loodrecht op de zon staat waardoor de schaduw het grootst is.

Op basis van bovenstaande berekeningsmethodiek wordt een zeer conservatieve benadering van de werkelijkheid bekomen. De werkelijke slagschaduwduur zal daarom bijna altijd minder groot zijn dan berekend in deze studie.

2.3.2 THEORIE VS REALITEIT

Bemerk evenwel dat, ongeacht de dimensies van de windturbine, elk type windturbine dient te voldoen aan de Vlarem voorwaarden: de slagschaduweffecten dienen voor woningen en bedrijven beperkt te blijven tot respectievelijk maximaal 8 uur en 30 uur per jaar met een maximum van 30 min per dag.

Hiertoe zal de windturbine uitgerust worden met een slagschaduwmodule die de windturbine zal stilzetten op momenten van potentiële slagschaduwhinder op de slagschaduwgevoelige objecten die theoretisch meer dan 8 uur per jaar of meer dan 30 min per dag slagschaduwhinder zouden kunnen ondervinden.

Deze afregeling van de geplande en operationele en vergunde windturbines wordt niet weergegeven in deze nota, want dit wordt in een latere fase (bij de voorbereiding van de bouw) verfijnd. M.a.w. de

resultaten hier beschreven tonen de theoretisch door slagschaduwhinder geïmpacteerde zone, zonder mitigerende maatregelen zoals het stilleggen van de windturbines op momenten van hinder.

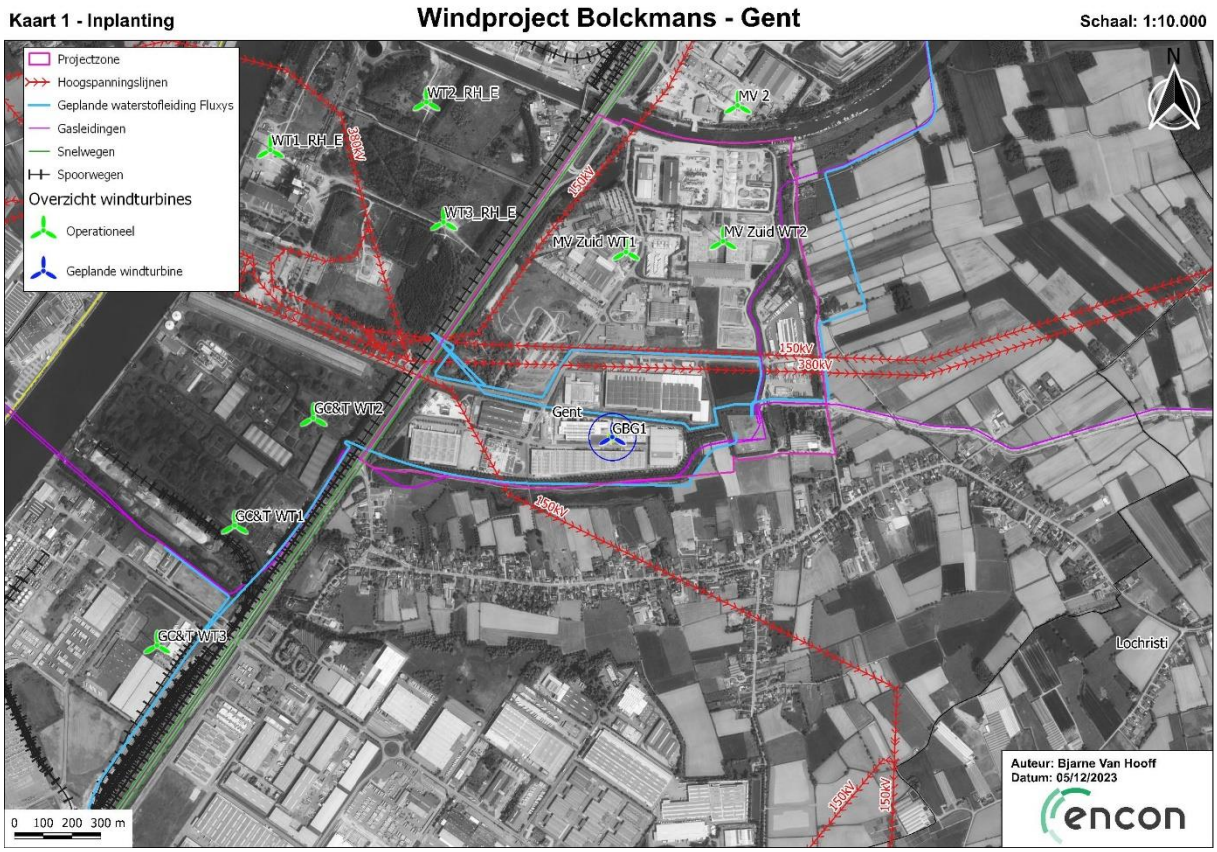
De bevindingen uit deze nota zijn aldus puur theoretisch en worst-case te beschouwen en zullen zich in realiteit niet voordoen. De impact na toepassing van mitigerende maatregelen zal altijd kleiner zijn dan deze bevindingen en voldoen aan de slagschaduwnormen volgens VLAREM II.

3 PROJECTOMSCHRIJVING

3.1 SITUERING WINDPROJECT

3.1.1 GEPLAND WINDPROJECT GROEP BOLCKMANS GREEN

De geplande windturbine van Groep Bolckmans Green (WT GBG1) is gelegen op de eigen terreinen in het havengebied van Gent, ten noorden van de woonwijk Desteldonk. De omgeving wordt gekenmerkt door industriële activiteiten, hoogspanningslijnen en meerdere operationele windturbines. De locatie is weergegeven op onderstaande figuur.



Figuur 4 : Inplanting geplande windturbine Groep Bolckmans Green te Gent (Bijlage 1 – Kaartenbundel)

De exacte Belgian Lambert-72 coördinaten van het centerpunt van de windturbine en de dimensies ervan worden weergegeven in onderstaande tabel.

Naam	Lambert X [m]	Lambert Y [m]	Maximale rotordiameter [m]	Maximale tiphoogte[m+mv]	Status
GBG1	109.668	201.947	163	210	Gepland

Tabel 3 : Overzicht eigenschappen geplande windturbine van Groep Bolckmans Green

In deze slagschaduwstudie wordt in de berekening gebruik gemaakt van een generiek windturbinetype Nordex N163. Dit type omvat de maximale afmetingen zoals vermeld in de omgevingsvergunningsaanvraag: een maximale rotordiameter van 163 m en een maximale tiphoogte van 210 m.

Parameters	GBG1
Aantal windturbines	1
Windturbine fabrikant	Nordex
Windturbinetype	N163
Masthoogte [m+mv]	128,5
Rotordiameter [m]	163
Tiphoogte [m+mv]	210

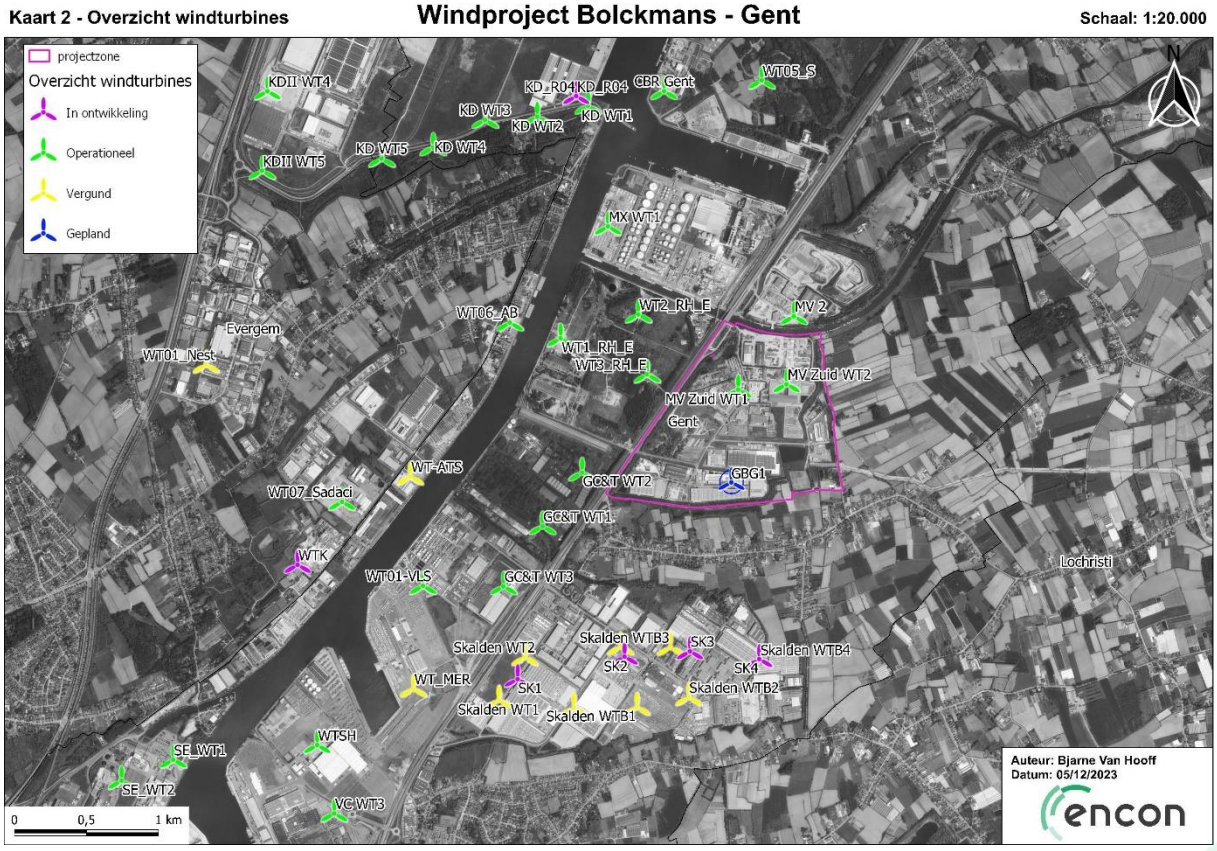
Tabel 3 : Parameters windturbines Groep Bolckmans Green

3.1.2 WINDPROJECTEN IN DE RUIME OMGEVING VAN HET GEPLAND PROJECT

Binnen de Gentse kanaalzone zijn er reeds talloze windturbines gerealiseerd door verschillende exploitanten. Hiernaast zijn er nog een aantal windturbines vergund/in opbouw, maar nog niet operationeel. Ten zuiden van de projectlocatie zijn er bijvoorbeeld nog 8 windturbines vergund van ENGIE ter hoogte van Skaldenpark. In de (ruimere) omgeving van het project zijn al een 50-tal windturbines (vergund, operationeel en windturbines in ontwikkeling)

Bijlage 4: Lijst van windturbines geeft een overzicht van de technische parameters van de windturbines in de (ruimere) omgeving.

De onderstaande figuur geeft de ligging weer van de geplande windturbine van Groep Bolckmans Green en de omliggende windturbines van de verschillende exploitanten.

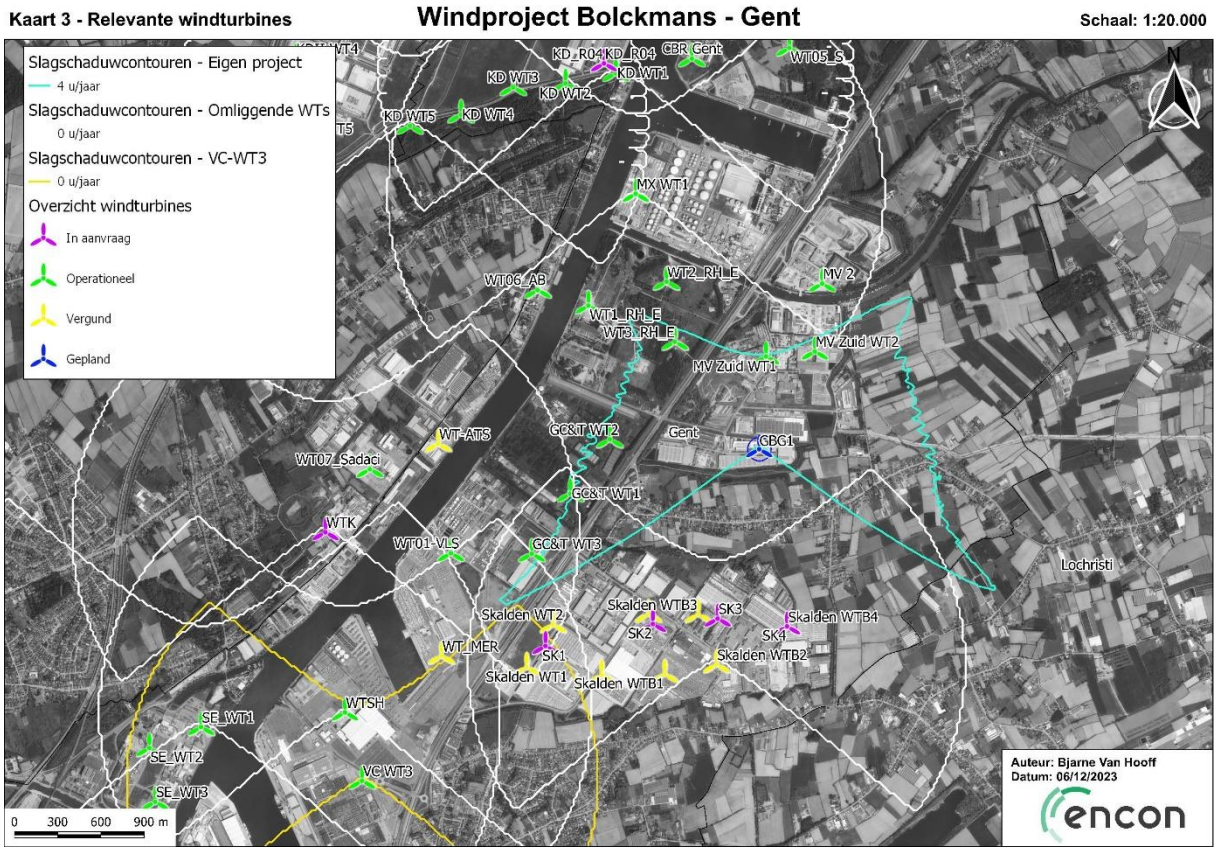


Figuur 5 : Overzicht windturbines in de ruimere omgeving (Bijlage 1 – Kaartenbundel)

3.2 SELECTIE RELEVANTE WINDTURBINES EN SCENARIO'S CUMULATIEVE EFFECTEN

Volgens de VLAREM regelgeving dient er cumulatief rekening gehouden te worden met de reeds vergunde en operationele windturbines. De **windturbines waarmee relevante cumulatieve effecten kunnen voorkomen zijn geïdentificeerd conform de handleiding van de Team Omgevingseffecten van oktober 2020**. Windturbines worden als relevant beschouwd indien de (individuele) iso-contour van 0-u/jaar te verwachten slagschaduw raakt aan de iso-contour van 4-u/jaar te verwachten slagschaduw van het geplande project van Groep Bolckmans Green.

Deze oefening werd uitgevoerd voor zowel de gekende vergunde windturbines als met de gekende windturbines in ontwikkeling (= windturbines in aanvraag maar momenteel nog niet vergund).



Figuur 6 : Selectie relevante windturbines (Bijlage 1 – Kaartenbundel)

Op basis van deze rekenwijze zijn 30+1 windturbines in de omgeving geselecteerd waarmee ook cumulatief (incl. geplande windturbine van Groep Bolckmans Green) gerekend moet worden. Om rekening te houden met de cumulatieve effecten met alle relevante windturbines worden in deze studie volgende windturbines beschouwd:

- **Scenario 1:** Referentiesituatie (huidig vergunde en operationele relevante windturbines) samen met het gepland project (25 + 1 WTs).
- **Scenario 2:** Ontwikkelingsscenario (= scenario 1 met toevoeging van de relevante windturbines van de huidig gekende projecten in ontwikkeling) samen met het gepland project. Voor dit Scenario zullen de 8 vergunde windturbines op het Skaldenpark vervangen worden door de 4 windturbines in ontwikkeling op Figuur 5. Daarnaast zal ook de windturbine WTK (Kronos) meegenomen worden.

Onderstaande opsomming geeft een overzicht van de relevante windturbines in scenario 1.

1. **GBG1**
2. GC&T WT1
3. GC&T WT2
4. GC&T WT3
5. MV 2
6. MV Zuid WT1
7. MV Zuid WT2
8. MX WT1
9. Skalden WT1
10. Skalden WT2
11. Skalden WT3
12. Skalden WT4
13. Skalden WTB1
14. Skalden WTB2
15. Skalden WTB3
16. Skalden WTB4
17. VC WT3
18. WT_MER
19. WT01-VLS
20. WT06_AB
21. WT07_Sadaci
22. WT1_RH_E
23. WT2_RH_E
24. WT3_RH_E
25. WT-ATS
26. WTSH

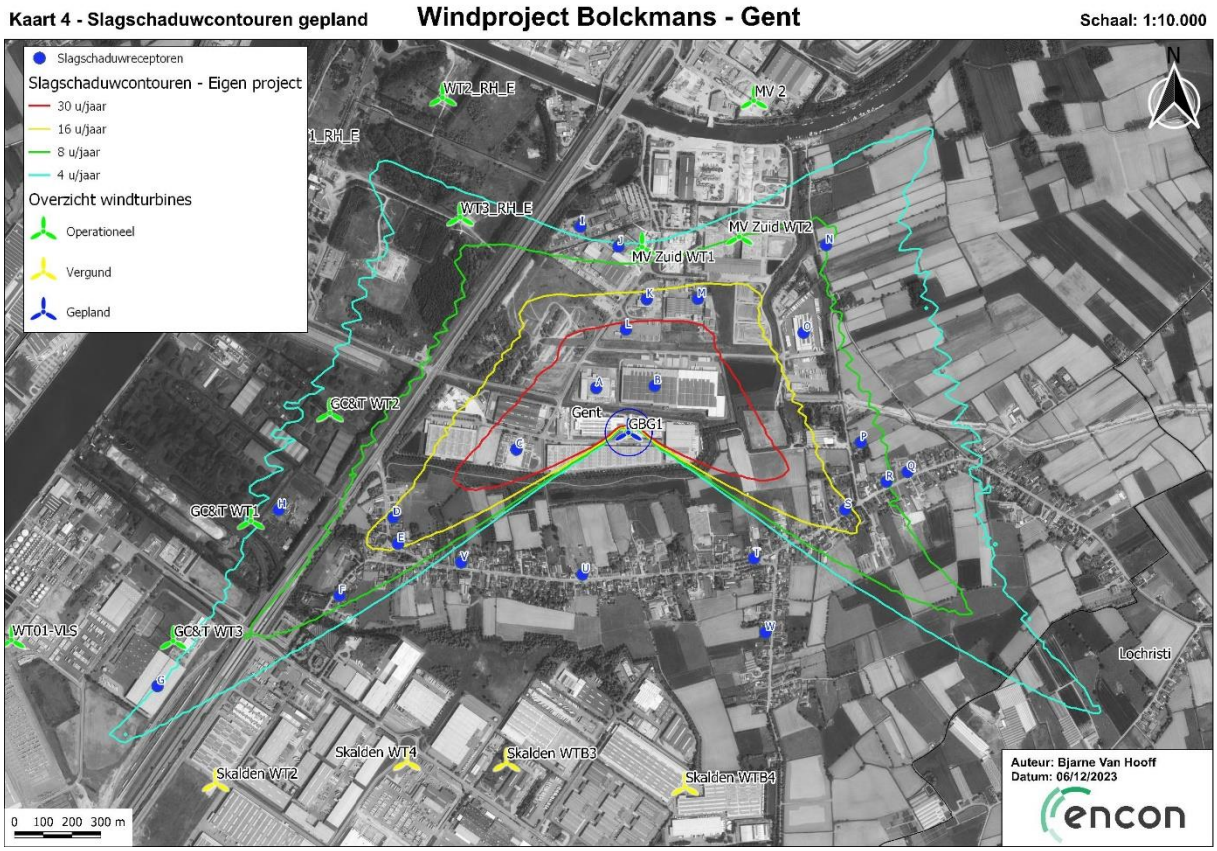
Onderstaande opsomming geeft een overzicht van de relevante windturbines in scenario 2.

1. **GBG1**
2. GC&T WT1
3. GC&T WT2
4. GC&T WT3
5. MV 2
6. MV Zuid WT1
7. MV Zuid WT2
8. MX WT1
9. **SK1**
10. **SK2**
11. **SK3**
12. **SK4**
13. VC WT3
14. WT_MER
15. WT01-VLS
16. WT06_AB
17. WT07_Sadaci
18. WT1_RH_E
19. WT2_RH_E
20. WT3_RH_E
21. WT-ATS
22. **WTK**
23. WTSH

3.3 SELECTIE REPRESENTATIEVE SLAGSCHADUWGEVOELIGE OBJECTEN

Rekening houdend met het type en de locatie van de windturbine en de orografiekaarten van de desbetreffende locaties, werden de slagschaduwcontouren bepaald. De representatieve slagschaduwgevoelige objecten werden geselecteerd binnen de te verwachten cumulatieve 4-u/jaar slagschaduwcontour van het geplande project.

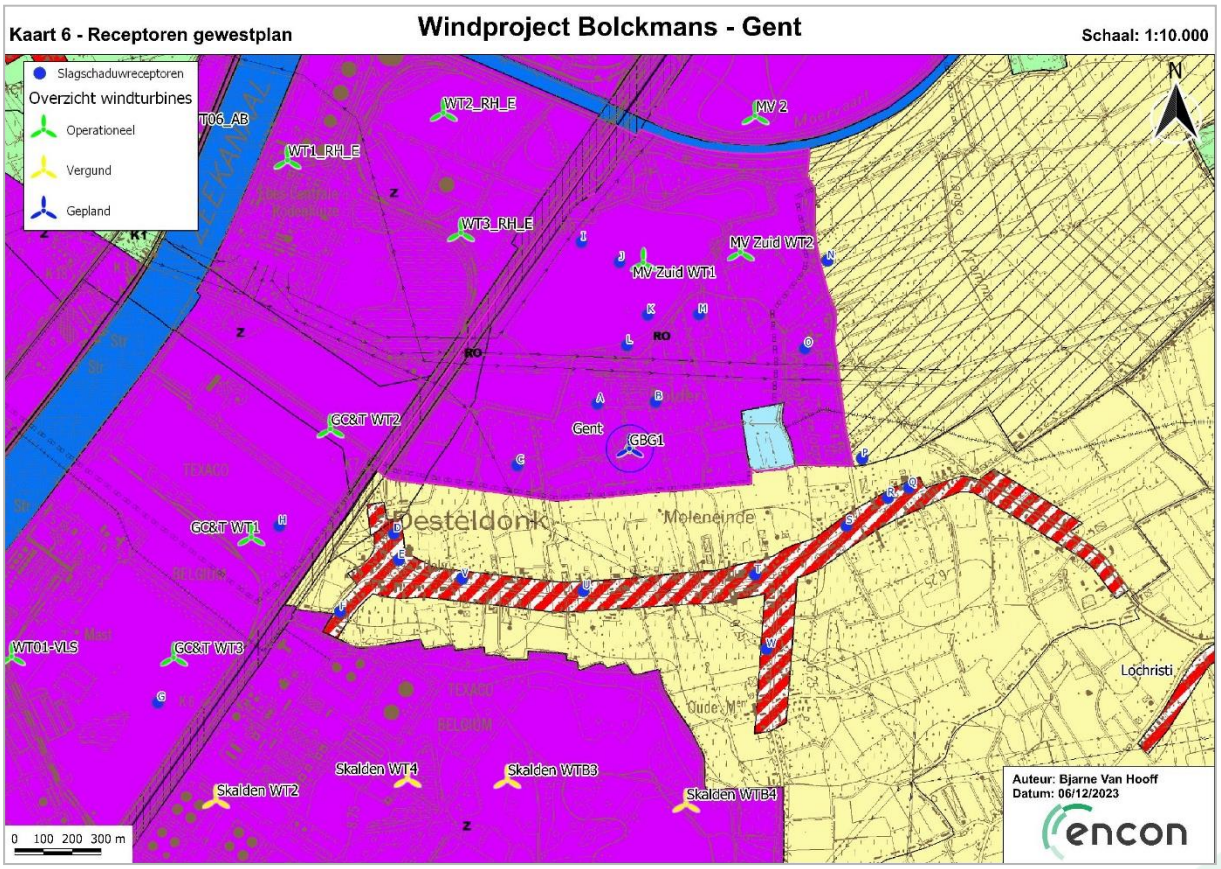
De 4, 8, 16 en 30 uren per jaar slagschaduwcontouren worden op onderstaande figuren afgebeeld op een luchtfoto, een topografische kaart en het gewestplan. Deze kaarten zijn tevens terug te vinden in bijlage 1 van deze studie.



Figuur 7 : Slagschaduwcontouren van de geplande windturbine van Groep Bolckmans Green (Bijlage 1 – Kaartenbundel)



Figuur 8 : Slagschaduwcontouren van de geplande windturbine in Gent (Bijlage 1 – Kaartenbundel)



Figuur 9 : Receptoren op gewestplan (Bijlage 1 – Kaartenbundel)

Onderstaande tabel geeft een gedetailleerd overzicht van de gekozen representatieve slagschaduwgevoelige objecten. De kolom “Beschrijving” in onderstaande tabel heeft betrekking op de cumulatieve slagschaduwcontouren van het geplande project uit deze studie. Er wordt een onderscheid gemaakt tussen woningen en bedrijfsgebouwen in industriegebied aangezien er verschillende normen van toepassing zijn (zie § 2).

Schaduwgevoelig object	X (m)	Y (m)	Bestemming	Bedrijf in industriegebied?	Beschrijving
A	109.555	202.102	Industrie gebied	Ja	Gebouw gelegen binnen de 30 u/jaar contour
B	109.758	202.109	Industrie gebied	Ja	Gebouw gelegen binnen de 30 u/jaar contour
C	109.278	201.889	Industrie gebied	Ja	Gebouw gelegen binnen de 30 u/jaar contour
D	108.851	201.653	Woongebied	Nee	Gebouw gelegen binnen de 16 u/jaar contour
E	108.867	201.562	Woongebied	Nee	Gebouw gelegen binnen de 16 u/jaar contour
F	108.664	201.382	Woongebied	Nee	Gebouw gelegen binnen de 8 u/jaar contour
G	108.032	201.068	Industrie gebied	Ja	Gebouw gelegen binnen de 4 u/jaar contour
H	108.452	201.679	Industrie gebied	Ja	Gebouw gelegen binnen de 4 u/jaar contour
I	109.500	202.662	Industrie gebied	Ja	Gebouw gelegen buiten de 4 u/jaar contour
J	109.633	202.593	Industrie gebied	Ja	Gebouw gelegen binnen de 4 u/jaar contour
K	109.730	202.410	Industrie gebied	Ja	Gebouw gelegen binnen de 16 u/jaar contour
L	109.658	202.304	Industrie gebied	Ja	Gebouw gelegen binnen de 30 u/jaar contour
M	109.908	202.411	Industrie gebied	Ja	Gebouw gelegen binnen de 16 u/jaar contour
N	110.354	202.598	Agrarisch gebied	Nee	Gebouw gelegen binnen de 8 u/jaar contour
O	110.275	202.294	Industrie gebied	Ja	Gebouw gelegen binnen de 8 u/jaar contour
P	110.474	201.913	Agrarisch gebied	Nee	Gebouw gelegen binnen de 8 u/jaar contour
Q	110.636	201.811	Woongebied	Nee	Gebouw gelegen binnen de 4 u/jaar contour
R	110.563	201.777	Woongebied	Nee	Gebouw gelegen binnen de 8 u/jaar contour
S	110.420	201.680	Woongebied	Nee	Gebouw gelegen binnen de 16 u/jaar contour

Schaduwgevoelig object	X	Y	Bestemming	Bedrijf in industriegebied?	Beschrijving
	(m)	*(m)*			
T	110.103	201.510	Woongebied	Nee	Gebouw gelegen buiten de 4 u/jaar contour
U	109.507	201.455	Woongebied	Nee	Gebouw gelegen buiten de 4 u/jaar contour
V	109.086	201.497	Woongebied	Nee	Gebouw gelegen buiten de 4 u/jaar contour
W	110.143	201.254	Woongebied	Nee	Gebouw gelegen buiten de 4 u/jaar contour

Tabel 4 : Overzicht van gebouwen aangeduid als representatieve slagschaduwgevoelige objecten

4 EVALUATIE SLAGSCHADUWIMPACT

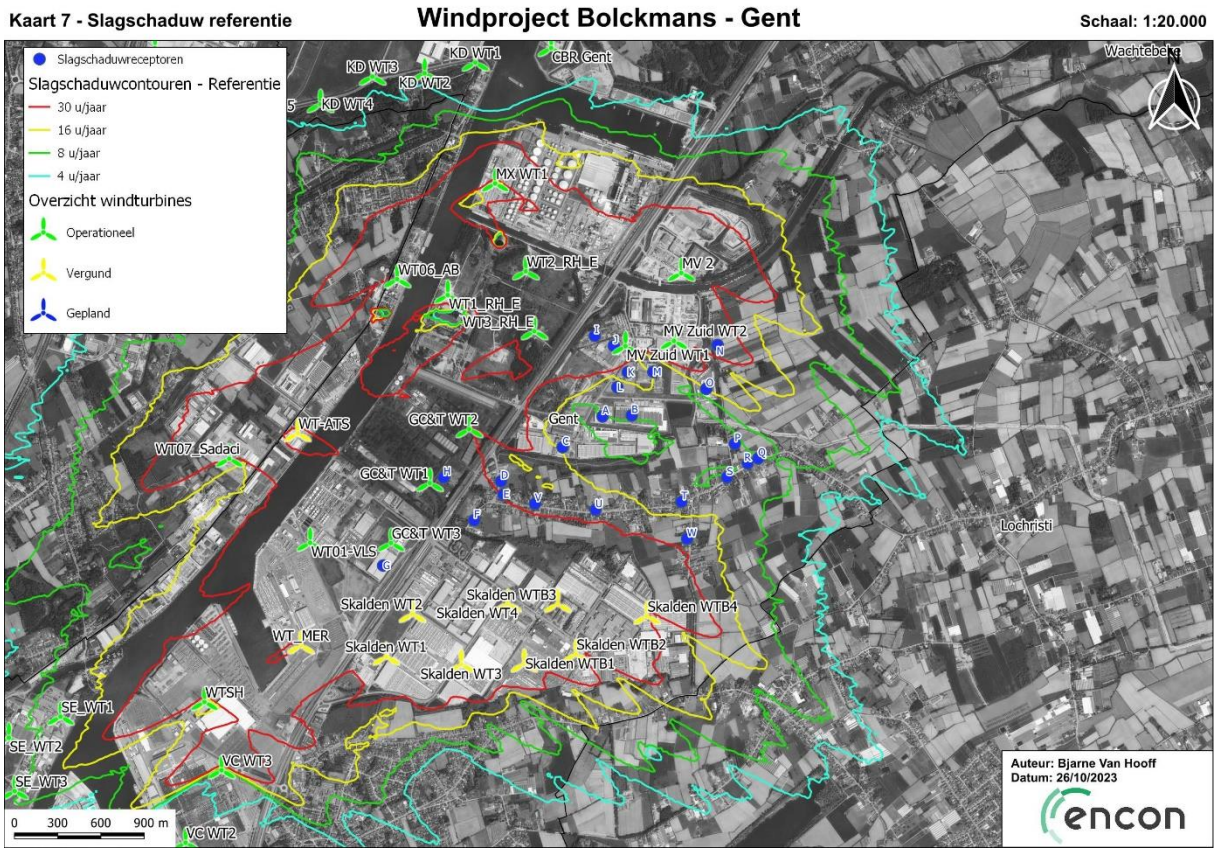
4.1 INLEIDING

In dit hoofdstuk volgt een overzicht van de slagschaduwuren voor alle representatieve slagschaduwgevoelige objecten. Onderstaande berekeningen geven een weergave van een worst-case scenario, waarbij ieder slagschaduwgevoelig object aan alle zijden ramen zou hebben (cfr. de specificaties vermeld in punt 1e van het addendum R20.1.6 voor de aanvraag van een omgevingsvergunning) en zonder rekening te houden met afscherming van licht/schaduw door natuurlijke elementen of gebouwen.

4.2 SLAGSCHADUWIMPACT SCENARIO 1: VERGUNDE SITUATIE MET GEPLAND WINDPROJECT

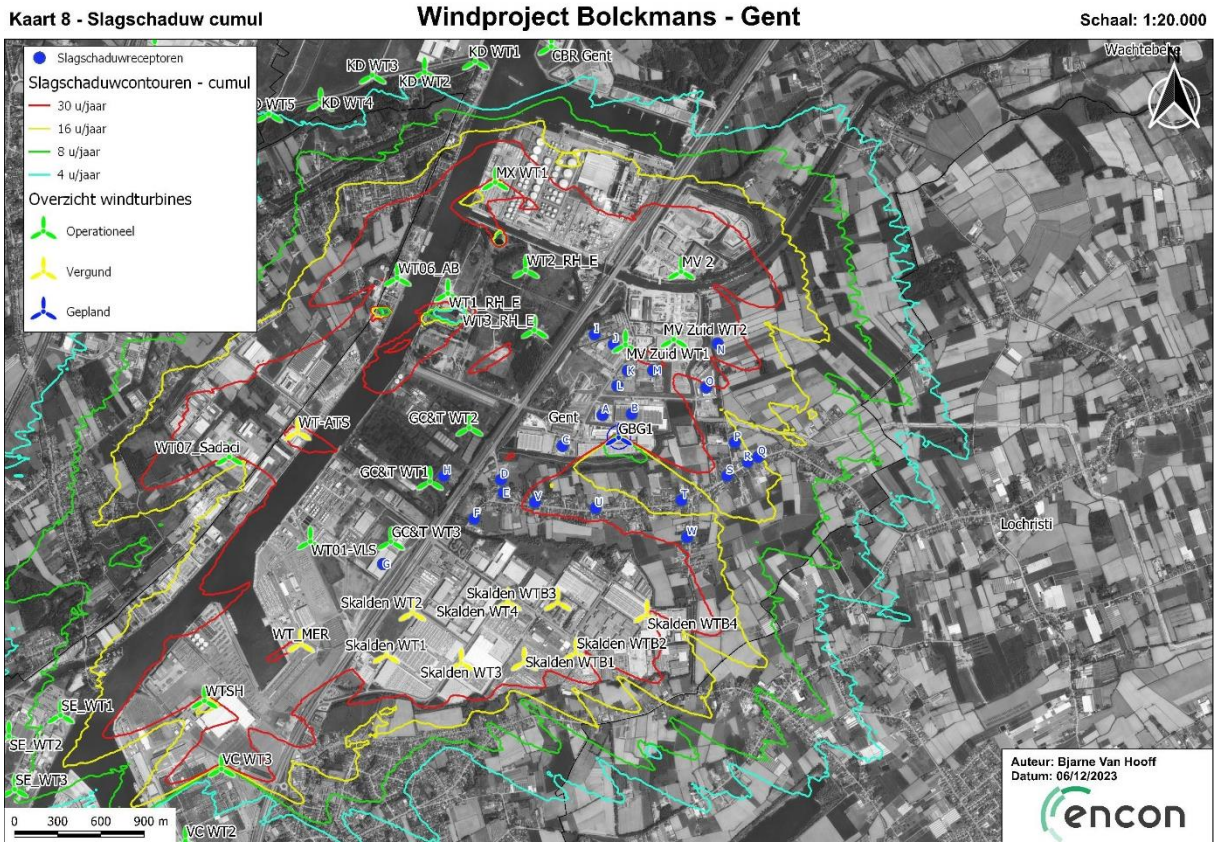
In deze paragraaf wordt de slagschaduwimpact van de relevante windturbines in de huidig vergunde situatie samen met het gepland windproject van Groep Bolckmans Green berekend en beoordeeld.

De cumulatieve slagschaduwcontouren van de relevante windturbines die momenteel vergund zijn (referentiesituatie, zonder het gepland project) zijn weergegeven in onderstaande figuur. Deze figuur is terug te vinden op groot formaat onder bijlage 1.



Figuur 10 : Cumulatieve slagschaduwcontouren relevante vergunde situatie (referentie) (Bijlage 1 – Kaartenbundel)

De cumulatieve slagschaduwcontouren van de relevante vergunde windturbines samen met het gepland project (scenario 1) zijn weergegeven in onderstaande figuur. Deze figuur is terug te vinden op groot formaat onder bijlage 1.



Figuur 11 : Cumulatieve slagschaduwcontouren vergunde situatie samen met het gepland project (scenario 1) (Bijlage 1 – Kaartenbundel)

In onderstaande tabellen worden de eerder besproken scenario's (referentie, gepland project en cumulatief) berekend en met elkaar vergeleken voor wat betreft de bijdrage aan de slagschaduwimpact per representatief slagschaduwgevoelig object. Bij een verschil van ***'0:00'*** tussen het referentiescenario en de cumulatieve situatie met het geplande project van Groep Bolckmans Green kan men stellen dat er geen additionele bijdrage is vanwege het geplande project. De slagschaduw komt in dat geval niet of gelijktijdig voor met de referentiesituatie.

De grafische schaduwkalenders van onderstaande representatieve objecten zijn bijgevoegd in bijlage 2. In bijlage 3 zijn tevens de grafische slagschaduwkalenders per windturbine terug te vinden.

Uitleg bij de tabellen:

- *Kolom 1: Identificatie slagschaduwgevoelig object van het slagschaduwgevoelig object*
- *Kolommen 2 t.e.m. 5: Berekening van de slagschaduwimpact op dagbasis volgens het astronomisch maximum en met een toetsing aan de VLAREM dagnorm. Er wordt hierbij uitgegaan dat er geen milderende maatregelen aanwezig zijn. Overschrijdingen van de norm worden in het rood aangeduid*
    - *Kolom 2: Maximale slagschaduwimpact op dagbasis van het referentiescenario*
    - *Kolom 3: Maximale slagschaduwimpact op dagbasis van enkel het geplande project*
    - *Kolom 4: Maximale cumulatieve slagschaduwimpact op dagbasis van de combinatie van voorgaande scenario's*
    - *Kolom 5: Het verschil tussen de cumulatieve impact in kolom 4 en de referentiesituatie in kolom 2. Dit betreft de effectieve maximale bijdrage aan de slagschaduwimpact door het geplande project*
- *Kolommen 6 t.e.m. 9: volgen hetzelfde principe als kolommen 2 t.e.m. 5 met het belangrijke verschil dat de realistisch te verwachten slagschaduwimpact op jaarbasis wordt geëvalueerd*
- *Kolommen 10 t.e.m. 11: Finale slagschaduwimpact per slagschaduwgevoelig object nadat milderende maatregelen correct werden toegepast*

Slagschaduw gevoelig object	*Slagschaduw DAGNORM* *Astronomisch maximum aantal uren per dag* *(zonder toepassing van milderende maatregelen)*				*Slagschaduw JAARNORM* *Realistisch verwacht aantal uren per jaar* *(zonder toepassing van milderende maatregelen)*				Maximale cumulatieve slagschaduwduur na toepassing milderende maatregelen	
	Referentie [A]	Gepland project	Scenario 1: Cumulatief [B]	Verschil [B-A]	Referentie [C]	Gepland project	Scenario 1: Cumulatief [D]	Verschil [D-C]		
	[max. u/dag]	*[max. u/dag]*	*[max. u/dag]*	*[u/dag]*	*[u/jaar]*	*[u/jaar]*	*[u/jaar]*	*[u/jaar]*	*[u/dag]*	*[u/jaar]*
A	0:32	2:50	3:21	2:49	9:10	94:28	103:38	94:28	0:30	30:00
B	0:26	2:54	3:18	2:52	9:49	123:10	132:50	123:01	0:30	30:00
C	0:37	1:37	2:05	1:28	16:23	56:53	73:05	56:42	0:30	30:00
D	1:02	0:47	1:02	0:00	26:29	19:45	46:01	19:32	0:30	8:00
E	1:11	0:47	1:11	0:00	31:48	17:35	49:03	17:15	0:30	8:00
F	2:09	0:37	2:09	0:00	45:33	10:37	55:48	10:15	0:30	8:00
G	2:55	0:21	2:55	0:00	79:01	4:08	83:00	3:59	0:30	30:00
H	3:22	0:32	3:38	0:16	154:54	4:59	159:53	4:59	0:30	30:00
I	4:22	0:40	4:22	0:00	131:54	2:43	134:37	2:43	0:30	30:00
J	2:34	0:51	2:34	0:00	75:39	4:57	80:36	4:57	0:30	30:00
K	0:53	1:28	1:31	0:38	23:05	19:48	42:53	19:48	0:30	30:00
L	0:33	1:49	1:58	1:25	13:36	35:48	49:24	35:48	0:30	30:00
M	0:47	1:18	1:29	0:42	15:21	21:06	36:27	21:06	0:30	30:00
N	1:52	0:43	1:52	0:00	62:38	9:01	71:39	9:01	0:30	8:00
O	1:07	0:55	1:07	0:00	17:46	11:46	29:32	11:46	0:30	29:32
P	0:29	0:48	0:48	0:19	10:39	10:24	20:49	10:10	0:30	8:00
Q	0:34	0:40	0:40	0:06	9:50	7:18	17:08	7:18	0:30	8:00
R	0:30	0:43	0:43	0:13	10:28	8:55	19:23	8:55	0:30	8:00
S	0:33	0:51	0:51	0:18	10:23	18:46	29:09	18:46	0:30	8:00
T	0:41	0:00	0:41	0:00	11:59	0:00	11:59	0:00	0:30	8:00
U	1:43	0:00	1:43	0:00	28:35	0:00	28:35	0:00	0:30	8:00
V	1:32	0:00	1:32	0:00	26:56	0:00	26:56	0:00	0:30	8:00
W	1:31	0:00	1:31	0:00	26:47	0:00	26:47	0:00	0:30	8:00

Tabel 5 : Overzicht slagschaduwuren gebouwen – Scenario 1

Onderstaande tabel geeft een overzicht van de bijdrage aan slagschaduw op jaarbasis veroorzaakt door de geplande windturbine van Groep Bolckmans Green wanneer milderende maatregelen toegepast worden. In het groen wordt aangeduid bij welke receptoren geen bijkomende slagschaduw zal optreden.

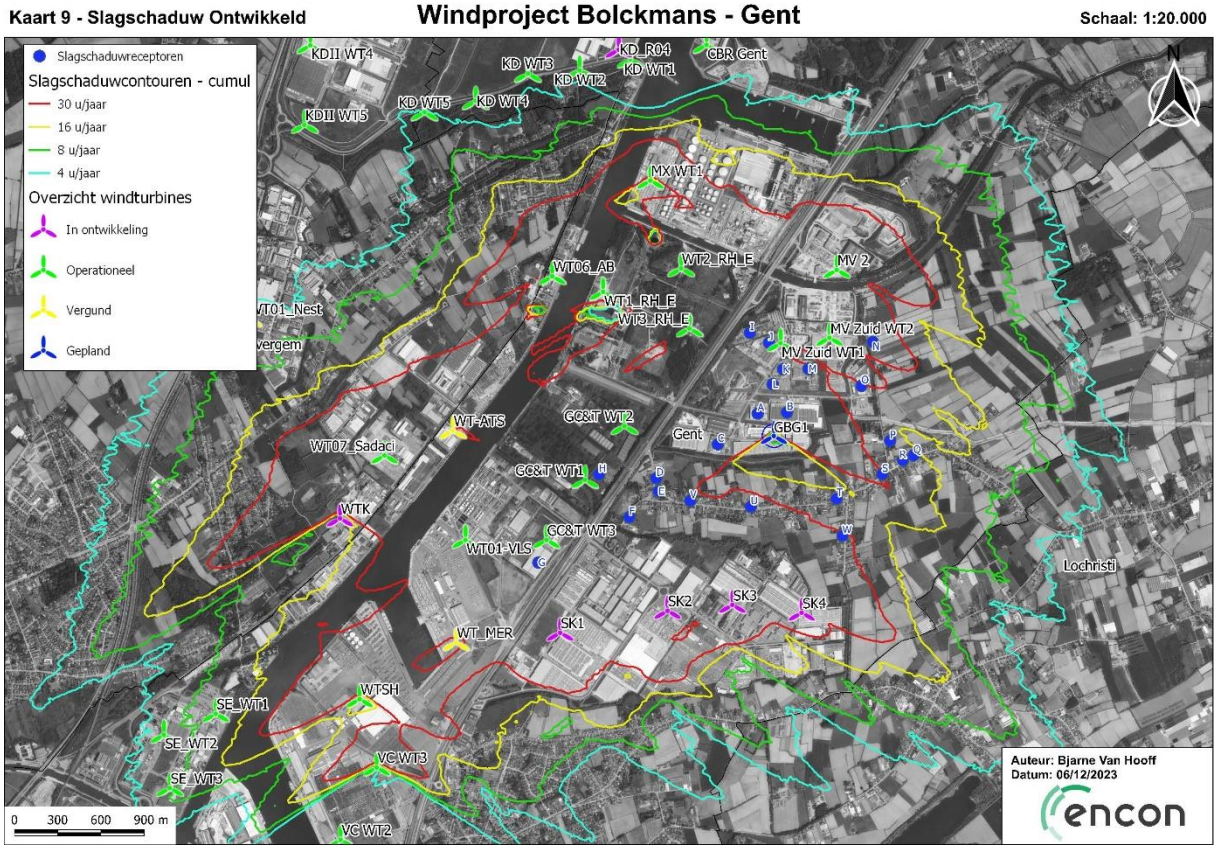
Slagschaduwgevoelig object	*Slagschaduw JAARNORM mits toepassing van milderende maatregelen*		
	Referentie	**Cumulatief: referentie + geplande windturbine**	**Verschil**
	[u/jaar]	*[u/jaar]*	*[u/jaar]*
A	9:10	30:00	20:50
B	9:49	30:00	20:11
C	16:23	30:00	13:37
D	8:00	8:00	0:00
E	8:00	8:00	0:00
F	8:00	8:00	0:00
G	30:00	30:00	0:00
H	30:00	30:00	0:00
I	30:00	30:00	0:00
J	30:00	30:00	0:00
K	23:05	30:00	6:55
L	13:36	30:00	16:24
M	15:21	30:00	14:39
N	8:00	8:00	0:00
O	17:46	29:32	11:46
P	8:00	8:00	0:00
Q	8:00	8:00	0:00
R	8:00	8:00	0:00
S	8:00	8:00	0:00
T	8:00	8:00	0:00
U	8:00	8:00	0:00
V	8:00	8:00	0:00
W	8:00	8:00	0:00

Tabel 6: Overzicht slagschaduwuren op jaarbasis bij toepassing van milderende maatregelen

4.3 SLAGSCHADUWIMPACT SCENARIO 2: ONTWIKKELINGSSCENARIO MET GEPLAND WINDPROJECT

In deze paragraaf wordt de slagschaduwimpact berekend en beoordeeld van de relevante windturbines in de huidig vergunde situatie in combinatie met de relevante windturbines van de gekende projecten in aanvraag (ontwikkeling) en het gepland windproject van Groep Bolckmans Green.

De onderstaande tabel geeft een evaluatie van de slagschaduwimpact per representatief slagschaduwgevoelig object. De cumulatieve slagschaduwcontouren zijn weergegeven in onderstaande figuur en terug te vinden op groot formaat onder bijlage 1.



Figuur 12 : Cumulatieve slagschaduwcontouren relevante vergunde situatie in combinatie met de relevante windturbines in aanvraag en het gepland project (scenario 2: ontwikkelingsscenario) (Bijlage 1 – Kaartenbundel)

In onderstaande tabellen worden de eerder besproken scenario's (referentie, gepland project en cumulatief) berekend en met elkaar vergeleken voor wat betreft de bijdrage aan de slagschaduwimpact per representatief slagschaduwgevoelig object. Bij een verschil van ***'0:00'*** tussen het ontwikkelingsscenario en de cumulatieve situatie met het geplande project van Groep Bolckmans Green kan men stellen dat er geen additionele bijdrage is vanwege het geplande project. De slagschaduw komt in dat geval niet of gelijktijdig voor met het ontwikkelingsscenario.

De grafische schaduwkalenders van onderstaande representatieve objecten zijn bijgevoegd in bijlage 2. In bijlage 3 zijn tevens de grafische slagschaduwkalenders per windturbine terug te vinden

Uitleg bij de tabellen:

- *Kolom 1: Identificatie slagschaduwgevoelig object van het slagschaduwgevoelig object*
- *Kolommen 2 t.e.m. 5: Berekening van de slagschaduwimpact op dagbasis volgens het astronomisch maximum en met een toetsing aan de VLAREM dagnorm. Er wordt hierbij uitgegaan dat er geen milderende maatregelen aanwezig zijn. Overschrijdingen van de norm worden in het rood aangeduid*

- *Kolom 2: Maximale slagschaduwimpact op dagbasis van het ontwikkelingsscenario*
- *Kolom 3: Maximale slagschaduwimpact op dagbasis van enkel het geplande project*
- *Kolom 4: Maximale cumulatieve slagschaduwimpact op dagbasis van de combinatie van voorgaande scenario's*
- *Kolom 5: Het verschil tussen de cumulatieve impact in kolom 4 en het ontwikkelingsscenario in kolom 2. Dit betreft de effectieve maximale bijdrage aan de slagschaduwimpact door het geplande project*

- *Kolommen 6 t.e.m. 9: volgen hetzelfde principe als kolommen 2 t.e.m. 5 met het belangrijke verschil dat de realistisch te verwachten slagschaduwimpact op jaarbasis wordt geëvalueerd.*
- *Kolommen 10 t.e.m. 11: Finale slagschaduwimpact per slagschaduwgevoelig object nadat milderende maatregelen correct werden toegepast.*

Slagschaduw gevoelig object	*Slagschaduw DAGNORM* *Astronomisch maximum aantal uren per dag* *(zonder toepassing van milderende maatregelen)*				*Slagschaduw JAARNORM* *Realistisch verwacht aantal uren per jaar* *(zonder toepassing van milderende maatregelen)*				Maximale cumulatieve slagschaduwduur na toepassing milderende maatregelen	
	Referentie+ Ontwikkeling [A]	Gepland project	Scenario 2: Cumulatief [B]	Verschil [B-A]	Referentie + Ontwikkeling [C]	Gepland project	Scenario 2: Cumulatief [D]	Verschil [D-C]		
	[max. u/dag]	*[max. u/dag]*	*[max. u/dag]*	*[u/dag]*	*[u/jaar]*	*[u/jaar]*	*[u/jaar]*	*[u/jaar]*	*[u/dag]*	*[u/jaar]*
A	0:32	2:50	3:21	2:49	9:15	94:28	103:26	94:11	0:30	30:00
B	0:26	2:54	3:18	2:52	10:28	123:10	132:19	121:51	0:30	30:00
C	0:45	1:37	2:05	1:20	17:58	56:53	74:13	56:15	0:30	30:00
D	1:46	0:47	1:46	0:00	36:46	19:45	56:01	19:15	0:30	8:00
E	2:08	0:47	2:08	0:00	44:40	17:35	61:38	16:58	0:30	8:00
F	2:16	0:37	2:16	0:00	52:51	10:37	63:03	10:12	0:30	8:00
G	2:32	0:21	2:32	0:00	75:52	4:08	79:52	4:00	0:30	30:00
H	3:22	0:32	3:38	0:16	159:08	4:59	164:07	4:59	0:30	30:00
I	4:22	0:40	4:22	0:00	130:43	2:43	133:26	2:43	0:30	30:00
J	2:34	0:51	2:34	0:00	74:56	4:57	79:53	4:57	0:30	30:00
K	0:53	1:28	1:41	0:48	23:15	19:48	43:03	19:48	0:30	30:00
L	0:33	1:49	2:02	1:29	13:45	35:48	49:33	35:48	0:30	30:00
M	0:47	1:18	1:18	0:31	14:04	21:06	35:10	21:06	0:30	30:00
N	1:52	0:43	1:52	0:00	62:00	9:01	71:01	9:01	0:30	8:00
O	1:07	0:55	1:07	0:00	18:29	11:46	30:15	11:46	0:30	30:00
P	0:41	0:48	0:48	0:07	13:24	10:24	23:34	10:10	0:30	8:00
Q	0:41	0:40	0:41	0:00	13:31	7:18	20:49	7:18	0:30	8:00
R	0:43	0:43	0:43	0:00	14:45	8:55	23:40	8:55	0:30	8:00
S	0:49	0:51	0:51	0:02	16:01	18:46	34:47	18:46	0:30	8:00
T	1:14	0:00	1:14	0:00	21:19	0:00	21:19	0:00	0:30	8:00
U	2:37	0:00	2:37	0:00	43:51	0:00	43:51	0:00	0:30	8:00
V	2:38	0:00	2:38	0:00	41:36	0:00	41:36	0:00	0:30	8:00
W	1:34	0:00	1:34	0:00	35:22	0:00	35:22	0:00	0:30	8:00

Tabel 7 : Overzicht slagschaduwuren gebouwen – Scenario 2

4.4 SAMENVATTING RESULTATEN

4.4.1 SCENARIO 1 – VERGUNDE SITUATIE MET GEPLAND WINDPROJECT

Op basis van de slagschaduwanalyse in bovenstaande tabellen kan men volgende conclusies trekken:

- Referentiesituatie: Relevante windturbines binnen de huidig vergunde toestand
    - Zonder de toepassing van milderende maatregelen worden voor 12 geselecteerde representatieve woningen de VLAREM-normen van maximaal 8 uur slagschaduw per jaar en/of maximaal 30 minuten per dag met betrekking tot slagschaduw overschreden;
    - Zonder de toepassing van milderende maatregelen worden voor 10 geselecteerde representatieve bedrijfsgebouwen in industriegebied de VLAREM-normen van maximaal 30u slagschaduw per jaar en/of maximaal 30 minuten per dag met betrekking tot slagschaduw overschreden; alle bedrijven ervaren slagschaduw van minstens 1 van de omliggende windturbines waarvan de slagschaduw na 19u ’s avonds valt en dus buiten de kantooruren is.
    - Het is duidelijk dat de relevante windturbines in de huidige situatie reeds milderende maatregelen dienen toe te passen zodanig dat de VLAREM-normen gerespecteerd worden.
- Ontwikkeling van het gepland windproject van Groep Bolckmans Green samen met de referentiesituatie
    - Op 7 van de 23 geselecteerde representatieve slagschaduwobjecten (bedrijven en woningen) wordt een bijkomende bijdrage aan slagschaduwimpact vastgesteld;
    - Zonder de toepassing van milderende maatregelen worden voor 12 geselecteerde representatieve woningen de VLAREM-normen van maximaal 8 uur slagschaduw per jaar en/of maximaal 30 minuten per dag met betrekking tot slagschaduw overschreden;
    - Zonder de toepassing van milderende maatregelen worden voor 11 geselecteerde representatieve bedrijfsgebouwen in industriegebied de VLAREM-normen van maximaal 30u slagschaduw per jaar en/of maximaal 30 minuten per dag met betrekking tot slagschaduw overschreden; de slagschaduw van de geplande turbine voor object G valt voor 7 u ’s ochtends en dus buiten de kantooruren.
    - Het is duidelijk dat milderende maatregelen noodzakelijk zijn zodanig dat de VLAREM-normen gerespecteerd worden. Deze milderende maatregelen worden beschreven in hoofdstuk 5.

4.4.2 SCENARIO 2 – ONTWIKKELINGSSCENARIO MET GEPLAND PROJECT

Op basis van de slagschaduwanalyse in bovenstaande tabellen kan men volgende conclusies trekken:

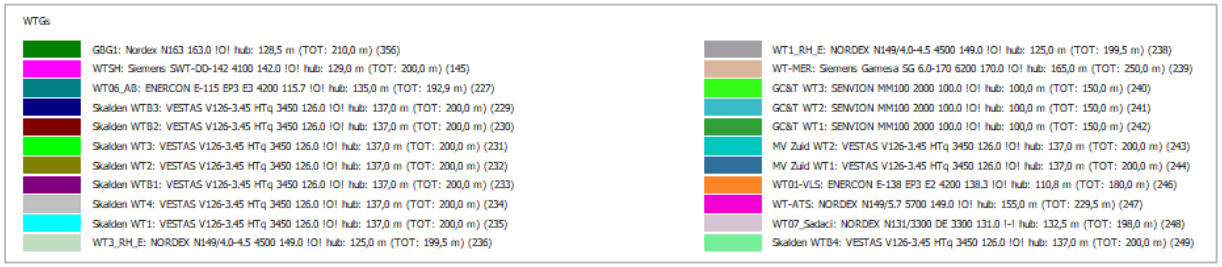
- Referentiesituatie incl. alle gekende ontwikkelingen: Relevante windturbines binnen de huidig vergunde toestand cumulatief met alle gekende toekomstige ontwikkelingen:
    - Zonder de toepassing van milderende maatregelen worden voor 12 geselecteerde representatieve woningen de VLAREM-normen van maximaal 8 uur slagschaduw per jaar en/of maximaal 30 minuten per dag met betrekking tot slagschaduw overschreden;
    - Zonder de toepassing van milderende maatregelen worden voor 10 geselecteerde representatieve bedrijfsgebouwen in industriegebied de VLAREM-normen van maximaal 30u slagschaduw per jaar en/of maximaal 30 minuten per dag met betrekking tot slagschaduw overschreden; alle bedrijven ervaren slagschaduw van minstens 1 van de omliggende windturbines waarvan (een deel van) de slagschaduw na 19u ’s avonds valt en dus buiten de kantooruren is.
    - Het is duidelijk dat de relevante windturbines in de huidige situatie reeds milderende maatregelen dienen toe te passen zodanig dat de VLAREM-normen gerespecteerd worden.
- Ontwikkeling van het gepland windproject van Groep Bolckmans Green samen met de referentiesituatie incl. alle gekende toekomstige ontwikkelingen:

- Op 7 van de 23 geselecteerde representatieve slagschaduwobjecten (bedrijven en woningen) wordt een bijkomende bijdrage aan slagschaduwimpact vastgesteld;
- Zonder de toepassing van milderende maatregelen worden voor 12 geselecteerde representatieve woningen de VLAREM-normen van maximaal 8 uur slagschaduw per jaar en/of maximaal 30 minuten per dag met betrekking tot slagschaduw overschreden;
- Zonder de toepassing van milderende maatregelen worden voor 11 geselecteerde representatieve bedrijfsgebouwen in industriegebied de VLAREM-normen van maximaal 30u slagschaduw per jaar en/of maximaal 30 minuten per dag met betrekking tot slagschaduw overschreden; de slagschaduw voor object G valt na 19u 's avonds en dus buiten de kantooruren.
- Het is duidelijk dat milderende maatregelen noodzakelijk zijn zodanig dat de VLAREM-normen gerespecteerd worden. Deze milderende maatregelen worden beschreven in hoofdstuk 5.

4.5 DETAILANALYSE VAN ENKELE SLAGSCHADUWGEVOELIGE OBJECTEN

Ter illustratie worden in onderstaande paragrafen enkele receptoren met relatief veel slagschaduw in meer detail besproken. De geselecteerde slagschaduwgevoelige objecten zijn immers worst-case benaderd en doorgerekend als serre-objecten die licht vanuit alle richtingen kunnen ontvangen zonder dat er afscherming van licht/schaduw optreedt door natuurlijke elementen of gebouwen. Daarnaast gaat men uit van een astronomisch maximum voor wat betreft de evaluatie van de dagnorm en houdt men geen rekening met werkelijke zonneschijnduur (bewolking). Voor meer informatie over de regelgeving en berekeningswijze kan men terecht in hoofdstuk 2.

De resultaten van alle receptoren zijn terug te vinden in bijlage 2 aan deze slagschaduwstudie. De kleurencode gebruikt in de slagschaduwkalenders volgt volgende conventie:



Figuur 13 : Legende slagschaduwkalender

4.5.1 WONINGEN

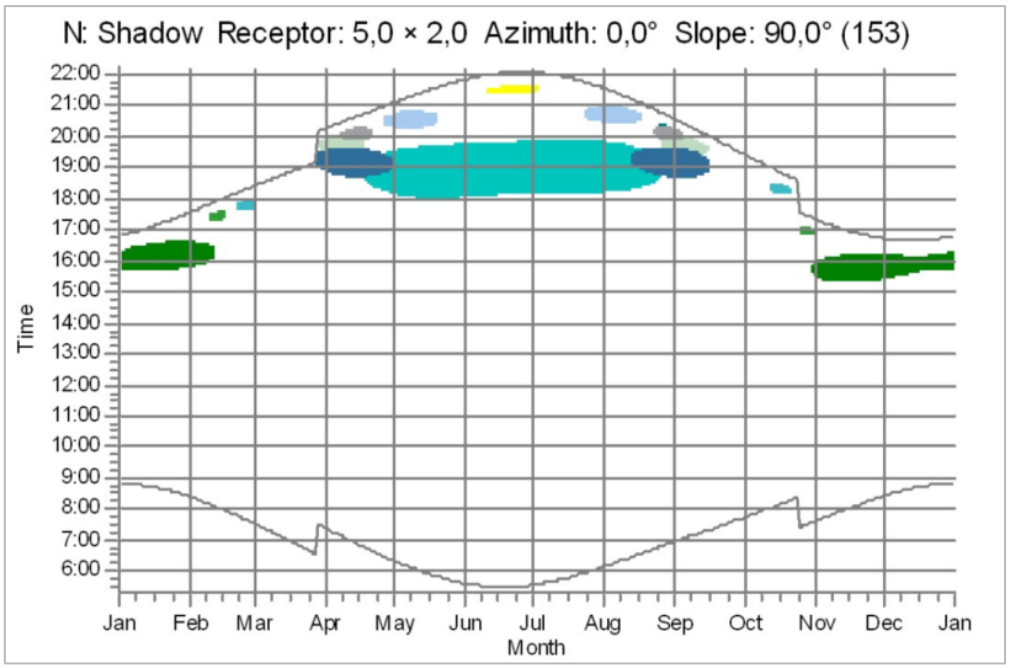
4.5.1.1 WONING N

Woning met 3 ramen aan de kant van de geplande windturbine. De ramen worden niet afgeschermd door begroeiing. Dit slagschaduwgevoelig object wordt als een relevant en representatief object beschouwd voor de woningen in de Keurestraat.

Op basis van de slagschaduwkalender kan slagschaduw voornamelijk voorkomen ten gevolge van windturbine ‘MV Zuid WT2’ in de periode van half mei tot eind augustus tussen 18u en 20u. De bijkomende slagschaduw ten gevolge van GBG1 kan voorkomen in de periode van november tot begin februari tussen ca. 15u30 en ca. 16u30. De normen zullen gerespecteerd worden door de windturbines stil te zetten. Hierdoor zal er geen bijkomende slagschaduw waar te nemen zijn.



Figuur 14 : Woning N



Figuur 15: Slagschaduwkalender woning N

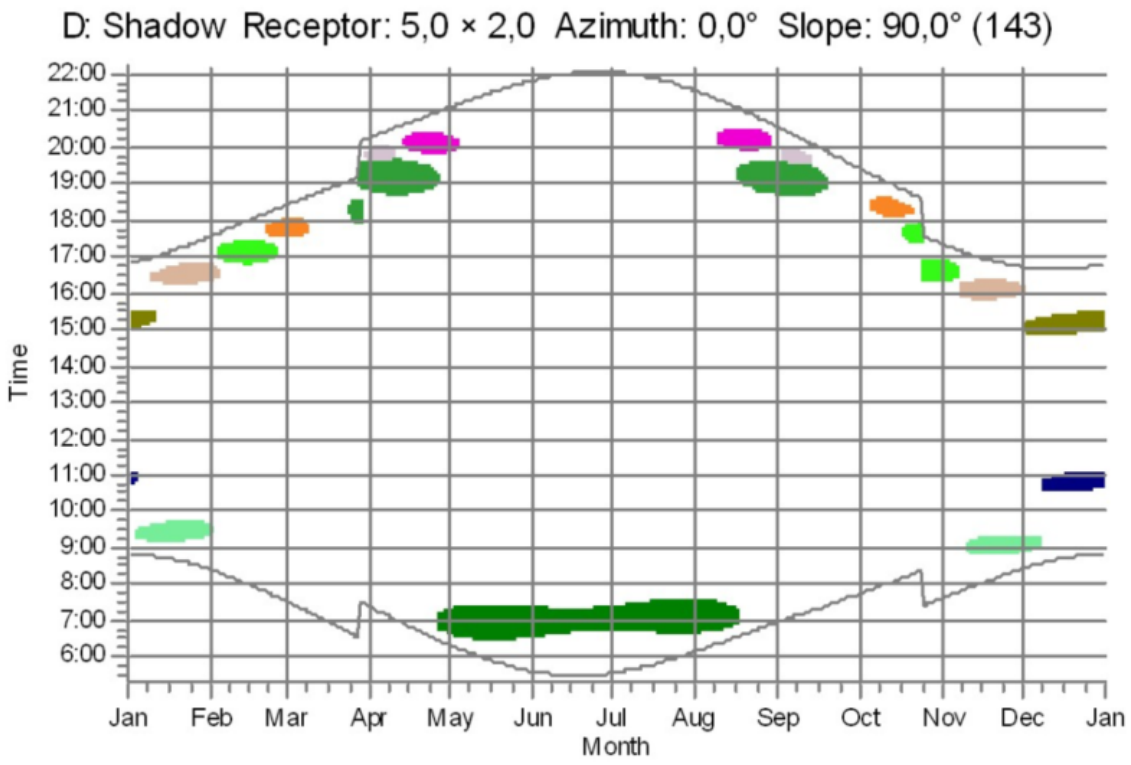
4.5.1.2 WONING D: REPRESENTATIEF VOOR DE WONINGEN AAN DE DESTELDONKSTRAAT

Woning D is een woning waar de ramen aan de achterzijde van de woning naar de geplande windturbine gericht zijn. Dit slagschaduwgevoelig object wordt als een representatief object beschouwd voor de woningen in de Desteldonkstraat.



Figuur 16: Woning D

Op basis van de slagschaduwkalender kan slagschaduw voornamelijk voorkomen ten gevolge van GBG1 in de periode van mei tot half augustus tussen 6u30 en 7u30. Er is ook slagschaduw ten gevolge van andere omliggende windturbines in de periode van half augustus tot mei tussen ca. 15u en 20u30.



Figuur 17: Slagschaduwkalender woning D

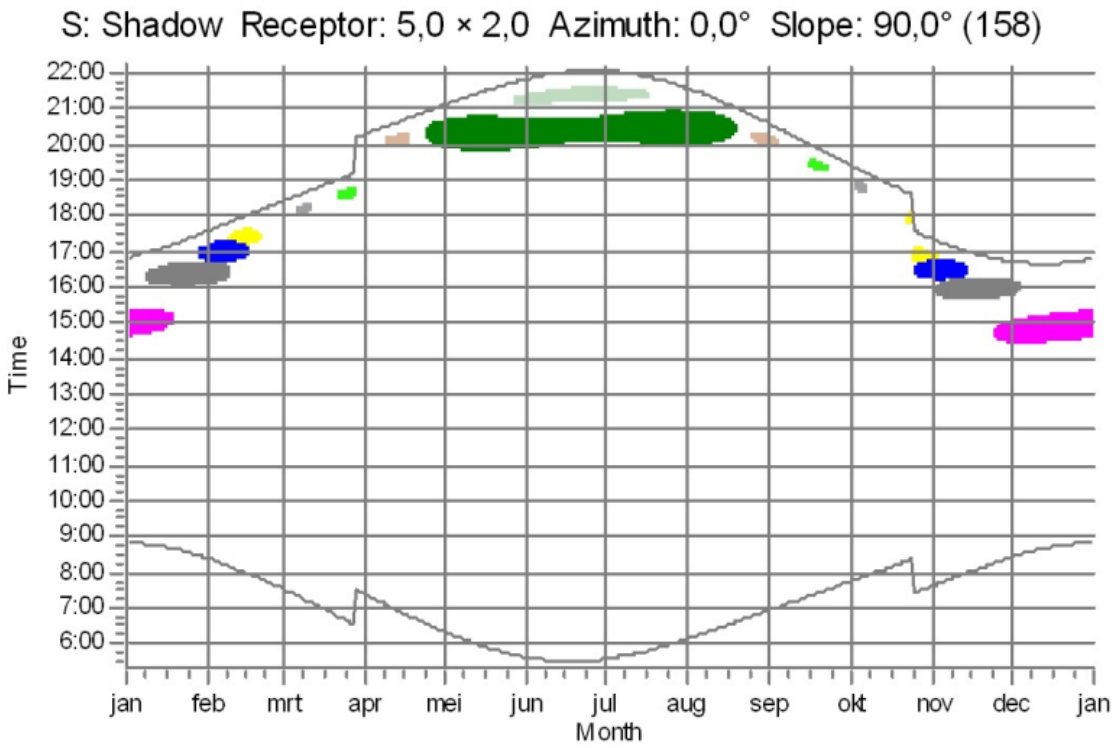
4.5.1.3 WONING S: REPRESENTATIEF VOOR DE WONINGEN AAN DE LINDESTRAAT

Woning S is een woning waar de ramen aan de achterzijde van de woning naar de geplande windturbine gericht zijn. Dit slagschaduwgevoelig object wordt als een representatief object beschouwd voor de woningen in de Lindestraat.



Figuur 18: Woning S

Op basis van de slagschaduwkalender kan slagschaduw voorkomen ten gevolge van GBG1 in de periode van eind april tot half augustus tussen 20u en 21u. Er is ook slagschaduw ten gevolge van andere omliggende windturbines, vooral in de periode van eind oktober tot half februari tussen ca. 14u30 en 17u30.



Figuur 19: Slagschaduwkalender woning S

4.5.2 BEDRIJFSGEBOUWEN

4.5.2.1 GEBOUW B: DSV

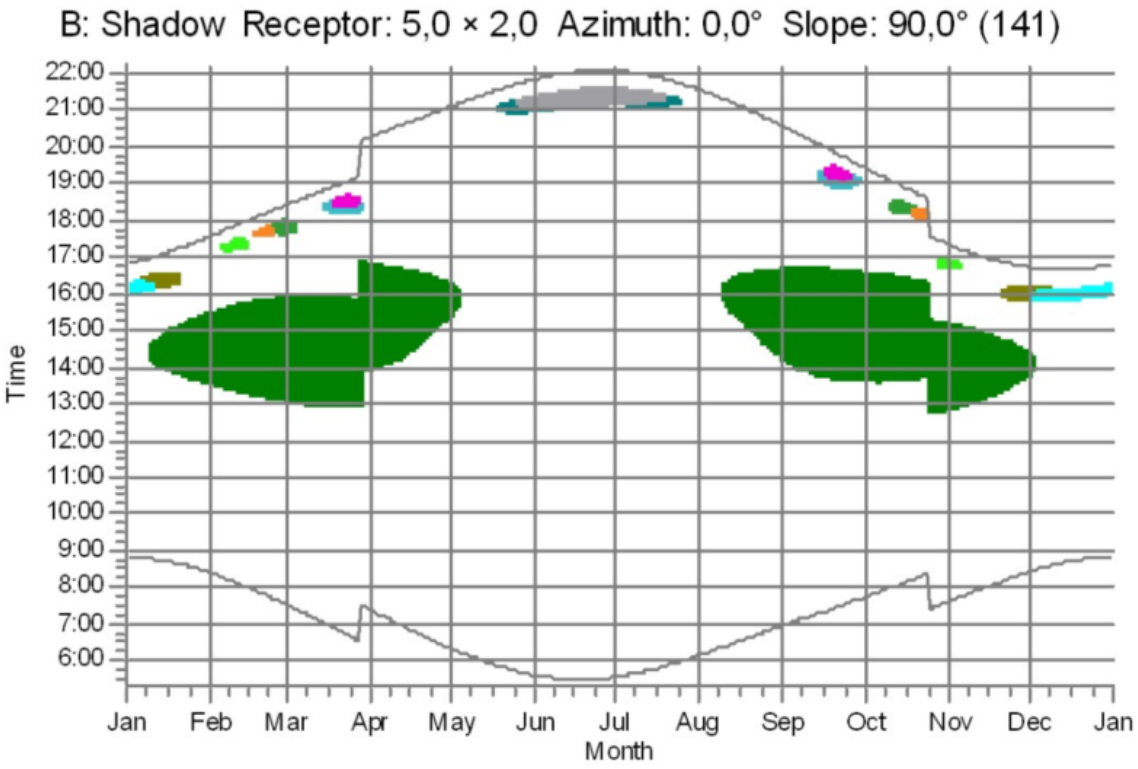
DSV is een logistiek bedrijf. Bij deze hallen zijn er bijna geen grote raampartijen aanwezig. Op basis van de berekende slagschaduwkalender wordt de slagschaduw voor 19u 's avonds veroorzaakt. Aangezien de periode van slagschaduw binnen de kantoor-/openingsuren valt en dus mogelijks hinder veroorzaakt, kan dit object als relevant worden beschouwd.



Figuur 20: Bedrijf B - DSV

Op basis van de slagschaduwkalender wordt het grootste deel van de slagschaduw op dit bedrijf veroorzaakt door de geplande windturbine. De slagschaduw ten gevolge van GBG1 komt voor in de

periode van half januari tot mei en van half augustus tot december tussen ca. 13u en 17u afhankelijk van het zomeruur of winteruur.



Figuur 21: Slagschaduwkalender bedrijf B - DSV

5 PREVENTIEVE EN MILDERENDE MAATREGELEN

Op basis van de uitgevoerde analyse onder hoofdstuk 4 zullen milderende maatregelen noodzakelijk zijn om het welslagen van het project te verzekeren. Om aan de eisen te voldoen, die worden gesteld door de milieuadministratie zullen volgende maatregelen getroffen dienen te worden door Groep Bolckmans Green:

- De windturbine wordt uitgerust met een automatische stilstand voorziening ('slagschaduwmodule'). Op basis van de slagschaduwkalenders en de gegevens van de eerder vergunde windturbines in de omgeving zal de slagschaduwmodule berekenen en bijhouden hoeveel slagschaduw er per relevant slagschaduwgevoelig object geworpen mag worden zodanig dat de slagschaduwnormen te allen tijde gerespecteerd worden;
- Om de wettelijke normen omtrent slagschaduw te allen tijde te respecteren dient de windturbine zo nodig tijdelijk te worden stilgezet op basis van de slagschaduwmodule;
- De exploitant houdt een logboek bij voor de windturbine. Dit logboek vermeldt de uitgevoerde stilstanden en bevat de nodige gegevens om de effectieve slagschaduwduur voor elk relevant slagschaduwgevoelig object te bepalen.

Bovenstaande maatregelen garanderen eveneens dat de eerder vergunde windturbines geen negatieve impact ondervinden van het gepland project en ze dus onveranderd ten opzichte van vandaag in exploitatie blijven.

De beoordeling of slagschaduwreceptor al dan niet een representatief slagschaduwgevoelig object is zoals beschreven in dit rapport, blijft steeds een inschatting en dient in de toekomst verder in detail bekeken en opgevolgd te worden. Voorafgaand aan de exploitatie dient onderzocht te worden hoe groot de werkelijke slagschaduwhinder zal zijn aangezien de slagschaduwreceptoren in deze studie als worst-case serre objecten (grote raampartijen die van alle zijden licht ontvangen) werden ingegeven. Er wordt daarnaast geen rekening gehouden met de afschermende werking van objecten/gebouwen tussen de windturbine(s) en de receptor. De werkelijke slagschaduwimpact zal bijgevolg bijna altijd kleiner zijn dan die weergegeven in de analyse in hoofdstuk 4.

6 BESLUIT EN MAATREGELEN

In het kader van de aanvraag van een omgevingsvergunning voor het plaatsen van 1 windturbine, heeft initiatiefnemer Groep Bolckmans Green, studiebureau Encon de opdracht gegeven om een slagschaduwstudie uit te voeren voor deze windturbine gelegen op de terreinen van Groep Bolckmans Green te Gent nabij de R4. Bij deze studie werd er rekening gehouden met het cumulatieve effect van de nabijgelegen relevante vergunde windturbines alsook met de relevante windturbines in aanvraag (ontwikkelingsscenario).

De slagschaduwimpact werd geëvalueerd aan de hand van 23 representatieve slagschaduwgevoelige objecten in de omgeving.

Uit deze studie blijkt dat een aantal representatieve slagschaduwgevoelige objecten, rekening houdend met de cumulatieve effecten van de geplande en omliggende windturbines, de norm van 8 u/dag of 30 u/jaar en maximaal 30 min/dag zouden overschrijden. Het gaat hier vooral om bedrijven en woningen in woongebied en landbouwgebied. Bij 12 woningen en 11 bedrijven wordt de VLAREM-norm op jaarbasis en/of op dagbasis overschreden. De slagschaduwduur zal voor deze slagschaduwgevoelige objecten gemonitord moeten worden, en indien nodig zal de desbetreffende windturbine, die de slagschaduw veroorzaakt, tijdelijk stilgezet worden om de norm op jaar-of op dagbasis te respecteren. Milderende maatregelen zullen dus noodzakelijk zijn om slagschaduw tot de VLAREM normen te beperken.

Om te allen tijd aan de VLAREM-normen voor slagschaduw te voldoen zullen volgende milderende maatregelen getroffen worden door Groep Bolckmans Green:

- De windturbine wordt uitgerust met een automatische stilstand voorziening (slagschaduwmodule);
- Om de wettelijke normen omtrent slagschaduw te allen tijde te respecteren dient de windturbine zo nodig tijdelijk worden stilgezet;
- De exploitant zal een logboek bijhouden voor de windturbine. Dit logboek vermeldt de stilstanden voor slagschaduw en bevat de nodige gegevens om de effectieve slagschaduw voor elk relevant slagschaduwgevoelig object te bepalen.

In realiteit worden er door de bestaande windturbines ook reeds maatregelen genomen om aan de normen te voldoen. **Wanneer rekening gehouden wordt met de milderende maatregelen wordt voor de bestudeerde woningen in deze studie geen bijkomende slagschaduwimpact berekend door de geplande windturbine.**

De eerste twee jaren zal er door een studiebureau een controlerapport worden opgesteld waarin de hoeveelheid effectieve slagschaduw op elk relevant slagschaduwgevoelig object wordt aangetoond. Op basis van dit rapport zullen er indien nodig bijkomende remediërende maatregelen worden genomen door Groep Bolckmans Green.

Aangezien de slagschaduwreceptoren in deze studie als worst case (serre objecten) werden ingegeven, is het zeer waarschijnlijk dat de werkelijke slagschaduwhinder op de nabijgelegen slagschaduwgevoelige objecten beperkter zullen zijn dan de in deze studie berekende waarden.

Mits de toepassing van milderende maatregelen zal voor alle representatieve relevante slagschaduwreceptoren voldaan worden aan de geldende slagschaduwnormen.

De slagschaduwnormen voor windturbines zoals opgenomen in titel II van het VLAREM zijn in overeenstemming met de aanbevelingen uit het advies van de Hoge Gezondheidsraad van 2013. Dit advies is nog steeds actueel. Bijgevolg kan in alle redelijkheid gesteld worden dat bij een toetsing aan de sectorale slagschaduwnormen van titel II van het VLAREM er geen aanzienlijke effecten zijn voor wat slagschaduw betreft.

BIJLAGEN

BIJLAGE 1: KAARTENBUNDEL

Kaart 1 - Inplanting

Windproject Bolckmans - Gent

Schaal: 1:10.000

Projectzone
Hoogspanningslijnen
Geplande waterstofleiding Fluxys
Gasleidingen
Snelwegen
Spoorwegen

Overzicht windturbines

Operationeel

Geplande windturbine

WT2_RH_E
WT1_RH_E
WT3_RH_E
MV 2
MV Zuid WT1
MV Zuid WT2
GC&T WT2
GC&T WT1
GC&T WT3
GBG1
Gent
Lochristi
380kV
150kV
150kV
380kV
150kV
150kV
150kV

N

0 100 200 300 m

Auteur: Bjarne Van Hooff
Datum: 05/12/2023

encon

Kaart 2 - Overzicht windturbines

Windproject Bolckmans - Gent

Schaal: 1:20.000

projectzone

Overzicht windturbines

- In ontwikkeling
- Operationeel
- Vergund
- Gepland

N

KDII WT4
KDII WT5
KD_R04
KD_R04
CBR Gent
WT05_S
KD WT3
KD WT2
KD WT1
KD WT5
KD WT4
MX WT1
WT2_RH_E
MV 2
WT06_AB
Evergem
WT01_Nest
WT1_RH_E
WT3_RH_E
MV Zuid WT2
MV Zuid WT1
Gent
WT-ATS
GC&T WT2
GBG1
WT07_Sadaci
GC&T WT1
WTK
Lochristi
WT01-VLS
GC&T WT3
Skalden WTB3
SK3
Skalden WT2
Skalden WTB4
SK2
SK4
WT_MER
SK1
Skalden WTB2
Skalden WT1
Skalden WTB1
WTSH
SE_WT1
SE_WT2
VC WT3

0 0,5 1 km

Auteur: Bjarne Van Hooff
Datum: 05/12/2023

encon

Kaart 3 - Relevante windturbines

Windproject Bolckmans - Gent

Schaal: 1:20.000

Slagschaduwcontouren - Eigen project

4 u/jaar

Slagschaduwcontouren - Omliggende WTs

0 u/jaar

Slagschaduwcontouren - VC-WT3

0 u/jaar

Overzicht windturbines

In aanvraag

Operationeel

Vergund

Gepland

KD_R04 KD_R04 CBR Gent WT05_S

KD WT1

KD WT3

KD WT2

KD WT5 KD WT4

MX WT1

WT06_AB

WT2_RH_E MV 2

WT1_RH_E

WT3_RH_E

MV Zuid WT2

MV Zuid WT1

WT-ATS

GC&T WT2

Gent

GBG1

WT07_Sadaci

GC&T WT1

WTK

WT01-VLS

GC&T WT3

Lochristi

Skalden WTB3 SK3 Skalden WTB4

Skalden WT2

SK2 SK4

WT_MER

SK1

Skalden WTB2

Skalden WT1

Skalden WTB1

WTSH

SE_WT1

SE_WT2

VC WT3

SE_WT3

0 300 600 900 m

N

Auteur: Bjarne Van Hooff
Datum: 06/12/2023

encon

Kaart 4 - Slagschaduwcontouren gepland

Windproject Bolckmans - Gent

Schaal: 1:10.000

Slagschaduwreceptoren

Slagschaduwcontouren - Eigen project

- 30 u/jaar
- 16 u/jaar
- 8 u/jaar
- 4 u/jaar

Overzicht windturbines

- Operationeel
- Vergund
- Gepland

N

WT2_RH_E

MV 2

1_RH_E

WT3_RH_E

MV Zuid WT2

MV Zuid WT1

GC&T WT2

Gent

GBG1

GC&T WT1

GC&T WT3

WT01-VLS

Skalden WT4

Skalden WTB3

Skalden WT2

Skalden WTB4

Lochristi

A B C D E F G H I J K L M N O P Q R S T U V W

0 100 200 300 m

Auteur: Bjarne Van Hooff
Datum: 06/12/2023

encon

Kaart 5 - Slagschaduw topografisch

Windproject Bolckmans - Gent

Schaal: 1:10.000



Auteur: Bjarne Van Hooff
Datum: 06/12/2023

encon

Kaart 6 - Receptoren gewestplan

Windproject Bolckmans - Gent

Schaal: 1:10.000

Slagschaduwreceptoren

Overzicht windturbines

Operationeel

Vergund

Gepland

N

WT2_RH_E

MV 2

T06_AB

WT1_RH_E

WT3_RH_E

MV Zuid WT2

MV Zuid WT1

GC&T WT2

Gent

GBG1

GC&T WT1

WT01-VLS

GC&T WT3

Skalden WT4

Skalden WTB3

Skalden WT2

Skalden WTB4

Desteldonk

Moleneinde

Oude Men

Lochristi

TEXACO

BELGIUM

Z

RO

K1

A B C D E F G H I J K L M N O P Q R S T U V W

0 100 200 300 m

Auteur: Bjarne Van Hooff
Datum: 06/12/2023

encon

Kaart 7 - Slagschaduw referentie

Windproject Bolckmans - Gent

Schaal: 1:20.000

Slagschaduwreceptoren

Slagschaduwcontouren - Referentie

- 30 u/jaar
- 16 u/jaar
- 8 u/jaar
- 4 u/jaar

Overzicht windturbines

- Operationeel
- Vergund
- Gepland

KD WT1
KD WT3
KD WT2
KD WT4
CBR Gent
Wachtebeke
MX WT1
WT06_AB
WT2_RH_E
MV 2
WT1_RH_E
WT3_RH_E
MV Zuid WT2
MV Zuid WT1
WT-ATS
GC&T WT2
Gent
WT07_Sadaci
GC&T WT1
GC&T WT3
WT01-VLS
Lochristi
Skalden WTB3
Skalden WT2
Skalden WT4
Skalden WTB4
WT_MER
Skalden WT1
Skalden WTB2
Skalden WTB1
Skalden WT3
WTSH
SE_WT1
SE_WT2
VC WT3
SE_WT3
VC WT2

0 300 600 900 m

Auteur: Bjarne Van Hooff
Datum: 26/10/2023

encon

Kaart 8 - Slagschaduw cumul

Windproject Bolckmans - Gent

Schaal: 1:20.000

Slagschaduwreceptoren

Slagschaduwcontouren - cumul

- 30 u/jaar
- 16 u/jaar
- 8 u/jaar
- 4 u/jaar

Overzicht windturbines

- Operationeel
- Vergund
- Gepland

KD WT1
CBR Gent
KD WT3
KD WT2
KD WT4
MX WT1
WT2_RH_E
MV 2
WT06_AB
WT1_RH_E
WT3_RH_E
MV Zuid WT2
MV Zuid WT1
WT-ATS
GC&T WT2
Gent
GBG1
WT07_Sadaci
GC&T WT1
GC&T WT3
WT01-VLS
Skalden WTB3
Skalden WT2
Skalden WT4
Skalden WTB4
WT_MER
Skalden WT1
Skalden WTB2
Skalden WT3
Skalden WTB1
WTSH
SE_WT1
SE_WT2
SE_WT3
VC WT3
VC WT2
Lochristi
Wachtebeke

0 300 600 900 m

Auteur: Bjarne Van Hooff
Datum: 06/12/2023

encon

Kaart 9 - Slagschaduw Ontwikkeld

Windproject Bolckmans - Gent

Schaal: 1:20.000

Slagschaduwreceptoren

Slagschaduwcontouren - cumul

- 30 u/jaar
- 16 u/jaar
- 8 u/jaar
- 4 u/jaar

Overzicht windturbines

- In ontwikkeling
- Operationeel
- Vergund
- Gepland

KDII WT4
KDII WT5
KD WT5
KD WT4
KD WT3
KD WT2
KD_R04
KD WT1
CBR Gent
MX WT1
WT06_AB
WT2_RH_E
MV 2
WT1_RH_E
WT3_RH_E
MV Zuid WT2
MV Zuid WT1
GBG1
Gent
WT07_Sadaci
WT-ATS
GC&T WT2
GC&T WT1
WTK
WT01-VLS
GC&T WT3
WT_MER
SK1
SK2
SK3
SK4
Lochristi
WTSH
SE_WT1
SE_WT2
SE_WT3
VC WT3
VC WT2

0 300 600 900 m

Auteur: Bjarne Van Hooff
Datum: 06/12/2023

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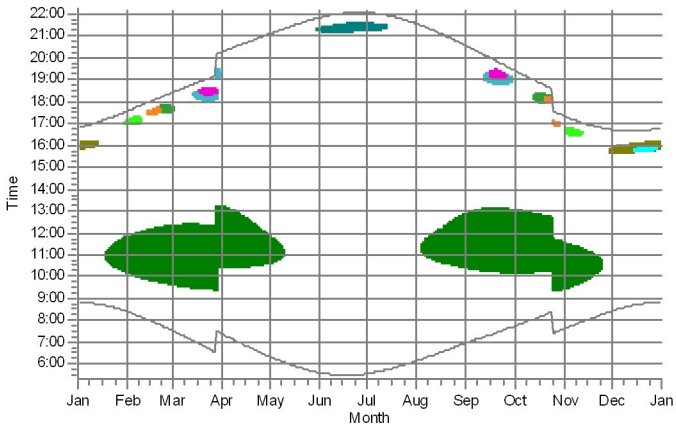
BIJLAGE 2: SLAGSCHADUWKALENDER PER REPRESENTATIEVE SLAGSCHADUWRECEPTOR

Licensed user:
Encon
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BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

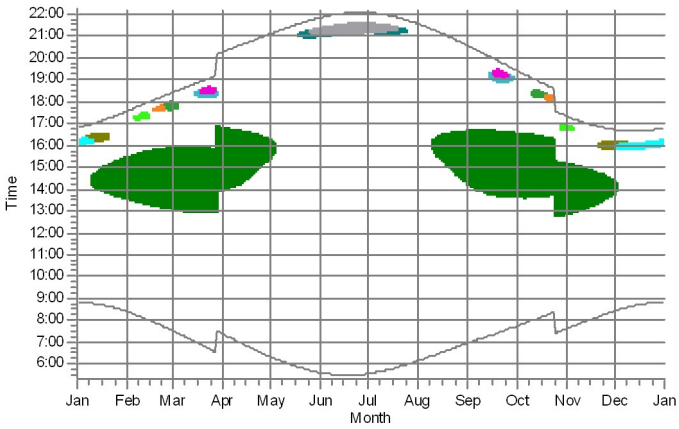
SHADOW - Calendar, graphical

Calculation: SS OVA - Gepland

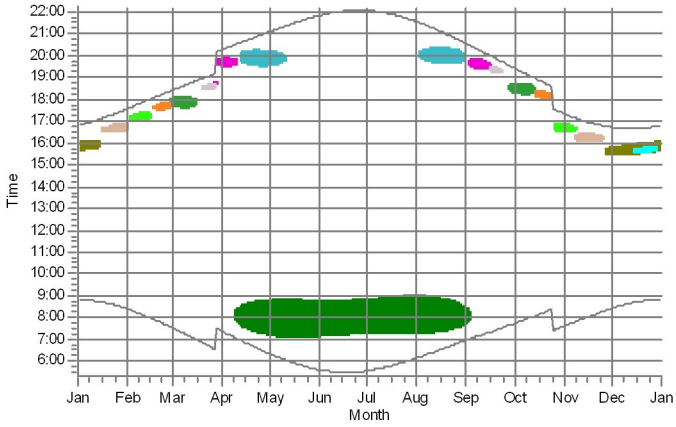
A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)



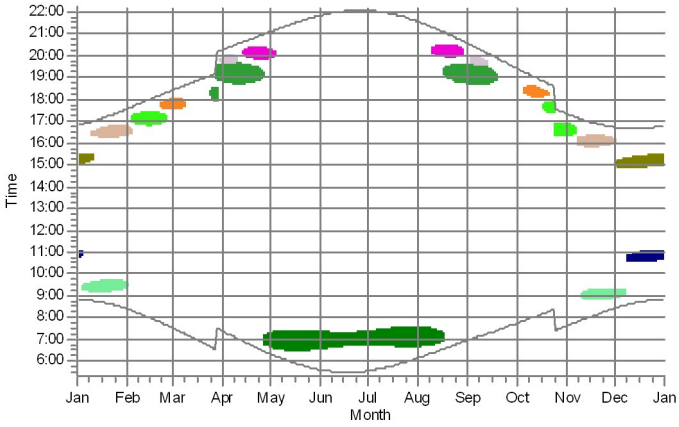
B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)



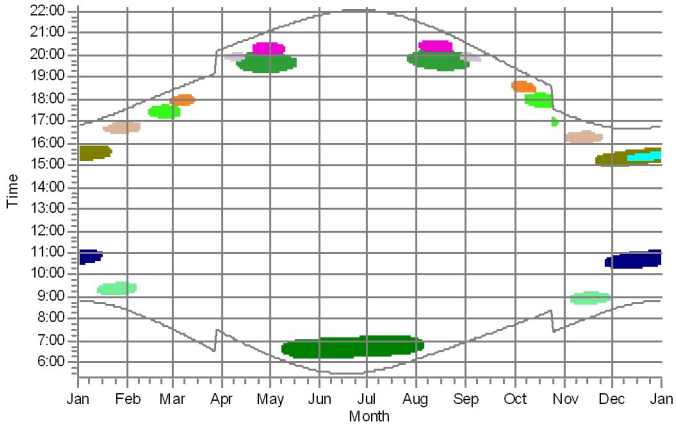
C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)



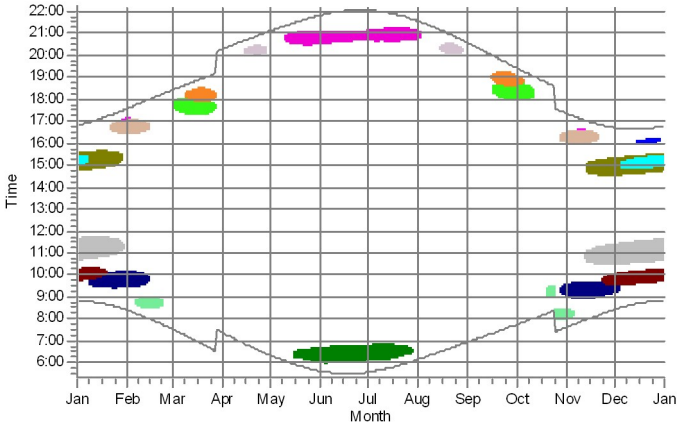
D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)



E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)



F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)



WTGs

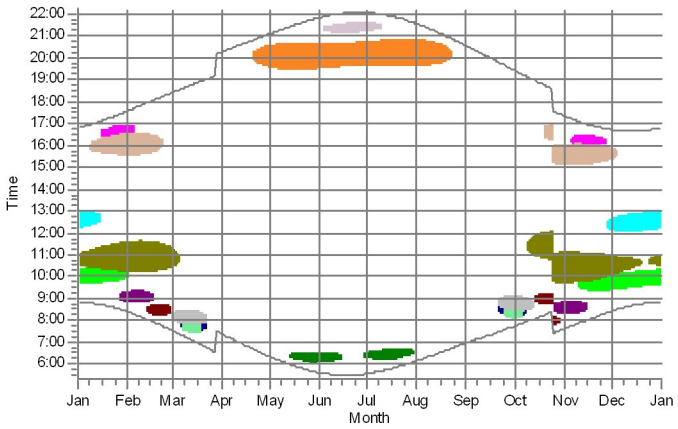
- WT163: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)
- VC WT3: SENVION MM92 2050 92.5 !O! hub: 100,0 m (TOT: 146,3 m) (122)
- WTSH: Siemens SWT-DD-142 4100 142.0 !O! hub: 129,0 m (TOT: 200,0 m) (145)
- WT06_AB: ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (227)
- Skalden WTB3: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (229)
- Skalden WTB2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (230)
- Skalden WT2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (232)
- Skalden WT4: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (234)
- Skalden WT1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (235)
- WT1_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)
- WT-MER: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (239)
- GC&T WT3: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)
- GC&T WT2: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)
- GC&T WT1: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)
- WT01-VLS: ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (246)
- WT-ATS: NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)
- WT07_Sadaci: NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (248)
- Skalden WTB4: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (249)

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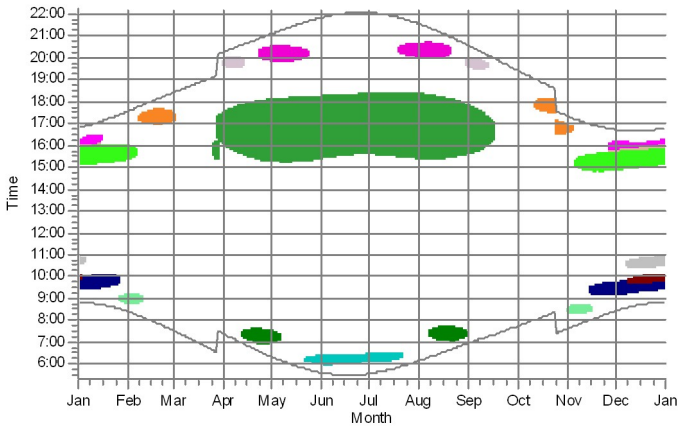
SHADOW - Calendar, graphical

Calculation: SS OVA - Gepland

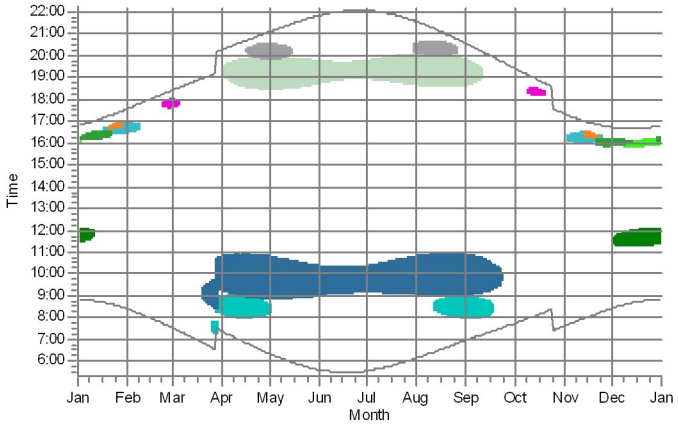
G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)



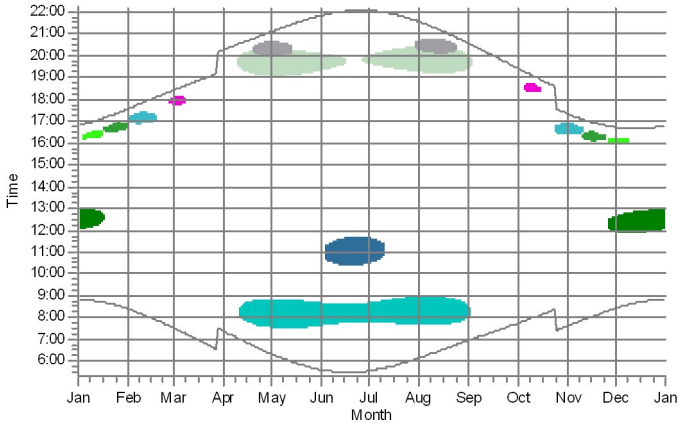
H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)



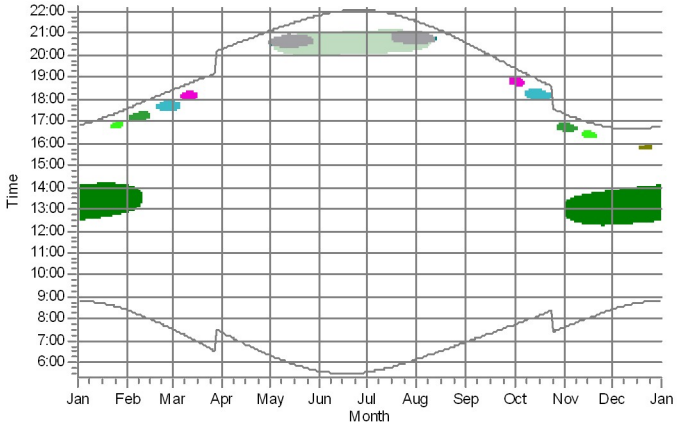
I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)



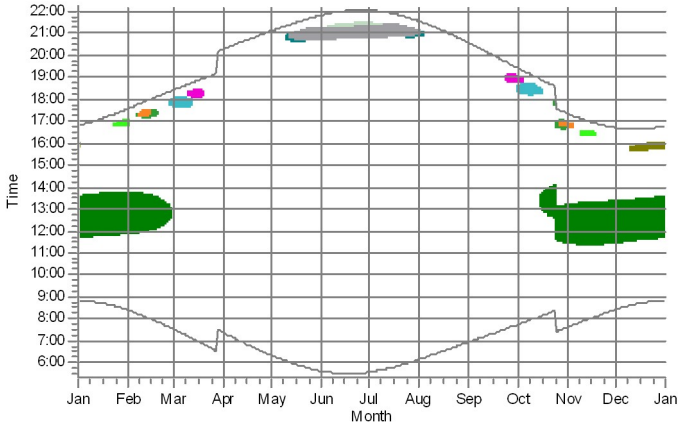
J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)



K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)



L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)



WTGs

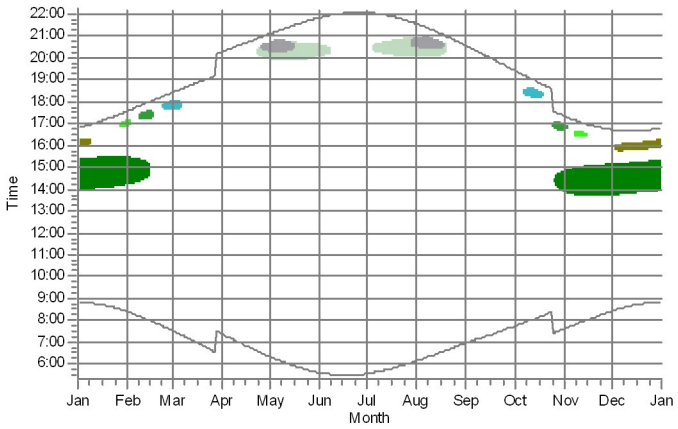
- WT163: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)
- WTSH: Siemens SWT-DD-142 4100 142.0 !O! hub: 129,0 m (TOT: 200,0 m) (145)
- WT06_AB: ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (227)
- Skalden WTB3: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (229)
- Skalden WTB2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (230)
- Skalden WT3: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (231)
- Skalden WT2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (232)
- Skalden WTB1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (233)
- Skalden WT4: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (234)
- Skalden WT1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (235)
- WT3_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (236)
- WT1_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)
- WT-MER: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (239)
- GC&T WT3: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)
- GC&T WT2: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)
- GC&T WT1: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)
- MV Zuid WT2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (243)
- MV Zuid WT1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (244)
- WT01-VLS: ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (246)
- WT-ATS: NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)
- WT07_Sadaci: NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (248)
- Skalden WTB4: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (249)

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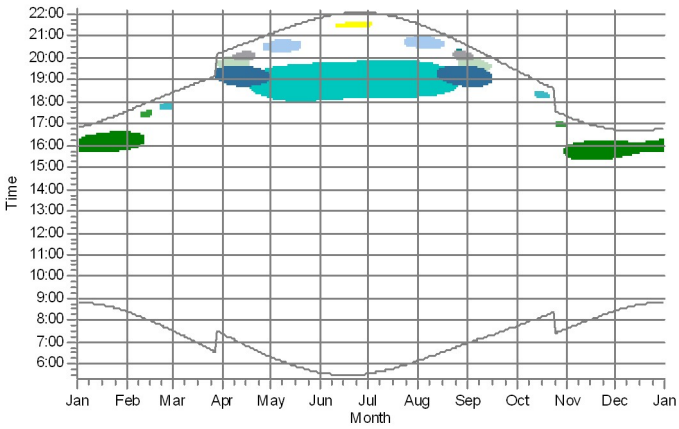
SHADOW - Calendar, graphical

Calculation: SS OVA - Gepland

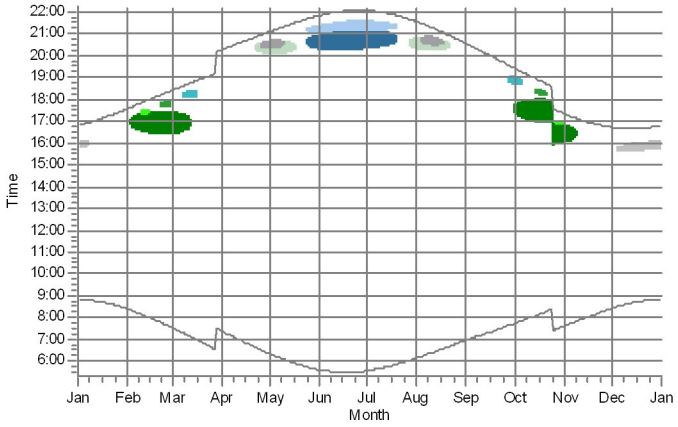
M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)



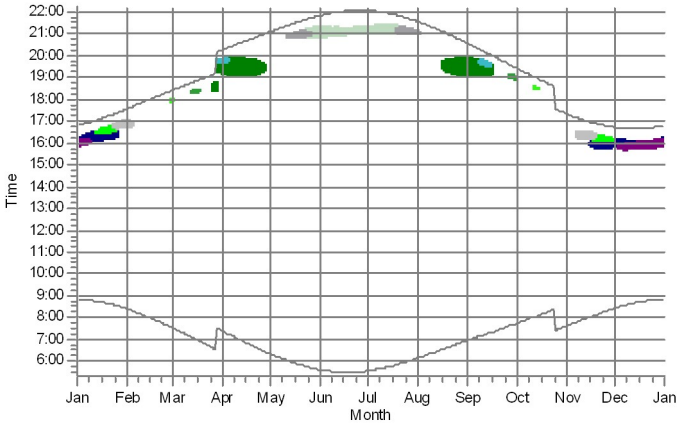
N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)



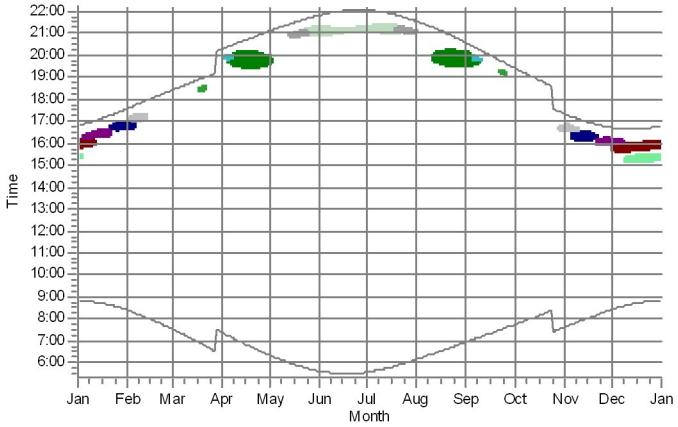
O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)



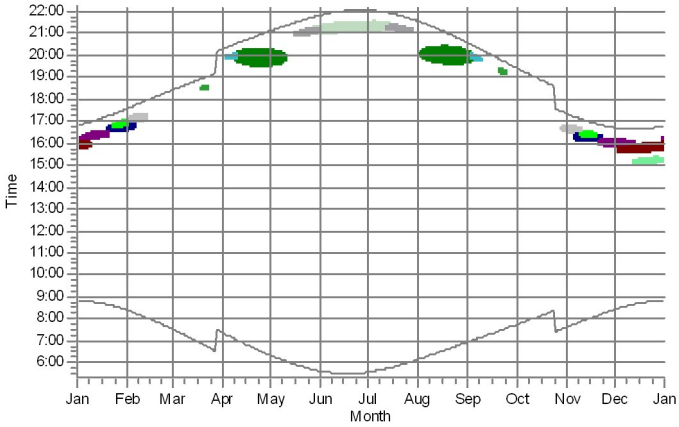
P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)



Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)



R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)



WTGs

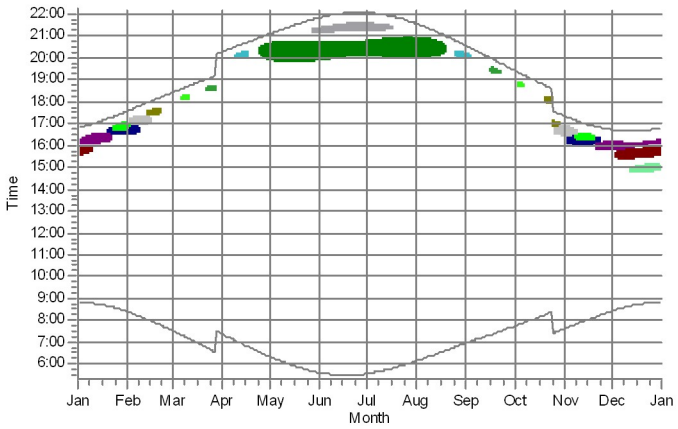
- WT163: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)
- MX WT1: SENVION 3.4M104 3400 104.0 !O! hub: 100,0 m (TOT: 152,0 m) (91)
- WT06_AB: ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (227)
- Skalden WTB3: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (229)
- Skalden WTB2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (230)
- Skalden WT3: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (231)
- Skalden WT2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (232)
- Skalden WTB1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (233)
- Skalden WT4: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (234)
- WT3_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (236)
- WT2_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (237)
- WT1_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)
- GC&T WT3: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)
- GC&T WT2: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)
- GC&T WT1: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)
- MV Zuid WT2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (243)
- MV Zuid WT1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (244)
- Skalden WTB4: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (249)

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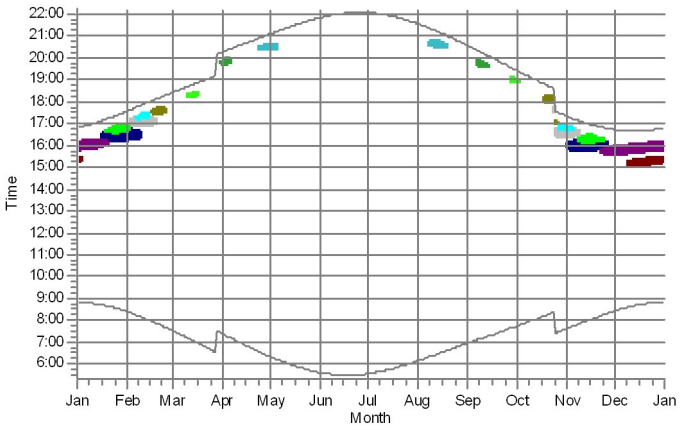
SHADOW - Calendar, graphical

Calculation: SS OVA - Gepland

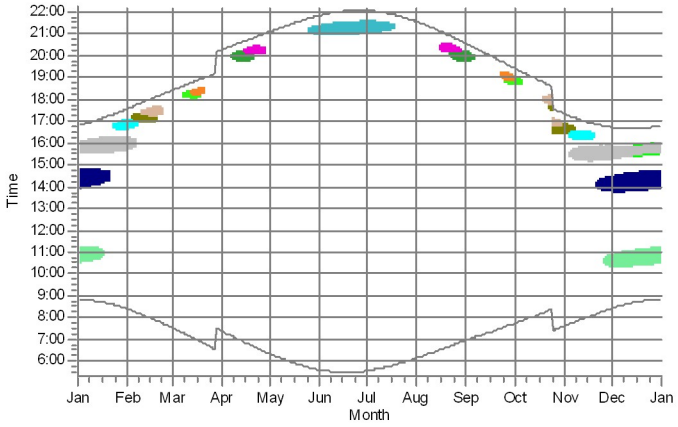
S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)



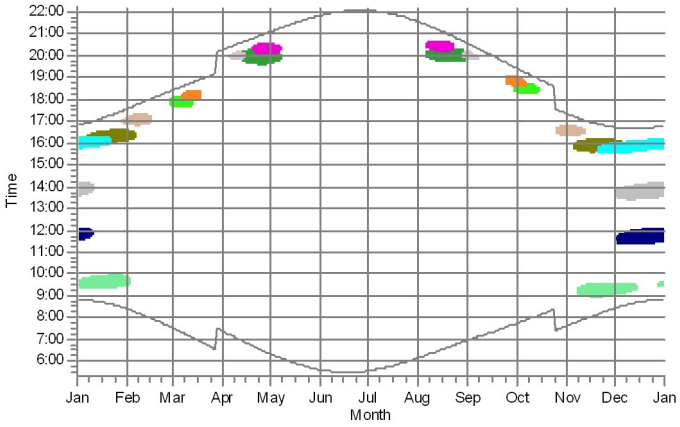
T: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)



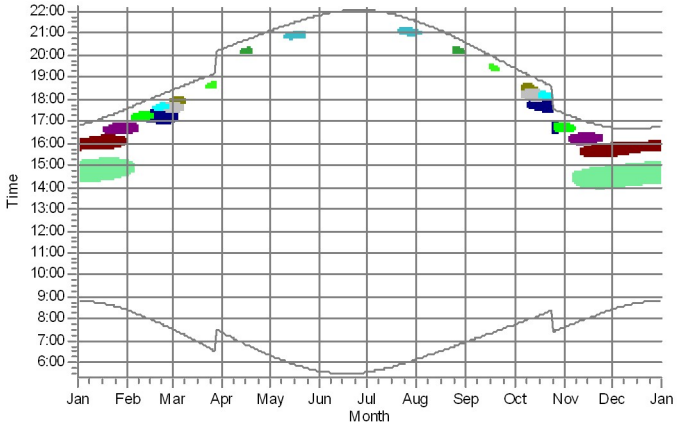
U: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)



V: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)



W: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)



WTGs

- WT163: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)
- Skalden WTB3: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (229)
- Skalden WTB2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (230)
- Skalden WT3: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (231)
- Skalden WT2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (232)
- Skalden WTB1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (233)
- Skalden WT4: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (234)
- Skalden WT1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (235)
- WT3_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (236)
- WT1_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)
- WT-MER: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (239)
- GC&T WT3: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)
- GC&T WT2: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)
- GC&T WT1: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)
- WT01-VLS: ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (246)
- WT-ATS: NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)
- WT07_Sadaci: NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (248)
- Skalden WTB4: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (249)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: A - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:53 (Skalden WT2)	08:24		10:13 (WT163)	07:32		09:41 (WT163)	07:23		10:27 (WT163)	06:20		10:40 (WT163)	05:36		21:15 (WT06_AB)
	16:48	17	16:10 (Skalden WT2)	17:35	96	17:05 (GC&T WT3)	18:25	164	17:42 (GC&T WT1)	20:17	162	13:09 (WT163)	21:06	67	11:47 (WT163)	21:50	3	21:18 (WT06_AB)
2	08:49		15:54 (Skalden WT2)	08:22		10:12 (WT163)	07:30		09:40 (WT163)	07:21		10:27 (WT163)	06:18		10:41 (WT163)	05:36		21:15 (WT06_AB)
	16:49	16	16:10 (Skalden WT2)	17:36	101	17:07 (GC&T WT3)	18:26	159	12:19 (WT163)	20:19	161	13:08 (WT163)	21:08	62	11:43 (WT163)	21:51	5	21:20 (WT06_AB)
3	08:49		15:54 (Skalden WT2)	08:21		10:10 (WT163)	07:28		09:40 (WT163)	07:19		10:27 (WT163)	06:16		10:44 (WT163)	05:35		21:14 (WT06_AB)
	16:50	16	16:10 (Skalden WT2)	17:38	107	17:09 (GC&T WT3)	18:28	159	12:19 (WT163)	20:20	160	13:07 (WT163)	21:09	56	11:40 (WT163)	21:52	7	21:21 (WT06_AB)
4	08:49		15:55 (Skalden WT2)	08:19		10:08 (WT163)	07:26		09:39 (WT163)	07:16		10:27 (WT163)	06:15		10:45 (WT163)	05:34		21:13 (WT06_AB)
	16:51	15	16:10 (Skalden WT2)	17:40	113	17:11 (GC&T WT3)	18:30	161	12:20 (WT163)	20:22	159	13:06 (WT163)	21:11	51	11:36 (WT163)	21:53	8	21:21 (WT06_AB)
5	08:49		15:56 (Skalden WT2)	08:18		10:07 (WT163)	07:23		09:38 (WT163)	07:14		10:27 (WT163)	06:13		10:47 (WT163)	05:34		21:13 (WT06_AB)
	16:53	15	16:11 (Skalden WT2)	17:42	117	17:13 (GC&T WT3)	18:32	161	12:19 (WT163)	20:23	157	13:04 (WT163)	21:12	45	11:32 (WT163)	21:54	10	21:23 (WT06_AB)
6	08:48		15:56 (Skalden WT2)	08:16		10:06 (WT163)	07:21		09:37 (WT163)	07:12		10:27 (WT163)	06:11		10:48 (WT163)	05:33		21:13 (WT06_AB)
	16:54	15	16:11 (Skalden WT2)	17:44	121	17:15 (GC&T WT3)	18:33	163	12:20 (WT163)	20:25	155	13:02 (WT163)	21:14	40	11:28 (WT163)	21:55	10	21:23 (WT06_AB)
7	08:48		15:57 (Skalden WT2)	08:14		10:04 (WT163)	07:19		09:37 (WT163)	07:10		10:27 (WT163)	06:09		10:52 (WT163)	05:32		21:13 (WT06_AB)
	16:55	14	16:11 (Skalden WT2)	17:45	124	17:15 (GC&T WT3)	18:35	163	12:20 (WT163)	20:27	153	13:00 (WT163)	21:16	32	11:24 (WT163)	21:56	11	21:24 (WT06_AB)
8	08:48		15:58 (Skalden WT2)	08:13		10:03 (WT163)	07:17		09:37 (WT163)	07:08		10:27 (WT163)	06:08		10:55 (WT163)	05:32		21:13 (WT06_AB)
	16:56	13	16:11 (Skalden WT2)	17:47	124	17:14 (GC&T WT3)	18:37	164	12:21 (WT163)	20:28	151	12:58 (WT163)	21:17	24	11:19 (WT163)	21:57	12	21:25 (WT06_AB)
9	08:47		15:58 (Skalden WT2)	08:11		10:02 (WT163)	07:15		09:35 (WT163)	07:05		10:27 (WT163)	06:06		11:02 (WT163)	05:31		21:13 (WT06_AB)
	16:58	12	16:10 (Skalden WT2)	17:49	123	17:13 (GC&T WT3)	18:38	165	12:20 (WT163)	20:30	149	12:56 (WT163)	21:19	9	11:11 (WT163)	21:58	12	21:25 (WT06_AB)
10	08:47		16:00 (Skalden WT2)	08:09		10:01 (WT163)	07:13		09:35 (WT163)	07:03		10:28 (WT163)	06:04			05:31		21:13 (WT06_AB)
	16:59	11	16:11 (Skalden WT2)	17:51	120	12:01 (WT163)	18:40	165	12:20 (WT163)	20:32	146	12:54 (WT163)	21:20			21:59	13	21:26 (WT06_AB)
11	08:46		16:01 (Skalden WT2)	08:07		09:59 (WT163)	07:10		09:34 (WT163)	07:01		10:27 (WT163)	06:03			05:31		21:13 (WT06_AB)
	17:00	9	16:10 (Skalden WT2)	17:53	123	12:02 (WT163)	18:42	167	12:21 (WT163)	20:33	144	12:51 (WT163)	21:22			21:59	14	21:27 (WT06_AB)
12	08:46		16:03 (Skalden WT2)	08:06		09:58 (WT163)	07:08		09:34 (WT163)	06:59		10:27 (WT163)	06:01			05:30		21:13 (WT06_AB)
	17:02	6	16:09 (Skalden WT2)	17:54	125	12:03 (WT163)	18:44	167	12:21 (WT163)	20:35	141	12:48 (WT163)	21:23			22:00	14	21:27 (WT06_AB)
13	08:45			08:04		09:57 (WT163)	07:06		09:33 (WT163)	06:57		10:28 (WT163)	05:59			05:30		21:13 (WT06_AB)
	17:03			17:56	127	12:04 (WT163)	18:45	167	12:20 (WT163)	20:37	138	12:46 (WT163)	21:25			22:01	15	21:28 (WT06_AB)
14	08:44			08:02		09:55 (WT163)	07:04		09:32 (WT163)	06:55		10:28 (WT163)	05:58			05:30		21:13 (WT06_AB)
	17:05			17:58	131	17:30 (WT01-VLS)	18:47	168	12:20 (WT163)	20:38	135	12:43 (WT163)	21:26			22:01	16	21:29 (WT06_AB)
15	08:43			08:00		09:54 (WT163)	07:01		09:32 (WT163)	06:52		10:29 (WT163)	05:56			05:30		21:13 (WT06_AB)
	17:06			18:00	137	17:32 (WT01-VLS)	18:49	172	18:22 (GC&T WT2)	20:40	131	12:40 (WT163)	21:28			22:02	16	21:29 (WT06_AB)
16	08:43			07:58		09:53 (WT163)	06:59		09:32 (WT163)	06:50		10:29 (WT163)	05:55			05:30		21:14 (WT06_AB)
	17:08			18:02	141	17:34 (WT01-VLS)	18:50	181	18:26 (GC&T WT2)	20:42	128	12:37 (WT163)	21:29			22:02	16	21:30 (WT06_AB)
17	08:42			07:56		09:52 (WT163)	06:57		09:31 (WT163)	06:48		10:30 (WT163)	05:53			05:30		21:14 (WT06_AB)
	17:09			18:03	145	17:36 (WT01-VLS)	18:52	185	18:27 (GC&T WT2)	20:43	124	12:34 (WT163)	21:31			22:03	16	21:30 (WT06_AB)
18	08:41			07:54		09:51 (WT163)	06:55		09:31 (WT163)	06:46		10:30 (WT163)	05:52			05:30		21:14 (WT06_AB)
	17:11			18:05	148	17:38 (WT01-VLS)	18:54	188	18:29 (WT-ATS)	20:45	121	12:31 (WT163)	21:32			22:03	16	21:30 (WT06_AB)
19	08:40		10:47 (WT163)	07:52		09:50 (WT163)	06:52		09:31 (WT163)	06:44		10:31 (WT163)	05:51			05:30		21:14 (WT06_AB)
	17:12	18	11:05 (WT163)	18:07	151	17:40 (WT01-VLS)	18:55	191	18:31 (WT-ATS)	20:46	116	12:27 (WT163)	21:34			22:04	17	21:31 (WT06_AB)
20	08:39		10:42 (WT163)	07:50		09:49 (WT163)	06:50		09:30 (WT163)	06:42		10:31 (WT163)	05:49			05:30		21:14 (WT06_AB)
	17:14	30	11:12 (WT163)	18:09	154	17:42 (GC&T WT1)	18:57	195	18:33 (WT-ATS)	20:48	113	12:24 (WT163)	21:35			22:04	17	21:31 (WT06_AB)
21	08:38		10:38 (WT163)	07:49		09:48 (WT163)	06:48		09:29 (WT163)	06:40		10:32 (WT163)	05:48			05:30		21:14 (WT06_AB)
	17:16	38	11:16 (WT163)	18:11	159	17:44 (GC&T WT1)	18:59	197	18:33 (WT-ATS)	20:50	109	12:21 (WT163)	21:37			22:04	17	21:31 (WT06_AB)
22	08:37		10:35 (WT163)	07:46		09:47 (WT163)	06:46		09:29 (WT163)	06:38		10:32 (WT163)	05:47			05:30		21:15 (WT06_AB)
	17:17	45	11:20 (WT163)	18:12	162	17:46 (GC&T WT1)	19:00	198	18:35 (WT-ATS)	20:51	105	12:17 (WT163)	21:38			22:04	17	21:32 (WT06_AB)
23	08:36		10:33 (WT163)	07:44		09:46 (WT163)	06:43		09:29 (WT163)	06:36		10:33 (WT163)	05:46			05:30		21:15 (WT06_AB)
	17:19	51	11:24 (WT163)	18:14	166	17:48 (GC&T WT1)	19:02	200	18:37 (WT-ATS)	20:53	101	12:14 (WT163)	21:39			22:04	17	21:32 (WT06_AB)
24	08:35		10:30 (WT163)	07:42		09:46 (WT163)	06:41		09:28 (WT163)	06:34		10:34 (WT163)	05:44			05:31		21:15 (WT06_AB)
	17:21	56	11:26 (WT163)	18:16	168	17:49 (GC&T WT1)	19:04	201	18:37 (WT-ATS)	20:55	96	12:10 (WT163)	21:41			22:05	17	21:32 (WT06_AB)
25	08:33		10:28 (WT163)	07:40		09:45 (WT163)	06:39		09:28 (WT163)	06:32		10:34 (WT163)	05:43			05:31		21:16 (WT06_AB)
	17:22	62	11:30 (WT163)	18:18	169	17:48 (GC&T WT1)	19:05	200	18:37 (WT-ATS)	20:56	93	12:07 (WT163)	21:42			22:05	16	21:32 (WT06_AB)
26	08:32		10:26 (WT163)	07:38		09:44 (WT163)	06:37		09:28 (WT163)	06:30		10:35 (WT163)	05:42			05:31		21:16 (WT06_AB)
	17:24	67	11:33 (WT163)	18:19	170	17:48 (GC&T WT1)	19:07	198	18:36 (WT-ATS)	20:58	88	12:03 (WT163)	21:43			22:05	16	21:32 (WT06_AB)
27	08:31		10:23 (WT163)	07:36		09:42 (WT163)	06:34		09:28 (WT163)	06:28		10:36 (WT163)	05:41			05:32		21:16 (WT06_AB)
	17:26	72	11:35 (WT163)	18:21	170	17:46 (GC&T WT1)	19:09	194	18:34 (WT-ATS)	21:00	84	12:00 (WT163)	21:44			22:05	15	21:31 (WT06_AB)
28	08:29		10:21 (WT163)	07:34		09:42 (WT163)	06:32		09:27 (WT163)	06:26		10:37 (WT163)	05:40			05:32		21:16 (WT06_AB)
	17:28	76	11:37 (WT163)	18:23	167	17:45 (GC&T WT1)	19:10	190	18:30 (WT-ATS)	21:01	79	11:56 (WT163)	21:46			22:05	16	21:32 (WT06_AB)
29	08:28		10:19 (WT163)				07:30		10:27 (WT163)	06:24		10:38 (WT163)	05:39			05:33		21:16 (WT06_AB)
	17:29	80	11:39 (WT163)				20:12	183	19:25 (GC&T WT2)	21:03	76	11:54 (WT163)	21:47			22:04	15	21:31 (WT06_AB)
30	08:27		10:17 (WT163)				07:28		10:27 (WT163)	06:22		10:39 (WT163)	05:38			05:33		21:17 (WT06_AB)
	17:31	85	11:42 (WT163)				20:14	178	19:23 (GC&T WT2)	21:04	71	11:50 (WT163)	21:48			22:04	15	21:32 (WT06_AB)
31	08:25		10:15 (WT163)				07:25		10:27 (WT163)				05:37		21:16 (WT06_AB)			
	17:33	90	17:03 (GC&T WT3)				20:15	169	19:19 (GC&T WT2)				21:49	2	21:18 (WT06_AB)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		929			3859			5513			3746			388			409	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,59			0,58			0,57			0,57			0,57			0,56	
Total reduction		0,13			0,16			0,20			0,25			0,25			0,24	
Total, real		125			621			1126			933			97			96	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: A - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December		
1	05:34		21:17 (WT06_AB)	06:09		06:57		10:27 (WT163)	07:44		10:13 (WT163)	07:36		09:31 (WT163)	08:26		15:43 (Skalden WT2)
	22:04	15	21:32 (WT06_AB)	21:33		20:33	144	12:51 (WT163)	19:25	167	13:00 (WT163)	17:21	119	11:30 (WT163)	16:42	9	15:52 (Skalden WT2)
2	05:34		21:17 (WT06_AB)	06:11		06:59		10:26 (WT163)	07:46		10:13 (WT163)	07:38		09:31 (WT163)	08:27		15:42 (Skalden WT2)
	22:04	14	21:31 (WT06_AB)	21:32		20:31	146	12:52 (WT163)	19:23	167	13:00 (WT163)	17:19	124	16:42 (GC&T WT3)	16:41	11	15:53 (Skalden WT2)
3	05:35		21:18 (WT06_AB)	06:12		07:00		10:25 (WT163)	07:48		10:12 (WT163)	07:40		09:32 (WT163)	08:29		15:42 (Skalden WT2)
	22:03	13	21:31 (WT06_AB)	21:30		20:29	149	12:54 (WT163)	19:21	166	12:58 (WT163)	17:17	125	16:44 (GC&T WT3)	16:41	12	15:54 (Skalden WT2)
4	05:36		21:18 (WT06_AB)	06:14	11:08 (WT163)	07:02		10:24 (WT163)	07:49		10:13 (WT163)	07:42		09:34 (WT163)	08:30		15:42 (Skalden WT2)
	22:03	13	21:31 (WT06_AB)	21:28	16 11:24 (WT163)	20:26	151	12:55 (WT163)	19:19	165	12:58 (WT163)	17:16	123	16:45 (GC&T WT3)	16:40	13	15:55 (Skalden WT2)
5	05:37		21:18 (WT06_AB)	06:15	11:04 (WT163)	07:03		10:24 (WT163)	07:51		10:13 (WT163)	07:43		09:36 (WT163)	08:31		15:42 (Skalden WT2)
	22:02	12	21:30 (WT06_AB)	21:27	27 11:31 (WT163)	20:24	153	12:57 (WT163)	19:16	165	12:58 (WT163)	17:14	120	16:44 (GC&T WT3)	16:40	14	15:56 (Skalden WT2)
6	05:38		21:19 (WT06_AB)	06:17	11:00 (WT163)	07:05		10:23 (WT163)	07:52		10:13 (WT163)	07:45		09:37 (WT163)	08:32		15:42 (Skalden WT2)
	22:02	10	21:29 (WT06_AB)	21:25	35 11:35 (WT163)	20:22	155	12:58 (WT163)	19:14	163	12:56 (WT163)	17:12	117	16:43 (GC&T WT3)	16:39	15	15:57 (Skalden WT2)
7	05:38		21:19 (WT06_AB)	06:18	10:58 (WT163)	07:06		10:22 (WT163)	07:54		10:13 (WT163)	07:47		09:39 (WT163)	08:34		15:42 (Skalden WT2)
	22:01	10	21:29 (WT06_AB)	21:23	42 11:40 (WT163)	20:20	157	12:59 (WT163)	19:12	163	12:56 (WT163)	17:11	111	16:41 (GC&T WT3)	16:39	15	15:57 (Skalden WT2)
8	05:39		21:20 (WT06_AB)	06:20	10:55 (WT163)	07:08		10:21 (WT163)	07:56		10:14 (WT163)	07:49		09:41 (WT163)	08:35		15:43 (Skalden WT2)
	22:01	9	21:29 (WT06_AB)	21:22	48 11:43 (WT163)	20:18	159	13:00 (WT163)	19:10	162	12:56 (WT163)	17:09	107	16:40 (GC&T WT3)	16:39	16	15:59 (Skalden WT2)
9	05:40		21:21 (WT06_AB)	06:21	10:54 (WT163)	07:10		10:21 (WT163)	07:57		10:13 (WT163)	07:50		09:43 (WT163)	08:36		15:43 (Skalden WT2)
	22:00	7	21:28 (WT06_AB)	21:20	53 11:47 (WT163)	20:15	160	13:01 (WT163)	19:08	161	12:54 (WT163)	17:07	100	16:38 (GC&T WT3)	16:39	16	15:59 (Skalden WT2)
10	05:41		21:22 (WT06_AB)	06:23	10:52 (WT163)	07:11		10:20 (WT163)	07:59		10:14 (WT163)	07:52		09:44 (WT163)	08:37		15:43 (Skalden WT2)
	21:59	6	21:28 (WT06_AB)	21:18	58 11:50 (WT163)	20:13	161	13:01 (WT163)	19:05	160	12:54 (WT163)	17:06	95	16:35 (GC&T WT3)	16:38	16	15:59 (Skalden WT2)
11	05:42		21:23 (WT06_AB)	06:24	10:50 (WT163)	07:13		10:20 (WT163)	08:01		10:14 (WT163)	07:54		09:46 (WT163)	08:38		15:43 (Skalden WT2)
	21:59	4	21:27 (WT06_AB)	21:16	62 11:52 (WT163)	20:11	163	13:03 (WT163)	19:03	159	12:53 (WT163)	17:04	89	16:34 (GC&T WT3)	16:38	17	16:00 (Skalden WT2)
12	05:43		21:24 (WT06_AB)	06:26	10:49 (WT163)	07:14		10:19 (WT163)	08:02		10:14 (WT163)	07:55		09:48 (WT163)	08:39		15:43 (Skalden WT2)
	21:58	2	21:26 (WT06_AB)	21:14	67 11:56 (WT163)	20:09	168	19:10 (GC&T WT2)	19:01	157	12:51 (WT163)	17:03	85	11:13 (WT163)	16:38	17	16:00 (Skalden WT2)
13	05:44			06:27	10:47 (WT163)	07:16		10:19 (WT163)	08:04		10:15 (WT163)	07:57		09:51 (WT163)	08:40		15:44 (Skalden WT2)
	21:57			21:12	72 11:59 (WT163)	20:06	176	19:14 (GC&T WT2)	18:59	165	18:16 (GC&T WT1)	17:01	80	11:11 (WT163)	16:38	17	16:01 (Skalden WT2)
14	05:45			06:29	10:46 (WT163)	07:17		10:18 (WT163)	08:06		10:15 (WT163)	07:59		09:53 (WT163)	08:41		15:44 (Skalden WT2)
	21:56			21:10	76 12:02 (WT163)	20:04	181	19:15 (GC&T WT2)	18:57	168	18:18 (GC&T WT1)	17:00	76	11:09 (WT163)	16:38	17	16:01 (Skalden WT2)
15	05:46			06:30	10:44 (WT163)	07:19		10:18 (WT163)	08:07		10:16 (WT163)	08:01		09:56 (WT163)	08:42		15:45 (Skalden WT2)
	21:55			21:08	81 12:05 (WT163)	20:02	186	19:17 (GC&T WT2)	18:55	169	18:20 (GC&T WT1)	16:59	71	11:07 (WT163)	16:38	17	16:02 (Skalden WT2)
16	05:48			06:32	10:43 (WT163)	07:21		10:17 (WT163)	08:09		10:16 (WT163)	08:02		09:59 (WT163)	08:43		15:45 (Skalden WT2)
	21:54			21:07	85 12:08 (WT163)	19:59	194	19:22 (WT-ATS)	18:52	169	18:19 (GC&T WT1)	16:57	67	11:06 (WT163)	16:38	18	16:03 (Skalden WT2)
17	05:49			06:34	10:41 (WT163)	07:22		10:17 (WT163)	08:11		10:16 (WT163)	08:04		10:01 (WT163)	08:44		15:45 (Skalden WT1)
	21:53			21:05	89 12:10 (WT163)	19:57	197	19:24 (WT-ATS)	18:50	170	18:20 (GC&T WT1)	16:56	62	11:03 (WT163)	16:39	17	16:02 (Skalden WT2)
18	05:50			06:35	10:41 (WT163)	07:24		10:16 (WT163)	08:12		10:17 (WT163)	08:06		10:04 (WT163)	08:44		15:46 (Skalden WT1)
	21:52			21:03	93 12:14 (WT163)	19:55	199	19:24 (WT-ATS)	18:48	168	18:20 (GC&T WT1)	16:55	56	11:00 (WT163)	16:39	17	16:03 (Skalden WT2)
19	05:51			06:37	10:39 (WT163)	07:25		10:16 (WT163)	08:14		10:18 (WT163)	08:07		10:07 (WT163)	08:45		15:46 (Skalden WT1)
	21:51			21:01	98 12:17 (WT163)	19:53	200	19:25 (WT-ATS)	18:46	165	18:19 (GC&T WT1)	16:53	51	10:58 (WT163)	16:39	18	16:04 (Skalden WT2)
20	05:53			06:38	10:39 (WT163)	07:27		10:15 (WT163)	08:16		10:18 (WT163)	08:09		10:10 (WT163)	08:46		15:46 (Skalden WT1)
	21:50			20:59	101 12:20 (WT163)	19:50	201	19:23 (WT-ATS)	18:44	161	18:16 (GC&T WT1)	16:52	45	10:55 (WT163)	16:39	18	16:04 (Skalden WT2)
21	05:54			06:40	10:37 (WT163)	07:28		10:15 (WT163)	08:17		10:19 (WT163)	08:11		10:14 (WT163)	08:46		15:47 (Skalden WT1)
	21:49			20:56	106 12:23 (WT163)	19:48	199	19:21 (WT-ATS)	18:42	157	18:14 (GC&T WT1)	16:51	38	10:52 (WT163)	16:40	18	16:05 (Skalden WT2)
22	05:55			06:41	10:36 (WT163)	07:30		10:15 (WT163)	08:19		10:20 (WT163)	08:12		10:18 (WT163)	08:47		15:47 (Skalden WT1)
	21:48			20:54	110 12:26 (WT163)	19:46	197	19:20 (WT-ATS)	18:40	153	18:12 (GC&T WT1)	16:50	30	10:48 (WT163)	16:40	18	16:05 (Skalden WT2)
23	05:56			06:43	10:35 (WT163)	07:32		10:14 (WT163)	08:21		10:21 (WT163)	08:14		10:24 (WT163)	08:47		15:48 (Skalden WT1)
	21:46			20:52	113 12:28 (WT163)	19:43	195	19:17 (WT-ATS)	18:38	150	18:10 (WT01-VLS)	16:49	18	10:42 (WT163)	16:41	18	16:06 (Skalden WT2)
24	05:58			06:44	10:34 (WT163)	07:33		10:14 (WT163)	08:22		10:22 (WT163)	08:15			08:48		15:48 (Skalden WT1)
	21:45			20:50	118 12:32 (WT163)	19:41	192	19:15 (WT-ATS)	18:36	147	18:08 (WT01-VLS)	16:48			16:41	18	16:06 (Skalden WT2)
25	05:59			06:46	10:33 (WT163)	07:35		10:13 (WT163)	07:24		09:23 (WT163)	08:17			08:48		15:49 (Skalden WT1)
	21:44			20:48	121 12:34 (WT163)	19:39	190	19:12 (WT-ATS)	17:34	143	17:06 (WT01-VLS)	16:47			16:42	17	16:06 (Skalden WT2)
26	06:00			06:48	10:32 (WT163)	07:36		10:13 (WT163)	07:26		09:23 (WT163)	08:18			08:48		15:50 (Skalden WT1)
	21:42			20:46	125 12:37 (WT163)	19:37	187	19:10 (GC&T WT2)	17:32	139	17:03 (WT01-VLS)	16:46			16:43	17	16:07 (Skalden WT2)
27	06:02			06:49	10:31 (WT163)	07:38		10:14 (WT163)	07:28		09:24 (WT163)	08:20			08:49		15:50 (Skalden WT2)
	21:41			20:44	128 12:39 (WT163)	19:34	181	19:08 (GC&T WT2)	17:30	135	17:01 (WT01-VLS)	16:45			16:43	17	16:07 (Skalden WT2)
28	06:03			06:51	10:30 (WT163)	07:40		10:13 (WT163)	07:29		09:25 (WT163)	08:21			08:49		15:51 (Skalden WT2)
	21:39			20:42	132 12:42 (WT163)	19:32	176	19:05 (GC&T WT2)	17:28	132	17:00 (WT01-VLS)	16:44			16:44	17	16:08 (Skalden WT2)
29	06:05			06:52	10:29 (WT163)	07:41		10:13 (WT163)	07:31		09:26 (WT163)	08:23			08:49		15:51 (Skalden WT2)
	21:38			20:40	135 12:44 (WT163)	19:30	168	13:01 (WT163)	17:26	128	11:34 (WT163)	16:44			16:45	17	16:08 (Skalden WT2)
30	06:06			06:54	10:29 (WT163)	07:43		10:12 (WT163)	07:33		09:28 (WT163)	08:24		15:44 (Skalden WT2)	08:49		15:52 (Skalden WT2)
	21:36			20:37	138 12:47 (WT163)	19:28	168	13:00 (WT163)	17:25	124	11:32 (WT163)	16:43	6	15:50 (Skalden WT2)	16:46	17	16:09 (Skalden WT2)
31	06:08			06:55	10:27 (WT163)				07:35		09:29 (WT163)				08:49		15:52 (Skalden WT2)
	21:35			20:35	141 12:48 (WT163)				17:23	122	11:31 (WT163)				16:47	17	16:09 (Skalden WT2)
Potential sun hours	498			451		380			333			269			248		
Total, worst case		115			2470		5253			4820			1915			501	
Sun reduction		0,45			0,47		0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95		0,95			0,95			0,95			0,95	
Wind dir. red.		0,56			0,57		0,57			0,57			0,58			0,71	
Total reduction		0,24			0,26		0,24			0,20			0,14			0,14	
Total, real		27			630		1254			964			271			73	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: B - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		16:03 (Skalden WT1)	08:24		13:34 (WT163)	07:32		13:07 (WT163)	07:23		14:00 (WT163)	06:20		15:32 (WT163)	05:36		21:00 (WT06_AB)
	16:48	12	16:15 (Skalden WT1)	17:35	111	15:25 (WT163)	18:25	178	17:55 (GC&T WT1)	20:17	166	16:46 (WT163)	21:06	38	16:10 (WT163)	21:50	18	21:18 (WT1_RH_E)
2	08:49		16:02 (Skalden WT1)	08:22		13:34 (WT163)	07:30		13:07 (WT163)	07:21		14:01 (WT163)	06:18		15:37 (WT163)	05:36		21:01 (WT06_AB)
	16:49	13	16:15 (Skalden WT1)	17:36	114	15:28 (WT163)	18:26	176	17:54 (GC&T WT1)	20:19	164	16:45 (WT163)	21:08	29	16:06 (WT163)	21:51	19	21:20 (WT1_RH_E)
3	08:49		16:03 (Skalden WT1)	08:21		13:32 (WT163)	07:28		13:06 (WT163)	07:19		14:02 (WT163)	06:16		15:44 (WT163)	05:35		21:01 (WT06_AB)
	16:50	13	16:16 (Skalden WT1)	17:38	117	15:29 (WT163)	18:28	173	17:52 (GC&T WT1)	20:20	163	16:45 (WT163)	21:09	17	16:01 (WT163)	21:52	20	21:21 (WT1_RH_E)
4	08:49		16:04 (Skalden WT1)	08:19		13:31 (WT163)	07:26		13:05 (WT163)	07:16		14:04 (WT163)	06:15			05:34		21:01 (WT06_AB)
	16:51	14	16:18 (Skalden WT2)	17:40	119	15:30 (WT163)	18:30	167	15:52 (WT163)	20:22	160	16:44 (WT163)	21:11			21:53	20	21:21 (WT1_RH_E)
5	08:49		16:05 (Skalden WT1)	08:18		13:30 (WT163)	07:23		13:04 (WT163)	07:14		14:04 (WT163)	06:13			05:34		21:02 (WT06_AB)
	16:53	14	16:19 (Skalden WT2)	17:42	122	15:32 (WT163)	18:32	168	15:52 (WT163)	20:23	159	16:43 (WT163)	21:12			21:54	21	21:23 (WT1_RH_E)
6	08:48		16:06 (Skalden WT1)	08:16		13:29 (WT163)	07:21		13:04 (WT163)	07:12		14:06 (WT163)	06:11			05:33		21:02 (WT06_AB)
	16:54	14	16:20 (Skalden WT2)	17:44	125	17:15 (GC&T WT3)	18:33	169	15:53 (WT163)	20:25	156	16:42 (WT163)	21:14			21:55	21	21:23 (WT1_RH_E)
7	08:48		16:07 (Skalden WT1)	08:14		13:28 (WT163)	07:19		13:04 (WT163)	07:10		14:07 (WT163)	06:09			05:32		21:03 (WT06_AB)
	16:55	15	16:22 (Skalden WT2)	17:45	130	17:17 (GC&T WT3)	18:35	169	15:53 (WT163)	20:27	155	16:42 (WT163)	21:16			21:56	21	21:24 (WT1_RH_E)
8	08:48		16:08 (Skalden WT1)	08:13		13:26 (WT163)	07:17		13:03 (WT163)	07:08		14:09 (WT163)	06:08			05:32		21:05 (WT06_AB)
	16:56	15	16:23 (Skalden WT2)	17:47	134	17:18 (GC&T WT3)	18:37	170	15:53 (WT163)	20:28	152	16:41 (WT163)	21:17			21:57	20	21:25 (WT1_RH_E)
9	08:47		16:09 (Skalden WT1)	08:11		13:26 (WT163)	07:15		13:02 (WT163)	07:05		14:11 (WT163)	06:06			05:31		21:05 (WT06_AB)
	16:58	15	16:24 (Skalden WT2)	17:49	138	17:21 (GC&T WT3)	18:38	171	15:53 (WT163)	20:30	150	16:41 (WT163)	21:19			21:58	20	21:25 (WT1_RH_E)
10	08:47		14:17 (WT163)	08:09		13:25 (WT163)	07:13		13:02 (WT163)	07:03		14:14 (WT163)	06:04			05:31		21:06 (WT1_RH_E)
	16:59	27	16:26 (Skalden WT2)	17:51	142	17:23 (GC&T WT3)	18:40	171	15:53 (WT163)	20:32	146	16:40 (WT163)	21:20			21:59	20	21:26 (WT1_RH_E)
11	08:46		14:12 (WT163)	08:07		13:24 (WT163)	07:10		13:01 (WT163)	07:01		14:15 (WT163)	06:03			05:31		21:07 (WT1_RH_E)
	17:00	37	16:27 (Skalden WT2)	17:53	145	17:25 (GC&T WT3)	18:42	172	15:53 (WT163)	20:33	143	16:38 (WT163)	21:22			21:59	20	21:27 (WT1_RH_E)
12	08:46		14:08 (WT163)	08:06		13:23 (WT163)	07:08		13:01 (WT163)	06:59		14:18 (WT163)	06:01			05:30		21:06 (WT1_RH_E)
	17:02	47	16:29 (Skalden WT2)	17:54	146	17:25 (GC&T WT3)	18:44	172	15:53 (WT163)	20:35	139	16:37 (WT163)	21:23			22:00	21	21:27 (WT1_RH_E)
13	08:45		14:05 (WT163)	08:04		13:21 (WT163)	07:06		13:00 (WT163)	06:57		14:21 (WT163)	05:59			05:30		21:06 (WT1_RH_E)
	17:03	53	16:29 (Skalden WT2)	17:56	145	17:23 (GC&T WT3)	18:45	172	15:52 (WT163)	20:37	135	16:36 (WT163)	21:25			22:01	22	21:28 (WT1_RH_E)
14	08:44		14:03 (WT163)	08:02		13:20 (WT163)	07:04		13:00 (WT163)	06:55		14:24 (WT163)	05:58			05:30		21:07 (WT1_RH_E)
	17:05	59	16:30 (Skalden WT2)	17:58	142	15:42 (WT163)	18:47	173	15:53 (WT163)	20:38	132	16:36 (WT163)	21:26			22:01	22	21:29 (WT1_RH_E)
15	08:43		14:01 (WT163)	08:00		13:19 (WT163)	07:01		13:00 (WT163)	06:52		14:27 (WT163)	05:56			05:30		21:07 (WT1_RH_E)
	17:06	63	16:30 (Skalden WT2)	18:00	144	15:43 (WT163)	18:49	173	15:53 (WT163)	20:40	128	16:35 (WT163)	21:28			22:02	22	21:29 (WT1_RH_E)
16	08:43		13:59 (WT163)	07:58		13:18 (WT163)	06:59		13:00 (WT163)	06:50		14:31 (WT163)	05:55			05:30		21:07 (WT1_RH_E)
	17:08	67	16:30 (Skalden WT2)	18:02	146	15:44 (WT163)	18:50	178	18:26 (GC&T WT2)	20:42	123	16:34 (WT163)	21:29			22:02	23	21:30 (WT1_RH_E)
17	08:42		13:57 (WT163)	07:56		13:17 (WT163)	06:57		12:59 (WT163)	06:48		14:35 (WT163)	05:53			05:30		21:07 (WT1_RH_E)
	17:09	71	16:30 (Skalden WT2)	18:03	148	17:36 (WT01-VLS)	18:52	183	18:27 (GC&T WT2)	20:43	118	16:33 (WT163)	21:31			22:03	23	21:30 (WT1_RH_E)
18	08:41		13:55 (WT163)	07:54		13:16 (WT163)	06:55		12:59 (WT163)	06:46		14:39 (WT163)	05:52			05:30		21:08 (WT1_RH_E)
	17:11	74	16:29 (Skalden WT2)	18:05	152	17:38 (WT01-VLS)	18:54	186	18:29 (GC&T WT2)	20:45	113	16:32 (WT163)	21:32			22:03	22	21:30 (WT1_RH_E)
19	08:40		13:53 (WT163)	07:52		13:16 (WT163)	06:52		12:59 (WT163)	06:44		14:42 (WT163)	05:51		21:03 (WT06_AB)	05:30		21:08 (WT1_RH_E)
	17:12	76	16:28 (Skalden WT2)	18:07	155	17:40 (WT01-VLS)	18:55	189	18:31 (WT-ATS)	20:46	109	16:31 (WT163)	21:34	1	21:04 (WT06_AB)	22:04	23	21:31 (WT1_RH_E)
20	08:39		13:51 (WT163)	07:50		13:15 (WT163)	06:50		12:59 (WT163)	06:42		14:46 (WT163)	05:49		21:02 (WT06_AB)	05:30		21:08 (WT1_RH_E)
	17:14	77	16:27 (Skalden WT2)	18:09	159	17:42 (WT01-VLS)	18:57	192	18:33 (WT-ATS)	20:48	103	16:29 (WT163)	21:35	3	21:05 (WT06_AB)	22:04	23	21:31 (WT1_RH_E)
21	08:38		13:50 (WT163)	07:48		13:14 (WT163)	06:48		12:58 (WT163)	06:40		14:51 (WT163)	05:48		21:00 (WT06_AB)	05:30		21:08 (WT1_RH_E)
	17:16	75	15:05 (WT163)	18:11	161	17:44 (WT01-VLS)	18:59	193	18:33 (WT-ATS)	20:50	97	16:28 (WT163)	21:37	6	21:06 (WT06_AB)	22:04	23	21:31 (WT1_RH_E)
22	08:37		13:48 (WT163)	07:46		13:13 (WT163)	06:46		12:58 (WT163)	06:38		14:55 (WT163)	05:47		21:00 (WT06_AB)	05:30		21:09 (WT1_RH_E)
	17:17	79	15:07 (WT163)	18:12	163	17:46 (WT01-VLS)	19:00	195	18:35 (WT-ATS)	20:51	92	16:27 (WT163)	21:38	7	21:07 (WT06_AB)	22:04	23	21:32 (WT1_RH_E)
23	08:36		13:47 (WT163)	07:44		13:12 (WT163)	06:43		12:58 (WT163)	06:36		14:59 (WT163)	05:46		20:59 (WT06_AB)	05:30		21:09 (WT1_RH_E)
	17:19	83	15:10 (WT163)	18:14	165	17:48 (GC&T WT1)	19:02	197	18:37 (WT-ATS)	20:53	87	16:26 (WT163)	21:39	9	21:08 (WT06_AB)	22:04	23	21:32 (WT1_RH_E)
24	08:35		13:45 (WT163)	07:42		13:12 (WT163)	06:41		12:58 (WT163)	06:34		15:03 (WT163)	05:44		20:59 (WT06_AB)	05:30		21:09 (WT1_RH_E)
	17:21	86	15:11 (WT163)	18:16	166	17:50 (GC&T WT1)	19:04	198	18:38 (WT-ATS)	20:55	81	16:24 (WT163)	21:41	11	21:10 (WT06_AB)	22:05	23	21:32 (WT1_RH_E)
25	08:33		13:44 (WT163)	07:40		13:11 (WT163)	06:39		12:58 (WT163)	06:32		15:06 (WT163)	05:43		20:59 (WT06_AB)	05:31		21:10 (WT1_RH_E)
	17:22	90	15:14 (WT163)	18:18	170	17:52 (GC&T WT1)	19:05	196	18:37 (WT-ATS)	20:56	76	16:22 (WT163)	21:42	12	21:11 (WT06_AB)	22:05	22	21:32 (WT1_RH_E)
26	08:32		13:43 (WT163)	07:38		13:10 (WT163)	06:37		12:58 (WT163)	06:30		15:10 (WT163)	05:42		20:59 (WT06_AB)	05:31		21:09 (WT1_RH_E)
	17:24	93	15:16 (WT163)	18:19	174	17:54 (GC&T WT1)	19:07	192	18:35 (WT-ATS)	20:58	71	16:21 (WT163)	21:43	13	21:12 (WT1_RH_E)	22:05	23	21:32 (WT1_RH_E)
27	08:31		13:41 (WT163)	07:36		13:09 (WT163)	06:34		12:59 (WT163)	06:28		15:14 (WT163)	05:41		20:59 (WT06_AB)	05:32		21:09 (WT1_RH_E)
	17:26	96	15:17 (WT163)	18:21	176	17:55 (GC&T WT1)	19:09	187	18:33 (WT-ATS)	21:00	65	16:19 (WT163)	21:44	14	21:13 (WT1_RH_E)	22:05	22	21:31 (WT1_RH_E)
28	08:29		13:40 (WT163)	07:34		13:08 (WT163)	06:32		12:58 (WT163)	06:26		15:18 (WT163)	05:40		20:59 (WT06_AB)	05:32		21:10 (WT1_RH_E)
	17:28	100	15:20 (WT163)	18:23	179	17:56 (GC&T WT1)	19:10	179	18:26 (GC&T WT2)	21:01	59	16:17 (WT163)	21:46	15	21:14 (WT1_RH_E)	22:04	22	21:32 (WT1_RH_E)
29	08:28		13:38 (WT163)				07:30		13:59 (WT163)	06:24		15:23 (WT163)	05:39		21:00 (WT06_AB)	05:33		21:10 (WT1_RH_E)
	17:29	103	15:21 (WT163)				20:12	169	16:48 (WT163)	21:03	53	16:16 (WT163)	21:47	16	21:16 (WT1_RH_E)	22:04	21	21:31 (WT1_RH_E)
30	08:27		13:38 (WT163)				07:28		14:00 (WT163)	06:22		15:27 (WT163)	05:38		21:00 (WT06_AB)	05:33		21:10 (WT1_RH_E)
	17:31	105	15:23 (WT163)				20:14	167	16:47 (WT163)	21:04	46	16:13 (WT163)	21:48	17	21:17 (WT1_RH_E)	22:04	22	21:32 (WT1_RH_E)
31	08:25		13:36 (WT163)				07:25		14:00 (WT163)				05:37		21:00 (WT06_AB)			
	17:33	108	15:24 (WT163)				20:15	167	16:47 (WT163)				21:49	18	21:18 (WT1_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		1794			4088			5542			3541			226			645	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,72			0,72			0,72			0,73			0,62			0,56	
Total reduction		0,16			0,20			0,26			0,32			0,27			0,24	
Total, real		293			822			1417			1121			61			152	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: B - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:11 (WT1_RH_E)	06:09			06:57		14:15 (WT163)	07:44		13:40 (WT163)	07:36		12:55 (WT163)	08:26		13:53 (WT163)
	22:04	21	21:32 (WT1_RH_E)	21:33			20:33	143	16:38 (WT163)	19:25	172	16:32 (WT163)	17:21	141	16:52 (GC&T WT3)	16:42	39	16:10 (Skalden WT2)
2	05:34		21:10 (WT06_AB)	06:11			06:59		14:12 (WT163)	07:46		13:40 (WT163)	07:38		12:55 (WT163)	08:27		13:59 (WT163)
	22:04	21	21:31 (WT1_RH_E)	21:32			20:31	146	16:38 (WT163)	19:23	172	16:32 (WT163)	17:19	138	16:50 (GC&T WT3)	16:41	28	16:08 (Skalden WT2)
3	05:35		21:10 (WT06_AB)	06:12			07:00		14:09 (WT163)	07:48		13:40 (WT163)	07:40		12:56 (WT163)	08:29		15:53 (Skalden WT1)
	22:03	21	21:31 (WT1_RH_E)	21:30			20:29	150	16:39 (WT163)	19:21	171	16:31 (WT163)	17:17	134	16:48 (GC&T WT3)	16:41	15	16:08 (Skalden WT2)
4	05:36		21:10 (WT06_AB)	06:14			07:02		14:06 (WT163)	07:49		13:40 (WT163)	07:42		12:58 (WT163)	08:30		15:52 (Skalden WT1)
	22:03	21	21:31 (WT1_RH_E)	21:28			20:26	152	16:38 (WT163)	19:19	171	16:31 (WT163)	17:16	129	16:46 (GC&T WT3)	16:40	15	16:07 (Skalden WT2)
5	05:37		21:09 (WT06_AB)	06:15			07:03		14:04 (WT163)	07:51		13:40 (WT163)	07:43		12:59 (WT163)	08:31		15:52 (Skalden WT1)
	22:02	21	21:30 (WT1_RH_E)	21:27			20:24	155	16:39 (WT163)	19:16	170	16:30 (WT163)	17:14	124	15:03 (WT163)	16:40	15	16:07 (Skalden WT2)
6	05:38		21:09 (WT06_AB)	06:17			07:05		14:02 (WT163)	07:52		13:39 (WT163)	07:45		13:00 (WT163)	08:32		15:52 (Skalden WT1)
	22:02	20	21:29 (WT1_RH_E)	21:25			20:22	156	16:38 (WT163)	19:14	170	16:29 (WT163)	17:12	122	15:02 (WT163)	16:39	14	16:06 (Skalden WT2)
7	05:38		21:09 (WT06_AB)	06:18			07:06		14:00 (WT163)	07:54		13:40 (WT163)	07:47		13:02 (WT163)	08:34		15:52 (Skalden WT1)
	22:01	20	21:29 (WT1_RH_E)	21:23			20:20	159	16:39 (WT163)	19:12	169	16:29 (WT163)	17:11	119	15:01 (WT163)	16:39	14	16:06 (Skalden WT2)
8	05:39		21:09 (WT06_AB)	06:20			07:08		13:58 (WT163)	07:56		13:40 (WT163)	07:49		13:03 (WT163)	08:35		15:52 (Skalden WT1)
	22:01	20	21:29 (WT1_RH_E)	21:22			20:18	161	16:39 (WT163)	19:10	168	16:28 (WT163)	17:09	116	14:59 (WT163)	16:39	14	16:06 (Skalden WT2)
9	05:40		21:09 (WT06_AB)	06:21			07:10		13:57 (WT163)	07:57		13:40 (WT163)	07:50		13:05 (WT163)	08:36		15:52 (Skalden WT1)
	22:00	19	21:28 (WT1_RH_E)	21:20			20:15	162	16:39 (WT163)	19:07	167	16:27 (WT163)	17:07	113	14:58 (WT163)	16:39	13	16:05 (Skalden WT1)
10	05:41		21:09 (WT06_AB)	06:23		15:51 (WT163)	07:11		13:55 (WT163)	07:59		13:40 (WT163)	07:52		13:05 (WT163)	08:37		15:53 (Skalden WT1)
	21:59	19	21:28 (WT1_RH_E)	21:18	21	16:12 (WT163)	20:13	163	16:38 (WT163)	19:05	167	16:27 (WT163)	17:06	111	14:56 (WT163)	16:38	12	16:05 (Skalden WT1)
11	05:42		21:08 (WT06_AB)	06:24		15:44 (WT163)	07:13		13:54 (WT163)	08:01		13:41 (WT163)	07:54		13:07 (WT163)	08:38		15:53 (Skalden WT1)
	21:59	19	21:27 (WT1_RH_E)	21:16	32	16:16 (WT163)	20:11	165	16:39 (WT163)	19:03	174	18:27 (GC&T WT1)	17:04	108	14:55 (WT163)	16:38	12	16:05 (Skalden WT1)
12	05:43		21:08 (WT06_AB)	06:26		15:39 (WT163)	07:14		13:52 (WT163)	08:02		13:40 (WT163)	07:55		13:09 (WT163)	08:39		15:53 (Skalden WT1)
	21:58	18	21:26 (WT1_RH_E)	21:14	40	16:19 (WT163)	20:08	166	16:38 (WT163)	19:01	178	18:28 (GC&T WT1)	17:03	105	14:54 (WT163)	16:38	11	16:04 (Skalden WT1)
13	05:44		21:08 (WT06_AB)	06:27		15:34 (WT163)	07:16		13:51 (WT163)	08:04		13:41 (WT163)	07:57		13:10 (WT163)	08:40		15:53 (Skalden WT1)
	21:57	18	21:26 (WT1_RH_E)	21:12	47	16:21 (WT163)	20:06	168	16:39 (WT163)	18:59	178	18:29 (GC&T WT1)	17:01	103	14:53 (WT163)	16:38	11	16:04 (Skalden WT1)
14	05:45		21:08 (WT06_AB)	06:29		15:30 (WT163)	07:17		13:49 (WT163)	08:06		13:41 (WT163)	07:59		13:12 (WT163)	08:41		15:54 (Skalden WT1)
	21:56	17	21:25 (WT1_RH_E)	21:10	54	16:24 (WT163)	20:04	169	16:38 (WT163)	18:57	179	18:29 (GC&T WT1)	17:00	99	14:51 (WT163)	16:38	10	16:04 (Skalden WT1)
15	05:46		21:08 (WT06_AB)	06:30		15:25 (WT163)	07:19		13:49 (WT163)	08:07		13:42 (WT163)	08:01		13:14 (WT163)	08:42		15:54 (Skalden WT1)
	21:55	16	21:24 (WT1_RH_E)	21:08	60	16:25 (WT163)	20:02	177	19:16 (GC&T WT2)	18:55	175	18:27 (GC&T WT1)	16:59	96	14:50 (WT163)	16:38	11	16:05 (Skalden WT1)
16	05:48		21:08 (WT06_AB)	06:32		15:21 (WT163)	07:21		13:47 (WT163)	08:09		13:42 (WT163)	08:02		13:16 (WT163)	08:43		15:55 (Skalden WT1)
	21:54	15	21:23 (WT1_RH_E)	21:07	66	16:27 (WT163)	19:59	184	19:17 (GC&T WT2)	18:52	172	18:24 (GC&T WT1)	16:57	93	14:49 (WT163)	16:38	10	16:05 (Skalden WT1)
17	05:49		21:08 (WT06_AB)	06:33		15:16 (WT163)	07:22		13:47 (WT163)	08:11		13:42 (WT163)	08:04		13:17 (WT163)	08:44		15:55 (Skalden WT1)
	21:53	14	21:22 (WT1_RH_E)	21:05	72	16:28 (WT163)	19:57	191	19:23 (WT-ATS)	18:50	169	18:22 (GC&T WT1)	16:56	90	14:47 (WT163)	16:38	9	16:04 (Skalden WT1)
18	05:50		21:08 (WT06_AB)	06:35		15:12 (WT163)	07:24		13:45 (WT163)	08:12		13:43 (WT163)	08:06		13:19 (WT163)	08:44		15:55 (Skalden WT1)
	21:52	13	21:21 (WT1_RH_E)	21:03	77	16:29 (WT163)	19:55	196	19:24 (WT-ATS)	18:48	166	18:21 (GC&T WT1)	16:55	86	14:45 (WT163)	16:39	10	16:05 (Skalden WT1)
19	05:51		21:09 (WT06_AB)	06:37		15:07 (WT163)	07:25		13:45 (WT163)	08:14		13:44 (WT163)	08:07		13:21 (WT163)	08:45		15:56 (Skalden WT1)
	21:51	11	21:20 (WT06_AB)	21:01	83	16:30 (WT163)	19:53	197	19:25 (WT-ATS)	18:46	165	18:19 (GC&T WT1)	16:53	83	14:44 (WT163)	16:39	9	16:05 (Skalden WT1)
20	05:52		21:10 (WT06_AB)	06:38		15:04 (WT163)	07:27		13:44 (WT163)	08:16		13:44 (WT163)	08:09		13:23 (WT163)	08:46		15:56 (Skalden WT1)
	21:50	10	21:20 (WT06_AB)	20:59	87	16:31 (WT163)	19:50	197	19:23 (WT-ATS)	18:44	163	18:16 (WT01-VLS)	16:52	79	14:42 (WT163)	16:39	9	16:05 (Skalden WT1)
21	05:54		21:10 (WT06_AB)	06:40		14:59 (WT163)	07:28		13:44 (WT163)	08:17		13:45 (WT163)	08:11		13:26 (WT163)	08:46		15:57 (Skalden WT1)
	21:49	8	21:18 (WT06_AB)	20:56	93	16:32 (WT163)	19:48	195	19:21 (WT-ATS)	18:42	161	18:14 (WT01-VLS)	16:51	75	14:41 (WT163)	16:40	9	16:06 (Skalden WT1)
22	05:55		21:10 (WT06_AB)	06:41		14:55 (WT163)	07:30		13:44 (WT163)	08:19		13:45 (WT163)	08:12		13:27 (WT163)	08:47		15:57 (Skalden WT1)
	21:48	7	21:17 (WT06_AB)	20:54	98	16:33 (WT163)	19:46	195	19:20 (WT-ATS)	18:40	158	18:12 (WT01-VLS)	16:50	77	16:03 (Skalden WT2)	16:40	9	16:06 (Skalden WT1)
23	05:56		21:11 (WT06_AB)	06:43		14:50 (WT163)	07:32		13:42 (WT163)	08:21		13:46 (WT163)	08:14		13:30 (WT163)	08:47		15:58 (Skalden WT1)
	21:46	5	21:16 (WT06_AB)	20:52	103	16:33 (WT163)	19:43	193	19:17 (WT-ATS)	18:38	155	18:10 (WT01-VLS)	16:49	76	16:05 (Skalden WT2)	16:41	9	16:07 (Skalden WT1)
24	05:58		21:12 (WT06_AB)	06:44		14:46 (WT163)	07:33		13:42 (WT163)	08:22		13:47 (WT163)	08:15		13:32 (WT163)	08:48		15:58 (Skalden WT1)
	21:45	2	21:14 (WT06_AB)	20:50	108	16:34 (WT163)	19:41	191	19:15 (WT-ATS)	18:36	150	18:08 (WT01-VLS)	16:48	75	16:07 (Skalden WT2)	16:41	9	16:07 (Skalden WT1)
25	05:59			06:46		14:41 (WT163)	07:35		13:41 (WT163)	07:24		12:47 (WT163)	08:17		13:34 (WT163)	08:48		15:58 (Skalden WT1)
	21:44			20:48	114	16:35 (WT163)	19:39	188	19:12 (WT-ATS)	17:34	147	15:14 (WT163)	16:47	71	16:07 (Skalden WT2)	16:42	9	16:07 (Skalden WT1)
26	06:00			06:48		14:37 (WT163)	07:36		13:41 (WT163)	07:26		12:48 (WT163)	08:18		13:37 (WT163)	08:48		16:00 (Skalden WT1)
	21:42			20:46	119	16:36 (WT163)	19:37	185	19:10 (GC&T WT2)	17:32	145	15:13 (WT163)	16:46	67	16:08 (Skalden WT2)	16:43	9	16:09 (Skalden WT1)
27	06:02			06:49		14:32 (WT163)	07:38		13:40 (WT163)	07:28		12:49 (WT163)	08:20		13:40 (WT163)	08:49		16:00 (Skalden WT1)
	21:41			20:44	124	16:36 (WT163)	19:34	181	19:07 (GC&T WT2)	17:30	143	15:12 (WT163)	16:45	63	16:09 (Skalden WT2)	16:43	10	16:10 (Skalden WT1)
28	06:03			06:51		14:29 (WT163)	07:40		13:41 (WT163)	07:29		12:50 (WT163)	08:21		13:42 (WT163)	08:49		16:00 (Skalden WT1)
	21:39			20:42	128	16:37 (WT163)	19:32	174	19:05 (GC&T WT2)	17:28	141	15:11 (WT163)	16:44	59	16:09 (Skalden WT2)	16:44	10	16:10 (Skalden WT1)
29	06:05			06:52		14:25 (WT163)	07:41		13:41 (WT163)	07:31		12:51 (WT163)	08:23		13:46 (WT163)	08:49		16:01 (Skalden WT1)
	21:38			20:40	132	16:37 (WT163)	19:30	172	16:33 (WT163)	17:26	145	16:53 (GC&T WT3)	16:44	53	16:10 (Skalden WT2)	16:45	10	16:11 (Skalden WT1)
30	06:06			06:54		14:22 (WT163)	07:43		13:40 (WT163)	07:33		12:52 (WT163)	08:24		13:49 (WT163)	08:49		16:01 (Skalden WT1)
	21:36			20:37	135	16:37 (WT163)	19:28	172	16:32 (WT163)	17:25	147	16:55 (GC&T WT3)	16:43	47	16:10 (Skalden WT2)	16:46	11	16:12 (Skalden WT1)
31	06:08			06:55		14:18 (WT163)				07:35		12:54 (WT163)				08:49		16:02 (Skalden WT1)
	21:35			20:35	139	16:37 (WT163)				17:23	145	16:54 (GC&T WT3)				16:47	11	16:13 (Skalden WT1)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		376			1932			5203			5053			2852			387	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,56			0,73			0,72			0,72			0,72			0,71	
Total reduction		0,24			0,32			0,30			0,25			0,18			0,14	
Total, real		90			626			1555			1271			507			56	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: C - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:42 (Skalden WT2)	08:24		16:40 (WT-MER)	07:32		17:47 (GC&T WT1)	07:23		19:35 (WT-ATS)	06:20		07:15 (WT163)	05:36		07:11 (WT163)
	16:48	20	16:02 (Skalden WT2)	17:35	9	16:49 (WT-MER)	18:25	12	17:59 (GC&T WT1)	20:17	16	19:51 (WT-ATS)	21:06	123	20:10 (GC&T WT2)	21:50	93	08:44 (WT163)
2	08:49		15:43 (Skalden WT2)	08:22			07:30		17:45 (GC&T WT1)	07:21		19:35 (WT-ATS)	06:18		07:14 (WT163)	05:36		07:12 (WT163)
	16:49	20	16:03 (Skalden WT2)	17:36			18:26	16	18:01 (GC&T WT1)	20:19	18	19:53 (WT-ATS)	21:08	123	20:09 (GC&T WT2)	21:51	93	08:45 (WT163)
3	08:49		15:43 (Skalden WT2)	08:21		17:08 (GC&T WT3)	07:28		17:44 (GC&T WT1)	07:19		19:35 (WT-ATS)	06:16		07:14 (WT163)	05:35		07:12 (WT163)
	16:50	20	16:03 (Skalden WT2)	17:38	1	17:09 (GC&T WT3)	18:28	19	18:03 (GC&T WT1)	20:20	19	19:54 (WT-ATS)	21:09	123	20:09 (GC&T WT2)	21:52	93	08:45 (WT163)
4	08:49		15:44 (Skalden WT2)	08:19		17:06 (GC&T WT3)	07:26		17:43 (GC&T WT1)	07:16		19:35 (WT-ATS)	06:15		07:13 (WT163)	05:34		07:12 (WT163)
	16:51	19	16:03 (Skalden WT2)	17:40	5	17:11 (GC&T WT3)	18:30	22	18:05 (GC&T WT1)	20:22	19	19:54 (WT-ATS)	21:11	122	20:08 (GC&T WT2)	21:53	92	08:44 (WT163)
5	08:49		15:45 (Skalden WT2)	08:18		17:06 (GC&T WT3)	07:23		17:41 (GC&T WT1)	07:14		19:35 (WT-ATS)	06:13		07:12 (WT163)	05:34		07:13 (WT163)
	16:53	19	16:04 (Skalden WT2)	17:42	7	17:13 (GC&T WT3)	18:32	24	18:05 (GC&T WT1)	20:23	18	19:53 (WT-ATS)	21:12	120	20:06 (GC&T WT2)	21:54	92	08:45 (WT163)
6	08:48		15:45 (Skalden WT2)	08:16		17:05 (GC&T WT3)	07:21		17:41 (GC&T WT1)	07:12		19:35 (WT-ATS)	06:11		07:11 (WT163)	05:33		07:13 (WT163)
	16:54	19	16:04 (Skalden WT2)	17:44	10	17:15 (GC&T WT3)	18:33	24	18:05 (GC&T WT1)	20:25	16	19:51 (WT-ATS)	21:14	119	20:05 (GC&T WT2)	21:55	91	08:44 (WT163)
7	08:48		15:46 (Skalden WT2)	08:14		17:04 (GC&T WT3)	07:19		17:40 (GC&T WT1)	07:10		19:36 (WT-ATS)	06:09		07:12 (WT163)	05:32		07:13 (WT163)
	16:55	18	16:04 (Skalden WT2)	17:45	13	17:17 (GC&T WT3)	18:35	25	18:05 (GC&T WT1)	20:27	14	19:50 (WT-ATS)	21:16	116	20:04 (GC&T WT2)	21:56	91	08:44 (WT163)
8	08:48		15:46 (Skalden WT2)	08:13		17:04 (GC&T WT3)	07:17		17:40 (GC&T WT1)	07:08		19:37 (WT-ATS)	06:08		07:11 (WT163)	05:32		07:14 (WT163)
	16:56	18	16:04 (Skalden WT2)	17:47	14	17:18 (GC&T WT3)	18:37	25	18:05 (GC&T WT1)	20:28	12	19:49 (WT-ATS)	21:17	113	20:02 (GC&T WT2)	21:57	91	08:45 (WT163)
9	08:47		15:47 (Skalden WT2)	08:11		17:04 (GC&T WT3)	07:15		17:39 (GC&T WT1)	07:05		19:40 (WT-ATS)	06:06		07:11 (WT163)	05:31		07:14 (WT163)
	16:58	16	16:03 (Skalden WT2)	17:49	17	17:21 (GC&T WT3)	18:38	25	18:04 (GC&T WT1)	20:30	6	19:46 (WT-ATS)	21:19	109	20:00 (GC&T WT2)	21:58	90	08:44 (WT163)
10	08:47		15:48 (Skalden WT2)	08:09		17:04 (GC&T WT3)	07:13		17:40 (GC&T WT1)	07:03		07:56 (WT163)	06:04		07:10 (WT163)	05:31		07:14 (WT163)
	16:59	16	16:04 (Skalden WT2)	17:51	19	17:23 (GC&T WT3)	18:40	24	18:04 (GC&T WT1)	20:32	20	08:16 (WT163)	21:20	100	19:55 (GC&T WT2)	21:59	90	08:44 (WT163)
11	08:46		15:49 (Skalden WT2)	08:07		17:05 (GC&T WT3)	07:10		17:40 (GC&T WT1)	07:01		07:49 (WT163)	06:03		07:11 (WT163)	05:31		07:15 (WT163)
	17:00	14	16:03 (Skalden WT2)	17:53	17	17:22 (GC&T WT3)	18:42	23	18:03 (GC&T WT1)	20:33	31	08:20 (WT163)	21:22	96	08:47 (WT163)	21:59	90	08:45 (WT163)
12	08:46		15:50 (Skalden WT2)	08:06		17:05 (GC&T WT3)	07:08		17:41 (GC&T WT1)	06:59		07:45 (WT163)	06:01		07:10 (WT163)	05:30		07:14 (WT163)
	17:02	13	16:03 (Skalden WT2)	17:54	17	17:22 (GC&T WT3)	18:44	22	18:03 (GC&T WT1)	20:35	39	08:24 (WT163)	21:23	96	08:46 (WT163)	22:00	90	08:44 (WT163)
13	08:45		15:52 (Skalden WT2)	08:04		17:06 (GC&T WT3)	07:06		17:42 (GC&T WT1)	06:57		07:42 (WT163)	05:59		07:10 (WT163)	05:30		07:15 (WT163)
	17:03	10	16:02 (Skalden WT2)	17:56	15	17:21 (GC&T WT3)	18:45	18	18:00 (GC&T WT1)	20:37	59	20:03 (GC&T WT2)	21:25	97	08:47 (WT163)	22:01	89	08:44 (WT163)
14	08:44		15:55 (Skalden WT2)	08:02		17:07 (GC&T WT3)	07:04		17:44 (GC&T WT1)	06:55		07:39 (WT163)	05:58		07:09 (WT163)	05:30		07:15 (WT163)
	17:05	7	16:02 (Skalden WT2)	17:58	13	17:20 (GC&T WT3)	18:47	15	17:59 (GC&T WT1)	20:38	69	20:05 (GC&T WT2)	21:26	97	08:46 (WT163)	22:01	90	08:45 (WT163)
15	08:43			08:00		17:09 (GC&T WT3)	07:01		17:46 (GC&T WT1)	06:52		07:37 (WT163)	05:56		07:10 (WT163)	05:30		07:16 (WT163)
	17:06			18:00	9	17:18 (GC&T WT3)	18:49	11	17:57 (GC&T WT1)	20:40	77	20:07 (GC&T WT2)	21:28	97	08:47 (WT163)	22:02	89	08:45 (WT163)
16	08:43			07:58			06:59			06:50		07:35 (WT163)	05:55		07:10 (WT163)	05:30		07:16 (WT163)
	17:08			18:02			18:50			20:42	85	20:09 (GC&T WT2)	21:29	97	08:47 (WT163)	22:02	89	08:45 (WT163)
17	08:42		16:35 (WT-MER)	07:56			06:57			06:48		07:33 (WT163)	05:54		07:09 (WT163)	05:30		07:16 (WT163)
	17:09	3	16:38 (WT-MER)	18:03			18:52			20:43	91	20:10 (GC&T WT2)	21:31	97	08:46 (WT163)	22:03	89	08:45 (WT163)
18	08:41		16:35 (WT-MER)	07:54		17:36 (WT01-VLS)	06:55			06:46		07:31 (WT163)	05:52		07:10 (WT163)	05:30		07:16 (WT163)
	17:11	4	16:39 (WT-MER)	18:05	2	17:38 (WT01-VLS)	18:54			20:45	96	20:11 (GC&T WT2)	21:32	96	08:46 (WT163)	22:03	89	08:45 (WT163)
19	08:40		16:33 (WT-MER)	07:52		17:35 (WT01-VLS)	06:52			06:44		07:29 (WT163)	05:51		07:10 (WT163)	05:30		07:17 (WT163)
	17:12	7	16:40 (WT-MER)	18:07	5	17:40 (WT01-VLS)	18:55			20:47	101	20:12 (GC&T WT2)	21:34	96	08:46 (WT163)	22:04	88	08:45 (WT163)
20	08:39		16:33 (WT-MER)	07:50		17:34 (WT01-VLS)	06:50			06:42		07:27 (WT163)	05:49		07:10 (WT163)	05:30		07:17 (WT163)
	17:14	9	16:42 (WT-MER)	18:09	8	17:42 (WT01-VLS)	18:57			20:48	105	20:12 (GC&T WT2)	21:35	96	08:46 (WT163)	22:04	88	08:45 (WT163)
21	08:38		16:33 (WT-MER)	07:49		17:34 (WT01-VLS)	06:48		18:30 (WT07_Sadaci)	06:40		07:25 (WT163)	05:48		07:09 (WT163)	05:30		07:17 (WT163)
	17:16	11	16:44 (WT-MER)	18:11	10	17:44 (WT01-VLS)	18:59	3	18:33 (WT07_Sadaci)	20:50	109	20:12 (GC&T WT2)	21:37	96	08:45 (WT163)	22:04	88	08:45 (WT163)
22	08:37		16:34 (WT-MER)	07:47		17:34 (WT01-VLS)	06:46		18:30 (WT07_Sadaci)	06:38		07:24 (WT163)	05:47		07:09 (WT163)	05:30		07:18 (WT163)
	17:17	12	16:46 (WT-MER)	18:12	12	17:46 (WT01-VLS)	19:00	5	18:35 (WT07_Sadaci)	20:51	112	20:13 (GC&T WT2)	21:38	96	08:45 (WT163)	22:04	88	08:46 (WT163)
23	08:36		16:34 (WT-MER)	07:44		17:34 (WT01-VLS)	06:43		18:30 (WT07_Sadaci)	06:36		07:23 (WT163)	05:46		07:10 (WT163)	05:30		07:18 (WT163)
	17:19	14	16:48 (WT-MER)	18:14	14	17:48 (WT01-VLS)	19:02	7	18:37 (WT07_Sadaci)	20:53	115	20:13 (GC&T WT2)	21:39	95	08:45 (WT163)	22:04	88	08:46 (WT163)
24	08:35		16:33 (WT-MER)	07:42		17:35 (WT01-VLS)	06:41		18:29 (WT07_Sadaci)	06:34		07:21 (WT163)	05:44		07:10 (WT163)	05:31		07:17 (WT163)
	17:21	17	16:50 (WT-MER)	18:16	15	17:50 (WT01-VLS)	19:04	9	18:38 (WT07_Sadaci)	20:55	118	20:13 (GC&T WT2)	21:41	95	08:45 (WT163)	22:05	89	08:46 (WT163)
25	08:33		16:34 (WT-MER)	07:40		17:36 (WT01-VLS)	06:39		18:29 (WT07_Sadaci)	06:32		07:20 (WT163)	05:43		07:10 (WT163)	05:31		07:18 (WT163)
	17:22	18	16:52 (WT-MER)	18:18	14	17:50 (WT01-VLS)	19:05	11	18:40 (WT07_Sadaci)	20:56	119	20:12 (GC&T WT2)	21:42	95	08:45 (WT163)	22:05	89	08:47 (WT163)
26	08:32		16:35 (WT-MER)	07:38		17:38 (WT01-VLS)	06:37		18:31 (WT07_Sadaci)	06:30		07:19 (WT163)	05:42		07:10 (WT163)	05:31		07:18 (WT163)
	17:24	18	16:53 (WT-MER)	18:19	11	17:49 (WT01-VLS)	19:07	9	18:40 (WT07_Sadaci)	20:58	121	20:12 (GC&T WT2)	21:43	95	08:45 (WT163)	22:05	89	08:47 (WT163)
27	08:31		16:35 (WT-MER)	07:36		17:39 (WT01-VLS)	06:34		18:33 (WT07_Sadaci)	06:28		07:18 (WT163)	05:41		07:10 (WT163)	05:32		07:18 (WT163)
	17:26	17	16:52 (WT-MER)	18:21	6	17:45 (WT01-VLS)	19:09	5	18:38 (WT07_Sadaci)	21:00	122	20:12 (GC&T WT2)	21:44	95	08:45 (WT163)	22:05	89	08:47 (WT163)
28	08:29		16:36 (WT-MER)	07:34		17:51 (GC&T WT1)	06:32		18:44 (WT-ATS)	06:26		07:17 (WT163)	05:40		07:10 (WT163)	05:32		07:18 (WT163)
	17:28	17	16:53 (WT-MER)	18:23	5	17:56 (GC&T WT1)	19:10	1	18:45 (WT-ATS)	21:01	123	20:11 (GC&T WT2)	21:46	95	08:45 (WT163)	22:05	90	08:48 (WT163)
29	08:28		16:36 (WT-MER)				07:30		19:40 (WT-ATS)	06:24		07:17 (WT163)	05:39		07:11 (WT163)	05:33		07:19 (WT163)
	17:29	16	16:52 (WT-MER)				20:12	7	19:47 (WT-ATS)	21:03	124	20:12 (GC&T WT2)	21:47	94	08:45 (WT163)	22:04	89	08:48 (WT163)
30	08:27		16:37 (WT-MER)				07:28		19:38 (WT-ATS)	06:22		07:16 (WT163)	05:38		07:11 (WT163)	05:33		07:19 (WT163)
	17:31	15	16:52 (WT-MER)				20:14	10	19:48 (WT-ATS)	21:04	124	20:11 (GC&T WT2)	21:48	94	08:45 (WT163)	22:04	89	08:48 (WT163)
31	08:25		16:38 (WT-MER)				07:25		19:37 (WT-ATS)				05:37		07:11 (WT163)			
	17:33	13	16:51 (WT-MER)				20:15	13	19:50 (WT-ATS)				21:49	94	08:45 (WT163)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		420			268			385			2098			3177			2695	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,71			0,68			0,63			0,61			0,63			0,63	
Total reduction		0,16			0,19			0,23			0,27			0,27			0,27	
Total, real		68			51			87			563			872			722	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: C - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		07:19 (WT163)	06:09		07:20 (WT163)	06:57		07:49 (WT163)	07:44		18:21 (GC&T WT1)	07:36		16:34 (GC&T WT3)	08:26		15:31 (Skalden WT2)
	22:04	90	08:49 (WT163)	21:33	97	08:57 (WT163)	20:33	31	08:20 (WT163)	19:25	20	18:41 (GC&T WT1)	17:21	18	16:52 (GC&T WT3)	16:42	14	15:45 (Skalden WT2)
2	05:35		07:19 (WT163)	06:11		07:21 (WT163)	06:59		07:54 (WT163)	07:46		18:20 (GC&T WT1)	07:38		16:33 (GC&T WT3)	08:27		15:31 (Skalden WT2)
	22:04	90	08:49 (WT163)	21:32	96	08:57 (WT163)	20:31	19	08:13 (WT163)	19:23	22	18:42 (GC&T WT1)	17:19	17	16:50 (GC&T WT3)	16:42	15	15:46 (Skalden WT2)
3	05:35		07:19 (WT163)	06:12		07:21 (WT163)	07:00		19:38 (WT-ATS)	07:48		18:18 (GC&T WT1)	07:40		16:33 (GC&T WT3)	08:29		15:31 (Skalden WT2)
	22:03	90	08:49 (WT163)	21:30	105	20:08 (GC&T WT2)	20:29	6	19:44 (WT-ATS)	19:21	24	18:42 (GC&T WT1)	17:17	15	16:48 (GC&T WT3)	16:41	16	15:47 (Skalden WT2)
4	05:36		07:19 (WT163)	06:14		07:21 (WT163)	07:02		19:34 (WT-ATS)	07:49		18:17 (GC&T WT1)	07:42		16:34 (GC&T WT3)	08:30		15:30 (Skalden WT2)
	22:03	91	08:50 (WT163)	21:28	110	20:10 (GC&T WT2)	20:26	12	19:46 (WT-ATS)	19:19	25	18:42 (GC&T WT1)	17:16	12	16:46 (GC&T WT3)	16:40	18	15:48 (Skalden WT2)
5	05:37		07:19 (WT163)	06:15		07:21 (WT163)	07:03		19:33 (WT-ATS)	07:51		18:17 (GC&T WT1)	07:43		16:35 (GC&T WT3)	08:31		15:31 (Skalden WT2)
	22:02	91	08:50 (WT163)	21:27	115	20:13 (GC&T WT2)	20:24	14	19:47 (WT-ATS)	19:16	25	18:42 (GC&T WT1)	17:14	9	16:44 (GC&T WT3)	16:40	18	15:49 (Skalden WT2)
6	05:38		07:19 (WT163)	06:17		07:21 (WT163)	07:05		19:31 (WT-ATS)	07:52		18:16 (GC&T WT1)	07:45		16:36 (GC&T WT3)	08:32		15:31 (Skalden WT2)
	22:02	91	08:50 (WT163)	21:25	117	20:14 (GC&T WT2)	20:22	16	19:47 (WT-ATS)	19:14	25	18:41 (GC&T WT1)	17:12	7	16:43 (GC&T WT3)	16:40	19	15:50 (Skalden WT2)
7	05:38		07:19 (WT163)	06:18		07:22 (WT163)	07:06		19:30 (WT-ATS)	07:54		18:16 (GC&T WT1)	07:47		16:37 (GC&T WT3)	08:34		15:31 (Skalden WT2)
	22:01	92	08:51 (WT163)	21:23	118	20:15 (GC&T WT2)	20:20	18	19:48 (WT-ATS)	19:12	25	18:41 (GC&T WT1)	17:11	4	16:41 (GC&T WT3)	16:39	19	15:50 (Skalden WT2)
8	05:39		07:19 (WT163)	06:20		07:22 (WT163)	07:08		19:29 (WT-ATS)	07:56		18:17 (GC&T WT1)	07:49		16:39 (GC&T WT3)	08:35		15:32 (Skalden WT2)
	22:01	92	08:51 (WT163)	21:22	120	20:16 (GC&T WT2)	20:18	19	19:48 (WT-ATS)	19:10	24	18:41 (GC&T WT1)	17:09	1	16:40 (GC&T WT3)	16:39	19	15:51 (Skalden WT2)
9	05:40		07:20 (WT163)	06:21		07:23 (WT163)	07:10		19:29 (WT-ATS)	07:57		18:16 (GC&T WT1)	07:50		16:15 (WT-MER)	08:36		15:32 (Skalden WT2)
	22:00	92	08:52 (WT163)	21:20	122	20:17 (GC&T WT2)	20:15	19	19:48 (WT-ATS)	19:08	23	18:39 (GC&T WT1)	17:07	2	16:17 (WT-MER)	16:39	20	15:52 (Skalden WT2)
10	05:41		07:20 (WT163)	06:23		07:23 (WT163)	07:11		19:28 (WT-ATS)	07:59		18:17 (GC&T WT1)	07:52		16:11 (WT-MER)	08:37		15:32 (Skalden WT2)
	21:59	92	08:52 (WT163)	21:18	123	20:18 (GC&T WT2)	20:13	18	19:46 (WT-ATS)	19:05	21	18:38 (GC&T WT1)	17:06	9	16:20 (WT-MER)	16:38	20	15:52 (Skalden WT2)
11	05:42		07:20 (WT163)	06:24		07:22 (WT163)	07:13		19:28 (WT-ATS)	08:01		18:18 (GC&T WT1)	07:54		16:09 (WT-MER)	08:38		15:32 (Skalden WT2)
	21:59	93	08:53 (WT163)	21:16	125	20:18 (GC&T WT2)	20:11	17	19:45 (WT-ATS)	19:03	18	18:36 (GC&T WT1)	17:04	13	16:22 (WT-MER)	16:38	21	15:53 (Skalden WT2)
12	05:43		07:20 (WT163)	06:26		07:23 (WT163)	07:14		19:28 (WT-ATS)	08:02		18:19 (GC&T WT1)	07:55		16:08 (WT-MER)	08:39		15:32 (Skalden WT2)
	21:58	93	08:53 (WT163)	21:14	125	20:19 (GC&T WT2)	20:09	14	19:42 (WT-ATS)	19:01	14	18:33 (GC&T WT1)	17:03	15	16:23 (WT-MER)	16:38	21	15:53 (Skalden WT2)
13	05:44		07:20 (WT163)	06:27		07:23 (WT163)	07:16		19:29 (WT-ATS)	08:04		18:21 (GC&T WT1)	07:57		16:08 (WT-MER)	08:40		15:33 (Skalden WT2)
	21:57	93	08:53 (WT163)	21:12	124	20:18 (GC&T WT2)	20:06	11	19:40 (WT-ATS)	18:59	10	18:31 (GC&T WT1)	17:01	16	16:24 (WT-MER)	16:38	21	15:54 (Skalden WT2)
14	05:45		07:20 (WT163)	06:29		07:24 (WT163)	07:17		19:30 (WT-ATS)	08:06			07:59		16:08 (WT-MER)	08:41		15:33 (Skalden WT2)
	21:56	94	08:54 (WT163)	21:10	123	20:19 (GC&T WT2)	20:04	7	19:37 (WT-ATS)	18:57			17:00	17	16:25 (WT-MER)	16:38	21	15:54 (Skalden WT2)
15	05:47		07:20 (WT163)	06:30		07:24 (WT163)	07:19		19:33 (WT-ATS)	08:07		18:11 (WT01-VLS)	08:01		16:07 (WT-MER)	08:42		15:34 (Skalden WT2)
	21:55	94	08:54 (WT163)	21:08	123	20:19 (GC&T WT2)	20:02	2	19:35 (WT-ATS)	18:55	9	18:20 (WT01-VLS)	16:59	18	16:25 (WT-MER)	16:38	21	15:55 (Skalden WT2)
16	05:48		07:20 (WT163)	06:32		07:26 (WT163)	07:21		19:23 (WT07_Sadaci)	08:09		18:08 (WT01-VLS)	08:02		16:08 (WT-MER)	08:43		15:34 (Skalden WT2)
	21:54	94	08:54 (WT163)	21:07	121	20:19 (GC&T WT2)	19:59	2	19:25 (WT07_Sadaci)	18:52	13	18:21 (WT01-VLS)	16:57	18	16:26 (WT-MER)	16:38	21	15:55 (Skalden WT2)
17	05:49		07:20 (WT163)	06:34		07:26 (WT163)	07:22		19:19 (WT07_Sadaci)	08:11		18:07 (WT01-VLS)	08:04		16:07 (WT-MER)	08:44		15:34 (Skalden WT2)
	21:53	94	08:54 (WT163)	21:05	120	20:19 (GC&T WT2)	19:57	9	19:28 (WT07_Sadaci)	18:50	15	18:22 (WT01-VLS)	16:56	18	16:25 (WT-MER)	16:39	21	15:55 (Skalden WT2)
18	05:50		07:20 (WT163)	06:35		07:27 (WT163)	07:24		19:17 (WT07_Sadaci)	08:12		18:06 (WT01-VLS)	08:06		16:07 (WT-MER)	08:44		15:35 (Skalden WT2)
	21:52	95	08:55 (WT163)	21:03	119	20:19 (GC&T WT2)	19:55	11	19:28 (WT07_Sadaci)	18:48	15	18:21 (WT01-VLS)	16:55	17	16:24 (WT-MER)	16:39	21	15:56 (Skalden WT2)
19	05:51		07:19 (WT163)	06:37		07:27 (WT163)	07:25		19:16 (WT07_Sadaci)	08:14		18:06 (WT01-VLS)	08:07		16:08 (WT-MER)	08:45		15:36 (Skalden WT2)
	21:51	96	08:55 (WT163)	21:01	117	20:18 (GC&T WT2)	19:53	10	19:26 (WT07_Sadaci)	18:46	13	18:19 (WT01-VLS)	16:53	14	16:22 (WT-MER)	16:39	21	15:57 (Skalden WT2)
20	05:53		07:20 (WT163)	06:38		07:28 (WT163)	07:27		19:16 (WT07_Sadaci)	08:16		18:05 (WT01-VLS)	08:09		16:09 (WT-MER)	08:46		15:35 (Skalden WT2)
	21:50	96	08:56 (WT163)	20:59	115	20:18 (GC&T WT2)	19:50	8	19:24 (WT07_Sadaci)	18:44	11	18:16 (WT01-VLS)	16:52	12	16:21 (WT-MER)	16:39	21	15:56 (Skalden WT2)
21	05:54		07:20 (WT163)	06:40		07:29 (WT163)	07:28		19:15 (WT07_Sadaci)	08:17		18:05 (WT01-VLS)	08:11		16:09 (WT-MER)	08:46		15:36 (Skalden WT2)
	21:49	96	08:56 (WT163)	20:57	112	20:17 (GC&T WT2)	19:48	6	19:21 (WT07_Sadaci)	18:42	9	18:14 (WT01-VLS)	16:51	11	16:20 (WT-MER)	16:40	21	15:57 (Skalden WT2)
22	05:55		07:20 (WT163)	06:41		07:30 (WT163)	07:30		19:16 (WT07_Sadaci)	08:19		18:05 (WT01-VLS)	08:12		16:09 (WT-MER)	08:47		15:36 (Skalden WT2)
	21:48	96	08:56 (WT163)	20:54	109	20:17 (GC&T WT2)	19:46	4	19:20 (WT07_Sadaci)	18:40	7	18:12 (WT01-VLS)	16:50	9	16:18 (WT-MER)	16:40	21	15:57 (Skalden WT2)
23	05:56		07:20 (WT163)	06:43		07:31 (WT163)	07:32		19:16 (WT07_Sadaci)	08:21		18:06 (WT01-VLS)	08:14		16:11 (WT-MER)	08:47		15:37 (Skalden WT2)
	21:46	96	08:56 (WT163)	20:52	105	20:16 (GC&T WT2)	19:43	1	19:17 (WT07_Sadaci)	18:38	4	18:10 (WT01-VLS)	16:49	6	16:17 (WT-MER)	16:41	21	15:58 (Skalden WT2)
24	05:58		07:20 (WT163)	06:44		07:33 (WT163)	07:33			08:23		18:07 (WT01-VLS)	08:15		16:12 (WT-MER)	08:48		15:38 (Skalden WT2)
	21:45	97	08:57 (WT163)	20:50	100	20:15 (GC&T WT2)	19:41			18:36	1	18:08 (WT01-VLS)	16:48	4	16:16 (WT-MER)	16:41	21	15:59 (Skalden WT2)
25	05:59		07:20 (WT163)	06:46		07:34 (WT163)	07:35			07:24			08:17		16:12 (WT-MER)	08:48		15:38 (Skalden WT2)
	21:44	97	08:57 (WT163)	20:48	96	20:14 (GC&T WT2)	19:39			17:34			16:47	3	16:15 (WT-MER)	16:42	21	15:59 (Skalden WT2)
26	06:01		07:20 (WT163)	06:48		07:36 (WT163)	07:36			07:26			08:18			08:48		15:39 (Skalden WT2)
	21:42	97	08:57 (WT163)	20:46	90	20:13 (GC&T WT2)	19:37			17:32			16:46			16:43	21	16:00 (Skalden WT2)
27	06:02		07:20 (WT163)	06:49		07:37 (WT163)	07:38			07:28		16:38 (GC&T WT3)	08:20			08:49		15:39 (Skalden WT2)
	21:41	97	08:57 (WT163)	20:44	84	20:10 (GC&T WT2)	19:34			17:30	10	16:48 (GC&T WT3)	16:45			16:43	21	16:00 (Skalden WT2)
28	06:03		07:20 (WT163)	06:51		07:39 (WT163)	07:40		18:28 (GC&T WT1)	07:29		16:37 (GC&T WT3)	08:21		15:34 (Skalden WT2)	08:49		15:40 (Skalden WT2)
	21:39	97	08:57 (WT163)	20:42	77	20:09 (GC&T WT2)	19:32	8	18:36 (GC&T WT1)	17:28	12	16:49 (GC&T WT3)	16:44	7	15:41 (Skalden WT2)	16:44	21	16:01 (Skalden WT2)
29	06:05		07:20 (WT163)	06:52		07:40 (WT163)	07:41		18:25 (GC&T WT1)	07:31		16:35 (GC&T WT3)	08:23		15:33 (Skalden WT2)	08:49		15:40 (Skalden WT2)
	21:38	97	08:57 (WT163)	20:40	69	20:06 (GC&T WT2)	19:30	14	18:39 (GC&T WT1)	17:26	16	16:51 (GC&T WT3)	16:44	10	15:43 (Skalden WT2)	16:45	21	16:01 (Skalden WT2)
30	06:06		07:20 (WT163)	06:54		07:43 (WT163)	07:43		18:22 (GC&T WT1)	07:33		16:35 (GC&T WT3)	08:24		15:32 (Skalden WT2)	08:49		15:41 (Skalden WT2)
	21:36	97	08:57 (WT163)	20:37	57	20:03 (GC&T WT2)	19:28	18	18:40 (GC&T WT1)	17:25	16	16:51 (GC&T WT3)	16:43	13	15:45 (Skalden WT2)	16:46	20	16:01 (Skalden WT2)
31	06:08		07:21 (WT163)	06:55		07:45 (WT163)				07:35		16:34 (GC&T WT3)				08:49		15:41 (Skalden WT2)
	21:35	96	08:57 (WT163)	20:35	38	08:23 (WT163)				17:23	18	16:52 (GC&T WT3)				16:47	21	16:02 (Skalden WT2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		2916			3272			314			445			315			618	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,63			0,62			0,62			0,65			0,70			0,72	
Total reduction		0,27			0,28			0,26			0,23			0,17			0,15	
Total, real		791			904			80			102			55			90	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: D - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		10:48 (Skalden WTB3)	08:24		16:27 (WT-MER)	07:32		17:37 (WT01-VLS)	07:23		18:54 (GC&T WT1)	06:20		06:44 (WT163)	05:37		06:39 (WT163)
	16:48	34	15:27 (Skalden WT2)	17:35	14	16:41 (WT-MER)	18:25	22	17:59 (WT01-VLS)	20:17	46	19:51 (WT07_Sadaci)	21:06	45	20:14 (WT-ATS)	21:50	38	07:17 (WT163)
2	08:49		10:50 (Skalden WTB3)	08:22		16:29 (WT-MER)	07:30		17:37 (WT01-VLS)	07:21		18:53 (GC&T WT1)	06:18		06:42 (WT163)	05:36		06:40 (WT163)
	16:49	31	15:28 (Skalden WT2)	17:36	11	16:40 (WT-MER)	18:26	23	18:00 (WT01-VLS)	20:19	51	19:53 (WT07_Sadaci)	21:08	44	20:12 (WT-ATS)	21:51	38	07:18 (WT163)
3	08:49		10:52 (Skalden WTB3)	08:21		16:32 (WT-MER)	07:28		17:37 (WT01-VLS)	07:19		18:52 (GC&T WT1)	06:16		06:41 (WT163)	05:35		06:40 (WT163)
	16:50	26	15:27 (Skalden WT2)	17:38	5	16:37 (WT-MER)	18:28	23	18:00 (WT01-VLS)	20:20	55	19:55 (WT07_Sadaci)	21:09	41	20:09 (WT-ATS)	21:52	37	07:17 (WT163)
4	08:49		15:07 (Skalden WTB4)	08:19			07:26		17:38 (WT01-VLS)	07:17		18:51 (GC&T WT1)	06:15		06:39 (WT163)	05:34		06:40 (WT163)
	16:51	20	15:27 (Skalden WT2)	17:40			18:30	21	17:59 (WT01-VLS)	20:22	59	19:57 (WT07_Sadaci)	21:11	38	07:17 (WT163)	21:53	36	07:16 (WT163)
5	08:49		09:21 (Skalden WTB4)	08:18		17:02 (GC&T WT3)	07:24		17:38 (WT01-VLS)	07:14		18:51 (GC&T WT1)	06:13		06:38 (WT163)	05:34		06:41 (WT163)
	16:53	24	15:28 (Skalden WT2)	17:42	10	17:12 (GC&T WT3)	18:32	19	17:57 (WT01-VLS)	20:24	61	19:58 (WT07_Sadaci)	21:13	39	07:17 (WT163)	21:54	36	07:17 (WT163)
6	08:48		09:19 (Skalden WTB4)	08:16		16:59 (GC&T WT3)	07:21		17:40 (WT01-VLS)	07:12		18:49 (GC&T WT1)	06:11		06:38 (WT163)	05:33		06:41 (WT163)
	16:54	27	15:27 (Skalden WT2)	17:44	15	17:14 (GC&T WT3)	18:33	16	17:56 (WT01-VLS)	20:25	62	19:58 (WT07_Sadaci)	21:14	41	07:19 (WT163)	21:55	35	07:16 (WT163)
7	08:48		09:19 (Skalden WTB4)	08:14		16:58 (GC&T WT3)	07:19		17:42 (WT01-VLS)	07:10		18:49 (GC&T WT1)	06:09		06:37 (WT163)	05:32		06:42 (WT163)
	16:55	27	15:27 (Skalden WT2)	17:45	18	17:16 (GC&T WT3)	18:35	12	17:54 (WT01-VLS)	20:27	61	19:57 (WT07_Sadaci)	21:16	42	07:19 (WT163)	21:56	34	07:16 (WT163)
8	08:48		09:18 (Skalden WTB4)	08:13		16:56 (GC&T WT3)	07:17		17:45 (WT01-VLS)	07:08		18:49 (GC&T WT1)	06:08		06:36 (WT163)	05:32		06:43 (WT163)
	16:56	26	15:26 (Skalden WT2)	17:47	21	17:17 (GC&T WT3)	18:37	5	17:50 (WT01-VLS)	20:28	59	19:56 (WT07_Sadaci)	21:17	43	07:19 (WT163)	21:57	33	07:16 (WT163)
9	08:47		09:17 (Skalden WTB4)	08:11		16:56 (GC&T WT3)	07:15			07:05		18:48 (GC&T WT1)	06:06		06:36 (WT163)	05:31		06:43 (WT163)
	16:58	25	15:25 (Skalden WT2)	17:49	23	17:19 (GC&T WT3)	18:39			20:30	56	19:54 (WT07_Sadaci)	21:19	44	07:20 (WT163)	21:58	32	07:15 (WT163)
10	08:47		09:17 (Skalden WTB4)	08:09		16:55 (GC&T WT3)	07:13			07:03		18:48 (GC&T WT1)	06:04		06:35 (WT163)	05:31		06:44 (WT163)
	16:59	24	15:24 (Skalden WT2)	17:51	25	17:20 (GC&T WT3)	18:40			20:32	48	19:36 (GC&T WT1)	21:20	45	07:20 (WT163)	21:59	31	07:15 (WT163)
11	08:46		09:17 (Skalden WTB4)	08:07		16:55 (GC&T WT3)	07:10			07:01		18:48 (GC&T WT1)	06:03		06:35 (WT163)	05:31		06:45 (WT163)
	17:00	20	16:27 (WT-MER)	17:53	26	17:21 (GC&T WT3)	18:42			20:33	48	19:36 (GC&T WT1)	21:22	45	07:20 (WT163)	21:59	30	07:15 (WT163)
12	08:46		09:16 (Skalden WTB4)	08:06		16:54 (GC&T WT3)	07:08			06:59		18:48 (GC&T WT1)	06:01		06:34 (WT163)	05:30		06:44 (WT163)
	17:02	25	16:29 (WT-MER)	17:54	27	17:21 (GC&T WT3)	18:44			20:35	47	19:35 (GC&T WT1)	21:23	46	07:20 (WT163)	22:00	31	07:15 (WT163)
13	08:45		09:16 (Skalden WTB4)	08:04		16:54 (GC&T WT3)	07:06			06:57		18:48 (GC&T WT1)	06:00		06:35 (WT163)	05:30		06:45 (WT163)
	17:03	27	16:30 (WT-MER)	17:56	27	17:21 (GC&T WT3)	18:45			20:37	46	19:34 (GC&T WT1)	21:25	46	07:21 (WT163)	22:01	30	07:15 (WT163)
14	08:44		09:17 (Skalden WTB4)	08:02		16:53 (GC&T WT3)	07:04			06:55		18:48 (GC&T WT1)	05:58		06:34 (WT163)	05:30		06:46 (WT163)
	17:05	31	16:33 (WT-MER)	17:58	28	17:21 (GC&T WT3)	18:47			20:38	46	19:34 (GC&T WT1)	21:26	46	07:20 (WT163)	22:01	29	07:15 (WT163)
15	08:44		09:16 (Skalden WTB4)	08:00		16:53 (GC&T WT3)	07:01			06:52		18:49 (GC&T WT1)	05:56		06:34 (WT163)	05:30		06:46 (WT163)
	17:06	35	16:34 (WT-MER)	18:00	28	17:21 (GC&T WT3)	18:49			20:40	48	20:11 (WT-ATS)	21:28	46	07:20 (WT163)	22:02	29	07:15 (WT163)
16	08:43		09:16 (Skalden WTB4)	07:58		16:54 (GC&T WT3)	06:59			06:50		18:49 (GC&T WT1)	05:55		06:34 (WT163)	05:30		06:47 (WT163)
	17:08	37	16:36 (WT-MER)	18:02	27	17:21 (GC&T WT3)	18:50			20:42	55	20:15 (WT-ATS)	21:29	47	07:21 (WT163)	22:02	28	07:15 (WT163)
17	08:42		09:17 (Skalden WTB4)	07:56		16:54 (GC&T WT3)	06:57			06:48		18:50 (GC&T WT1)	05:54		06:34 (WT163)	05:30		06:47 (WT163)
	17:09	39	16:38 (WT-MER)	18:03	27	17:21 (GC&T WT3)	18:52			20:43	57	20:17 (WT-ATS)	21:31	46	07:20 (WT163)	22:03	28	07:15 (WT163)
18	08:41		09:17 (Skalden WTB4)	07:54		16:54 (GC&T WT3)	06:55			06:46		18:51 (GC&T WT1)	05:52		06:34 (WT163)	05:30		06:47 (WT163)
	17:11	40	16:39 (WT-MER)	18:05	27	17:21 (GC&T WT3)	18:54			20:45	58	20:18 (WT-ATS)	21:32	46	07:20 (WT163)	22:03	28	07:15 (WT163)
19	08:40		09:16 (Skalden WTB4)	07:52		16:55 (GC&T WT3)	06:53			06:44		18:52 (GC&T WT1)	05:51		06:34 (WT163)	05:30		06:47 (WT163)
	17:12	43	16:40 (WT-MER)	18:07	25	17:20 (GC&T WT3)	18:55			20:47	58	20:19 (WT-ATS)	21:34	46	07:20 (WT163)	22:04	28	07:15 (WT163)
20	08:39		09:16 (Skalden WTB4)	07:51		16:56 (GC&T WT3)	06:50			06:42		18:53 (GC&T WT1)	05:49		06:35 (WT163)	05:30		06:48 (WT163)
	17:14	45	16:42 (WT-MER)	18:09	23	17:19 (GC&T WT3)	18:57			20:48	58	20:20 (WT-ATS)	21:35	46	07:21 (WT163)	22:04	27	07:15 (WT163)
21	08:38		09:17 (Skalden WTB4)	07:49		16:57 (GC&T WT3)	06:48			06:40		18:54 (GC&T WT1)	05:48		06:35 (WT163)	05:30		06:48 (WT163)
	17:16	46	16:43 (WT-MER)	18:11	21	17:18 (GC&T WT3)	18:59			20:50	56	20:20 (WT-ATS)	21:37	46	07:21 (WT163)	22:04	27	07:15 (WT163)
22	08:37		09:18 (Skalden WTB4)	07:47		16:59 (GC&T WT3)	06:46			06:38		18:55 (GC&T WT1)	05:47		06:35 (WT163)	05:30		06:49 (WT163)
	17:17	46	16:44 (WT-MER)	18:12	20	17:46 (WT01-VLS)	19:00			20:51	54	20:20 (WT-ATS)	21:38	45	07:20 (WT163)	22:04	27	07:16 (WT163)
23	08:36		09:18 (Skalden WTB4)	07:45		17:01 (GC&T WT3)	06:44			06:36		18:57 (GC&T WT1)	05:46		06:35 (WT163)	05:30		06:49 (WT163)
	17:19	46	16:44 (WT-MER)	18:14	20	17:48 (WT01-VLS)	19:02			20:53	51	20:20 (WT-ATS)	21:39	44	07:19 (WT163)	22:04	27	07:16 (WT163)
24	08:35		09:18 (Skalden WTB4)	07:42		17:05 (GC&T WT3)	06:41			06:34		18:59 (GC&T WT1)	05:44		06:35 (WT163)	05:31		06:48 (WT163)
	17:21	46	16:44 (WT-MER)	18:16	15	17:50 (WT01-VLS)	19:04			20:55	46	20:20 (WT-ATS)	21:41	44	07:19 (WT163)	22:05	28	07:16 (WT163)
25	08:33		09:19 (Skalden WTB4)	07:40		17:39 (WT01-VLS)	06:39		18:13 (GC&T WT1)	06:32		19:02 (GC&T WT1)	05:43		06:36 (WT163)	05:31		06:49 (WT163)
	17:22	45	16:45 (WT-MER)	18:18	13	17:52 (WT01-VLS)	19:05	5	18:18 (GC&T WT1)	20:56	39	20:19 (WT-ATS)	21:42	43	07:19 (WT163)	22:05	28	07:17 (WT163)
26	08:32		09:20 (Skalden WTB4)	07:38		17:38 (WT01-VLS)	06:37		18:07 (GC&T WT1)	06:30		19:07 (GC&T WT1)	05:42		06:36 (WT163)	05:31		06:49 (WT163)
	17:24	43	16:45 (WT-MER)	18:19	16	17:54 (WT01-VLS)	19:07	18	18:25 (GC&T WT1)	20:58	28	20:19 (WT-ATS)	21:43	43	07:19 (WT163)	22:05	28	07:17 (WT163)
27	08:31		09:21 (Skalden WTB4)	07:36		17:37 (WT01-VLS)	06:34		18:04 (GC&T WT1)	06:28		06:53 (WT163)	05:41		06:36 (WT163)	05:32		06:49 (WT163)
	17:26	40	16:44 (WT-MER)	18:21	18	17:55 (WT01-VLS)	19:09	24	18:28 (GC&T WT1)	21:00	35	20:18 (WT-ATS)	21:44	42	07:18 (WT163)	22:05	29	07:18 (WT163)
28	08:30		09:22 (Skalden WTB4)	07:34		17:37 (WT01-VLS)	06:32		18:01 (GC&T WT1)	06:26		06:49 (WT163)	05:40		06:37 (WT163)	05:32		06:49 (WT163)
	17:28	39	16:45 (WT-MER)	18:23	20	17:57 (WT01-VLS)	19:10	28	18:29 (GC&T WT1)	21:01	40	20:17 (WT-ATS)	21:46	41	07:18 (WT163)	22:05	29	07:18 (WT163)
29	08:28		09:23 (Skalden WTB4)				07:30		18:59 (GC&T WT1)	06:24		06:48 (WT163)	05:39		06:38 (WT163)	05:33		06:49 (WT163)
	17:29	35	16:44 (WT-MER)				20:12	32	19:31 (GC&T WT1)	21:03	43	20:17 (WT-ATS)	21:47	41	07:19 (WT163)	22:04	30	07:19 (WT163)
30	08:27		09:25 (Skalden WTB4)				07:28		18:57 (GC&T WT1)	06:22		06:46 (WT163)	05:38		06:38 (WT163)	05:33		06:49 (WT163)
	17:31	30	16:44 (WT-MER)				20:14	35	19:32 (GC&T WT1)	21:04	45	20:16 (WT-ATS)	21:48	40	07:18 (WT163)	22:04	30	07:19 (WT163)
31	08:25		09:28 (Skalden WTB4)				07:25		18:56 (GC&T WT1)				05:37		06:38 (WT163)			
	17:33	23	16:43 (WT-MER)				20:15	40	19:50 (WT07_Sadaci)				21:49	40	07:18 (WT163)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		1045			550			323			1516			1351			921	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,63			0,69			0,63			0,61			0,66			0,66	
Total reduction		0,14			0,19			0,22			0,26			0,29			0,28	
Total, real		150			105			73			401			390			259	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: D - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		06:49 (WT163)	06:09		06:45 (WT163)	06:57		18:47 (GC&T WT1)	07:44			07:36		16:25 (GC&T WT3)	08:26		08:59 (Skalden WTB4)
	22:04	30	07:19 (WT163)	21:33	45	07:30 (WT163)	20:33	48	19:35 (GC&T WT1)	19:25			17:21	25	16:50 (GC&T WT3)	16:42	21	16:10 (WT-MER)
2	05:35		06:48 (WT163)	06:11		06:46 (WT163)	06:59		18:46 (GC&T WT1)	07:46			07:38		16:25 (GC&T WT3)	08:27		09:00 (Skalden WTB4)
	22:04	31	07:19 (WT163)	21:32	45	07:31 (WT163)	20:31	48	19:34 (GC&T WT1)	19:23			17:19	23	16:48 (GC&T WT3)	16:42	23	15:07 (Skalden WT2)
3	05:35		06:48 (WT163)	06:12		06:46 (WT163)	07:00		18:46 (GC&T WT1)	07:48			07:40		16:26 (GC&T WT3)	08:29		09:01 (Skalden WTB4)
	22:03	32	07:20 (WT163)	21:30	44	07:30 (WT163)	20:29	56	19:52 (WT07_Sadaci)	19:21			17:17	21	16:47 (GC&T WT3)	16:41	25	15:09 (Skalden WT2)
4	05:36		06:48 (WT163)	06:14		06:46 (WT163)	07:02		18:46 (GC&T WT1)	07:49			07:42		16:27 (GC&T WT3)	08:30		09:02 (Skalden WTB4)
	22:03	33	07:21 (WT163)	21:29	43	07:29 (WT163)	20:27	59	19:53 (WT07_Sadaci)	19:19			17:16	18	16:45 (GC&T WT3)	16:40	27	15:10 (Skalden WT2)
5	05:37		06:49 (WT163)	06:15		06:47 (WT163)	07:03		18:46 (GC&T WT1)	07:51			07:43		16:29 (GC&T WT3)	08:31		09:04 (Skalden WTB4)
	22:02	33	07:22 (WT163)	21:27	42	07:29 (WT163)	20:24	61	19:54 (WT07_Sadaci)	19:16			17:14	15	16:44 (GC&T WT3)	16:40	27	15:12 (Skalden WT2)
6	05:38		06:48 (WT163)	06:17		06:47 (WT163)	07:05		18:45 (GC&T WT1)	07:52		18:19 (WT01-VLS)	07:45		16:32 (GC&T WT3)	08:32		09:05 (Skalden WTB4)
	22:02	34	07:22 (WT163)	21:25	41	07:28 (WT163)	20:22	62	19:54 (WT07_Sadaci)	19:14	10	18:29 (WT01-VLS)	17:12	9	16:41 (GC&T WT3)	16:40	27	15:13 (Skalden WT2)
7	05:38		06:48 (WT163)	06:18		06:48 (WT163)	07:06		18:46 (GC&T WT1)	07:54		18:17 (WT01-VLS)	07:47			08:34		09:06 (Skalden WTB4)
	22:01	35	07:23 (WT163)	21:23	40	07:28 (WT163)	20:20	62	19:54 (WT07_Sadaci)	19:12	14	18:31 (WT01-VLS)	17:11			16:39	26	15:14 (Skalden WT2)
8	05:39		06:48 (WT163)	06:20		06:48 (WT163)	07:08		18:45 (GC&T WT1)	07:56		18:15 (WT01-VLS)	07:49		16:03 (WT-MER)	08:35		14:55 (Skalden WT2)
	22:01	35	07:23 (WT163)	21:22	39	07:27 (WT163)	20:18	59	19:51 (WT07_Sadaci)	19:10	18	18:33 (WT01-VLS)	17:09	5	16:08 (WT-MER)	16:39	20	15:15 (Skalden WT2)
9	05:40		06:47 (WT163)	06:21		06:49 (WT163)	07:10		18:46 (GC&T WT1)	07:57		18:13 (WT01-VLS)	07:50		16:00 (WT-MER)	08:36		10:41 (Skalden WTB3)
	22:00	37	07:24 (WT163)	21:20	37	07:26 (WT163)	20:15	55	19:49 (WT07_Sadaci)	19:08	20	18:33 (WT01-VLS)	17:07	12	16:12 (WT-MER)	16:39	26	15:16 (Skalden WT2)
10	05:41		06:47 (WT163)	06:23		06:50 (WT163)	07:11		18:46 (GC&T WT1)	07:59		18:12 (WT01-VLS)	07:52		15:57 (WT-MER)	08:37		10:40 (Skalden WTB3)
	21:59	38	07:25 (WT163)	21:18	42	20:19 (WT-ATS)	20:13	51	19:46 (WT07_Sadaci)	19:05	22	18:34 (WT01-VLS)	17:06	15	16:12 (WT-MER)	16:38	30	15:17 (Skalden WT2)
11	05:42		06:47 (WT163)	06:24		06:51 (WT163)	07:13		18:47 (GC&T WT1)	08:01		18:11 (WT01-VLS)	07:54		08:59 (Skalden WTB4)	08:38		10:39 (Skalden WTB3)
	21:59	38	07:25 (WT163)	21:16	45	20:21 (WT-ATS)	20:11	47	19:45 (WT07_Sadaci)	19:03	23	18:34 (WT01-VLS)	17:04	23	16:14 (WT-MER)	16:38	33	15:17 (Skalden WT2)
12	05:43		06:47 (WT163)	06:26		06:53 (WT163)	07:14		18:47 (GC&T WT1)	08:02		18:10 (WT01-VLS)	07:55		08:56 (Skalden WTB4)	08:39		10:38 (Skalden WTB3)
	21:58	39	07:26 (WT163)	21:14	45	20:23 (WT-ATS)	20:09	41	19:42 (WT07_Sadaci)	19:01	23	18:33 (WT01-VLS)	17:03	30	16:15 (WT-MER)	16:38	36	15:18 (Skalden WT2)
13	05:44		06:47 (WT163)	06:27		06:54 (WT163)	07:16		18:48 (GC&T WT1)	08:04		18:10 (WT01-VLS)	07:57		08:55 (Skalden WTB4)	08:40		10:38 (Skalden WTB3)
	21:57	39	07:26 (WT163)	21:12	45	20:24 (WT-ATS)	20:06	36	19:24 (GC&T WT1)	18:59	21	18:31 (WT01-VLS)	17:01	35	16:16 (WT-MER)	16:38	39	15:19 (Skalden WT2)
14	05:45		06:46 (WT163)	06:29		06:56 (WT163)	07:17		18:49 (GC&T WT1)	08:06		18:10 (WT01-VLS)	07:59		08:54 (Skalden WTB4)	08:41		10:38 (Skalden WTB3)
	21:56	41	07:27 (WT163)	21:10	43	20:25 (WT-ATS)	20:04	32	19:21 (GC&T WT1)	18:57	19	18:29 (WT01-VLS)	17:00	39	16:17 (WT-MER)	16:38	40	15:19 (Skalden WT2)
15	05:47		06:46 (WT163)	06:30		06:57 (WT163)	07:19		18:51 (GC&T WT1)	08:07		18:10 (WT01-VLS)	08:01		08:54 (Skalden WTB4)	08:42		10:38 (Skalden WTB3)
	21:55	41	07:27 (WT163)	21:09	40	20:25 (WT-ATS)	20:02	28	19:19 (GC&T WT1)	18:55	17	18:27 (WT01-VLS)	16:59	40	16:17 (WT-MER)	16:38	41	15:20 (Skalden WT2)
16	05:48		06:46 (WT163)	06:32		07:02 (WT163)	07:21		18:52 (GC&T WT1)	08:09		18:10 (WT01-VLS)	08:02		08:53 (Skalden WTB4)	08:43		10:38 (Skalden WTB3)
	21:54	42	07:28 (WT163)	21:07	33	20:26 (WT-ATS)	19:59	24	19:16 (GC&T WT1)	18:52	14	18:24 (WT01-VLS)	16:57	43	16:18 (WT-MER)	16:38	43	15:21 (Skalden WT2)
17	05:49		06:46 (WT163)	06:34		19:12 (GC&T WT1)	07:22		18:55 (GC&T WT1)	08:11		18:11 (WT01-VLS)	08:04		08:52 (Skalden WTB4)	08:44		10:38 (Skalden WTB3)
	21:53	42	07:28 (WT163)	21:05	32	20:26 (WT-ATS)	19:57	19	19:14 (GC&T WT1)	18:50	11	18:22 (WT01-VLS)	16:56	44	16:17 (WT-MER)	16:39	43	15:21 (Skalden WT2)
18	05:50		06:45 (WT163)	06:35		19:08 (GC&T WT1)	07:24		18:58 (GC&T WT1)	08:12		17:35 (GC&T WT3)	08:06		08:52 (Skalden WTB4)	08:44		10:38 (Skalden WTB3)
	21:52	43	07:28 (WT163)	21:03	41	20:26 (WT-ATS)	19:55	10	19:08 (GC&T WT1)	18:48	18	18:21 (WT01-VLS)	16:55	46	16:18 (WT-MER)	16:39	44	15:21 (Skalden WT2)
19	05:51		06:45 (WT163)	06:37		19:04 (GC&T WT1)	07:25			08:14		17:32 (GC&T WT3)	08:07		08:52 (Skalden WTB4)	08:45		10:39 (Skalden WTB3)
	21:51	44	07:29 (WT163)	21:01	48	20:26 (WT-ATS)	19:53			18:46	20	18:19 (WT01-VLS)	16:53	46	16:18 (WT-MER)	16:39	44	15:22 (Skalden WT2)
20	05:53		06:46 (WT163)	06:38		19:02 (GC&T WT1)	07:27			08:16		17:29 (GC&T WT3)	08:09		08:53 (Skalden WTB4)	08:46		10:38 (Skalden WTB3)
	21:50	44	07:30 (WT163)	20:59	52	20:26 (WT-ATS)	19:50			18:44	20	18:16 (WT01-VLS)	16:52	46	16:19 (WT-MER)	16:39	45	15:22 (Skalden WT2)
21	05:54		06:45 (WT163)	06:40		19:00 (GC&T WT1)	07:28			08:17		17:27 (GC&T WT3)	08:11		08:53 (Skalden WTB4)	08:46		10:39 (Skalden WTB3)
	21:49	45	07:30 (WT163)	20:57	54	20:25 (WT-ATS)	19:48			18:42	22	17:49 (GC&T WT3)	16:51	46	16:19 (WT-MER)	16:40	45	15:23 (Skalden WT2)
22	05:55		06:45 (WT163)	06:41		18:59 (GC&T WT1)	07:30			08:19		17:26 (GC&T WT3)	08:12		08:52 (Skalden WTB4)	08:47		10:39 (Skalden WTB3)
	21:48	45	07:30 (WT163)	20:54	56	20:25 (WT-ATS)	19:46			18:40	24	17:50 (GC&T WT3)	16:50	46	16:18 (WT-MER)	16:40	45	15:23 (Skalden WT2)
23	05:56		06:45 (WT163)	06:43		18:56 (GC&T WT1)	07:32			08:21		17:25 (GC&T WT3)	08:14		08:53 (Skalden WTB4)	08:47		10:40 (Skalden WTB3)
	21:46	45	07:30 (WT163)	20:52	58	20:23 (WT-ATS)	19:43			18:38	25	17:50 (GC&T WT3)	16:49	43	16:17 (WT-MER)	16:41	45	15:24 (Skalden WT2)
24	05:58		06:45 (WT163)	06:45		18:55 (GC&T WT1)	07:33			08:23		17:25 (GC&T WT3)	08:15		08:54 (Skalden WTB4)	08:48		10:41 (Skalden WTB3)
	21:45	46	07:31 (WT163)	20:50	59	20:23 (WT-ATS)	19:41			18:36	26	17:51 (GC&T WT3)	16:48	40	16:16 (WT-MER)	16:41	44	15:24 (Skalden WT2)
25	05:59		06:45 (WT163)	06:46		18:53 (GC&T WT1)	07:35			07:24		16:24 (GC&T WT3)	08:17		08:54 (Skalden WTB4)	08:48		10:41 (Skalden WTB3)
	21:44	46	07:31 (WT163)	20:48	59	20:21 (WT-ATS)	19:39			17:34	28	16:52 (GC&T WT3)	16:47	39	16:15 (WT-MER)	16:42	44	15:24 (Skalden WT2)
26	06:01		06:45 (WT163)	06:48		18:53 (GC&T WT1)	07:36			07:26		16:23 (GC&T WT3)	08:18		08:55 (Skalden WTB4)	08:49		10:42 (Skalden WTB3)
	21:42	46	07:31 (WT163)	20:46	57	20:20 (WT-ATS)	19:37			17:32	28	16:51 (GC&T WT3)	16:46	36	16:14 (WT-MER)	16:43	44	15:26 (Skalden WT2)
27	06:02		06:44 (WT163)	06:49		18:51 (GC&T WT1)	07:38			07:28		16:23 (GC&T WT3)	08:20		08:56 (Skalden WTB4)	08:49		10:43 (Skalden WTB3)
	21:41	47	07:31 (WT163)	20:44	55	20:17 (WT-ATS)	19:34			17:30	28	16:51 (GC&T WT3)	16:45	34	16:13 (WT-MER)	16:44	43	15:26 (Skalden WT2)
28	06:03		06:45 (WT163)	06:51		18:50 (GC&T WT1)	07:40			07:29		16:23 (GC&T WT3)	08:21		08:56 (Skalden WTB4)	08:49		10:44 (Skalden WTB3)
	21:39	46	07:31 (WT163)	20:42	48	20:13 (WT-ATS)	19:32			17:28	28	16:51 (GC&T WT3)	16:44	31	16:12 (WT-MER)	16:44	41	15:26 (Skalden WT2)
29	06:05		06:45 (WT163)	06:52		18:49 (GC&T WT1)	07:41			07:31		16:23 (GC&T WT3)	08:23		08:57 (Skalden WTB4)	08:49		10:44 (Skalden WTB3)
	21:38	46	07:31 (WT163)	20:40	46	19:35 (GC&T WT1)	19:30			17:26	28	16:51 (GC&T WT3)	16:44	27	16:11 (WT-MER)	16:45	41	15:26 (Skalden WT2)
30	06:06		06:44 (WT163)	06:54		18:49 (GC&T WT1)	07:43			07:33		16:24 (GC&T WT3)	08:24		08:58 (Skalden WTB4)	08:49		10:45 (Skalden WTB3)
	21:37	46	07:30 (WT163)	20:37	46	19:35 (GC&T WT1)	19:28			17:25	27	16:51 (GC&T WT3)	16:43	26	16:11 (WT-MER)	16:46	40	15:27 (Skalden WT2)
31	06:08		06:45 (WT163)	06:56		18:47 (GC&T WT1)				07:35		16:24 (GC&T WT3)				08:49		10:47 (Skalden WTB3)
	21:35	46	07:31 (WT163)	20:35	48	19:35 (GC&T WT1)				17:23	26	16:50 (GC&T WT3)				16:47	37	15:27 (Skalden WT2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case	1255			1428			798			560			903			1129		
Sun reduction	0,45			0,47			0,43			0,36			0,26			0,21		
Oper. time red.	0,95			0,95			0,95			0,95			0,95			0,95		
Wind dir. red.	0,66			0,62			0,61			0,68			0,63			0,67		
Total reduction	0,28			0,28			0,26			0,24			0,16			0,14		
Total, real	357			396			204			132			141			154		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: E - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		10:33 (Skalden WTB3)	08:24		09:12 (Skalden WTB4)	07:32		17:13 (GC&T WT3)	07:23			06:20		19:17 (GC&T WT1)	05:37		06:15 (WT163)
	16:48	64	15:45 (Skalden WT2)	17:35	45	16:55 (WT-MER)	18:25	32	17:59 (WT01-VLS)	20:17			21:06	70	20:29 (WT-ATS)	21:50	46	07:01 (WT163)
2	08:49		10:34 (Skalden WTB3)	08:22		09:14 (Skalden WTB4)	07:30		17:14 (GC&T WT3)	07:21			06:18		19:17 (GC&T WT1)	05:36		06:16 (WT163)
	16:49	63	15:45 (Skalden WT2)	17:36	41	16:55 (WT-MER)	18:26	33	18:01 (WT01-VLS)	20:19			21:08	69	20:29 (WT-ATS)	21:51	46	07:02 (WT163)
3	08:49		10:34 (Skalden WTB3)	08:21		09:14 (Skalden WTB4)	07:28		17:16 (GC&T WT3)	07:19			06:16		19:19 (GC&T WT1)	05:35		06:16 (WT163)
	16:50	62	15:45 (Skalden WT2)	17:38	38	16:54 (WT-MER)	18:28	33	18:03 (WT01-VLS)	20:20			21:09	66	20:29 (WT-ATS)	21:52	46	07:02 (WT163)
4	08:49		10:35 (Skalden WTB3)	08:19		09:16 (Skalden WTB4)	07:26		17:18 (GC&T WT3)	07:17		19:56 (WT07_Sadaci)	06:15		19:19 (GC&T WT1)	05:34		06:15 (WT163)
	16:51	62	15:46 (Skalden WT2)	17:40	33	16:53 (WT-MER)	18:30	32	18:05 (WT01-VLS)	20:22	1	19:57 (WT07_Sadaci)	21:11	64	20:28 (WT-ATS)	21:53	47	07:02 (WT163)
5	08:49		10:36 (Skalden WTB3)	08:18		09:19 (Skalden WTB4)	07:24		17:20 (GC&T WT3)	07:14		19:54 (WT07_Sadaci)	06:13		19:19 (GC&T WT1)	05:34		06:16 (WT163)
	16:53	60	15:46 (Skalden WT2)	17:42	27	16:53 (WT-MER)	18:32	28	18:06 (WT01-VLS)	20:24	4	19:58 (WT07_Sadaci)	21:13	61	20:27 (WT-ATS)	21:54	46	07:02 (WT163)
6	08:48		10:37 (Skalden WTB3)	08:16		16:37 (WT-MER)	07:21		17:48 (WT01-VLS)	07:12		19:52 (WT07_Sadaci)	06:11		19:20 (GC&T WT1)	05:33		06:16 (WT163)
	16:54	58	15:46 (Skalden WT2)	17:44	15	16:52 (WT-MER)	18:33	20	18:08 (WT01-VLS)	20:25	7	19:59 (WT07_Sadaci)	21:14	58	20:26 (WT-ATS)	21:55	46	07:02 (WT163)
7	08:48		10:38 (Skalden WTB3)	08:14		16:38 (WT-MER)	07:19		17:48 (WT01-VLS)	07:10		19:51 (WT07_Sadaci)	06:09		19:21 (GC&T WT1)	05:32		06:16 (WT163)
	16:55	58	15:47 (Skalden WT2)	17:45	12	16:50 (WT-MER)	18:35	22	18:10 (WT01-VLS)	20:27	10	20:01 (WT07_Sadaci)	21:16	54	20:25 (WT-ATS)	21:56	47	07:03 (WT163)
8	08:48		10:39 (Skalden WTB3)	08:13		16:42 (WT-MER)	07:17		17:48 (WT01-VLS)	07:08		19:50 (WT07_Sadaci)	06:08		19:21 (GC&T WT1)	05:32		06:17 (WT163)
	16:56	56	15:47 (Skalden WT2)	17:47	5	16:47 (WT-MER)	18:37	23	18:11 (WT01-VLS)	20:28	13	20:03 (WT07_Sadaci)	21:17	50	20:23 (WT-ATS)	21:57	46	07:03 (WT163)
9	08:47		10:39 (Skalden WTB3)	08:11			07:15		17:47 (WT01-VLS)	07:05		19:50 (WT07_Sadaci)	06:06		06:33 (WT163)	05:31		06:17 (WT163)
	16:58	54	15:46 (Skalden WT2)	17:49			18:39	23	18:10 (WT01-VLS)	20:30	14	20:04 (WT07_Sadaci)	21:19	53	20:21 (WT-ATS)	21:58	46	07:03 (WT163)
10	08:47		10:41 (Skalden WTB3)	08:09			07:13		17:48 (WT01-VLS)	07:03		19:50 (WT07_Sadaci)	06:04		06:29 (WT163)	05:31		06:17 (WT163)
	16:59	52	15:47 (Skalden WT2)	17:51			18:40	21	18:09 (WT01-VLS)	20:32	16	20:06 (WT07_Sadaci)	21:20	49	19:56 (GC&T WT1)	21:59	46	07:03 (WT163)
11	08:46		10:42 (Skalden WTB3)	08:07			07:10		17:49 (WT01-VLS)	07:01		19:36 (GC&T WT1)	06:03		06:28 (WT163)	05:31		06:18 (WT163)
	17:00	50	15:47 (Skalden WT2)	17:53			18:42	19	18:08 (WT01-VLS)	20:33	30	20:06 (WT07_Sadaci)	21:22	51	19:55 (GC&T WT1)	21:59	46	07:04 (WT163)
12	08:46		10:44 (Skalden WTB3)	08:06			07:08		17:51 (WT01-VLS)	06:59		19:32 (GC&T WT1)	06:01		06:26 (WT163)	05:30		06:17 (WT163)
	17:02	45	15:47 (Skalden WT2)	17:54			18:44	16	18:07 (WT01-VLS)	20:35	31	20:03 (WT07_Sadaci)	21:23	52	19:54 (GC&T WT1)	22:00	46	07:03 (WT163)
13	08:45		10:45 (Skalden WTB3)	08:04			07:06		17:52 (WT01-VLS)	06:57		19:29 (GC&T WT1)	06:00		06:25 (WT163)	05:30		06:17 (WT163)
	17:03	42	15:47 (Skalden WT2)	17:56			18:45	12	18:04 (WT01-VLS)	20:37	33	20:02 (WT07_Sadaci)	21:25	52	19:53 (GC&T WT1)	22:01	46	07:03 (WT163)
14	08:44		09:17 (Skalden WTB4)	08:02			07:04		17:56 (WT01-VLS)	06:55		19:27 (GC&T WT1)	05:58		06:23 (WT163)	05:30		06:18 (WT163)
	17:05	41	15:47 (Skalden WT2)	17:58			18:47	4	18:00 (WT01-VLS)	20:38	31	19:58 (WT07_Sadaci)	21:26	51	19:50 (GC&T WT1)	22:01	46	07:04 (WT163)
15	08:43		09:14 (Skalden WTB4)	08:00		17:23 (GC&T WT3)	07:01			06:52		19:26 (GC&T WT1)	05:56		06:22 (WT163)	05:30		06:18 (WT163)
	17:06	39	15:47 (Skalden WT2)	18:00	6	17:29 (GC&T WT3)	18:49			20:40	33	19:59 (GC&T WT1)	21:28	50	19:49 (GC&T WT1)	22:02	46	07:04 (WT163)
16	08:43		09:13 (Skalden WTB4)	07:58		17:19 (GC&T WT3)	06:59			06:50		19:24 (GC&T WT1)	05:55		06:21 (WT163)	05:30		06:18 (WT163)
	17:08	36	15:47 (Skalden WT2)	18:02	14	17:33 (GC&T WT3)	18:50			20:42	36	20:00 (GC&T WT1)	21:29	45	19:46 (GC&T WT1)	22:02	46	07:04 (WT163)
17	08:42		09:12 (Skalden WTB4)	07:56		17:17 (GC&T WT3)	06:57			06:48		19:23 (GC&T WT1)	05:54		06:19 (WT163)	05:30		06:19 (WT163)
	17:09	35	15:46 (Skalden WT2)	18:03	18	17:35 (GC&T WT3)	18:52			20:43	38	20:01 (GC&T WT1)	21:31	36	06:55 (WT163)	22:03	45	07:04 (WT163)
18	08:41		09:12 (Skalden WTB4)	07:54		17:16 (GC&T WT3)	06:55			06:46		19:22 (GC&T WT1)	05:52		06:18 (WT163)	05:30		06:19 (WT163)
	17:11	36	16:39 (WT-MER)	18:05	21	17:37 (GC&T WT3)	18:54			20:45	40	20:02 (GC&T WT1)	21:32	38	06:56 (WT163)	22:03	46	07:05 (WT163)
19	08:40		09:10 (Skalden WTB4)	07:52		17:15 (GC&T WT3)	06:53			06:44		19:21 (GC&T WT1)	05:51		06:18 (WT163)	05:30		06:19 (WT163)
	17:12	40	16:40 (WT-MER)	18:07	23	17:38 (GC&T WT3)	18:55			20:47	42	20:03 (GC&T WT1)	21:34	39	06:57 (WT163)	22:04	46	07:05 (WT163)
20	08:39		09:10 (Skalden WTB4)	07:51		17:14 (GC&T WT3)	06:50			06:42		19:20 (GC&T WT1)	05:49		06:18 (WT163)	05:30		06:19 (WT163)
	17:14	39	16:42 (WT-MER)	18:09	25	17:39 (GC&T WT3)	18:57			20:48	43	20:03 (GC&T WT1)	21:35	40	06:58 (WT163)	22:04	46	07:05 (WT163)
21	08:38		09:10 (Skalden WTB4)	07:49		17:13 (GC&T WT3)	06:48			06:40		19:19 (GC&T WT1)	05:48		06:17 (WT163)	05:30		06:19 (WT163)
	17:16	36	16:44 (WT-MER)	18:11	27	17:40 (GC&T WT3)	18:59			20:50	53	20:23 (WT-ATS)	21:37	42	06:59 (WT163)	22:04	46	07:05 (WT163)
22	08:37		09:10 (Skalden WTB4)	07:47		17:13 (GC&T WT3)	06:46			06:38		19:19 (GC&T WT1)	05:47		06:16 (WT163)	05:30		06:20 (WT163)
	17:17	36	16:46 (WT-MER)	18:12	27	17:40 (GC&T WT3)	19:00			20:51	58	20:25 (WT-ATS)	21:38	42	06:58 (WT163)	22:04	46	07:06 (WT163)
23	08:36		09:10 (Skalden WTB4)	07:45		17:12 (GC&T WT3)	06:44			06:36		19:18 (GC&T WT1)	05:46		06:16 (WT163)	05:30		06:20 (WT163)
	17:19	39	16:48 (WT-MER)	18:14	28	17:40 (GC&T WT3)	19:02			20:53	62	20:26 (WT-ATS)	21:39	43	06:59 (WT163)	22:04	46	07:06 (WT163)
24	08:35		09:09 (Skalden WTB4)	07:42		17:12 (GC&T WT3)	06:41			06:34		19:18 (GC&T WT1)	05:44		06:16 (WT163)	05:31		06:20 (WT163)
	17:21	43	16:50 (WT-MER)	18:16	29	17:41 (GC&T WT3)	19:04			20:55	65	20:28 (WT-ATS)	21:41	43	06:59 (WT163)	22:05	46	07:06 (WT163)
25	08:33		09:10 (Skalden WTB4)	07:40		17:12 (GC&T WT3)	06:39			06:32		19:17 (GC&T WT1)	05:43		06:16 (WT163)	05:31		06:21 (WT163)
	17:22	44	16:52 (WT-MER)	18:18	29	17:41 (GC&T WT3)	19:05			20:56	68	20:28 (WT-ATS)	21:42	44	07:00 (WT163)	22:05	45	07:06 (WT163)
26	08:32		09:10 (Skalden WTB4)	07:38		17:12 (GC&T WT3)	06:37			06:30		19:17 (GC&T WT1)	05:42		06:15 (WT163)	05:31		06:20 (WT163)
	17:24	47	16:54 (WT-MER)	18:19	28	17:40 (GC&T WT3)	19:07			20:58	70	20:29 (WT-ATS)	21:43	45	07:00 (WT163)	22:05	46	07:06 (WT163)
27	08:31		09:10 (Skalden WTB4)	07:36		17:12 (GC&T WT3)	06:34			06:28		19:17 (GC&T WT1)	05:41		06:15 (WT163)	05:32		06:21 (WT163)
	17:26	47	16:54 (WT-MER)	18:21	27	17:39 (GC&T WT3)	19:09			21:00	69	20:29 (WT-ATS)	21:44	45	07:00 (WT163)	22:05	46	07:07 (WT163)
28	08:30		09:10 (Skalden WTB4)	07:34		17:12 (GC&T WT3)	06:32			06:26		19:17 (GC&T WT1)	05:40		06:15 (WT163)	05:32		06:21 (WT163)
	17:28	48	16:55 (WT-MER)	18:23	30	17:57 (WT01-VLS)	19:10			21:01	70	20:29 (WT-ATS)	21:46	45	07:00 (WT163)	22:05	46	07:07 (WT163)
29	08:28		09:10 (Skalden WTB4)				07:30			06:24		19:17 (GC&T WT1)	05:39		06:16 (WT163)	05:33		06:22 (WT163)
	17:29	48	16:55 (WT-MER)				20:12			21:03	71	20:30 (WT-ATS)	21:47	45	07:01 (WT163)	22:04	46	07:08 (WT163)
30	08:27		09:11 (Skalden WTB4)				07:28			06:22		19:17 (GC&T WT1)	05:38		06:16 (WT163)	05:33		06:21 (WT163)
	17:31	47	16:55 (WT-MER)				20:14			21:04	71	20:30 (WT-ATS)	21:48	45	07:01 (WT163)	22:04	46	07:07 (WT163)
31	08:25		09:12 (Skalden WTB4)				07:25						05:37		06:15 (WT163)			
	17:33	46	16:55 (WT-MER)				20:15						21:49	46	07:01 (WT163)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		1473			548			318			1079			1533			1380	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,65			0,66			0,65			0,58			0,63			0,68	
Total reduction		0,15			0,19			0,23			0,25			0,28			0,29	
Total, real		217			102			73			272			426			402	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: E - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		06:22 (WT163)	06:09		06:37 (WT163)	06:57		19:35 (GC&T WT1)	07:44		18:30 (WT01-VLS)	07:36			08:26		10:24 (Skalden WTB3)
	22:04	46	07:08 (WT163)	21:33	52	20:05 (GC&T WT1)	20:33	29	20:04 (WT07_Sadaci)	19:25	15	18:45 (WT01-VLS)	17:21			16:42	50	15:29 (Skalden WT2)
2	05:35		06:21 (WT163)	06:11		06:39 (WT163)	06:59		19:48 (WT07_Sadaci)	07:46		18:29 (WT01-VLS)	07:38			08:27		10:23 (Skalden WTB3)
	22:04	46	07:07 (WT163)	21:32	51	20:06 (GC&T WT1)	20:31	16	20:04 (WT07_Sadaci)	19:23	18	18:47 (WT01-VLS)	17:19			16:42	52	15:29 (Skalden WT2)
3	05:35		06:22 (WT163)	06:12		06:40 (WT163)	07:00		19:48 (WT07_Sadaci)	07:48		18:26 (WT01-VLS)	07:40		16:10 (WT-MER)	08:29		10:24 (Skalden WTB3)
	22:03	46	07:08 (WT163)	21:30	53	20:29 (WT-ATS)	20:29	15	20:03 (WT07_Sadaci)	19:21	21	18:47 (WT01-VLS)	17:17	7	16:17 (WT-MER)	16:41	52	15:30 (Skalden WT2)
4	05:36		06:22 (WT163)	06:14		06:44 (WT163)	07:02		19:47 (WT07_Sadaci)	07:49		18:26 (WT01-VLS)	07:42		16:08 (WT-MER)	08:30		10:23 (Skalden WTB3)
	22:03	46	07:08 (WT163)	21:28	53	20:32 (WT-ATS)	20:27	13	20:00 (WT07_Sadaci)	19:19	22	18:48 (WT01-VLS)	17:16	12	16:20 (WT-MER)	16:40	56	15:31 (Skalden WT2)
5	05:37		06:23 (WT163)	06:15		19:31 (GC&T WT1)	07:03		19:48 (WT07_Sadaci)	07:51		18:25 (WT01-VLS)	07:43		16:06 (WT-MER)	08:31		10:23 (Skalden WTB3)
	22:02	46	07:09 (WT163)	21:27	52	20:34 (WT-ATS)	20:24	10	19:58 (WT07_Sadaci)	19:16	23	18:48 (WT01-VLS)	17:14	16	16:22 (WT-MER)	16:40	58	15:32 (Skalden WT2)
6	05:38		06:22 (WT163)	06:17		19:30 (GC&T WT1)	07:05		19:48 (WT07_Sadaci)	07:52		18:24 (WT01-VLS)	07:45		08:48 (Skalden WTB4)	08:32		10:23 (Skalden WTB3)
	22:02	46	07:08 (WT163)	21:25	56	20:35 (WT-ATS)	20:22	7	19:55 (WT07_Sadaci)	19:14	23	18:47 (WT01-VLS)	17:12	28	16:23 (WT-MER)	16:40	58	15:32 (Skalden WT2)
7	05:38		06:22 (WT163)	06:18		19:30 (GC&T WT1)	07:06		19:49 (WT07_Sadaci)	07:54		18:24 (WT01-VLS)	07:47		08:46 (Skalden WTB4)	08:34		10:23 (Skalden WTB3)
	22:01	47	07:09 (WT163)	21:23	59	20:36 (WT-ATS)	20:20	5	19:54 (WT07_Sadaci)	19:12	21	18:45 (WT01-VLS)	17:11	34	16:24 (WT-MER)	16:39	59	15:32 (Skalden WT2)
8	05:39		06:23 (WT163)	06:20		19:28 (GC&T WT1)	07:08		19:50 (WT07_Sadaci)	07:56		17:58 (GC&T WT3)	07:49		08:45 (Skalden WTB4)	08:35		10:23 (Skalden WTB3)
	22:01	46	07:09 (WT163)	21:22	62	20:36 (WT-ATS)	20:18	1	19:51 (WT07_Sadaci)	19:10	25	18:43 (WT01-VLS)	17:09	38	16:25 (WT-MER)	16:39	62	15:34 (Skalden WT2)
9	05:40		06:23 (WT163)	06:21		19:28 (GC&T WT1)	07:10			07:57		17:53 (GC&T WT3)	07:50		08:44 (Skalden WTB4)	08:36		10:23 (Skalden WTB3)
	22:00	46	07:09 (WT163)	21:20	65	20:38 (WT-ATS)	20:15			19:08	31	18:40 (WT01-VLS)	17:07	43	16:26 (WT-MER)	16:39	62	15:34 (Skalden WT2)
10	05:41		06:23 (WT163)	06:23		19:27 (GC&T WT1)	07:11			07:59		17:51 (GC&T WT3)	07:52		08:43 (Skalden WTB4)	08:37		10:23 (Skalden WTB3)
	21:59	47	07:10 (WT163)	21:18	67	20:37 (WT-ATS)	20:13			19:05	32	18:38 (WT01-VLS)	17:06	44	16:25 (WT-MER)	16:38	63	15:34 (Skalden WT2)
11	05:42		06:24 (WT163)	06:24		19:26 (GC&T WT1)	07:13			08:01		17:49 (GC&T WT3)	07:54		08:42 (Skalden WTB4)	08:38		10:23 (Skalden WTB3)
	21:59	46	07:10 (WT163)	21:16	69	20:37 (WT-ATS)	20:11			19:03	32	18:36 (WT01-VLS)	17:04	47	16:26 (WT-MER)	16:38	64	15:35 (Skalden WT2)
12	05:43		06:24 (WT163)	06:26		19:26 (GC&T WT1)	07:14			08:02		17:47 (GC&T WT3)	07:55		08:42 (Skalden WTB4)	08:39		10:24 (Skalden WTB3)
	21:58	46	07:10 (WT163)	21:14	69	20:38 (WT-ATS)	20:09			19:01	31	18:33 (WT01-VLS)	17:03	47	16:26 (WT-MER)	16:38	63	15:35 (Skalden WT2)
13	05:44		06:24 (WT163)	06:27		19:25 (GC&T WT1)	07:16			08:04		17:46 (GC&T WT3)	07:57		08:42 (Skalden WTB4)	08:40		10:24 (Skalden WTB3)
	21:57	46	07:10 (WT163)	21:12	70	20:37 (WT-ATS)	20:06			18:59	30	18:31 (WT01-VLS)	17:01	48	16:27 (WT-MER)	16:38	64	15:36 (Skalden WT2)
14	05:45		06:24 (WT163)	06:29		19:25 (GC&T WT1)	07:17			08:06		17:45 (GC&T WT3)	07:59		08:42 (Skalden WTB4)	08:41		10:24 (Skalden WTB3)
	21:56	46	07:10 (WT163)	21:10	70	20:37 (WT-ATS)	20:04			18:57	27	18:12 (GC&T WT3)	17:00	48	16:27 (WT-MER)	16:38	65	15:36 (Skalden WT2)
15	05:47		06:24 (WT163)	06:30		19:24 (GC&T WT1)	07:19			08:07		17:45 (GC&T WT3)	08:01		08:43 (Skalden WTB4)	08:42		10:25 (Skalden WTB3)
	21:55	46	07:10 (WT163)	21:09	71	20:37 (WT-ATS)	20:02			18:55	27	18:12 (GC&T WT3)	16:59	47	16:27 (WT-MER)	16:38	64	15:37 (Skalden WT2)
16	05:48		06:25 (WT163)	06:32		19:24 (GC&T WT1)	07:21			08:09		17:43 (GC&T WT3)	08:02		08:43 (Skalden WTB4)	08:43		10:25 (Skalden WTB3)
	21:54	45	07:10 (WT163)	21:07	71	20:37 (WT-ATS)	19:59			18:52	29	18:12 (GC&T WT3)	16:57	47	16:27 (WT-MER)	16:38	65	15:37 (Skalden WT2)
17	05:49		06:25 (WT163)	06:34		19:24 (GC&T WT1)	07:22			08:11		17:43 (GC&T WT3)	08:04		08:43 (Skalden WTB4)	08:44		10:25 (Skalden WTB3)
	21:53	45	07:10 (WT163)	21:05	68	20:35 (WT-ATS)	19:57			18:50	29	18:12 (GC&T WT3)	16:56	44	16:25 (WT-MER)	16:39	65	15:37 (Skalden WT2)
18	05:50		06:25 (WT163)	06:35		19:24 (GC&T WT1)	07:24			08:12		17:43 (GC&T WT3)	08:06		08:43 (Skalden WTB4)	08:44		10:25 (Skalden WTB3)
	21:52	44	07:09 (WT163)	21:03	68	20:35 (WT-ATS)	19:55			18:48	29	18:12 (GC&T WT3)	16:55	43	16:24 (WT-MER)	16:39	66	15:38 (Skalden WT2)
19	05:51		06:25 (WT163)	06:37		19:23 (GC&T WT1)	07:25			08:14		17:44 (GC&T WT3)	08:07		08:44 (Skalden WTB4)	08:45		10:26 (Skalden WTB3)
	21:51	44	07:09 (WT163)	21:01	66	20:33 (WT-ATS)	19:53			18:46	28	18:12 (GC&T WT3)	16:53	39	16:22 (WT-MER)	16:39	67	15:39 (Skalden WT2)
20	05:53		06:26 (WT163)	06:38		19:24 (GC&T WT1)	07:27			08:16		17:43 (GC&T WT3)	08:09		08:45 (Skalden WTB4)	08:46		10:26 (Skalden WTB3)
	21:50	44	07:10 (WT163)	20:59	62	20:32 (WT-ATS)	19:50			18:44	27	18:10 (GC&T WT3)	16:52	36	16:21 (WT-MER)	16:39	65	15:38 (Skalden WT2)
21	05:54		06:27 (WT163)	06:40		19:23 (GC&T WT1)	07:28			08:17		17:44 (GC&T WT3)	08:11		08:46 (Skalden WTB4)	08:46		10:27 (Skalden WTB3)
	21:49	42	07:09 (WT163)	20:57	57	20:29 (WT-ATS)	19:48			18:42	26	18:10 (GC&T WT3)	16:51	36	16:20 (WT-MER)	16:40	65	15:39 (Skalden WT2)
22	05:55		06:27 (WT163)	06:41		19:24 (GC&T WT1)	07:30			08:19		17:44 (GC&T WT3)	08:12		08:46 (Skalden WTB4)	08:47		10:27 (Skalden WTB3)
	21:48	42	07:09 (WT163)	20:54	51	20:27 (WT-ATS)	19:46			18:40	25	18:09 (GC&T WT3)	16:50	39	16:18 (WT-MER)	16:40	65	15:39 (Skalden WT2)
23	05:56		06:27 (WT163)	06:43		19:24 (GC&T WT1)	07:32			08:21		17:45 (GC&T WT3)	08:14		08:47 (Skalden WTB4)	08:47		10:28 (Skalden WTB3)
	21:46	41	07:08 (WT163)	20:52	43	20:07 (GC&T WT1)	19:43			18:38	23	18:08 (GC&T WT3)	16:49	40	16:17 (WT-MER)	16:41	65	15:40 (Skalden WT2)
24	05:58		06:28 (WT163)	06:45		19:25 (GC&T WT1)	07:33			08:23		17:47 (GC&T WT3)	08:15		08:49 (Skalden WTB4)	08:48		10:28 (Skalden WTB3)
	21:45	40	07:08 (WT163)	20:50	41	20:06 (GC&T WT1)	19:41			18:36	20	18:07 (GC&T WT3)	16:48	36	16:16 (WT-MER)	16:41	66	15:41 (Skalden WT2)
25	05:59		06:29 (WT163)	06:46		19:25 (GC&T WT1)	07:35			07:24		16:48 (GC&T WT3)	08:17		08:49 (Skalden WTB4)	08:48		10:28 (Skalden WTB3)
	21:44	38	07:07 (WT163)	20:48	40	20:05 (GC&T WT1)	19:39			17:34	17	17:05 (GC&T WT3)	16:47	35	15:23 (Skalden WT2)	16:42	66	15:41 (Skalden WT2)
26	06:01		06:29 (WT163)	06:48		19:26 (GC&T WT1)	07:36			07:26		16:50 (GC&T WT3)	08:18		08:51 (Skalden WTB4)	08:49		10:30 (Skalden WTB3)
	21:42	38	07:07 (WT163)	20:46	38	20:04 (GC&T WT1)	19:37			17:32	12	17:02 (GC&T WT3)	16:46	35	15:25 (Skalden WT2)	16:43	65	15:42 (Skalden WT2)
27	06:02		06:30 (WT163)	06:49		19:26 (GC&T WT1)	07:38			07:28		16:55 (GC&T WT3)	08:20		08:53 (Skalden WTB4)	08:49		10:30 (Skalden WTB3)
	21:41	42	19:54 (GC&T WT1)	20:44	36	20:02 (GC&T WT1)	19:34			17:30	1	16:56 (GC&T WT3)	16:45	37	15:26 (Skalden WT2)	16:44	65	15:42 (Skalden WT2)
28	06:03		06:32 (WT163)	06:51		19:28 (GC&T WT1)	07:40			07:29			08:21		08:55 (Skalden WTB4)	08:49		10:30 (Skalden WTB3)
	21:39	47	19:58 (GC&T WT1)	20:42	33	20:01 (GC&T WT1)	19:32			17:28			16:44	41	15:26 (Skalden WT2)	16:44	66	15:43 (Skalden WT2)
29	06:05		06:33 (WT163)	06:52		19:28 (GC&T WT1)	07:41			07:31			08:23		10:26 (Skalden WTB3)	08:49		10:31 (Skalden WTB3)
	21:38	50	20:00 (GC&T WT1)	20:40	31	19:59 (WT07_Sadaci)	19:30			17:26			16:44	42	15:28 (Skalden WT2)	16:45	64	15:43 (Skalden WT2)
30	06:06		06:34 (WT163)	06:54		19:30 (GC&T WT1)	07:43		18:33 (WT01-VLS)	07:33			08:24		10:26 (Skalden WTB3)	08:49		10:32 (Skalden WTB3)
	21:37	52	20:02 (GC&T WT1)	20:37	33	20:03 (WT07_Sadaci)	19:28	10	18:43 (WT01-VLS)	17:25			16:43	45	15:29 (Skalden WT2)	16:46	64	15:43 (Skalden WT2)
31	06:08		06:36 (WT163)	06:56		19:32 (GC&T WT1)				07:35						08:49		10:32 (Skalden WTB3)
	21:35	52	20:04 (GC&T WT1)	20:35	31	20:03 (WT07_Sadaci)				17:23						16:47	64	15:44 (Skalden WT2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		1398			1688			106			644			1054			1935	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,68			0,58			0,59			0,66			0,64			0,67	
Total reduction		0,29			0,26			0,25			0,23			0,16			0,14	
Total, real		408			438			26			149			166			264	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: F - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		09:48 (Skalden WTB2)	08:24		09:28 (Skalden WTB3)	07:32			07:23			06:20			05:37		06:04 (WT163)
	16:48	119	15:30 (Skalden WT2)	17:35	72	17:04 (WTSH)	18:25			20:17			21:06			21:50	60	21:01 (WT-ATS)
2	08:49		09:48 (Skalden WTB2)	08:22		09:29 (Skalden WTB3)	07:30			07:21			06:18			05:36		06:04 (WT163)
	16:49	120	15:31 (Skalden WT2)	17:36	70	17:04 (WTSH)	18:26			20:19			21:08			21:51	60	21:01 (WT-ATS)
3	08:49		09:48 (Skalden WTB2)	08:21		09:29 (Skalden WTB3)	07:28		17:37 (GC&T WT3)	07:19			06:16			05:35		06:04 (WT163)
	16:50	120	15:31 (Skalden WT2)	17:38	69	17:03 (WTSH)	18:28	14	17:51 (GC&T WT3)	20:20			21:09			21:52	60	21:01 (WT-ATS)
4	08:49		09:49 (Skalden WTB2)	08:19		09:30 (Skalden WTB3)	07:26		17:34 (GC&T WT3)	07:17			06:15			05:34		06:03 (WT163)
	16:51	119	15:31 (Skalden WT2)	17:40	65	17:00 (WTSH)	18:30	20	17:54 (GC&T WT3)	20:22			21:11			21:53	61	21:01 (WT-ATS)
5	08:49		09:50 (Skalden WTB2)	08:18		09:31 (Skalden WTB3)	07:24		17:31 (GC&T WT3)	07:14			06:13			05:34		06:04 (WT163)
	16:53	118	15:32 (Skalden WT2)	17:42	62	16:59 (WT-MER)	18:32	25	17:56 (GC&T WT3)	20:24			21:13			21:54	60	21:01 (WT-ATS)
6	08:48		09:50 (Skalden WTB2)	08:16		09:31 (Skalden WTB3)	07:21		17:29 (GC&T WT3)	07:12			06:11			05:33		06:04 (WT163)
	16:54	117	15:32 (Skalden WT2)	17:44	60	16:59 (WT-MER)	18:33	29	17:58 (GC&T WT3)	20:25			21:14			21:55	58	21:00 (WT-ATS)
7	08:48		09:51 (Skalden WTB2)	08:14		08:41 (Skalden WTB4)	07:19		17:28 (GC&T WT3)	07:10			06:09			05:32		06:04 (WT163)
	16:55	117	15:33 (Skalden WT2)	17:45	63	16:58 (WT-MER)	18:35	31	17:59 (GC&T WT3)	20:27			21:16			21:56	59	21:01 (WT-ATS)
8	08:48		09:51 (Skalden WTB2)	08:13		08:38 (Skalden WTB4)	07:17		17:27 (GC&T WT3)	07:08			06:08			05:32		06:05 (WT163)
	16:56	116	15:33 (Skalden WT2)	17:47	65	16:57 (WT-MER)	18:37	33	18:00 (GC&T WT3)	20:28			21:17			21:57	58	21:01 (WT-ATS)
9	08:47		09:36 (Skalden WTB3)	08:11		08:37 (Skalden WTB4)	07:15		17:25 (GC&T WT3)	07:05			06:06			05:32		06:04 (WT163)
	16:58	124	15:33 (Skalden WT2)	17:49	66	16:58 (WT-MER)	18:39	35	18:00 (GC&T WT3)	20:30			21:19			21:58	57	21:00 (WT-ATS)
10	08:47		09:35 (Skalden WTB3)	08:09		08:35 (Skalden WTB4)	07:13		17:24 (GC&T WT3)	07:03			06:04			05:31		06:05 (WT163)
	16:59	128	15:34 (Skalden WT2)	17:51	64	16:57 (WT-MER)	18:40	42	18:15 (WT01-VLS)	20:32			21:20			21:59	57	21:01 (WT-ATS)
11	08:46		09:34 (Skalden WTB3)	08:07		08:34 (Skalden WTB4)	07:10		17:24 (GC&T WT3)	07:01			06:03		20:44 (WT-ATS)	05:31		06:05 (WT163)
	17:00	128	15:34 (Skalden WT2)	17:53	58	16:55 (WT-MER)	18:42	48	18:17 (WT01-VLS)	20:33			21:22	6	20:50 (WT-ATS)	21:59	57	21:01 (WT-ATS)
12	08:46		09:33 (Skalden WTB3)	08:06		08:34 (Skalden WTB4)	07:08		17:23 (GC&T WT3)	06:59			06:01		20:40 (WT-ATS)	05:30		06:05 (WT163)
	17:02	128	15:34 (Skalden WT2)	17:55	50	16:53 (WT-MER)	18:44	52	18:19 (WT01-VLS)	20:35			21:23	12	20:52 (WT-ATS)	22:00	56	21:00 (WT-ATS)
13	08:45		09:32 (Skalden WTB3)	08:04		08:33 (Skalden WTB4)	07:06		17:22 (GC&T WT3)	06:57			06:00		20:39 (WT-ATS)	05:30		06:05 (WT163)
	17:03	129	15:34 (Skalden WT2)	17:56	35	16:51 (WT-MER)	18:45	56	18:20 (WT01-VLS)	20:37			21:25	16	20:55 (WT-ATS)	22:01	55	21:00 (WT-ATS)
14	08:44		09:32 (Skalden WTB3)	08:02		08:33 (Skalden WTB4)	07:04		17:22 (GC&T WT3)	06:55			05:58		20:37 (WT-ATS)	05:30		06:05 (WT163)
	17:05	128	15:35 (Skalden WT2)	17:58	22	08:55 (Skalden WTB4)	18:47	60	18:22 (WT01-VLS)	20:38			21:26	18	20:55 (WT-ATS)	22:01	55	21:00 (WT-ATS)
15	08:44		09:31 (Skalden WTB3)	08:00		08:33 (Skalden WTB4)	07:02		17:22 (GC&T WT3)	06:52			05:56		20:37 (WT-ATS)	05:30		06:06 (WT163)
	17:06	126	15:35 (Skalden WT2)	18:00	22	08:55 (Skalden WTB4)	18:49	62	18:24 (WT01-VLS)	20:40			21:28	20	20:57 (WT-ATS)	22:02	54	21:00 (WT-ATS)
16	08:43		09:30 (Skalden WTB3)	07:58		08:33 (Skalden WTB4)	06:59		17:22 (GC&T WT3)	06:50		20:11 (WT07_Sadaci)	05:55		20:36 (WT-ATS)	05:30		06:06 (WT163)
	17:08	125	15:35 (Skalden WT2)	18:02	22	08:55 (Skalden WTB4)	18:50	64	18:26 (WT01-VLS)	20:42	4	20:15 (WT07_Sadaci)	21:29	22	20:58 (WT-ATS)	22:02	54	21:00 (WT-ATS)
17	08:42		09:30 (Skalden WTB3)	07:56		08:33 (Skalden WTB4)	06:57		17:21 (GC&T WT3)	06:48		20:09 (WT07_Sadaci)	05:54		06:19 (WT163)	05:30		06:06 (WT163)
	17:09	121	15:35 (Skalden WT2)	18:04	21	08:54 (Skalden WTB4)	18:52	66	18:27 (WT01-VLS)	20:43	8	20:17 (WT07_Sadaci)	21:31	29	20:58 (WT-ATS)	22:03	53	21:00 (WT-ATS)
18	08:41		09:30 (Skalden WTB3)	07:54		08:33 (Skalden WTB4)	06:55		17:22 (GC&T WT3)	06:46		20:08 (WT07_Sadaci)	05:52		06:18 (WT163)	05:30		06:06 (WT163)
	17:11	113	15:35 (Skalden WT2)	18:05	21	08:54 (Skalden WTB4)	18:54	66	18:28 (WT01-VLS)	20:45	10	20:18 (WT07_Sadaci)	21:32	35	20:59 (WT-ATS)	22:03	53	21:00 (WT-ATS)
19	08:40		09:28 (Skalden WTB3)	07:52		08:34 (Skalden WTB4)	06:53		17:22 (GC&T WT3)	06:44		20:07 (WT07_Sadaci)	05:51		06:17 (WT163)	05:30		06:06 (WT163)
	17:12	110	15:34 (Skalden WT2)	18:07	19	08:53 (Skalden WTB4)	18:55	65	18:28 (WT01-VLS)	20:47	13	20:20 (WT07_Sadaci)	21:34	39	21:00 (WT-ATS)	22:04	53	21:00 (WT-ATS)
20	08:39		09:28 (Skalden WTB3)	07:51		08:35 (Skalden WTB4)	06:50		17:23 (GC&T WT3)	06:42		20:07 (WT07_Sadaci)	05:49		06:16 (WT163)	05:30		06:06 (WT163)
	17:14	108	15:34 (Skalden WT2)	18:09	17	08:52 (Skalden WTB4)	18:57	64	18:28 (WT01-VLS)	20:48	15	20:22 (WT07_Sadaci)	21:35	41	21:00 (WT-ATS)	22:04	55	21:01 (WT-ATS)
21	08:38		09:28 (Skalden WTB3)	07:49		08:37 (Skalden WTB4)	06:48		17:23 (GC&T WT3)	06:40		20:06 (WT07_Sadaci)	05:48		06:15 (WT163)	05:30		06:07 (WT163)
	17:16	106	15:34 (Skalden WT2)	18:11	13	08:50 (Skalden WTB4)	18:59	61	18:26 (WT01-VLS)	20:50	17	20:23 (WT07_Sadaci)	21:37	44	21:01 (WT-ATS)	22:04	55	21:02 (WT-ATS)
22	08:37		09:28 (Skalden WTB3)	07:47		08:39 (Skalden WTB4)	06:46		17:24 (GC&T WT3)	06:38		20:06 (WT07_Sadaci)	05:47		06:13 (WT163)	05:30		06:07 (WT163)
	17:17	112	16:46 (WT-MER)	18:12	8	08:47 (Skalden WTB4)	19:00	58	18:26 (WT01-VLS)	20:51	18	20:24 (WT07_Sadaci)	21:38	47	21:00 (WT-ATS)	22:04	55	21:02 (WT-ATS)
23	08:36		09:28 (Skalden WTB3)	07:45			06:44		17:26 (GC&T WT3)	06:36		20:06 (WT07_Sadaci)	05:46		06:12 (WT163)	05:30		06:07 (WT163)
	17:19	113	16:48 (WT-MER)	18:14			19:02	53	18:25 (WT01-VLS)	20:53	18	20:24 (WT07_Sadaci)	21:39	48	21:00 (WT-ATS)	22:04	54	21:02 (WT-ATS)
24	08:35		09:27 (Skalden WTB3)	07:42			06:41		17:27 (GC&T WT3)	06:34		20:07 (WT07_Sadaci)	05:44		06:11 (WT163)	05:31		06:07 (WT163)
	17:21	113	16:50 (WT-MER)	18:16			19:04	47	18:23 (WT01-VLS)	20:55	16	20:23 (WT07_Sadaci)	21:41	51	21:01 (WT-ATS)	22:05	53	21:01 (WT-ATS)
25	08:33		09:28 (Skalden WTB3)	07:40			06:39		17:29 (GC&T WT3)	06:32		20:07 (WT07_Sadaci)	05:43		06:10 (WT163)	05:31		06:08 (WT163)
	17:22	110	16:52 (WT-MER)	18:18			19:05	39	18:21 (WT01-VLS)	20:56	15	20:22 (WT07_Sadaci)	21:42	53	21:01 (WT-ATS)	22:05	53	21:02 (WT-ATS)
26	08:32		09:28 (Skalden WTB3)	07:38			06:37		17:32 (GC&T WT3)	06:30		20:08 (WT07_Sadaci)	05:42		06:09 (WT163)	05:31		06:08 (WT163)
	17:24	108	16:54 (WT-MER)	18:19			19:07	29	18:19 (WT01-VLS)	20:58	12	20:20 (WT07_Sadaci)	21:43	54	21:01 (WT-ATS)	22:05	54	21:02 (WT-ATS)
27	08:31		09:28 (Skalden WTB3)	07:36			06:34		17:37 (GC&T WT3)	06:28		20:10 (WT07_Sadaci)	05:41		06:08 (WT163)	05:32		06:09 (WT163)
	17:26	101	16:55 (WTSH)	18:21			19:09	11	18:15 (WT01-VLS)	21:00	8	20:18 (WT07_Sadaci)	21:44	55	21:01 (WT-ATS)	22:05	54	21:03 (WT-ATS)
28	08:30		09:28 (Skalden WTB3)	07:34			06:32			06:26			05:40		06:07 (WT163)	05:32		06:08 (WT163)
	17:28	94	16:58 (WTSH)	18:23			19:10			21:01			21:46	56	21:01 (WT-ATS)	22:05	56	21:03 (WT-ATS)
29	08:28		09:28 (Skalden WTB3)				07:30			06:24			05:39		06:07 (WT163)	05:33		06:09 (WT163)
	17:29	72	16:59 (WTSH)				20:12			21:03			21:47	58	21:02 (WT-ATS)	22:04	55	21:04 (WT-ATS)
30	08:27		09:28 (Skalden WTB3)				07:28			06:22			05:38		06:06 (WT163)	05:33		06:09 (WT163)
	17:31	69	17:02 (WTSH)				20:14			21:04			21:48	58	21:01 (WT-ATS)	22:04	56	21:04 (WT-ATS)
31	08:25		09:28 (Skalden WTB3)				07:25						05:37		06:05 (WT163)			
	17:33	70	17:03 (WTSH)				20:15						21:49	59	21:01 (WT-ATS)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		3482			964			1130			154			821			1680	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,63			0,60			0,64			0,56			0,61			0,65	
Total reduction		0,14			0,17			0,23			0,24			0,27			0,27	
Total, real		498			161			256			37			220			460	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: F - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		06:09 (WT163)	06:09		20:52 (WT-ATS)	06:57			07:44		18:02 (GC&T WT3)	07:36		08:05 (Skalden WTB4)	08:26		09:16 (Skalden WTB3)
	22:04	56	21:05 (WT-ATS)	21:33	10	21:02 (WT-ATS)	20:33			19:25	53	18:58 (WT01-VLS)	17:21	62	16:26 (WT-MER)	16:42	128	15:16 (Skalden WT2)
2	05:35		06:09 (WT163)	06:11			06:59			07:46		18:02 (GC&T WT3)	07:38		08:06 (Skalden WTB4)	08:27		09:17 (Skalden WTB3)
	22:04	57	21:05 (WT-ATS)	21:32			20:31			19:23	51	18:57 (WT01-VLS)	17:19	65	16:26 (WT-MER)	16:42	127	15:16 (Skalden WT2)
3	05:35		06:09 (WT163)	06:12			07:00			07:48		18:02 (GC&T WT3)	07:40		08:08 (Skalden WTB4)	08:29		09:20 (Skalden WTB3)
	22:03	57	21:05 (WT-ATS)	21:30			20:29			19:21	44	18:54 (WT01-VLS)	17:17	66	16:27 (WT-MER)	16:41	124	15:17 (Skalden WT2)
4	05:36		06:10 (WT163)	06:14			07:02			07:49		18:03 (GC&T WT3)	07:42		08:11 (Skalden WTB4)	08:30		09:36 (Skalden WTB2)
	22:03	58	21:06 (WT-ATS)	21:29			20:27			19:19	37	18:52 (WT01-VLS)	17:16	61	16:28 (WT-MER)	16:40	115	15:17 (Skalden WT2)
5	05:37		06:10 (WT163)	06:15			07:03			07:51		18:03 (GC&T WT3)	07:43		09:01 (Skalden WTB3)	08:31		09:36 (Skalden WTB2)
	22:02	59	21:07 (WT-ATS)	21:27			20:24			19:16	35	18:38 (GC&T WT3)	17:14	60	16:28 (WT-MER)	16:40	117	15:18 (Skalden WT2)
6	05:38		06:10 (WT163)	06:17			07:05			07:52		18:03 (GC&T WT3)	07:45		09:01 (Skalden WTB3)	08:32		09:36 (Skalden WTB2)
	22:02	60	21:07 (WT-ATS)	21:25			20:22			19:14	33	18:36 (GC&T WT3)	17:12	62	16:29 (WT-MER)	16:40	118	15:18 (Skalden WT2)
7	05:38		06:10 (WT163)	06:18			07:07			07:54		18:05 (GC&T WT3)	07:47		09:00 (Skalden WTB3)	08:34		09:36 (Skalden WTB2)
	22:01	59	21:07 (WT-ATS)	21:23			20:20			19:12	29	18:34 (GC&T WT3)	17:11	66	16:31 (WTSH)	16:39	118	15:18 (Skalden WT2)
8	05:39		06:11 (WT163)	06:20			07:08			07:56		18:06 (GC&T WT3)	07:49		09:00 (Skalden WTB3)	08:35		09:37 (Skalden WTB2)
	22:01	59	21:08 (WT-ATS)	21:22			20:18			19:10	27	18:33 (GC&T WT3)	17:09	69	16:34 (WTSH)	16:39	119	15:19 (Skalden WT2)
9	05:40		06:11 (WT163)	06:21			07:10			07:57		18:07 (GC&T WT3)	07:50		09:00 (Skalden WTB3)	08:36		09:37 (Skalden WTB2)
	22:00	59	21:08 (WT-ATS)	21:20			20:15			19:08	23	18:30 (GC&T WT3)	17:07	70	16:35 (WTSH)	16:39	120	15:20 (Skalden WT2)
10	05:41		06:12 (WT163)	06:23			07:11			07:59		18:09 (GC&T WT3)	07:52		08:59 (Skalden WTB3)	08:37		09:37 (Skalden WTB2)
	21:59	59	21:09 (WT-ATS)	21:18			20:13			19:05	18	18:27 (GC&T WT3)	17:06	71	16:35 (WTSH)	16:38	119	15:20 (Skalden WT2)
11	05:42		06:12 (WT163)	06:24			07:13			08:01		18:13 (GC&T WT3)	07:54		08:59 (Skalden WTB3)	08:38		09:38 (Skalden WTB2)
	21:59	60	21:09 (WT-ATS)	21:16			20:11			19:03	11	18:24 (GC&T WT3)	17:04	70	16:34 (WTSH)	16:38	119	15:20 (Skalden WT2)
12	05:43		06:13 (WT163)	06:26			07:14			08:02			07:55		08:59 (Skalden WTB3)	08:39		09:38 (Skalden WTB2)
	21:58	60	21:10 (WT-ATS)	21:14			20:09			19:01			17:03	68	16:32 (WTSH)	16:38	120	15:21 (Skalden WT2)
13	05:44		06:14 (WT163)	06:27			07:16			08:04			07:57		09:00 (Skalden WTB3)	08:40		09:38 (Skalden WTB2)
	21:57	59	21:10 (WT-ATS)	21:12			20:06			18:59			17:01	72	16:31 (WTSH)	16:38	120	15:21 (Skalden WT2)
14	05:45		06:15 (WT163)	06:29			07:17			08:06			07:59		09:00 (Skalden WTB3)	08:41		09:39 (Skalden WTB2)
	21:56	58	21:10 (WT-ATS)	21:10			20:04			18:57			17:00	94	16:30 (WTSH)	16:38	119	15:21 (Skalden WT2)
15	05:47		06:16 (WT163)	06:30		20:20 (WT07_Sadaci)	07:19			08:07			08:01		09:00 (Skalden WTB3)	08:42		09:39 (Skalden WTB2)
	21:55	57	21:10 (WT-ATS)	21:09	2	20:22 (WT07_Sadaci)	20:02			18:55			16:59	102	16:28 (WTSH)	16:38	121	16:03 (VC WT3)
16	05:48		06:17 (WT163)	06:32		20:17 (WT07_Sadaci)	07:21		18:59 (WT01-VLS)	08:09			08:02		09:01 (Skalden WTB3)	08:43		09:40 (Skalden WTB2)
	21:54	56	21:10 (WT-ATS)	21:07	9	20:26 (WT07_Sadaci)	19:59	2	19:01 (WT01-VLS)	18:52			16:57	108	16:27 (WT-MER)	16:38	124	16:05 (VC WT3)
17	05:49		06:18 (WT163)	06:34		20:15 (WT07_Sadaci)	07:22		18:21 (GC&T WT3)	08:11			08:04		09:01 (Skalden WTB3)	08:44		09:40 (Skalden WTB2)
	21:53	54	21:10 (WT-ATS)	21:05	12	20:27 (WT07_Sadaci)	19:57	27	19:07 (WT01-VLS)	18:50			16:56	110	16:25 (WT-MER)	16:39	121	16:04 (VC WT3)
18	05:50		06:19 (WT163)	06:35		20:14 (WT07_Sadaci)	07:24		18:17 (GC&T WT3)	08:12			08:06		09:01 (Skalden WTB3)	08:44		09:40 (Skalden WTB2)
	21:52	53	21:10 (WT-ATS)	21:03	15	20:29 (WT07_Sadaci)	19:55	37	19:08 (WT01-VLS)	18:48			16:55	113	16:24 (WT-MER)	16:39	124	16:05 (VC WT3)
19	05:51		06:20 (WT163)	06:37		20:12 (WT07_Sadaci)	07:25		18:15 (GC&T WT3)	08:14			08:07		09:02 (Skalden WTB3)	08:45		09:41 (Skalden WTB2)
	21:51	51	21:10 (WT-ATS)	21:01	17	20:29 (WT07_Sadaci)	19:53	45	19:10 (WT01-VLS)	18:46			16:53	113	16:22 (WT-MER)	16:39	123	16:05 (VC WT3)
20	05:53		06:22 (WT163)	06:38		20:12 (WT07_Sadaci)	07:27		18:13 (GC&T WT3)	08:16		09:08 (Skalden WTB4)	08:09		09:03 (Skalden WTB3)	08:46		09:41 (Skalden WTB2)
	21:50	49	21:11 (WT-ATS)	20:59	17	20:29 (WT07_Sadaci)	19:50	51	19:11 (WT01-VLS)	18:44	11	09:19 (Skalden WTB4)	16:52	113	16:21 (WT-MER)	16:39	124	16:05 (VC WT3)
21	05:54		06:23 (WT163)	06:40		20:11 (WT07_Sadaci)	07:28		18:10 (GC&T WT3)	08:17		09:06 (Skalden WTB4)	08:11		09:04 (Skalden WTB3)	08:46		09:42 (Skalden WTB2)
	21:49	48	21:11 (WT-ATS)	20:57	18	20:29 (WT07_Sadaci)	19:48	56	19:11 (WT01-VLS)	18:42	15	09:21 (Skalden WTB4)	16:51	106	15:10 (Skalden WT2)	16:40	124	16:06 (VC WT3)
22	05:55		06:24 (WT163)	06:41		20:11 (WT07_Sadaci)	07:30		18:09 (GC&T WT3)	08:19		09:05 (Skalden WTB4)	08:12		09:04 (Skalden WTB3)	08:47		09:42 (Skalden WTB2)
	21:48	45	21:10 (WT-ATS)	20:54	17	20:28 (WT07_Sadaci)	19:46	60	19:12 (WT01-VLS)	18:40	18	09:23 (Skalden WTB4)	16:50	109	15:10 (Skalden WT2)	16:40	124	16:06 (VC WT3)
23	05:56		06:25 (WT163)	06:43		20:11 (WT07_Sadaci)	07:32		18:07 (GC&T WT3)	08:21		09:04 (Skalden WTB4)	08:14		09:05 (Skalden WTB3)	08:47		09:43 (Skalden WTB2)
	21:46	42	21:10 (WT-ATS)	20:52	14	20:25 (WT07_Sadaci)	19:43	62	19:11 (WT01-VLS)	18:38	20	09:24 (Skalden WTB4)	16:49	110	15:11 (Skalden WT2)	16:41	124	16:07 (VC WT3)
24	05:58		06:27 (WT163)	06:45		20:11 (WT07_Sadaci)	07:33		18:06 (GC&T WT3)	08:23		09:04 (Skalden WTB4)	08:15		09:07 (Skalden WTB3)	08:48		09:43 (Skalden WTB2)
	21:45	40	21:11 (WT-ATS)	20:50	13	20:24 (WT07_Sadaci)	19:41	66	19:12 (WT01-VLS)	18:36	20	09:24 (Skalden WTB4)	16:48	112	15:12 (Skalden WT2)	16:41	124	16:07 (VC WT3)
25	05:59		06:28 (WT163)	06:46		20:11 (WT07_Sadaci)	07:35		18:05 (GC&T WT3)	07:24		08:03 (Skalden WTB4)	08:17		09:07 (Skalden WTB3)	08:48		09:43 (Skalden WTB2)
	21:44	36	21:10 (WT-ATS)	20:48	10	20:21 (WT07_Sadaci)	19:39	66	19:11 (WT01-VLS)	17:34	22	08:25 (Skalden WTB4)	16:47	120	15:12 (Skalden WT2)	16:42	124	16:08 (VC WT3)
26	06:01		06:29 (WT163)	06:48		20:12 (WT07_Sadaci)	07:36		18:04 (GC&T WT3)	07:26		08:02 (Skalden WTB4)	08:18		09:08 (Skalden WTB3)	08:49		09:44 (Skalden WTB2)
	21:42	32	21:09 (WT-ATS)	20:46	8	20:20 (WT07_Sadaci)	19:37	66	19:10 (WT01-VLS)	17:32	22	08:24 (Skalden WTB4)	16:46	124	15:13 (Skalden WT2)	16:43	123	16:09 (VC WT3)
27	06:02		06:30 (WT163)	06:49		20:13 (WT07_Sadaci)	07:38		18:04 (GC&T WT3)	07:28		08:02 (Skalden WTB4)	08:20		09:10 (Skalden WTB3)	08:49		09:45 (Skalden WTB2)
	21:41	27	21:08 (WT-ATS)	20:44	4	20:17 (WT07_Sadaci)	19:34	64	19:08 (WT01-VLS)	17:30	22	08:24 (Skalden WTB4)	16:45	126	15:14 (Skalden WT2)	16:44	124	16:10 (VC WT3)
28	06:03		20:47 (WT-ATS)	06:51			07:40		18:03 (GC&T WT3)	07:29		08:02 (Skalden WTB4)	08:21		09:11 (Skalden WTB3)	08:49		09:45 (Skalden WTB2)
	21:39	21	21:08 (WT-ATS)	20:42			19:32	62	19:05 (WT01-VLS)	17:28	22	08:24 (Skalden WTB4)	16:44	128	15:14 (Skalden WT2)	16:44	122	16:09 (VC WT3)
29	06:05		20:47 (WT-ATS)	06:52			07:41		18:03 (GC&T WT3)	07:31		08:03 (Skalden WTB4)	08:23		09:13 (Skalden WTB3)	08:49		09:46 (Skalden WTB2)
	21:38	20	21:07 (WT-ATS)	20:40			19:30	59	19:03 (WT01-VLS)	17:27	40	16:21 (WT-MER)	16:44	129	15:15 (Skalden WT2)	16:45	119	15:28 (Skalden WT2)
30	06:06		20:48 (WT-ATS)	06:54			07:43		18:02 (GC&T WT3)	07:33		08:03 (Skalden WTB4)	08:24		09:15 (Skalden WTB3)	08:49		09:46 (Skalden WTB2)
	21:37	17	21:05 (WT-ATS)	20:37			19:28	56	19:00 (WT01-VLS)	17:25	53	16:23 (WT-MER)	16:43	128	15:16 (Skalden WT2)	16:46	121	15:29 (Skalden WT2)
31	06:08		20:50 (WT-ATS)	06:56						07:35		08:04 (Skalden WTB4)				08:49		09:47 (Skalden WTB2)
	21:35	14	21:04 (WT-ATS)	20:35						17:23	59	16:25 (WT-MER)				16:47	119	15:29 (Skalden WT2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		1482			166			779			685			2807			3768	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,63			0,56			0,64			0,61			0,62			0,65	
Total reduction		0,27			0,25			0,26			0,21			0,15			0,13	
Total, real		398			41			206			145			429			498	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: G - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		09:44 (Skalden WT3)	08:24		08:54 (Skalden WTB1)	07:32		10:32 (Skalden WT2)	07:23			06:20		19:39 (WT01-VLS)	05:37		06:09 (WT163)
	16:48	94	12:56 (Skalden WT1)	17:35	163	16:51 (WTSH)	18:25	38	11:10 (Skalden WT2)	20:17			21:06	51	20:30 (WT01-VLS)	21:50	79	20:36 (WT01-VLS)
2	08:49		09:45 (Skalden WT3)	08:22		08:54 (Skalden WTB1)	07:30		08:04 (Skalden WT4)	07:21			06:18		19:38 (WT01-VLS)	05:36		06:10 (WT163)
	16:49	94	12:57 (Skalden WT1)	17:37	162	16:51 (WTSH)	18:27	44	11:06 (Skalden WT2)	20:19			21:08	53	20:31 (WT01-VLS)	21:51	78	20:37 (WT01-VLS)
3	08:49		09:44 (Skalden WT3)	08:21		08:53 (Skalden WTB1)	07:28		08:01 (Skalden WT4)	07:19			06:17		19:38 (WT01-VLS)	05:35		06:10 (WT163)
	16:50	97	12:56 (Skalden WT1)	17:38	164	16:50 (WTSH)	18:28	42	11:02 (Skalden WT2)	20:20			21:09	54	20:32 (WT01-VLS)	21:52	76	20:36 (WT01-VLS)
4	08:49		09:45 (Skalden WT3)	08:19		08:52 (Skalden WTB1)	07:26		07:59 (Skalden WT4)	07:17			06:15		19:37 (WT01-VLS)	05:34		06:12 (WT163)
	16:52	98	12:56 (Skalden WT1)	17:40	161	16:48 (WTSH)	18:30	32	10:55 (Skalden WT2)	20:22			21:11	56	20:33 (WT01-VLS)	21:53	75	20:37 (WT01-VLS)
5	08:49		09:45 (Skalden WT3)	08:18		08:53 (Skalden WTB1)	07:24		07:57 (Skalden WT4)	07:14			06:13		19:36 (WT01-VLS)	05:34		06:12 (WT163)
	16:53	100	12:56 (Skalden WT1)	17:42	151	16:31 (WT-MER)	18:32	25	08:22 (Skalden WT4)	20:24			21:13	57	20:33 (WT01-VLS)	21:54	78	21:22 (WT07_Sadaci)
6	08:49		09:45 (Skalden WT3)	08:16		08:52 (Skalden WTB1)	07:21		07:55 (Skalden WT4)	07:12			06:11		19:36 (WT01-VLS)	05:33		06:13 (WT163)
	16:54	101	12:56 (Skalden WT1)	17:44	152	16:30 (WT-MER)	18:33	28	08:23 (Skalden WT4)	20:25			21:14	58	20:34 (WT01-VLS)	21:55	80	21:24 (WT07_Sadaci)
7	08:48		09:46 (Skalden WT3)	08:14		08:52 (Skalden WTB1)	07:19		07:45 (Skalden WTB3)	07:10			06:09		19:35 (WT01-VLS)	05:33		06:13 (WT163)
	16:55	101	12:56 (Skalden WT1)	17:46	152	16:30 (WT-MER)	18:35	39	08:24 (Skalden WT4)	20:27			21:16	59	20:34 (WT01-VLS)	21:56	79	21:24 (WT07_Sadaci)
8	08:48		09:46 (Skalden WT3)	08:13		08:52 (Skalden WTB1)	07:17		07:40 (Skalden WTB4)	07:08			06:08		19:34 (WT01-VLS)	05:32		06:14 (WT163)
	16:56	102	12:55 (Skalden WT1)	17:47	152	16:30 (WT-MER)	18:37	44	08:24 (Skalden WT4)	20:28			21:17	60	20:34 (WT01-VLS)	21:57	79	21:25 (WT07_Sadaci)
9	08:47		09:46 (Skalden WT3)	08:11		08:53 (Skalden WTB1)	07:15		07:37 (Skalden WTB4)	07:06			06:06		19:34 (WT01-VLS)	05:32		06:14 (WT163)
	16:58	108	15:59 (WT-MER)	17:49	150	16:30 (WT-MER)	18:39	47	08:24 (Skalden WT4)	20:30			21:19	61	20:35 (WT01-VLS)	21:58	79	21:25 (WT07_Sadaci)
10	08:47		09:47 (Skalden WT3)	08:09		08:53 (Skalden WTB1)	07:13		07:35 (Skalden WTB4)	07:03			06:04		19:33 (WT01-VLS)	05:31		06:16 (WT163)
	16:59	114	16:03 (WT-MER)	17:51	148	16:30 (WT-MER)	18:40	49	08:24 (Skalden WT4)	20:32			21:20	62	20:35 (WT01-VLS)	21:59	77	21:26 (WT07_Sadaci)
11	08:46		09:47 (Skalden WT3)	08:08		08:54 (Skalden WTB1)	07:10		07:33 (Skalden WTB4)	07:01			06:03		19:33 (WT01-VLS)	05:31		06:17 (WT163)
	17:00	118	16:06 (WT-MER)	17:53	145	16:29 (WT-MER)	18:42	51	08:24 (Skalden WT4)	20:33			21:22	63	20:36 (WT01-VLS)	21:59	77	21:27 (WT07_Sadaci)
12	08:46		09:47 (Skalden WT3)	08:06		08:54 (Skalden WTB1)	07:08		07:31 (Skalden WTB4)	06:59			06:01		19:33 (WT01-VLS)	05:30		06:17 (WT163)
	17:02	120	16:08 (WT-MER)	17:55	143	16:29 (WT-MER)	18:44	53	08:24 (Skalden WT4)	20:35			21:23	62	20:35 (WT01-VLS)	22:00	76	21:27 (WT07_Sadaci)
13	08:45		09:47 (Skalden WT3)	08:04		08:55 (Skalden WTB1)	07:06		07:29 (Skalden WTB4)	06:57			06:00		19:33 (WT01-VLS)	05:30		06:19 (WT163)
	17:03	119	16:09 (WT-MER)	17:56	139	16:28 (WT-MER)	18:45	54	08:23 (Skalden WT4)	20:37			21:25	63	20:36 (WT01-VLS)	22:01	73	21:28 (WT07_Sadaci)
14	08:44		09:48 (Skalden WT3)	08:02		08:26 (Skalden WTB2)	07:04		07:29 (Skalden WTB4)	06:55			05:58		06:23 (WT163)	05:30		19:41 (WT01-VLS)
	17:05	113	16:12 (WT-MER)	17:58	140	16:27 (WT-MER)	18:47	54	08:23 (Skalden WT4)	20:38			21:27	65	20:36 (WT01-VLS)	22:01	71	21:29 (WT07_Sadaci)
15	08:44		09:48 (Skalden WT3)	08:00		08:24 (Skalden WTB2)	07:02		07:30 (Skalden WTB4)	06:53			05:57		06:22 (WT163)	05:30		19:42 (WT01-VLS)
	17:06	116	16:13 (WT-MER)	18:00	139	16:26 (WT-MER)	18:49	52	08:22 (Skalden WT4)	20:40			21:28	67	20:36 (WT01-VLS)	22:02	71	21:29 (WT07_Sadaci)
16	08:43		09:49 (Skalden WT3)	07:58		08:22 (Skalden WTB2)	06:59		07:31 (Skalden WTB4)	06:50			05:55		06:21 (WT163)	05:30		19:42 (WT01-VLS)
	17:08	123	16:36 (WTSH)	18:02	133	16:25 (WT-MER)	18:50	50	08:21 (Skalden WT4)	20:42			21:29	70	20:37 (WT01-VLS)	22:02	72	21:30 (WT07_Sadaci)
17	08:42		09:49 (Skalden WT3)	07:56		08:20 (Skalden WTB2)	06:57		07:32 (Skalden WTB4)	06:48			05:54		06:19 (WT163)	05:30		19:43 (WT01-VLS)
	17:09	129	16:38 (WTSH)	18:04	124	16:24 (WT-MER)	18:52	47	08:19 (Skalden WT4)	20:43			21:31	72	20:36 (WT01-VLS)	22:03	71	21:30 (WT07_Sadaci)
18	08:41		09:50 (Skalden WT3)	07:54		08:19 (Skalden WTB2)	06:55		07:36 (Skalden WTB3)	06:46			05:52		06:18 (WT163)	05:30		19:43 (WT01-VLS)
	17:11	133	16:39 (WTSH)	18:05	123	16:23 (WT-MER)	18:54	42	08:18 (Skalden WT4)	20:45			21:32	73	20:36 (WT01-VLS)	22:03	71	21:30 (WT07_Sadaci)
19	08:40		09:49 (Skalden WT3)	07:53		08:18 (Skalden WTB2)	06:53		07:37 (Skalden WTB3)	06:44			05:51		06:17 (WT163)	05:30		19:43 (WT01-VLS)
	17:13	137	16:40 (WTSH)	18:07	118	16:21 (WT-MER)	18:55	39	08:16 (Skalden WT4)	20:47			21:34	75	20:37 (WT01-VLS)	22:04	72	21:31 (WT07_Sadaci)
20	08:39		09:50 (Skalden WT3)	07:51		08:18 (Skalden WTB2)	06:50		07:38 (Skalden WTB3)	06:42			05:50		06:16 (WT163)	05:30		19:43 (WT01-VLS)
	17:14	143	16:42 (WTSH)	18:09	113	16:19 (WT-MER)	18:57	33	08:14 (Skalden WT4)	20:48			21:35	77	20:37 (WT01-VLS)	22:04	72	21:31 (WT07_Sadaci)
21	08:38		09:51 (Skalden WT3)	07:49		08:18 (Skalden WTB2)	06:48		07:40 (Skalden WTB3)	06:40			05:48		06:15 (WT163)	05:30		19:44 (WT01-VLS)
	17:16	146	16:44 (WTSH)	18:11	105	16:16 (WT-MER)	18:59	23	08:11 (Skalden WT4)	20:50			21:37	78	20:37 (WT01-VLS)	22:04	72	21:32 (WT07_Sadaci)
22	08:37		09:52 (Skalden WT3)	07:47		08:18 (Skalden WTB2)	06:46			06:38		19:59 (WT01-VLS)	05:47		06:13 (WT163)	05:30		19:44 (WT01-VLS)
	17:17	149	16:46 (WTSH)	18:12	94	16:12 (WT-MER)	19:00			20:51	14	20:13 (WT01-VLS)	21:38	78	20:36 (WT01-VLS)	22:04	72	21:32 (WT07_Sadaci)
23	08:36		09:53 (Skalden WT3)	07:45		08:18 (Skalden WTB2)	06:44			06:36		19:55 (WT01-VLS)	05:46		06:12 (WT163)	05:30		19:44 (WT01-VLS)
	17:19	153	16:48 (WTSH)	18:14	80	11:24 (Skalden WT2)	19:02			20:53	22	20:17 (WT01-VLS)	21:39	80	20:36 (WT01-VLS)	22:05	72	21:32 (WT07_Sadaci)
24	08:35		09:53 (Skalden WT3)	07:43		08:19 (Skalden WTB2)	06:41			06:34		19:51 (WT01-VLS)	05:45		06:11 (WT163)	05:31		19:44 (WT01-VLS)
	17:21	157	16:50 (WTSH)	18:16	76	11:23 (Skalden WT2)	19:04			20:55	29	20:20 (WT01-VLS)	21:41	81	20:36 (WT01-VLS)	22:05	71	21:31 (WT07_Sadaci)
25	08:33		09:54 (Skalden WT3)	07:40		08:20 (Skalden WTB2)	06:39			06:32		19:49 (WT01-VLS)	05:43		06:10 (WT163)	05:31		19:45 (WT01-VLS)
	17:23	160	16:52 (WTSH)	18:18	71	11:21 (Skalden WT2)	19:05			20:56	33	20:22 (WT01-VLS)	21:42	81	20:36 (WT01-VLS)	22:05	71	21:32 (WT07_Sadaci)
26	08:32		09:56 (Skalden WT3)	07:38		08:21 (Skalden WTB2)	06:37			06:30		19:47 (WT01-VLS)	05:42		06:09 (WT163)	05:31		19:44 (WT01-VLS)
	17:24	161	16:53 (WTSH)	18:20	65	11:19 (Skalden WT2)	19:07			20:58	37	20:24 (WT01-VLS)	21:43	82	20:36 (WT01-VLS)	22:05	72	21:32 (WT07_Sadaci)
27	08:31		09:56 (Skalden WT3)	07:36		08:22 (Skalden WTB2)	06:35			06:28		19:45 (WT01-VLS)	05:41		06:08 (WT163)	05:32		19:45 (WT01-VLS)
	17:26	162	16:53 (WTSH)	18:21	57	11:16 (Skalden WT2)	19:09			21:00	40	20:25 (WT01-VLS)	21:44	83	20:36 (WT01-VLS)	22:05	71	21:32 (WT07_Sadaci)
28	08:30		09:00 (Skalden WTB1)	07:34		10:30 (Skalden WT2)	06:32			06:26		19:44 (WT01-VLS)	05:40		06:08 (WT163)	05:32		19:45 (WT01-VLS)
	17:28	171	16:53 (WTSH)	18:23	43	11:13 (Skalden WT2)	19:10			21:01	43	20:27 (WT01-VLS)	21:46	83	20:37 (WT01-VLS)	22:05	70	21:32 (WT07_Sadaci)
29	08:28		08:57 (Skalden WTB1)				07:30			06:24		19:42 (WT01-VLS)	05:39		06:08 (WT163)	05:33		06:23 (WT163)
	17:29	175	16:53 (WTSH)				20:12			21:03	46	20:28 (WT01-VLS)	21:47	83	20:37 (WT01-VLS)	22:04	73	21:32 (WT07_Sadaci)
30	08:27		08:57 (Skalden WTB1)				07:28			06:22		19:41 (WT01-VLS)	05:38		06:09 (WT163)	05:33		06:22 (WT163)
	17:31	173	16:53 (WTSH)				20:14			21:05	48	20:29 (WT01-VLS)	21:48	81	20:37 (WT01-VLS)	22:04	74	21:31 (WT07_Sadaci)
31	08:25		08:55 (Skalden WTB1)				07:26						05:37		06:09 (WT163)			
	17:33	172	16:52 (WTSH)				20:15						21:49	79	20:36 (WT01-VLS)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		4039			3463			886			312			2147			2224	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,62			0,62			0,56			0,55			0,57			0,56	
Total reduction		0,14			0,17			0,20			0,24			0,25			0,24	
Total, real		571			600			178			75			536			533	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: G - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		06:21 (WT163)	06:09		19:43 (WT01-VLS)	06:57			07:44		08:09 (Skalden WTB4)	07:36		08:23 (Skalden WTB1)	08:26		09:29 (Skalden WT3)
	22:04	77	21:32 (WT07_Sadaci)	21:33	63	20:46 (WT01-VLS)	20:33			19:25	54	09:03 (Skalden WT4)	17:21	149	16:00 (WT-MER)	16:42	117	15:48 (WT-MER)
2	05:35		06:20 (WT163)	06:11		19:44 (WT01-VLS)	06:59			07:46		08:11 (Skalden WTB4)	07:38		08:22 (Skalden WTB1)	08:27		09:30 (Skalden WT3)
	22:04	78	21:31 (WT07_Sadaci)	21:32	62	20:46 (WT01-VLS)	20:31			19:23	52	09:03 (Skalden WT4)	17:19	150	15:59 (WT-MER)	16:42	115	15:47 (WT-MER)
3	05:35		06:20 (WT163)	06:12		19:44 (WT01-VLS)	07:00			07:48		08:12 (Skalden WTB4)	07:40		08:22 (Skalden WTB1)	08:29		09:30 (Skalden WT3)
	22:03	78	21:31 (WT07_Sadaci)	21:30	61	20:45 (WT01-VLS)	20:29			19:21	50	09:02 (Skalden WT4)	17:17	150	15:59 (WT-MER)	16:41	108	15:43 (WT-MER)
4	05:36		06:20 (WT163)	06:14		19:44 (WT01-VLS)	07:02			07:49		08:14 (Skalden WTB4)	07:42		08:22 (Skalden WTB1)	08:30		09:30 (Skalden WT3)
	22:03	79	21:31 (WT07_Sadaci)	21:29	60	20:44 (WT01-VLS)	20:27			19:19	48	09:02 (Skalden WT4)	17:16	152	16:00 (WT-MER)	16:41	102	12:39 (Skalden WT1)
5	05:37		06:20 (WT163)	06:15		19:45 (WT01-VLS)	07:03			07:51		08:16 (Skalden WTB4)	07:43		08:22 (Skalden WTB1)	08:31		09:31 (Skalden WT3)
	22:02	79	21:31 (WT07_Sadaci)	21:27	59	20:44 (WT01-VLS)	20:24			19:16	45	09:01 (Skalden WT4)	17:14	152	16:00 (WT-MER)	16:40	101	12:41 (Skalden WT1)
6	05:38		06:18 (WT163)	06:17		19:44 (WT01-VLS)	07:05			07:52		08:19 (Skalden WTB3)	07:45		08:22 (Skalden WTB1)	08:32		09:31 (Skalden WT3)
	22:02	80	21:29 (WT07_Sadaci)	21:25	59	20:43 (WT01-VLS)	20:22			19:14	41	09:00 (Skalden WT4)	17:12	155	16:15 (WTSH)	16:40	101	12:42 (Skalden WT1)
7	05:39		06:18 (WT163)	06:18		19:45 (WT01-VLS)	07:07			07:54		08:24 (Skalden WTB3)	07:47		08:23 (Skalden WTB1)	08:34		09:31 (Skalden WT3)
	22:01	80	21:29 (WT07_Sadaci)	21:23	58	20:43 (WT01-VLS)	20:20			19:12	30	08:59 (Skalden WT4)	17:11	161	16:19 (WTSH)	16:39	100	12:42 (Skalden WT1)
8	05:39		06:18 (WT163)	06:20		19:45 (WT01-VLS)	07:08			07:56		08:32 (Skalden WT4)	07:49		08:24 (Skalden WTB1)	08:35		09:33 (Skalden WT3)
	22:01	80	21:29 (WT07_Sadaci)	21:22	57	20:42 (WT01-VLS)	20:18			19:10	26	08:58 (Skalden WT4)	17:09	164	16:21 (WTSH)	16:39	98	12:44 (Skalden WT1)
9	05:40		06:18 (WT163)	06:21		19:47 (WT01-VLS)	07:10			07:57		08:32 (Skalden WT4)	07:50		08:25 (Skalden WTB1)	08:36		09:33 (Skalden WT3)
	22:00	76	20:43 (WT01-VLS)	21:20	55	20:42 (WT01-VLS)	20:15			19:08	24	08:56 (Skalden WT4)	17:08	163	16:22 (WTSH)	16:39	97	12:45 (Skalden WT1)
10	05:41		06:18 (WT163)	06:23		19:47 (WT01-VLS)	07:11			07:59		08:34 (Skalden WT4)	07:52		08:26 (Skalden WTB1)	08:37		09:34 (Skalden WT3)
	21:59	77	20:44 (WT01-VLS)	21:18	53	20:40 (WT01-VLS)	20:13			19:05	38	11:33 (Skalden WT2)	17:06	162	16:23 (WTSH)	16:38	95	12:46 (Skalden WT1)
11	05:42		06:18 (WT163)	06:24		19:48 (WT01-VLS)	07:13			08:01		08:37 (Skalden WT4)	07:54		08:26 (Skalden WTB1)	08:38		09:34 (Skalden WT3)
	21:59	78	20:44 (WT01-VLS)	21:16	52	20:40 (WT01-VLS)	20:11			19:03	43	11:38 (Skalden WT2)	17:04	172	16:23 (WTSH)	16:38	93	12:46 (Skalden WT1)
12	05:43		06:17 (WT163)	06:26		19:48 (WT01-VLS)	07:14			08:02		08:39 (Skalden WT4)	07:55		08:28 (Skalden WTB1)	08:39		09:35 (Skalden WT3)
	21:58	80	20:45 (WT01-VLS)	21:14	50	20:38 (WT01-VLS)	20:09			19:01	43	11:41 (Skalden WT2)	17:03	173	16:24 (WTSH)	16:38	92	12:47 (Skalden WT1)
13	05:44		06:17 (WT163)	06:27		19:49 (WT01-VLS)	07:16			08:04		11:04 (Skalden WT2)	07:57		08:29 (Skalden WTB1)	08:40		09:35 (Skalden WT3)
	21:57	81	20:45 (WT01-VLS)	21:12	48	20:37 (WT01-VLS)	20:06			18:59	41	11:45 (Skalden WT2)	17:01	175	16:25 (WTSH)	16:38	90	12:48 (Skalden WT1)
14	05:45		06:17 (WT163)	06:29		19:50 (WT01-VLS)	07:18			08:06		08:58 (Skalden WTB2)	07:59		08:32 (Skalden WTB1)	08:41		09:36 (Skalden WT3)
	21:56	81	20:45 (WT01-VLS)	21:10	46	20:36 (WT01-VLS)	20:04			18:57	49	11:48 (Skalden WT2)	17:00	170	16:25 (WTSH)	16:38	88	12:49 (Skalden WT1)
15	05:47		06:17 (WT163)	06:31		19:51 (WT01-VLS)	07:19			08:07		08:54 (Skalden WTB2)	08:01		09:29 (Skalden WT3)	08:42		09:37 (Skalden WT3)
	21:55	82	20:45 (WT01-VLS)	21:09	43	20:34 (WT01-VLS)	20:02			18:55	61	11:50 (Skalden WT2)	16:59	162	16:26 (WTSH)	16:38	87	12:50 (Skalden WT1)
16	05:48		06:17 (WT163)	06:32		19:53 (WT01-VLS)	07:21			08:09		08:52 (Skalden WTB2)	08:02		09:29 (Skalden WT3)	08:43		09:37 (Skalden WT3)
	21:54	83	20:46 (WT01-VLS)	21:07	39	20:32 (WT01-VLS)	19:59			18:53	67	11:51 (Skalden WT2)	16:57	161	16:26 (WTSH)	16:38	84	12:50 (Skalden WT1)
17	05:49		06:18 (WT163)	06:34		19:54 (WT01-VLS)	07:22			08:11		08:51 (Skalden WTB2)	08:04		09:27 (Skalden WT3)	08:44		09:37 (Skalden WT3)
	21:53	83	20:46 (WT01-VLS)	21:05	36	20:30 (WT01-VLS)	19:57			18:50	73	11:53 (Skalden WT2)	16:56	160	16:25 (WTSH)	16:39	81	12:50 (Skalden WT1)
18	05:50		06:19 (WT163)	06:35		19:56 (WT01-VLS)	07:24			08:12		08:50 (Skalden WTB2)	08:06		09:27 (Skalden WT3)	08:44		09:38 (Skalden WT3)
	21:52	82	20:46 (WT01-VLS)	21:03	32	20:28 (WT01-VLS)	19:55			18:48	78	11:55 (Skalden WT2)	16:55	157	16:24 (WTSH)	16:39	77	12:51 (Skalden WT1)
19	05:51		06:20 (WT163)	06:37		19:58 (WT01-VLS)	07:25			08:14		08:49 (Skalden WTB2)	08:07		09:27 (Skalden WT3)	08:45		09:39 (Skalden WT3)
	21:51	81	20:46 (WT01-VLS)	21:01	27	20:25 (WT01-VLS)	19:53			18:46	81	11:56 (Skalden WT2)	16:54	153	16:22 (WTSH)	16:39	73	12:52 (Skalden WT1)
20	05:53		06:22 (WT163)	06:38		20:01 (WT01-VLS)	07:27			08:16		08:48 (Skalden WTB2)	08:09		09:27 (Skalden WT3)	08:46		09:39 (Skalden WT3)
	21:50	80	20:47 (WT01-VLS)	20:59	21	20:22 (WT01-VLS)	19:50			18:44	99	16:44 (WT-MER)	16:52	149	16:21 (WTSH)	16:40	73	12:52 (Skalden WT1)
21	05:54		06:23 (WT163)	06:40		20:05 (WT01-VLS)	07:28			08:17		08:48 (Skalden WTB2)	08:11		09:27 (Skalden WT3)	08:46		09:40 (Skalden WT3)
	21:49	80	20:47 (WT01-VLS)	20:57	12	20:17 (WT01-VLS)	19:48			18:42	109	16:48 (WT-MER)	16:51	146	16:20 (WTSH)	16:40	73	12:53 (Skalden WT1)
22	05:55		06:24 (WT163)	06:41			07:30		08:26 (Skalden WTB3)	08:19		08:48 (Skalden WTB2)	08:12		09:26 (Skalden WT3)	08:47		09:40 (Skalden WT3)
	21:48	79	20:47 (WT01-VLS)	20:54			19:46	19	08:55 (Skalden WT4)	18:40	115	16:50 (WT-MER)	16:50	143	16:18 (WTSH)	16:40	73	12:53 (Skalden WT1)
23	05:57		06:25 (WT163)	06:43			07:32		08:22 (Skalden WTB3)	08:21		08:49 (Skalden WTB2)	08:14		09:26 (Skalden WT3)	08:47		09:41 (Skalden WT3)
	21:46	76	20:46 (WT01-VLS)	20:52			19:44	31	08:57 (Skalden WT4)	18:38	119	16:52 (WT-MER)	16:49	137	16:17 (WTSH)	16:41	73	12:54 (Skalden WT1)
24	05:58		06:27 (WT163)	06:45			07:33		08:21 (Skalden WTB3)	08:23		08:49 (Skalden WTB2)	08:15		09:27 (Skalden WT3)	08:48		09:41 (Skalden WT3)
	21:45	76	20:47 (WT01-VLS)	20:50			19:41	39	09:00 (Skalden WT4)	18:36	123	16:54 (WT-MER)	16:48	134	16:17 (WTSH)	16:42	73	12:54 (Skalden WT1)
25	05:59		06:28 (WT163)	06:46			07:35		08:19 (Skalden WTB3)	07:24		07:51 (Skalden WTB2)	08:17		09:27 (Skalden WT3)	08:48		09:41 (Skalden WT3)
	21:44	74	20:47 (WT01-VLS)	20:48			19:39	41	09:00 (Skalden WT4)	17:34	125	15:55 (WT-MER)	16:47	129	16:16 (WTSH)	16:42	75	12:54 (Skalden WT1)
26	06:01		06:29 (WT163)	06:48			07:36		08:17 (Skalden WTB4)	07:26		07:52 (Skalden WTB2)	08:18		09:27 (Skalden WT3)	08:49		09:42 (Skalden WT3)
	21:42	73	20:47 (WT01-VLS)	20:46			19:37	45	09:02 (Skalden WT4)	17:32	134	15:55 (WT-MER)	16:46	123	16:14 (WTSH)	16:43	80	12:55 (Skalden WT1)
27	06:02		06:30 (WT163)	06:49			07:38		08:14 (Skalden WTB4)	07:28		07:54 (Skalden WTB2)	08:20		09:27 (Skalden WT3)	08:49		09:42 (Skalden WT3)
	21:41	70	20:46 (WT01-VLS)	20:44			19:34	49	09:03 (Skalden WT4)	17:30	138	15:56 (WT-MER)	16:45	117	15:53 (WT-MER)	16:44	82	12:55 (Skalden WT1)
28	06:03		06:32 (WT163)	06:51			07:40		08:11 (Skalden WTB4)	07:29		07:56 (Skalden WTB2)	08:22		09:27 (Skalden WT3)	08:49		09:43 (Skalden WT3)
	21:40	69	20:47 (WT01-VLS)	20:42			19:32	52	09:03 (Skalden WT4)	17:28	140	15:57 (WT-MER)	16:44	113	15:51 (WT-MER)	16:44	84	12:55 (Skalden WT1)
29	06:05		06:33 (WT163)	06:52			07:41		08:10 (Skalden WTB4)	07:31		08:25 (Skalden WTB1)	08:23		09:28 (Skalden WT3)	08:49		09:43 (Skalden WT3)
	21:38	65	20:46 (WT01-VLS)	20:40			19:30	53	09:03 (Skalden WT4)	17:27	140	15:58 (WT-MER)	16:44	119	15:50 (WT-MER)	16:45	87	12:56 (Skalden WT1)
30	06:06		19:44 (WT01-VLS)	06:54			07:43		08:09 (Skalden WTB4)	07:33		08:24 (Skalden WTB1)	08:24		09:29 (Skalden WT3)	08:49		09:43 (Skalden WT3)
	21:37	63	20:47 (WT01-VLS)	20:38			19:28	54	09:03 (Skalden WT4)	17:25	145	15:59 (WT-MER)	16:43	119	15:50 (WT-MER)	16:46	89	12:56 (Skalden WT1)
31	06:08		19:43 (WT01-VLS)	06:56						07:35		08:23 (Skalden WTB1)				08:49		09:44 (Skalden WT3)
	21:35	63	20:46 (WT01-VLS)	20:35						17:23	147	15:59 (WT-MER)				16:47	91	12:56 (Skalden WT1)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		2383			993			383			2478			4470			2752	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,57			0,55			0,56			0,60			0,62			0,61	
Total reduction		0,25			0,25			0,23			0,21			0,15			0,13	
Total, real		591			246			89			521			692			347	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: H - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		09:30 (Skalden WTB3)	08:24		08:49 (Skalden WTB4)	07:32		17:13 (WT01-VLS)	07:23		16:09 (GC&T WT1)	06:20		07:03 (WT163)	05:37		06:04 (MV Zuid WT2)
	16:48	102	16:15 (WTSH)	17:35	47	15:56 (GC&T WT3)	18:25	11	17:24 (WT01-VLS)	20:17	83	19:51 (WT07_Sadaci)	21:06	218	20:28 (WT-ATS)	21:50	178	18:11 (GC&T WT1)
2	08:49		09:31 (Skalden WTB3)	08:22		08:50 (Skalden WTB4)	07:30			07:21		16:06 (GC&T WT1)	06:18		07:04 (WT163)	05:36		06:04 (MV Zuid WT2)
	16:49	96	16:16 (WTSH)	17:36	44	15:55 (GC&T WT3)	18:26			20:19	93	19:53 (WT07_Sadaci)	21:08	216	20:28 (WT-ATS)	21:51	178	18:12 (GC&T WT1)
3	08:49		09:30 (Skalden WTB3)	08:21		08:49 (Skalden WTB4)	07:28			07:19		16:03 (GC&T WT1)	06:17		07:06 (WT163)	05:35		06:03 (MV Zuid WT2)
	16:50	93	16:16 (WTSH)	17:38	41	15:53 (GC&T WT3)	18:28			20:20	102	19:55 (WT07_Sadaci)	21:09	216	20:29 (WT-ATS)	21:52	177	18:11 (GC&T WT1)
4	08:49		09:31 (Skalden WTB3)	08:19		08:49 (Skalden WTB4)	07:26			07:17		16:00 (GC&T WT1)	06:15		07:08 (WT163)	05:34		06:03 (MV Zuid WT2)
	16:51	91	16:18 (WTSH)	17:40	35	15:51 (GC&T WT3)	18:30			20:22	110	19:57 (WT07_Sadaci)	21:11	213	20:29 (WT-ATS)	21:53	177	18:11 (GC&T WT1)
5	08:49		09:32 (Skalden WTB3)	08:18		08:51 (Skalden WTB4)	07:24			07:14		15:58 (GC&T WT1)	06:13		07:10 (WT163)	05:34		06:03 (MV Zuid WT2)
	16:53	84	16:19 (WTSH)	17:42	26	15:48 (GC&T WT3)	18:32			20:24	116	19:58 (WT07_Sadaci)	21:13	208	20:28 (WT-ATS)	21:54	178	18:12 (GC&T WT1)
6	08:49		09:31 (Skalden WTB3)	08:16		08:51 (Skalden WTB4)	07:21			07:12		15:54 (GC&T WT1)	06:11		15:19 (GC&T WT1)	05:33		06:03 (MV Zuid WT2)
	16:54	86	16:20 (WTSH)	17:44	16	09:07 (Skalden WTB4)	18:33			20:25	124	19:59 (WT07_Sadaci)	21:14	200	20:29 (WT-ATS)	21:55	177	18:12 (GC&T WT1)
7	08:48		09:32 (Skalden WTB3)	08:14		08:52 (Skalden WTB4)	07:19			07:10		15:52 (GC&T WT1)	06:09		15:18 (GC&T WT1)	05:32		06:04 (MV Zuid WT2)
	16:55	87	16:22 (WTSH)	17:45	14	09:06 (Skalden WTB4)	18:35			20:27	128	19:59 (WT07_Sadaci)	21:16	202	20:29 (WT-ATS)	21:56	176	18:12 (GC&T WT1)
8	08:48		09:32 (Skalden WTB3)	08:13		08:52 (Skalden WTB4)	07:17			07:08		15:50 (GC&T WT1)	06:08		15:18 (GC&T WT1)	05:32		06:04 (MV Zuid WT2)
	16:56	88	16:23 (WTSH)	17:47	18	17:18 (WT01-VLS)	18:37			20:28	131	19:59 (WT07_Sadaci)	21:17	201	20:28 (WT-ATS)	21:57	176	18:13 (GC&T WT1)
9	08:47		09:32 (Skalden WTB3)	08:11		08:55 (Skalden WTB4)	07:15			07:05		15:48 (GC&T WT1)	06:06		15:19 (GC&T WT1)	05:32		06:04 (MV Zuid WT2)
	16:58	88	16:24 (WTSH)	17:49	19	17:21 (WT01-VLS)	18:39			20:30	134	19:58 (WT07_Sadaci)	21:19	200	20:28 (WT-ATS)	21:58	176	18:13 (GC&T WT1)
10	08:47		09:33 (Skalden WTB3)	08:09		17:09 (WT01-VLS)	07:13			07:03		15:46 (GC&T WT1)	06:04		15:18 (GC&T WT1)	05:31		06:05 (MV Zuid WT2)
	16:59	87	16:25 (WTSH)	17:51	14	17:23 (WT01-VLS)	18:40			20:32	136	19:57 (WT07_Sadaci)	21:20	201	20:28 (WT-ATS)	21:59	174	18:13 (GC&T WT1)
11	08:46		09:33 (Skalden WTB3)	08:07		17:08 (WT01-VLS)	07:10			07:01		15:44 (GC&T WT1)	06:03		15:19 (GC&T WT1)	05:31		06:05 (MV Zuid WT2)
	17:00	88	16:25 (WTSH)	17:53	17	17:25 (WT01-VLS)	18:42			20:33	138	19:56 (WT07_Sadaci)	21:22	200	20:28 (WT-ATS)	21:59	174	18:14 (GC&T WT1)
12	08:46		09:33 (Skalden WTB3)	08:06		17:07 (WT01-VLS)	07:08			06:59		15:41 (GC&T WT1)	06:01		15:18 (GC&T WT1)	05:30		06:05 (MV Zuid WT2)
	17:02	85	16:24 (WTSH)	17:55	20	17:27 (WT01-VLS)	18:44			20:35	139	19:54 (WT07_Sadaci)	21:23	200	20:27 (WT-ATS)	22:00	173	18:13 (GC&T WT1)
13	08:45		09:33 (Skalden WTB3)	08:04		17:06 (WT01-VLS)	07:06			06:57		07:19 (WT163)	06:00		15:19 (GC&T WT1)	05:30		06:05 (MV Zuid WT2)
	17:03	85	16:24 (WTSH)	17:56	23	17:29 (WT01-VLS)	18:45			20:37	144	19:52 (WT07_Sadaci)	21:25	199	20:27 (WT-ATS)	22:01	173	18:13 (GC&T WT1)
14	08:44		09:35 (Skalden WTB3)	08:02		17:05 (WT01-VLS)	07:04			06:55		07:17 (WT163)	05:58		15:19 (GC&T WT1)	05:30		06:06 (MV Zuid WT2)
	17:05	82	16:24 (WTSH)	17:58	26	17:31 (WT01-VLS)	18:47			20:38	142	17:49 (GC&T WT1)	21:27	197	20:26 (WT-ATS)	22:01	172	18:14 (GC&T WT1)
15	08:44		09:35 (Skalden WTB3)	08:00		17:04 (WT01-VLS)	07:02			06:52		07:15 (WT163)	05:56		15:19 (GC&T WT1)	05:30		06:06 (MV Zuid WT2)
	17:06	78	16:23 (WTSH)	18:00	28	17:32 (WT01-VLS)	18:49			20:40	148	17:50 (GC&T WT1)	21:28	197	20:26 (WT-ATS)	22:02	172	18:14 (GC&T WT1)
16	08:43		09:36 (Skalden WTB3)	07:58		17:04 (WT01-VLS)	06:59			06:50		07:13 (WT163)	05:55		15:20 (GC&T WT1)	05:30		06:07 (MV Zuid WT2)
	17:08	71	16:00 (WT-MER)	18:02	30	17:34 (WT01-VLS)	18:50			20:42	155	17:52 (GC&T WT1)	21:29	195	20:25 (WT-ATS)	22:02	170	18:14 (GC&T WT1)
17	08:42		09:36 (Skalden WTB3)	07:56		17:03 (WT01-VLS)	06:57			06:48		07:11 (WT163)	05:54		15:20 (GC&T WT1)	05:30		06:07 (MV Zuid WT2)
	17:09	69	15:59 (WT-MER)	18:04	32	17:35 (WT01-VLS)	18:52			20:43	160	17:53 (GC&T WT1)	21:31	193	20:24 (WT-ATS)	22:03	172	18:15 (GC&T WT1)
18	08:41		09:37 (Skalden WTB3)	07:54		17:03 (WT01-VLS)	06:55			06:46		07:09 (WT163)	05:52		15:20 (GC&T WT1)	05:30		06:07 (MV Zuid WT2)
	17:11	69	16:00 (GC&T WT3)	18:05	32	17:35 (WT01-VLS)	18:54			20:45	165	17:54 (GC&T WT1)	21:32	191	20:23 (WT-ATS)	22:03	171	18:15 (GC&T WT1)
19	08:40		09:38 (Skalden WTB3)	07:53		17:03 (WT01-VLS)	06:53			06:44		07:07 (WT163)	05:51		15:21 (GC&T WT1)	05:30		06:07 (MV Zuid WT2)
	17:12	67	16:00 (GC&T WT3)	18:07	32	17:35 (WT01-VLS)	18:55			20:47	170	17:55 (GC&T WT1)	21:34	189	20:23 (WT-ATS)	22:04	171	18:15 (GC&T WT1)
20	08:39		09:38 (Skalden WTB3)	07:51		17:03 (WT01-VLS)	06:50			06:42		07:05 (WT163)	05:49		15:22 (GC&T WT1)	05:30		06:07 (MV Zuid WT2)
	17:14	66	15:59 (GC&T WT3)	18:09	32	17:35 (WT01-VLS)	18:57			20:48	173	17:55 (GC&T WT1)	21:35	187	20:22 (WT-ATS)	22:04	171	18:15 (GC&T WT1)
21	08:38		09:39 (Skalden WTB3)	07:49		17:03 (WT01-VLS)	06:48			06:40		07:03 (WT163)	05:48		15:23 (GC&T WT1)	05:30		06:08 (MV Zuid WT2)
	17:16	65	16:00 (GC&T WT3)	18:11	32	17:35 (WT01-VLS)	18:59			20:50	177	17:56 (GC&T WT1)	21:37	183	20:21 (WT-ATS)	22:04	171	18:16 (GC&T WT1)
22	08:37		09:40 (Skalden WTB3)	07:47		17:04 (WT01-VLS)	06:46			06:38		07:02 (WT163)	05:47		15:22 (GC&T WT1)	05:30		06:08 (MV Zuid WT2)
	17:17	63	16:00 (GC&T WT3)	18:12	31	17:35 (WT01-VLS)	19:00			20:51	181	17:57 (GC&T WT1)	21:38	179	20:18 (WT-ATS)	22:04	171	18:16 (GC&T WT1)
23	08:36		09:41 (Skalden WTB3)	07:45		17:04 (WT01-VLS)	06:44			06:36		07:01 (WT163)	05:46		06:12 (MV Zuid WT2)	05:30		06:08 (MV Zuid WT2)
	17:19	60	16:00 (GC&T WT3)	18:14	30	17:34 (WT01-VLS)	19:02			20:53	184	17:58 (GC&T WT1)	21:39	177	20:16 (WT-ATS)	22:05	171	18:16 (GC&T WT1)
24	08:35		09:42 (Skalden WTB3)	07:42		17:05 (WT01-VLS)	06:41			06:34		07:01 (WT163)	05:44		06:11 (MV Zuid WT2)	05:31		06:08 (MV Zuid WT2)
	17:21	58	16:00 (GC&T WT3)	18:16	28	17:33 (WT01-VLS)	19:04			20:55	197	20:19 (WT-ATS)	21:41	170	18:09 (GC&T WT1)	22:05	171	18:16 (GC&T WT1)
25	08:33		09:44 (Skalden WTB3)	07:40		17:06 (WT01-VLS)	06:39			06:32		07:01 (WT163)	05:43		06:10 (MV Zuid WT2)	05:31		06:09 (MV Zuid WT2)
	17:22	53	16:00 (GC&T WT3)	18:18	27	17:33 (WT01-VLS)	19:05			20:56	203	20:21 (WT-ATS)	21:42	172	18:09 (GC&T WT1)	22:05	172	18:17 (GC&T WT1)
26	08:32		09:47 (Skalden WTB3)	07:38		17:07 (WT01-VLS)	06:37			06:30		07:01 (WT163)	05:42		06:09 (MV Zuid WT2)	05:31		06:09 (MV Zuid WT2)
	17:24	48	16:00 (GC&T WT3)	18:19	24	17:31 (WT01-VLS)	19:07			20:58	208	20:23 (WT-ATS)	21:43	172	18:09 (GC&T WT1)	22:05	170	18:16 (GC&T WT1)
27	08:31		08:57 (Skalden WTB4)	07:36		17:08 (WT01-VLS)	06:34		15:37 (GC&T WT1)	06:28		07:01 (WT163)	05:41		06:08 (MV Zuid WT2)	05:32		06:09 (MV Zuid WT2)
	17:26	43	15:59 (GC&T WT3)	18:21	21	17:29 (WT01-VLS)	19:09	28	16:05 (GC&T WT1)	21:00	211	20:24 (WT-ATS)	21:44	174	18:10 (GC&T WT1)	22:05	171	18:17 (GC&T WT1)
28	08:30		08:56 (Skalden WTB4)	07:34		17:10 (WT01-VLS)	06:32		15:28 (GC&T WT1)	06:26		07:01 (WT163)	05:40		06:07 (MV Zuid WT2)	05:32		06:09 (MV Zuid WT2)
	17:28	45	15:59 (GC&T WT3)	18:23	17	17:27 (WT01-VLS)	19:10	43	16:11 (GC&T WT1)	21:01	214	20:25 (WT-ATS)	21:46	175	18:10 (GC&T WT1)	22:05	172	18:17 (GC&T WT1)
29	08:28		08:54 (Skalden WTB4)				07:30		16:23 (GC&T WT1)	06:24		07:02 (WT163)	05:39		06:07 (MV Zuid WT2)	05:33		06:10 (MV Zuid WT2)
	17:29	46	15:58 (GC&T WT3)				20:12	53	17:16 (GC&T WT1)	21:03	217	20:27 (WT-ATS)	21:47	175	18:11 (GC&T WT1)	22:04	172	18:18 (GC&T WT1)
30	08:27		08:53 (Skalden WTB4)				07:28		16:18 (GC&T WT1)	06:22		07:03 (WT163)	05:38		06:06 (MV Zuid WT2)	05:33		06:09 (MV Zuid WT2)
	17:31	46	15:58 (GC&T WT3)				20:14	62	17:20 (GC&T WT1)	21:04	217	20:27 (WT-ATS)	21:48	177	18:11 (GC&T WT1)	22:04	173	18:17 (GC&T WT1)
31	08:25		08:51 (Skalden WTB4)				07:25		16:14 (GC&T WT1)				05:37		06:05 (MV Zuid WT2)			
	17:33	47	15:57 (GC&T WT3)				20:15	70	17:24 (GC&T WT1)				21:49	177	18:11 (GC&T WT1)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		2236			756			267			4700			5954			5200	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,67			0,67			0,67			0,66			0,66			0,67	
Total reduction		0,15			0,18			0,24			0,29			0,29			0,28	
Total, real		339			140			63			1348			1704			1478	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: H - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		06:10 (MV Zuid WT2)	06:09		15:29 (GC&T WT1)	06:57		15:43 (GC&T WT1)	07:44			07:36		08:28 (Skalden WTB4)	08:26		09:15 (Skalden WTB3)
	22:04	173	18:18 (GC&T WT1)	21:33	200	20:38 (WT-ATS)	20:33	138	19:55 (WT07_Sadaci)	19:25			17:21	15	16:52 (WT01-VLS)	16:42	86	16:07 (WTSH)
2	05:35		06:09 (MV Zuid WT2)	06:11		15:29 (GC&T WT1)	06:59		15:44 (GC&T WT1)	07:46			07:38		08:23 (Skalden WTB4)	08:27		09:16 (Skalden WTB3)
	22:04	173	18:17 (GC&T WT1)	21:32	200	20:38 (WT-ATS)	20:31	136	19:55 (WT07_Sadaci)	19:23			17:19	20	16:50 (WT01-VLS)	16:42	88	16:08 (WTSH)
3	05:35		06:09 (MV Zuid WT2)	06:12		15:28 (GC&T WT1)	07:00		15:46 (GC&T WT1)	07:48			07:40		08:22 (Skalden WTB4)	08:29		09:16 (Skalden WTB3)
	22:03	175	18:18 (GC&T WT1)	21:30	201	20:38 (WT-ATS)	20:29	134	19:56 (WT07_Sadaci)	19:21			17:17	17	16:48 (WT01-VLS)	16:41	88	16:08 (WTSH)
4	05:36		06:10 (MV Zuid WT2)	06:14		15:28 (GC&T WT1)	07:02		15:47 (GC&T WT1)	07:49			07:42		08:21 (Skalden WTB4)	08:30		09:16 (Skalden WTB3)
	22:03	174	18:18 (GC&T WT1)	21:29	201	20:38 (WT-ATS)	20:27	132	19:56 (WT07_Sadaci)	19:19			17:16	15	08:36 (Skalden WTB4)	16:40	88	16:07 (WTSH)
5	05:37		06:10 (MV Zuid WT2)	06:15		15:28 (GC&T WT1)	07:03		15:49 (GC&T WT1)	07:51			07:43		08:21 (Skalden WTB4)	08:31		09:17 (Skalden WTB3)
	22:02	176	18:19 (GC&T WT1)	21:27	202	20:39 (WT-ATS)	20:24	128	19:56 (WT07_Sadaci)	19:16			17:14	16	08:37 (Skalden WTB4)	16:40	87	16:07 (WTSH)
6	05:38		06:09 (MV Zuid WT2)	06:17		15:28 (GC&T WT1)	07:05		15:50 (GC&T WT1)	07:52			07:45		08:20 (Skalden WTB4)	08:32		09:17 (Skalden WTB3)
	22:02	176	18:18 (GC&T WT1)	21:25	200	20:38 (WT-ATS)	20:22	124	19:55 (WT07_Sadaci)	19:14			17:12	28	15:18 (GC&T WT3)	16:40	86	16:06 (WTSH)
7	05:38		06:10 (MV Zuid WT2)	06:18		15:29 (GC&T WT1)	07:07		15:53 (GC&T WT1)	07:54			07:47		08:20 (Skalden WTB4)	08:34		09:18 (Skalden WTB3)
	22:01	176	18:18 (GC&T WT1)	21:23	200	20:39 (WT-ATS)	20:20	117	19:54 (WT07_Sadaci)	19:12			17:11	36	15:22 (GC&T WT3)	16:39	85	16:06 (WTSH)
8	05:39		06:10 (MV Zuid WT2)	06:20		07:18 (WT163)	07:08		15:54 (GC&T WT1)	07:56			07:49		08:20 (Skalden WTB4)	08:35		09:19 (Skalden WTB3)
	22:01	177	18:19 (GC&T WT1)	21:22	211	20:38 (WT-ATS)	20:18	111	19:51 (WT07_Sadaci)	19:10			17:09	41	15:24 (GC&T WT3)	16:39	90	16:06 (WTSH)
9	05:40		06:10 (MV Zuid WT2)	06:21		07:17 (WT163)	07:10		15:57 (GC&T WT1)	07:57			07:50		08:21 (Skalden WTB4)	08:36		09:19 (Skalden WTB3)
	22:00	179	18:19 (GC&T WT1)	21:20	213	20:38 (WT-ATS)	20:15	103	19:49 (WT07_Sadaci)	19:08			17:07	44	15:26 (GC&T WT3)	16:39	92	16:05 (WTSH)
10	05:41		06:11 (MV Zuid WT2)	06:23		07:14 (WT163)	07:11		15:59 (GC&T WT1)	07:59			07:52		08:21 (Skalden WTB4)	08:37		09:20 (Skalden WTB3)
	21:59	178	18:19 (GC&T WT1)	21:18	217	20:37 (WT-ATS)	20:13	93	19:46 (WT07_Sadaci)	19:05			17:06	47	15:28 (GC&T WT3)	16:38	96	16:05 (WTSH)
11	05:42		06:12 (MV Zuid WT2)	06:24		07:12 (WT163)	07:13		16:02 (GC&T WT1)	08:01			07:54		08:22 (Skalden WTB4)	08:38		09:20 (Skalden WTB3)
	21:59	177	18:19 (GC&T WT1)	21:16	217	20:36 (WT-ATS)	20:11	85	19:45 (WT07_Sadaci)	19:03			17:04	48	15:28 (GC&T WT3)	16:38	101	16:05 (WTSH)
12	05:43		06:13 (MV Zuid WT2)	06:26		07:12 (WT163)	07:14		16:05 (GC&T WT1)	08:02		17:50 (WT01-VLS)	07:55		08:24 (Skalden WTB4)	08:39		09:21 (Skalden WTB3)
	21:58	177	18:19 (GC&T WT1)	21:14	217	20:36 (WT-ATS)	20:09	73	19:42 (WT07_Sadaci)	19:01	3	17:53 (WT01-VLS)	17:03	46	15:29 (GC&T WT3)	16:38	102	16:05 (WTSH)
13	05:44		06:14 (MV Zuid WT2)	06:27		07:10 (WT163)	07:16		16:09 (GC&T WT1)	08:04		17:45 (WT01-VLS)	07:57		08:26 (Skalden WTB4)	08:40		09:22 (Skalden WTB3)
	21:57	176	18:19 (GC&T WT1)	21:12	216	20:35 (WT-ATS)	20:06	63	17:12 (GC&T WT1)	18:59	14	17:59 (WT01-VLS)	17:01	46	15:30 (GC&T WT3)	16:38	103	16:04 (WTSH)
14	05:45		06:15 (MV Zuid WT2)	06:29		07:10 (WT163)	07:17		16:12 (GC&T WT1)	08:06		17:42 (WT01-VLS)	07:59		08:28 (Skalden WTB4)	08:41		09:22 (Skalden WTB3)
	21:56	176	18:19 (GC&T WT1)	21:10	215	20:34 (WT-ATS)	20:04	55	17:07 (GC&T WT1)	18:57	19	18:01 (WT01-VLS)	17:00	45	15:31 (GC&T WT3)	16:38	104	16:04 (WTSH)
15	05:47		06:16 (MV Zuid WT2)	06:30		07:09 (WT163)	07:19		16:17 (GC&T WT1)	08:07		17:41 (WT01-VLS)	08:01		08:30 (Skalden WTB4)	08:42		09:23 (Skalden WTB3)
	21:55	175	18:19 (GC&T WT1)	21:09	215	20:33 (WT-ATS)	20:02	45	17:02 (GC&T WT1)	18:55	22	18:03 (WT01-VLS)	16:59	43	15:32 (GC&T WT3)	16:38	106	16:05 (WTSH)
16	05:48		06:17 (MV Zuid WT2)	06:32		07:08 (WT163)	07:21		16:23 (GC&T WT1)	08:09		17:38 (WT01-VLS)	08:02		09:20 (Skalden WTB3)	08:43		09:24 (Skalden WTB3)
	21:54	174	18:19 (GC&T WT1)	21:07	211	20:32 (WT-ATS)	19:59	32	16:55 (GC&T WT1)	18:53	25	18:03 (WT01-VLS)	16:57	48	15:33 (GC&T WT3)	16:38	105	16:05 (WTSH)
17	05:49		06:18 (MV Zuid WT2)	06:34		07:07 (WT163)	07:22			08:11		17:37 (WT01-VLS)	08:04		09:17 (Skalden WTB3)	08:44		09:24 (Skalden WTB3)
	21:53	173	18:19 (GC&T WT1)	21:05	208	20:29 (WT-ATS)	19:57			18:50	27	18:04 (WT01-VLS)	16:56	53	15:33 (GC&T WT3)	16:39	105	16:04 (WTSH)
18	05:50		06:19 (MV Zuid WT2)	06:35		07:07 (WT163)	07:24			08:12		17:36 (WT01-VLS)	08:06		09:16 (Skalden WTB3)	08:44		09:24 (Skalden WTB3)
	21:52	172	18:19 (GC&T WT1)	21:03	203	20:28 (WT-ATS)	19:55			18:48	29	18:05 (WT01-VLS)	16:55	59	15:34 (GC&T WT3)	16:39	106	16:05 (WTSH)
19	05:51		06:20 (MV Zuid WT2)	06:37		07:07 (WT163)	07:25			08:14		17:35 (WT01-VLS)	08:07		09:15 (Skalden WTB3)	08:45		09:25 (Skalden WTB3)
	21:51	171	18:19 (GC&T WT1)	21:01	195	20:24 (WT-ATS)	19:53			18:46	31	18:06 (WT01-VLS)	16:53	60	15:34 (GC&T WT3)	16:39	107	16:05 (WTSH)
20	05:53		06:22 (MV Zuid WT2)	06:38		07:07 (WT163)	07:27			08:16		17:34 (WT01-VLS)	08:09		09:15 (Skalden WTB3)	08:46		09:25 (Skalden WTB3)
	21:50	174	20:25 (WT-ATS)	20:59	182	18:03 (GC&T WT1)	19:50			18:44	31	18:05 (WT01-VLS)	16:52	63	15:35 (GC&T WT3)	16:39	107	16:05 (WTSH)
21	05:54		06:23 (MV Zuid WT2)	06:40		07:06 (WT163)	07:28			08:17		17:34 (WT01-VLS)	08:11		09:15 (Skalden WTB3)	08:46		09:26 (Skalden WTB3)
	21:49	179	20:28 (WT-ATS)	20:57	182	18:02 (GC&T WT1)	19:48			18:42	31	18:05 (WT01-VLS)	16:51	65	15:36 (GC&T WT3)	16:40	107	16:06 (WTSH)
22	05:55		15:33 (GC&T WT1)	06:41		07:08 (WT163)	07:30			08:19		17:33 (WT01-VLS)	08:12		09:14 (Skalden WTB3)	08:47		09:26 (Skalden WTB3)
	21:48	182	20:30 (WT-ATS)	20:54	178	18:01 (GC&T WT1)	19:46			18:40	33	18:06 (WT01-VLS)	16:50	66	15:35 (GC&T WT3)	16:40	107	16:06 (WTSH)
23	05:56		15:32 (GC&T WT1)	06:43		07:09 (WT163)	07:32			08:21		17:33 (WT01-VLS)	08:14		09:14 (Skalden WTB3)	08:47		09:27 (Skalden WTB3)
	21:46	184	20:31 (WT-ATS)	20:52	173	17:59 (GC&T WT1)	19:44			18:38	33	18:06 (WT01-VLS)	16:49	67	15:36 (GC&T WT3)	16:41	107	16:07 (WTSH)
24	05:58		15:32 (GC&T WT1)	06:45		07:11 (WT163)	07:33			08:23		17:34 (WT01-VLS)	08:15		09:14 (Skalden WTB3)	08:48		09:27 (Skalden WTB3)
	21:45	188	20:33 (WT-ATS)	20:50	168	17:58 (GC&T WT1)	19:41			18:36	32	18:06 (WT01-VLS)	16:48	69	15:37 (GC&T WT3)	16:41	107	16:07 (WTSH)
25	05:59		15:31 (GC&T WT1)	06:46		07:12 (WT163)	07:35			07:24		16:34 (WT01-VLS)	08:17		09:14 (Skalden WTB3)	08:48		09:27 (Skalden WTB3)
	21:44	191	20:34 (WT-ATS)	20:48	164	17:56 (GC&T WT1)	19:39			17:34	32	17:06 (WT01-VLS)	16:47	69	15:37 (WT-MER)	16:42	106	16:08 (WTSH)
26	06:01		15:31 (GC&T WT1)	06:48		07:14 (WT163)	07:36			07:26		16:33 (WT01-VLS)	08:18		09:14 (Skalden WTB3)	08:49		09:29 (Skalden WTB3)
	21:42	191	20:34 (WT-ATS)	20:46	158	17:55 (GC&T WT1)	19:37			17:32	30	17:03 (WT01-VLS)	16:46	71	15:38 (WT-MER)	16:43	105	16:09 (WTSH)
27	06:02		15:30 (GC&T WT1)	06:49		07:15 (WT163)	07:38			07:28		16:34 (WT01-VLS)	08:20		09:14 (Skalden WTB3)	08:49		09:29 (Skalden WTB3)
	21:41	195	20:35 (WT-ATS)	20:44	153	17:53 (GC&T WT1)	19:34			17:30	27	17:01 (WT01-VLS)	16:45	78	16:02 (WTSH)	16:44	104	16:10 (WTSH)
28	06:03		15:30 (GC&T WT1)	06:51		07:17 (WT163)	07:40			07:29		16:35 (WT01-VLS)	08:22		09:14 (Skalden WTB3)	08:49		09:29 (Skalden WTB3)
	21:40	196	20:36 (WT-ATS)	20:42	148	17:52 (GC&T WT1)	19:32			17:28	25	17:00 (WT01-VLS)	16:44	82	16:03 (WTSH)	16:44	105	16:10 (WTSH)
29	06:05		15:30 (GC&T WT1)	06:52		07:18 (WT163)	07:41			07:31		16:35 (WT01-VLS)	08:23		09:14 (Skalden WTB3)	08:49		09:29 (Skalden WTB3)
	21:38	196	20:36 (WT-ATS)	20:40	142	17:50 (GC&T WT1)	19:30			17:27	23	16:58 (WT01-VLS)	16:44	85	16:05 (WTSH)	16:45	104	16:11 (WTSH)
30	06:06		15:29 (GC&T WT1)	06:54		07:20 (WT163)	07:43			07:33		16:36 (WT01-VLS)	08:24		09:15 (Skalden WTB3)	08:49		09:30 (Skalden WTB3)
	21:37	199	20:37 (WT-ATS)	20:38	144	19:53 (WT07_Sadaci)	19:28			17:25	20	16:56 (WT01-VLS)	16:43	86	16:07 (WTSH)	16:46	103	16:12 (WTSH)
31	06:08		15:29 (GC&T WT1)	06:56		15:41 (GC&T WT1)				07:35		16:38 (WT01-VLS)				08:49		09:30 (Skalden WTB3)
	21:35	200	20:38 (WT-ATS)	20:35	139	19:54 (WT07_Sadaci)				17:23	16	16:54 (WT01-VLS)				16:47	102	16:13 (WTSH)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		5603			5873			1569			503			1528			3089	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,66			0,65			0,66			0,68			0,66			0,66	
Total reduction		0,28			0,29			0,27			0,24			0,16			0,13	
Total, real		1595			1714			430			120			249			414	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: I - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		11:29 (WT163)	08:24		16:32 (GC&T WT2)	07:32		17:41 (WT-ATS)	07:23		08:13 (MV Zuid WT2)	06:20		08:55 (MV Zuid WT1)	05:36		09:04 (MV Zuid WT1)
	16:48	41	16:14 (GC&T WT1)	17:35	23	16:55 (GC&T WT2)	18:25	15	17:56 (WT-ATS)	20:17	126	10:45 (MV Zuid WT1)	21:06	226	20:29 (WT1_RH_E)	21:50	130	19:43 (WT3_RH_E)
2	08:49		11:30 (WT163)	08:22		16:34 (GC&T WT2)	07:30		17:42 (WT-ATS)	07:21		08:11 (MV Zuid WT2)	06:18		08:55 (MV Zuid WT1)	05:36		09:05 (MV Zuid WT1)
	16:49	41	16:16 (GC&T WT1)	17:36	21	16:55 (GC&T WT2)	18:26	13	17:55 (WT-ATS)	20:19	132	10:46 (MV Zuid WT1)	21:08	224	20:28 (WT1_RH_E)	21:51	129	19:43 (WT3_RH_E)
3	08:49		11:30 (WT163)	08:21		16:34 (GC&T WT2)	07:28		17:43 (WT-ATS)	07:19		08:10 (MV Zuid WT2)	06:16		08:55 (MV Zuid WT1)	05:35		09:05 (MV Zuid WT1)
	16:50	36	16:16 (GC&T WT1)	17:38	20	16:54 (GC&T WT2)	18:28	11	17:54 (WT-ATS)	20:20	155	19:27 (WT3_RH_E)	21:09	223	20:28 (WT1_RH_E)	21:52	126	19:42 (WT3_RH_E)
4	08:49		11:32 (WT163)	08:19		16:35 (GC&T WT2)	07:26		17:46 (WT-ATS)	07:16		08:09 (MV Zuid WT2)	06:15		08:55 (MV Zuid WT1)	05:34		09:05 (MV Zuid WT1)
	16:51	36	16:18 (GC&T WT1)	17:40	18	16:53 (GC&T WT2)	18:30	6	17:52 (WT-ATS)	20:22	169	19:32 (WT3_RH_E)	21:11	222	20:28 (WT1_RH_E)	21:53	125	19:42 (WT3_RH_E)
5	08:49		11:34 (WT163)	08:18		16:37 (GC&T WT2)	07:23			07:14		08:08 (MV Zuid WT2)	06:13		08:55 (MV Zuid WT1)	05:34		09:07 (MV Zuid WT1)
	16:53	34	16:19 (GC&T WT1)	17:42	16	16:53 (GC&T WT2)	18:32			20:23	181	19:36 (WT3_RH_E)	21:13	219	20:27 (WT1_RH_E)	21:54	122	19:42 (WT3_RH_E)
6	08:48		11:34 (WT163)	08:16		16:39 (GC&T WT2)	07:21			07:12		08:06 (MV Zuid WT2)	06:11		08:55 (MV Zuid WT1)	05:33		09:07 (MV Zuid WT1)
	16:54	34	16:20 (GC&T WT1)	17:44	12	16:51 (GC&T WT2)	18:33			20:25	189	19:37 (WT3_RH_E)	21:14	216	20:26 (WT1_RH_E)	21:55	119	19:41 (WT3_RH_E)
7	08:48		11:37 (WT163)	08:14		16:41 (GC&T WT2)	07:19			07:10		08:06 (MV Zuid WT2)	06:09		08:56 (MV Zuid WT1)	05:32		09:07 (MV Zuid WT1)
	16:55	33	16:22 (GC&T WT1)	17:45	8	16:49 (GC&T WT2)	18:35			20:27	197	19:39 (WT3_RH_E)	21:16	214	20:26 (WT1_RH_E)	21:56	118	19:41 (WT3_RH_E)
8	08:48		11:38 (WT163)	08:13			07:17			07:08		08:05 (MV Zuid WT2)	06:08		08:55 (MV Zuid WT1)	05:32		09:08 (MV Zuid WT1)
	16:56	31	16:23 (GC&T WT1)	17:47			18:37			20:28	203	19:41 (WT3_RH_E)	21:17	211	20:25 (WT1_RH_E)	21:57	116	19:41 (WT3_RH_E)
9	08:47		11:40 (WT163)	08:11			07:15			07:05		08:05 (MV Zuid WT2)	06:06		08:56 (MV Zuid WT1)	05:31		09:08 (MV Zuid WT1)
	16:58	28	16:24 (GC&T WT1)	17:49			18:38			20:30	209	19:43 (WT3_RH_E)	21:19	206	20:24 (WT1_RH_E)	21:58	114	19:40 (WT3_RH_E)
10	08:47		11:44 (WT163)	08:09			07:13			07:03		08:04 (MV Zuid WT2)	06:04		08:56 (MV Zuid WT1)	05:31		09:09 (MV Zuid WT1)
	16:59	23	16:26 (GC&T WT1)	17:51			18:40			20:32	216	19:45 (WT3_RH_E)	21:20	202	20:23 (WT1_RH_E)	21:59	112	19:40 (WT3_RH_E)
11	08:46		16:14 (GC&T WT1)	08:07			07:10			07:01		08:03 (MV Zuid WT2)	06:03		08:56 (MV Zuid WT1)	05:31		09:10 (MV Zuid WT1)
	17:00	13	16:27 (GC&T WT1)	17:53			18:42			20:33	219	19:45 (WT3_RH_E)	21:22	199	20:22 (WT1_RH_E)	21:59	110	19:40 (WT3_RH_E)
12	08:46		16:14 (GC&T WT1)	08:06			07:08			06:59		08:03 (MV Zuid WT2)	06:01		08:56 (MV Zuid WT1)	05:30		09:09 (MV Zuid WT1)
	17:02	15	16:29 (GC&T WT1)	17:54			18:44			20:35	222	19:46 (WT3_RH_E)	21:23	193	20:20 (WT1_RH_E)	22:00	110	19:40 (WT3_RH_E)
13	08:45		16:14 (GC&T WT1)	08:04			07:06			06:57		08:03 (MV Zuid WT2)	05:59		08:57 (MV Zuid WT1)	05:30		09:10 (MV Zuid WT1)
	17:03	16	16:30 (GC&T WT1)	17:56			18:45			20:37	225	19:48 (WT3_RH_E)	21:25	188	20:18 (WT1_RH_E)	22:01	108	19:40 (WT3_RH_E)
14	08:44		16:16 (GC&T WT1)	08:02			07:04			06:55		08:03 (MV Zuid WT2)	05:58		08:56 (MV Zuid WT1)	05:30		09:11 (MV Zuid WT1)
	17:05	16	16:32 (GC&T WT1)	17:58			18:47			20:38	229	19:49 (WT3_RH_E)	21:26	179	20:14 (WT1_RH_E)	22:01	107	19:40 (WT3_RH_E)
15	08:44		16:16 (GC&T WT1)	08:00			07:01			06:52		08:03 (MV Zuid WT2)	05:56		08:57 (MV Zuid WT1)	05:30		09:11 (MV Zuid WT1)
	17:06	16	16:32 (GC&T WT1)	18:00			18:49			20:40	231	19:49 (WT3_RH_E)	21:28	171	19:50 (WT3_RH_E)	22:02	106	19:40 (WT3_RH_E)
16	08:43		16:17 (GC&T WT1)	07:58			06:59			06:50		08:03 (MV Zuid WT2)	05:55		08:58 (MV Zuid WT1)	05:30		09:11 (MV Zuid WT1)
	17:08	15	16:32 (GC&T WT1)	18:02			18:50			20:42	233	19:50 (WT3_RH_E)	21:29	168	19:50 (WT3_RH_E)	22:02	105	19:40 (WT3_RH_E)
17	08:42		16:18 (GC&T WT1)	07:56			06:57			06:48		08:03 (MV Zuid WT2)	05:53		08:57 (MV Zuid WT1)	05:30		09:12 (MV Zuid WT1)
	17:09	14	16:32 (GC&T WT1)	18:03			18:52			20:43	238	20:16 (WT1_RH_E)	21:31	167	19:49 (WT3_RH_E)	22:03	104	19:40 (WT3_RH_E)
18	08:41		16:19 (GC&T WT1)	07:54			06:55			06:46		08:03 (MV Zuid WT2)	05:52		08:58 (MV Zuid WT1)	05:29		09:12 (MV Zuid WT1)
	17:11	14	16:39 (GC&T WT2)	18:05			18:54			20:45	246	20:18 (WT1_RH_E)	21:32	164	19:49 (WT3_RH_E)	22:03	104	19:40 (WT3_RH_E)
19	08:40		16:19 (GC&T WT1)	07:52			06:52			06:44		08:03 (MV Zuid WT2)	05:51		08:58 (MV Zuid WT1)	05:30		09:12 (MV Zuid WT1)
	17:12	17	16:40 (GC&T WT2)	18:07			18:55			20:47	250	20:20 (WT1_RH_E)	21:34	163	19:49 (WT3_RH_E)	22:04	103	19:40 (WT3_RH_E)
20	08:39		16:21 (GC&T WT1)	07:50			06:50			06:42		08:04 (MV Zuid WT2)	05:49		08:59 (MV Zuid WT1)	05:30		09:12 (MV Zuid WT1)
	17:14	17	16:42 (GC&T WT2)	18:09			18:57			20:48	254	20:22 (WT1_RH_E)	21:35	159	19:48 (WT3_RH_E)	22:04	103	19:40 (WT3_RH_E)
21	08:38		16:23 (GC&T WT1)	07:49			06:48		08:54 (MV Zuid WT1)	06:40		08:04 (MV Zuid WT2)	05:48		08:59 (MV Zuid WT1)	05:30		09:12 (MV Zuid WT1)
	17:16	17	16:44 (WT01-VLS)	18:11			18:59	24	09:18 (MV Zuid WT1)	20:50	258	20:23 (WT1_RH_E)	21:37	156	19:47 (WT3_RH_E)	22:04	103	19:40 (WT3_RH_E)
22	08:37		16:33 (GC&T WT2)	07:47			06:46		08:48 (MV Zuid WT1)	06:38		08:05 (MV Zuid WT2)	05:47		08:59 (MV Zuid WT1)	05:30		09:13 (MV Zuid WT1)
	17:17	13	16:46 (WT01-VLS)	18:12			19:00	36	09:24 (MV Zuid WT1)	20:51	259	20:25 (WT1_RH_E)	21:38	155	19:47 (WT3_RH_E)	22:04	103	19:41 (WT3_RH_E)
23	08:36		16:33 (GC&T WT2)	07:44		17:44 (WT-ATS)	06:43		08:44 (MV Zuid WT1)	06:36		08:05 (MV Zuid WT2)	05:46		09:00 (MV Zuid WT1)	05:30		09:13 (MV Zuid WT1)
	17:19	15	16:48 (WT01-VLS)	18:14	4	17:48 (WT-ATS)	19:02	44	09:28 (MV Zuid WT1)	20:53	260	20:26 (WT1_RH_E)	21:39	153	19:47 (WT3_RH_E)	22:05	103	19:41 (WT3_RH_E)
24	08:35		16:32 (GC&T WT2)	07:42		17:43 (WT-ATS)	06:41		08:39 (MV Zuid WT1)	06:34		08:06 (MV Zuid WT2)	05:44		09:00 (MV Zuid WT1)	05:30		09:13 (MV Zuid WT1)
	17:21	17	16:49 (WT01-VLS)	18:16	7	17:50 (WT-ATS)	19:04	52	09:31 (MV Zuid WT1)	20:55	261	20:28 (WT1_RH_E)	21:41	150	19:46 (WT3_RH_E)	22:05	104	19:41 (WT3_RH_E)
25	08:33		16:32 (GC&T WT2)	07:40		17:42 (WT-ATS)	06:39		08:36 (MV Zuid WT1)	06:32		08:07 (MV Zuid WT2)	05:43		09:01 (MV Zuid WT1)	05:31		09:14 (MV Zuid WT1)
	17:22	20	16:52 (WT01-VLS)	18:18	10	17:52 (WT-ATS)	19:05	58	09:34 (MV Zuid WT1)	20:56	261	20:29 (WT1_RH_E)	21:42	147	19:46 (WT3_RH_E)	22:05	104	19:42 (WT3_RH_E)
26	08:32		16:32 (GC&T WT2)	07:38		17:42 (WT-ATS)	06:37		07:30 (MV Zuid WT2)	06:30		08:08 (MV Zuid WT2)	05:42		09:01 (MV Zuid WT1)	05:31		09:14 (MV Zuid WT1)
	17:24	22	16:54 (WT01-VLS)	18:19	12	17:54 (WT-ATS)	19:07	73	09:36 (MV Zuid WT1)	20:58	259	20:29 (WT1_RH_E)	21:43	144	19:45 (WT3_RH_E)	22:05	104	19:42 (WT3_RH_E)
27	08:31		16:31 (GC&T WT2)	07:36		17:40 (WT-ATS)	06:34		07:25 (MV Zuid WT2)	06:28		08:09 (MV Zuid WT2)	05:41		09:01 (MV Zuid WT1)	05:32		09:13 (MV Zuid WT1)
	17:26	24	16:55 (WT01-VLS)	18:21	15	17:55 (WT-ATS)	19:09	88	09:39 (MV Zuid WT1)	21:00	257	20:29 (WT1_RH_E)	21:44	143	19:45 (WT3_RH_E)	22:05	106	19:42 (WT3_RH_E)
28	08:30		16:32 (GC&T WT2)	07:34		17:41 (WT-ATS)	06:32		07:21 (MV Zuid WT2)	06:26		08:11 (MV Zuid WT2)	05:40		09:02 (MV Zuid WT1)	05:32		09:14 (MV Zuid WT1)
	17:28	23	16:55 (WT01-VLS)	18:23	16	17:57 (WT-ATS)	19:10	99	09:40 (MV Zuid WT1)	21:01	252	20:29 (WT1_RH_E)	21:46	140	19:44 (WT3_RH_E)	22:05	106	19:43 (WT3_RH_E)
29	08:28		16:32 (GC&T WT2)				07:30		08:19 (MV Zuid WT2)	06:24		08:14 (MV Zuid WT2)	05:39		09:03 (MV Zuid WT1)	05:33		09:13 (MV Zuid WT1)
	17:29	23	16:55 (GC&T WT2)				20:12	106	10:41 (MV Zuid WT1)	21:03	248	20:30 (WT1_RH_E)	21:47	138	19:45 (WT3_RH_E)	22:04	108	19:43 (WT3_RH_E)
30	08:27		16:32 (GC&T WT2)				07:28		08:17 (MV Zuid WT2)	06:22		08:17 (MV Zuid WT2)	05:38		09:04 (MV Zuid WT1)	05:33		09:14 (MV Zuid WT1)
	17:31	24	16:56 (GC&T WT2)				20:14	114	10:43 (MV Zuid WT1)	21:04	241	20:29 (WT1_RH_E)	21:48	134	19:44 (WT3_RH_E)	22:04	109	19:44 (WT3_RH_E)
31	08:25		16:32 (GC&T WT2)				07:25		08:15 (MV Zuid WT2)				05:37		09:04 (MV Zuid WT1)			
	17:33	23	16:55 (GC&T WT2)				20:15	121	10:45 (MV Zuid WT1)				21:49	132	19:43 (WT3_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		711			182			860			6680			5506			3321	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,68			0,69			0,57			0,57			0,57			0,57	
Total reduction		0,15			0,19			0,20			0,25			0,25			0,24	
Total, real		109			35			173			1677			1376			805	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: I - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		09:14 (MV Zuid WT1)	06:09		09:06 (MV Zuid WT1)	06:57		08:03 (MV Zuid WT2)	07:44			07:36			08:26		15:56 (GC&T WT1)
	22:04	111	19:45 (WT3_RH_E)	21:33	195	20:31 (WT1_RH_E)	20:33	219	19:45 (WT3_RH_E)	19:25			17:21			16:42	14	16:10 (GC&T WT1)
2	05:34		09:13 (MV Zuid WT1)	06:11		09:07 (MV Zuid WT1)	06:59		08:02 (MV Zuid WT2)	07:46			07:38			08:27		11:27 (WT163)
	22:04	112	19:44 (WT3_RH_E)	21:32	200	20:33 (WT1_RH_E)	20:31	215	19:43 (WT3_RH_E)	19:23			17:19			16:41	22	16:09 (GC&T WT1)
3	05:35		09:14 (MV Zuid WT1)	06:12		09:06 (MV Zuid WT1)	07:00		08:03 (MV Zuid WT2)	07:48			07:40			08:29		11:24 (WT163)
	22:03	112	19:45 (WT3_RH_E)	21:30	205	20:34 (WT1_RH_E)	20:29	209	19:41 (WT3_RH_E)	19:21			17:17			16:41	28	16:08 (GC&T WT1)
4	05:36		09:14 (MV Zuid WT1)	06:14		09:05 (MV Zuid WT1)	07:02		08:02 (MV Zuid WT2)	07:49			07:42		16:10 (GC&T WT2)	08:30		11:22 (WT163)
	22:03	115	19:46 (WT3_RH_E)	21:28	209	20:34 (WT1_RH_E)	20:26	203	19:38 (WT3_RH_E)	19:19			17:16	9	16:19 (GC&T WT2)	16:40	31	16:07 (GC&T WT1)
5	05:37		09:13 (MV Zuid WT1)	06:15		09:06 (MV Zuid WT1)	07:03		08:03 (MV Zuid WT2)	07:51			07:43		16:08 (GC&T WT2)	08:31		11:22 (WT163)
	22:02	117	19:46 (WT3_RH_E)	21:27	212	20:36 (WT1_RH_E)	20:24	198	19:37 (WT3_RH_E)	19:16			17:14	13	16:21 (GC&T WT2)	16:40	33	16:07 (GC&T WT1)
6	05:37		09:13 (MV Zuid WT1)	06:17		09:05 (MV Zuid WT1)	07:05		08:02 (MV Zuid WT2)	07:52			07:45		16:07 (GC&T WT2)	08:32		11:21 (WT163)
	22:02	119	19:47 (WT3_RH_E)	21:25	215	20:36 (WT1_RH_E)	20:22	189	19:33 (WT3_RH_E)	19:14			17:12	16	16:23 (GC&T WT2)	16:39	33	16:06 (GC&T WT1)
7	05:38		09:13 (MV Zuid WT1)	06:18		09:05 (MV Zuid WT1)	07:06		08:03 (MV Zuid WT2)	07:54			07:47		16:06 (GC&T WT2)	08:34		11:20 (WT163)
	22:01	121	19:48 (WT3_RH_E)	21:23	219	20:37 (WT1_RH_E)	20:20	181	19:31 (WT3_RH_E)	19:12			17:11	18	16:24 (GC&T WT2)	16:39	35	16:06 (GC&T WT1)
8	05:39		09:13 (MV Zuid WT1)	06:20		09:05 (MV Zuid WT1)	07:08		08:03 (MV Zuid WT2)	07:56			07:49		16:05 (GC&T WT2)	08:35		11:20 (WT163)
	22:01	123	19:49 (WT3_RH_E)	21:22	219	20:37 (WT1_RH_E)	20:18	171	19:27 (WT3_RH_E)	19:10			17:09	20	16:25 (GC&T WT2)	16:39	36	16:06 (GC&T WT1)
9	05:40		09:13 (MV Zuid WT1)	06:21		09:04 (MV Zuid WT1)	07:10		08:04 (MV Zuid WT2)	07:57			07:50		16:05 (GC&T WT2)	08:36		11:20 (WT163)
	22:00	125	19:49 (WT3_RH_E)	21:20	222	20:37 (WT1_RH_E)	20:15	157	19:22 (WT3_RH_E)	19:08			17:07	21	16:26 (GC&T WT2)	16:39	35	16:05 (GC&T WT1)
10	05:41		09:13 (MV Zuid WT1)	06:23		09:04 (MV Zuid WT1)	07:11		08:04 (MV Zuid WT2)	07:59		18:19 (WT-ATS)	07:52		16:03 (GC&T WT2)	08:37		11:19 (WT163)
	21:59	127	19:50 (WT3_RH_E)	21:18	223	20:37 (WT1_RH_E)	20:13	132	10:39 (MV Zuid WT1)	19:05	8	18:27 (WT-ATS)	17:06	23	16:26 (GC&T WT2)	16:38	41	16:05 (GC&T WT1)
11	05:42		09:13 (MV Zuid WT1)	06:24		09:04 (MV Zuid WT1)	07:13		08:06 (MV Zuid WT2)	08:01		18:17 (WT-ATS)	07:54		16:03 (GC&T WT2)	08:38		11:19 (WT163)
	21:59	129	19:51 (WT3_RH_E)	21:16	225	20:37 (WT1_RH_E)	20:11	126	10:38 (MV Zuid WT1)	19:03	12	18:29 (WT-ATS)	17:04	23	16:26 (GC&T WT2)	16:38	42	16:05 (GC&T WT1)
12	05:43		09:12 (MV Zuid WT1)	06:26		08:29 (MV Zuid WT2)	07:14		08:06 (MV Zuid WT2)	08:02		18:15 (WT-ATS)	07:55		16:03 (GC&T WT2)	08:39		11:19 (WT163)
	21:58	132	19:52 (WT3_RH_E)	21:14	231	20:38 (WT1_RH_E)	20:09	122	10:36 (MV Zuid WT1)	19:01	14	18:29 (WT-ATS)	17:03	24	16:27 (GC&T WT2)	16:38	42	16:04 (GC&T WT1)
13	05:44		09:12 (MV Zuid WT1)	06:27		08:23 (MV Zuid WT2)	07:16		08:08 (MV Zuid WT2)	08:04		18:14 (WT-ATS)	07:57		16:04 (GC&T WT2)	08:40		11:19 (WT163)
	21:57	134	19:52 (WT3_RH_E)	21:12	243	20:37 (WT1_RH_E)	20:06	115	10:35 (MV Zuid WT1)	18:59	16	18:30 (WT-ATS)	17:01	23	16:27 (GC&T WT2)	16:38	44	16:01 (GC&T WT3)
14	05:45		09:12 (MV Zuid WT1)	06:29		08:21 (MV Zuid WT2)	07:17		08:09 (MV Zuid WT2)	08:06		18:14 (WT-ATS)	07:59		16:04 (GC&T WT2)	08:41		11:19 (WT163)
	21:56	136	19:53 (WT3_RH_E)	21:10	248	20:37 (WT1_RH_E)	20:04	108	10:32 (MV Zuid WT1)	18:57	15	18:29 (WT-ATS)	17:00	23	16:27 (WT01-VLS)	16:38	45	16:02 (GC&T WT3)
15	05:46		09:12 (MV Zuid WT1)	06:30		08:18 (MV Zuid WT2)	07:19		08:11 (MV Zuid WT2)	08:07		18:14 (WT-ATS)	08:01		16:04 (GC&T WT2)	08:42		11:19 (WT163)
	21:55	138	19:53 (WT3_RH_E)	21:09	255	20:37 (WT1_RH_E)	20:02	100	10:30 (MV Zuid WT1)	18:55	13	18:27 (WT-ATS)	16:59	24	16:28 (WT01-VLS)	16:38	47	16:03 (GC&T WT3)
16	05:48		09:11 (MV Zuid WT1)	06:32		08:17 (MV Zuid WT2)	07:21		08:13 (MV Zuid WT2)	08:09		18:13 (WT-ATS)	08:02		16:05 (GC&T WT2)	08:43		11:20 (WT163)
	21:54	142	19:54 (WT3_RH_E)	21:07	257	20:37 (WT1_RH_E)	19:59	90	10:27 (MV Zuid WT1)	18:52	11	18:24 (WT-ATS)	16:57	22	16:27 (WT01-VLS)	16:38	48	16:04 (GC&T WT3)
17	05:49		09:11 (MV Zuid WT1)	06:34		08:14 (MV Zuid WT2)	07:22		08:17 (MV Zuid WT2)	08:11		18:14 (WT-ATS)	08:04		16:05 (GC&T WT2)	08:44		11:19 (WT163)
	21:53	144	19:55 (WT3_RH_E)	21:05	261	20:36 (WT1_RH_E)	19:57	77	10:25 (MV Zuid WT1)	18:50	8	18:22 (WT-ATS)	16:56	20	16:25 (WT01-VLS)	16:38	49	16:04 (GC&T WT3)
18	05:50		09:10 (MV Zuid WT1)	06:35		08:13 (MV Zuid WT2)	07:24		09:23 (MV Zuid WT1)	08:12		18:14 (WT-ATS)	08:06		16:06 (GC&T WT2)	08:44		11:20 (WT163)
	21:52	146	19:55 (WT3_RH_E)	21:03	261	20:35 (WT1_RH_E)	19:55	59	10:22 (MV Zuid WT1)	18:48	7	18:21 (WT-ATS)	16:55	17	16:23 (WT01-VLS)	16:39	49	16:04 (GC&T WT3)
19	05:51		09:10 (MV Zuid WT1)	06:37		08:12 (MV Zuid WT2)	07:25		09:26 (MV Zuid WT1)	08:14		18:16 (WT-ATS)	08:07		16:07 (GC&T WT2)	08:45		11:20 (WT163)
	21:51	149	19:56 (WT3_RH_E)	21:01	262	20:33 (WT1_RH_E)	19:53	53	10:19 (MV Zuid WT1)	18:46	3	18:19 (WT-ATS)	16:53	15	16:22 (WT01-VLS)	16:39	50	16:05 (GC&T WT3)
20	05:52		09:10 (MV Zuid WT1)	06:38		08:11 (MV Zuid WT2)	07:27		09:28 (MV Zuid WT1)	08:16			08:09		16:08 (GC&T WT2)	08:46		11:20 (WT163)
	21:50	152	19:57 (WT3_RH_E)	20:59	261	20:32 (WT1_RH_E)	19:50	47	10:15 (MV Zuid WT1)	18:44			16:52	13	16:21 (WT01-VLS)	16:39	50	16:05 (GC&T WT3)
21	05:54		09:10 (MV Zuid WT1)	06:40		08:09 (MV Zuid WT2)	07:28		09:32 (MV Zuid WT1)	08:17			08:11		15:59 (GC&T WT1)	08:46		11:21 (WT163)
	21:49	153	19:57 (WT3_RH_E)	20:57	260	20:29 (WT1_RH_E)	19:48	39	10:11 (MV Zuid WT1)	18:42			16:51	17	16:20 (WT01-VLS)	16:40	50	16:06 (GC&T WT3)
22	05:55		09:09 (MV Zuid WT1)	06:41		08:09 (MV Zuid WT2)	07:30		09:37 (MV Zuid WT1)	08:19			08:12		15:57 (GC&T WT1)	08:47		11:21 (WT163)
	21:48	156	19:58 (WT3_RH_E)	20:54	257	20:28 (WT1_RH_E)	19:46	29	10:06 (MV Zuid WT1)	18:40			16:50	17	16:18 (GC&T WT2)	16:40	50	16:06 (GC&T WT3)
23	05:56		09:09 (MV Zuid WT1)	06:43		08:07 (MV Zuid WT2)	07:32		09:45 (MV Zuid WT1)	08:21			08:14		15:56 (GC&T WT1)	08:47		11:22 (WT163)
	21:46	158	19:58 (WT3_RH_E)	20:52	254	20:25 (WT1_RH_E)	19:43	11	09:56 (MV Zuid WT1)	18:38			16:49	17	16:17 (GC&T WT2)	16:41	50	16:07 (GC&T WT3)
24	05:58		09:08 (MV Zuid WT1)	06:44		08:07 (MV Zuid WT2)	07:33			08:23			08:15		15:56 (GC&T WT1)	08:48		11:22 (WT163)
	21:45	161	19:58 (WT3_RH_E)	20:50	250	20:24 (WT1_RH_E)	19:41			18:36			16:48	14	16:16 (GC&T WT2)	16:41	50	16:07 (GC&T WT3)
25	05:59		09:09 (MV Zuid WT1)	06:46		08:06 (MV Zuid WT2)	07:35			07:24			08:17		15:56 (GC&T WT1)	08:48		11:23 (WT163)
	21:44	162	19:59 (WT3_RH_E)	20:48	245	20:21 (WT1_RH_E)	19:39			17:34			16:47	14	16:10 (GC&T WT1)	16:42	49	16:07 (GC&T WT3)
26	06:00		09:08 (MV Zuid WT1)	06:48		08:06 (MV Zuid WT2)	07:36			07:26			08:18		15:55 (GC&T WT1)	08:49		11:24 (WT163)
	21:42	165	19:59 (WT3_RH_E)	20:46	234	19:54 (WT3_RH_E)	19:37			17:32			16:46	15	16:10 (GC&T WT1)	16:43	48	16:08 (GC&T WT3)
27	06:02		09:08 (MV Zuid WT1)	06:49		08:04 (MV Zuid WT2)	07:38			07:28			08:20		15:55 (GC&T WT1)	08:49		11:25 (WT163)
	21:41	168	20:00 (WT3_RH_E)	20:44	234	19:52 (WT3_RH_E)	19:34			17:30			16:45	16	16:11 (GC&T WT1)	16:43	48	16:09 (GC&T WT3)
28	06:03		09:08 (MV Zuid WT1)	06:51		08:04 (MV Zuid WT2)	07:40			07:29			08:21		15:55 (GC&T WT1)	08:49		11:25 (WT163)
	21:39	170	20:01 (WT3_RH_E)	20:42	232	19:51 (WT3_RH_E)	19:32			17:28			16:44	16	16:11 (GC&T WT1)	16:44	47	16:09 (GC&T WT3)
29	06:05		09:07 (MV Zuid WT1)	06:52		08:03 (MV Zuid WT2)	07:41			07:31			08:23		15:56 (GC&T WT1)	08:49		11:26 (WT163)
	21:38	173	20:01 (WT3_RH_E)	20:40	229	19:49 (WT3_RH_E)	19:30			17:26			16:44	15	16:11 (GC&T WT1)	16:45	46	16:09 (GC&T WT3)
30	06:06		09:07 (MV Zuid WT1)	06:54		08:03 (MV Zuid WT2)	07:43			07:33			08:24		15:56 (GC&T WT1)	08:49		11:27 (WT163)
	21:37	182	20:26 (WT1_RH_E)	20:37	225	19:48 (WT3_RH_E)	19:28			17:25			16:43	15	16:11 (GC&T WT1)	16:46	45	16:12 (GC&T WT1)
31	06:08		09:07 (MV Zuid WT1)	06:55		08:03 (MV Zuid WT2)				07:35						08:49		11:28 (WT163)
	21:35	191	20:30 (WT1_RH_E)	20:35	222	19:46 (WT3_RH_E)				17:23						16:47	43	16:13 (GC&T WT1)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		4423			7265			2850			107			480			1300	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,57			0,57			0,57			0,65			0,71			0,64	
Total reduction		0,25			0,26			0,24			0,23			0,17			0,13	
Total, real		1087			1861			677			24			83			170	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: J - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		12:08 (WT163)	08:24			07:32		17:50 (WT-ATS)	07:23			06:20		07:37 (MV Zuid WT2)	05:36		07:42 (MV Zuid WT2)
	16:48	48	12:56 (WT163)	17:35			18:25	9	17:59 (WT-ATS)	20:17			21:06	153	20:34 (WT1_RH_E)	21:50	86	20:00 (WT3_RH_E)
2	08:49		12:09 (WT163)	08:22		17:03 (GC&T WT2)	07:30		17:50 (WT-ATS)	07:21			06:18		07:36 (MV Zuid WT2)	05:36		07:44 (MV Zuid WT2)
	16:49	47	12:56 (WT163)	17:36	4	17:07 (GC&T WT2)	18:26	11	18:01 (WT-ATS)	20:19			21:08	153	20:33 (WT1_RH_E)	21:51	84	20:00 (WT3_RH_E)
3	08:49		12:09 (WT163)	08:21		17:01 (GC&T WT2)	07:28		17:50 (WT-ATS)	07:19			06:16		07:35 (MV Zuid WT2)	05:35		07:44 (MV Zuid WT2)
	16:50	46	12:55 (WT163)	17:38	8	17:09 (GC&T WT2)	18:28	13	18:03 (WT-ATS)	20:20			21:09	154	20:33 (WT1_RH_E)	21:52	81	19:59 (WT3_RH_E)
4	08:49		12:10 (WT163)	08:19		17:00 (GC&T WT2)	07:26		17:50 (WT-ATS)	07:16			06:15		07:36 (MV Zuid WT2)	05:34		07:44 (MV Zuid WT2)
	16:51	47	16:18 (GC&T WT3)	17:40	11	17:11 (GC&T WT2)	18:30	15	18:05 (WT-ATS)	20:22			21:11	153	20:33 (WT1_RH_E)	21:53	99	19:58 (WT3_RH_E)
5	08:49		12:12 (WT163)	08:18		17:00 (GC&T WT2)	07:23		17:50 (WT-ATS)	07:14			06:13		07:35 (MV Zuid WT2)	05:34		07:45 (MV Zuid WT2)
	16:53	46	16:19 (GC&T WT3)	17:42	13	17:13 (GC&T WT2)	18:32	14	18:04 (WT-ATS)	20:23			21:12	153	20:32 (WT1_RH_E)	21:54	106	19:58 (WT3_RH_E)
6	08:48		12:12 (WT163)	08:16		16:59 (GC&T WT2)	07:21		17:51 (WT-ATS)	07:12			06:11		07:35 (MV Zuid WT2)	05:33		07:45 (MV Zuid WT2)
	16:54	46	16:20 (GC&T WT3)	17:44	16	17:15 (GC&T WT2)	18:33	12	18:03 (WT-ATS)	20:25			21:14	151	20:31 (WT1_RH_E)	21:55	110	19:57 (WT3_RH_E)
7	08:48		12:14 (WT163)	08:14		16:58 (GC&T WT2)	07:19		17:52 (WT-ATS)	07:10			06:09		07:35 (MV Zuid WT2)	05:32		07:46 (MV Zuid WT2)
	16:55	45	16:22 (GC&T WT3)	17:45	19	17:17 (GC&T WT2)	18:35	9	18:01 (WT-ATS)	20:27			21:16	152	20:31 (WT1_RH_E)	21:56	112	19:57 (WT3_RH_E)
8	08:48		12:14 (WT163)	08:13		16:58 (GC&T WT2)	07:17			07:08			06:08		07:35 (MV Zuid WT2)	05:32		07:47 (MV Zuid WT2)
	16:56	45	16:23 (GC&T WT3)	17:47	20	17:18 (GC&T WT2)	18:37			20:28			21:17	150	20:30 (WT1_RH_E)	21:57	115	19:56 (WT3_RH_E)
9	08:47		12:15 (WT163)	08:11		16:59 (GC&T WT2)	07:15			07:05			06:06		07:35 (MV Zuid WT2)	05:31		07:47 (MV Zuid WT2)
	16:58	44	16:24 (GC&T WT3)	17:49	21	17:20 (GC&T WT2)	18:38			20:30			21:19	150	20:30 (WT1_RH_E)	21:58	115	19:55 (WT3_RH_E)
10	08:47		12:18 (WT163)	08:09		16:59 (GC&T WT2)	07:13			07:03			06:04		07:35 (MV Zuid WT2)	05:31		07:48 (MV Zuid WT2)
	16:59	42	16:26 (GC&T WT3)	17:51	21	17:20 (GC&T WT2)	18:40			20:32			21:20	147	20:28 (WT1_RH_E)	21:59	115	19:54 (WT3_RH_E)
11	08:46		12:19 (WT163)	08:07		16:59 (GC&T WT2)	07:10			07:01		19:38 (WT3_RH_E)	06:03		07:35 (MV Zuid WT2)	05:31		07:49 (MV Zuid WT2)
	17:00	40	16:27 (GC&T WT3)	17:53	21	17:20 (GC&T WT2)	18:42			20:33	13	19:51 (WT3_RH_E)	21:22	145	20:27 (WT1_RH_E)	21:59	115	19:54 (WT3_RH_E)
12	08:46		12:20 (WT163)	08:06		16:59 (GC&T WT2)	07:08			06:59		08:07 (MV Zuid WT2)	06:01		07:35 (MV Zuid WT2)	05:30		07:49 (MV Zuid WT2)
	17:02	40	16:29 (GC&T WT3)	17:54	20	17:19 (GC&T WT2)	18:44			20:35	39	19:55 (WT3_RH_E)	21:23	142	20:25 (WT1_RH_E)	22:00	113	19:52 (WT3_RH_E)
13	08:45		12:22 (WT163)	08:04		17:00 (GC&T WT2)	07:06			06:57		08:03 (MV Zuid WT2)	05:59		07:35 (MV Zuid WT2)	05:30		07:49 (MV Zuid WT2)
	17:03	36	16:30 (GC&T WT3)	17:56	19	17:19 (GC&T WT2)	18:45			20:37	55	19:58 (WT3_RH_E)	21:25	135	20:22 (WT1_RH_E)	22:01	114	19:51 (WT3_RH_E)
14	08:44		12:26 (WT163)	08:02		17:01 (GC&T WT2)	07:04			06:55		07:59 (MV Zuid WT2)	05:58		07:35 (MV Zuid WT2)	05:30		07:50 (MV Zuid WT2)
	17:05	30	16:31 (GC&T WT3)	17:58	17	17:18 (GC&T WT2)	18:47			20:38	67	20:01 (WT3_RH_E)	21:26	126	20:10 (WT3_RH_E)	22:01	112	19:50 (WT3_RH_E)
15	08:43		12:29 (WT163)	08:00		17:02 (GC&T WT2)	07:01			06:52		07:57 (MV Zuid WT2)	05:56		07:35 (MV Zuid WT2)	05:30		07:50 (MV Zuid WT2)
	17:06	22	16:30 (GC&T WT3)	18:00	14	17:16 (GC&T WT2)	18:49			20:40	76	20:03 (WT3_RH_E)	21:28	125	20:10 (WT3_RH_E)	22:02	110	19:49 (WT3_RH_E)
16	08:43		12:35 (WT163)	07:58		17:04 (GC&T WT2)	06:59			06:50		07:54 (MV Zuid WT2)	05:55		07:36 (MV Zuid WT2)	05:30		07:51 (MV Zuid WT2)
	17:08	3	12:38 (WT163)	18:02	11	17:15 (GC&T WT2)	18:50			20:42	84	20:04 (WT3_RH_E)	21:29	123	20:10 (WT3_RH_E)	22:02	105	11:34 (MV Zuid WT1)
17	08:42			07:56		17:08 (GC&T WT2)	06:57			06:48		07:52 (MV Zuid WT2)	05:53		07:36 (MV Zuid WT2)	05:30		07:51 (MV Zuid WT2)
	17:09			18:03	3	17:11 (GC&T WT2)	18:52			20:43	90	20:06 (WT3_RH_E)	21:31	121	20:09 (WT3_RH_E)	22:03	107	11:35 (MV Zuid WT1)
18	08:41		16:38 (GC&T WT1)	07:54			06:55			06:46		07:50 (MV Zuid WT2)	05:52		07:36 (MV Zuid WT2)	05:29		07:52 (MV Zuid WT2)
	17:11	1	16:39 (GC&T WT1)	18:05			18:54			20:45	97	20:07 (WT3_RH_E)	21:32	119	20:08 (WT3_RH_E)	22:03	106	11:35 (MV Zuid WT1)
19	08:40		16:37 (GC&T WT1)	07:52			06:52			06:44		07:49 (MV Zuid WT2)	05:51		07:37 (MV Zuid WT2)	05:30		07:52 (MV Zuid WT2)
	17:12	3	16:40 (GC&T WT1)	18:07			18:55			20:46	101	20:08 (WT3_RH_E)	21:34	117	20:08 (WT3_RH_E)	22:04	107	11:36 (MV Zuid WT1)
20	08:39		16:37 (GC&T WT1)	07:50			06:50			06:42		07:47 (MV Zuid WT2)	05:49		07:37 (MV Zuid WT2)	05:30		07:52 (MV Zuid WT2)
	17:14	5	16:42 (GC&T WT1)	18:09			18:57			20:48	113	20:22 (WT1_RH_E)	21:35	116	20:08 (WT3_RH_E)	22:04	107	11:36 (MV Zuid WT1)
21	08:38		16:37 (GC&T WT1)	07:49			06:48			06:40		07:46 (MV Zuid WT2)	05:48		07:37 (MV Zuid WT2)	05:30		07:52 (MV Zuid WT2)
	17:16	7	16:44 (GC&T WT1)	18:11			18:59			20:50	121	20:23 (WT1_RH_E)	21:37	113	20:07 (WT3_RH_E)	22:04	107	11:36 (MV Zuid WT1)
22	08:37		16:37 (GC&T WT1)	07:47			06:46			06:38		07:44 (MV Zuid WT2)	05:47		07:37 (MV Zuid WT2)	05:30		07:53 (MV Zuid WT2)
	17:17	9	16:46 (GC&T WT1)	18:12			19:00			20:51	129	20:25 (WT1_RH_E)	21:38	112	20:06 (WT3_RH_E)	22:04	107	11:37 (MV Zuid WT1)
23	08:36		16:38 (GC&T WT1)	07:44			06:43			06:36		07:43 (MV Zuid WT2)	05:46		07:38 (MV Zuid WT2)	05:30		07:53 (MV Zuid WT2)
	17:19	10	16:48 (GC&T WT1)	18:14			19:02			20:53	132	20:26 (WT1_RH_E)	21:39	110	20:06 (WT3_RH_E)	22:04	107	11:37 (MV Zuid WT1)
24	08:35		16:37 (GC&T WT1)	07:42			06:41			06:34		07:42 (MV Zuid WT2)	05:44		07:38 (MV Zuid WT2)	05:30		07:53 (MV Zuid WT2)
	17:21	12	16:49 (GC&T WT1)	18:16			19:04			20:55	136	20:28 (WT1_RH_E)	21:41	107	20:05 (WT3_RH_E)	22:05	106	11:36 (MV Zuid WT1)
25	08:33		16:38 (GC&T WT1)	07:40			06:39			06:32		07:41 (MV Zuid WT2)	05:43		07:39 (MV Zuid WT2)	05:31		07:53 (MV Zuid WT2)
	17:22	14	16:52 (GC&T WT1)	18:18			19:05			20:56	140	20:29 (WT1_RH_E)	21:42	105	20:05 (WT3_RH_E)	22:05	107	11:37 (MV Zuid WT1)
26	08:32		16:39 (GC&T WT1)	07:38			06:37			06:30		07:40 (MV Zuid WT2)	05:42		07:39 (MV Zuid WT2)	05:31		07:53 (MV Zuid WT2)
	17:24	15	16:54 (GC&T WT1)	18:19			19:07			20:58	144	20:31 (WT1_RH_E)	21:43	102	20:04 (WT3_RH_E)	22:05	105	11:36 (MV Zuid WT1)
27	08:31		16:39 (GC&T WT1)	07:36		17:53 (WT-ATS)	06:34			06:28		07:39 (MV Zuid WT2)	05:41		07:40 (MV Zuid WT2)	05:32		07:53 (MV Zuid WT2)
	17:26	14	16:53 (GC&T WT1)	18:21	2	17:55 (WT-ATS)	19:09			21:00	147	20:32 (WT1_RH_E)	21:44	99	20:03 (WT3_RH_E)	22:05	105	19:49 (WT3_RH_E)
28	08:30		16:40 (GC&T WT1)	07:34		17:51 (WT-ATS)	06:32			06:26		07:38 (MV Zuid WT2)	05:40		07:40 (MV Zuid WT2)	05:32		07:53 (MV Zuid WT2)
	17:28	13	16:53 (GC&T WT1)	18:23	6	17:57 (WT-ATS)	19:10			21:01	149	20:33 (WT1_RH_E)	21:46	97	20:03 (WT3_RH_E)	22:05	111	19:53 (WT3_RH_E)
29	08:28		16:41 (GC&T WT1)				07:30			06:24		07:38 (MV Zuid WT2)	05:39		07:41 (MV Zuid WT2)	05:33		07:53 (MV Zuid WT2)
	17:29	11	16:52 (GC&T WT1)				20:12			21:03	152	20:35 (WT1_RH_E)	21:47	94	20:03 (WT3_RH_E)	22:04	112	19:54 (WT3_RH_E)
30	08:27		16:44 (GC&T WT1)				07:28			06:22		07:38 (MV Zuid WT2)	05:38		07:42 (MV Zuid WT2)	05:33		07:53 (MV Zuid WT2)
	17:31	8	16:52 (GC&T WT1)				20:14			21:04	151	20:34 (WT1_RH_E)	21:48	92	20:02 (WT3_RH_E)	22:04	115	19:56 (WT3_RH_E)
31	08:25						07:25						05:37		07:42 (MV Zuid WT2)			
	17:33						20:15						21:49	89	20:01 (WT3_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		749			246			83			2136			3905			3201	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,68			0,69			0,64			0,59			0,60			0,61	
Total reduction		0,15			0,19			0,23			0,26			0,26			0,26	
Total, real		115			48			19			555			1026			836	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: J - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		07:53 (MV Zuid WT2)	06:09		07:45 (MV Zuid WT2)	06:57		19:38 (WT3_RH_E)	07:44			07:36		16:28 (GC&T WT2)	08:26		12:01 (WT163)
	22:04	114	19:57 (WT3_RH_E)	21:33	144	20:36 (WT1_RH_E)	20:33	12	19:50 (WT3_RH_E)	19:25			17:21	22	16:50 (GC&T WT2)	16:42	41	16:10 (GC&T WT3)
2	05:34		07:52 (MV Zuid WT2)	06:11		07:46 (MV Zuid WT2)	06:59			07:46			07:38		16:27 (GC&T WT2)	08:27		12:01 (WT163)
	22:04	115	19:58 (WT3_RH_E)	21:32	146	20:38 (WT1_RH_E)	20:31			19:23			17:19	22	16:49 (GC&T WT2)	16:41	42	16:09 (GC&T WT3)
3	05:35		07:53 (MV Zuid WT2)	06:12		07:45 (MV Zuid WT2)	07:00			07:48			07:40		16:28 (GC&T WT2)	08:29		12:00 (WT163)
	22:03	114	20:00 (WT3_RH_E)	21:30	148	20:39 (WT1_RH_E)	20:29			19:21			17:17	20	16:48 (GC&T WT2)	16:41	43	16:08 (GC&T WT3)
4	05:36		07:53 (MV Zuid WT2)	06:14		07:45 (MV Zuid WT2)	07:02			07:49			07:42		16:28 (GC&T WT2)	08:30		11:59 (WT163)
	22:03	114	20:01 (WT3_RH_E)	21:28	149	20:39 (WT1_RH_E)	20:26			19:19			17:16	18	16:46 (GC&T WT2)	16:40	44	16:07 (GC&T WT3)
5	05:37		07:52 (MV Zuid WT2)	06:15		07:45 (MV Zuid WT2)	07:03			07:51			07:43		16:29 (GC&T WT2)	08:31		11:59 (WT163)
	22:02	112	20:01 (WT3_RH_E)	21:27	151	20:41 (WT1_RH_E)	20:24			19:16			17:14	15	16:44 (GC&T WT2)	16:40	45	16:07 (GC&T WT3)
6	05:37		07:52 (MV Zuid WT2)	06:17		07:45 (MV Zuid WT2)	07:05			07:52		18:30 (WT-ATS)	07:45		16:30 (GC&T WT2)	08:32		11:58 (WT163)
	22:02	110	20:03 (WT3_RH_E)	21:25	151	20:41 (WT1_RH_E)	20:22			19:14	6	18:36 (WT-ATS)	17:12	13	16:43 (GC&T WT2)	16:39	46	16:06 (GC&T WT3)
7	05:38		07:52 (MV Zuid WT2)	06:18		07:45 (MV Zuid WT2)	07:06			07:54		18:27 (WT-ATS)	07:47		16:31 (GC&T WT2)	08:34		11:58 (WT163)
	22:01	107	20:04 (WT3_RH_E)	21:23	153	20:42 (WT1_RH_E)	20:20			19:12	11	18:38 (WT-ATS)	17:11	10	16:41 (GC&T WT2)	16:39	47	16:06 (GC&T WT3)
8	05:39		07:52 (MV Zuid WT2)	06:20		07:45 (MV Zuid WT2)	07:08			07:56		18:26 (WT-ATS)	07:49		16:32 (GC&T WT2)	08:35		11:58 (WT163)
	22:01	102	20:05 (WT3_RH_E)	21:22	153	20:42 (WT1_RH_E)	20:18			19:10	13	18:39 (WT-ATS)	17:09	8	16:40 (GC&T WT2)	16:39	47	16:06 (GC&T WT3)
9	05:40		07:52 (MV Zuid WT2)	06:21		07:44 (MV Zuid WT2)	07:10			07:57		18:24 (WT-ATS)	07:50		16:34 (GC&T WT2)	08:36		11:58 (WT163)
	22:00	91	20:06 (WT3_RH_E)	21:20	154	20:42 (WT1_RH_E)	20:15			19:08	15	18:39 (WT-ATS)	17:07	4	16:38 (GC&T WT2)	16:39	46	12:44 (WT163)
10	05:41		07:51 (MV Zuid WT2)	06:23		07:45 (MV Zuid WT2)	07:11			07:59		18:24 (WT-ATS)	07:52			08:37		11:58 (WT163)
	21:59	83	20:07 (WT3_RH_E)	21:18	153	20:42 (WT1_RH_E)	20:13			19:05	14	18:38 (WT-ATS)	17:06			16:38	47	12:45 (WT163)
11	05:42		07:51 (MV Zuid WT2)	06:24		07:45 (MV Zuid WT2)	07:13			08:01		18:24 (WT-ATS)	07:54		16:17 (GC&T WT1)	08:38		11:58 (WT163)
	21:59	84	20:08 (WT3_RH_E)	21:16	154	20:42 (WT1_RH_E)	20:11			19:03	12	18:36 (WT-ATS)	17:04	2	16:19 (GC&T WT1)	16:38	48	12:46 (WT163)
12	05:43		07:51 (MV Zuid WT2)	06:26		07:45 (MV Zuid WT2)	07:14			08:02		18:23 (WT-ATS)	07:55		16:14 (GC&T WT1)	08:39		11:58 (WT163)
	21:58	87	20:09 (WT3_RH_E)	21:14	154	20:43 (WT1_RH_E)	20:09			19:01	10	18:33 (WT-ATS)	17:03	9	16:23 (GC&T WT1)	16:38	48	12:46 (WT163)
13	05:44		07:50 (MV Zuid WT2)	06:27		07:45 (MV Zuid WT2)	07:16			08:04		18:24 (WT-ATS)	07:57		16:13 (GC&T WT1)	08:40		11:58 (WT163)
	21:57	91	20:10 (WT3_RH_E)	21:12	153	20:42 (WT1_RH_E)	20:06			18:59	7	18:31 (WT-ATS)	17:01	11	16:24 (GC&T WT1)	16:38	49	12:47 (WT163)
14	05:45		07:50 (MV Zuid WT2)	06:29		07:46 (MV Zuid WT2)	07:17			08:06		18:25 (WT-ATS)	07:59		16:12 (GC&T WT1)	08:41		11:58 (WT163)
	21:56	94	20:11 (WT3_RH_E)	21:10	151	20:42 (WT1_RH_E)	20:04			18:57	4	18:29 (WT-ATS)	17:00	13	16:25 (GC&T WT1)	16:38	50	12:48 (WT163)
15	05:46		07:50 (MV Zuid WT2)	06:30		07:46 (MV Zuid WT2)	07:19			08:07			08:01		16:12 (GC&T WT1)	08:42		11:59 (WT163)
	21:55	95	20:12 (WT3_RH_E)	21:08	148	20:40 (WT1_RH_E)	20:02			18:55			16:59	14	16:26 (GC&T WT1)	16:38	50	12:49 (WT163)
16	05:48		07:49 (MV Zuid WT2)	06:32		07:47 (MV Zuid WT2)	07:21			08:09			08:02		16:12 (GC&T WT1)	08:43		11:59 (WT163)
	21:54	99	20:13 (WT3_RH_E)	21:07	146	20:39 (WT1_RH_E)	19:59			18:52			16:57	15	16:27 (GC&T WT1)	16:38	51	12:50 (WT163)
17	05:49		07:49 (MV Zuid WT2)	06:33		07:47 (MV Zuid WT2)	07:22			08:11			08:04		16:11 (GC&T WT1)	08:44		11:59 (WT163)
	21:53	100	20:13 (WT3_RH_E)	21:05	143	20:37 (WT1_RH_E)	19:57			18:50			16:56	14	16:25 (GC&T WT1)	16:38	50	12:49 (WT163)
18	05:50		07:49 (MV Zuid WT2)	06:35		07:48 (MV Zuid WT2)	07:24			08:12			08:06		16:11 (GC&T WT1)	08:44		11:59 (WT163)
	21:52	103	20:14 (WT3_RH_E)	21:03	138	20:35 (WT1_RH_E)	19:55			18:48			16:55	12	16:23 (GC&T WT1)	16:39	51	12:50 (WT163)
19	05:51		07:48 (MV Zuid WT2)	06:37		07:48 (MV Zuid WT2)	07:25			08:14			08:07		16:12 (GC&T WT1)	08:45		12:00 (WT163)
	21:51	106	20:14 (WT3_RH_E)	21:01	136	20:33 (WT1_RH_E)	19:53			18:46			16:53	10	16:22 (GC&T WT1)	16:39	51	12:51 (WT163)
20	05:52		07:49 (MV Zuid WT2)	06:38		07:49 (MV Zuid WT2)	07:27			08:16			08:09		16:12 (GC&T WT1)	08:46		12:00 (WT163)
	21:50	108	20:16 (WT3_RH_E)	20:59	133	20:32 (WT1_RH_E)	19:50			18:44			16:52	9	16:21 (GC&T WT1)	16:39	51	12:51 (WT163)
21	05:54		07:48 (MV Zuid WT2)	06:40		07:49 (MV Zuid WT2)	07:28			08:17			08:11		16:13 (GC&T WT1)	08:46		12:01 (WT163)
	21:49	110	20:16 (WT3_RH_E)	20:56	128	20:29 (WT1_RH_E)	19:48			18:42			16:51	7	16:20 (GC&T WT1)	16:40	51	12:52 (WT163)
22	05:55		07:48 (MV Zuid WT2)	06:41		07:51 (MV Zuid WT2)	07:30			08:19			08:12		16:13 (GC&T WT1)	08:47		12:01 (WT163)
	21:48	112	20:17 (WT3_RH_E)	20:54	120	20:28 (WT1_RH_E)	19:46			18:40			16:50	5	16:18 (GC&T WT1)	16:40	51	12:52 (WT163)
23	05:56		07:47 (MV Zuid WT2)	06:43		07:51 (MV Zuid WT2)	07:32			08:21			08:14		16:14 (GC&T WT1)	08:47		12:02 (WT163)
	21:46	114	20:17 (WT3_RH_E)	20:52	109	20:25 (WT1_RH_E)	19:43			18:38			16:49	3	16:17 (GC&T WT1)	16:41	51	12:53 (WT163)
24	05:58		07:47 (MV Zuid WT2)	06:44		07:53 (MV Zuid WT2)	07:33			08:23			08:15		16:15 (GC&T WT1)	08:48		12:02 (WT163)
	21:45	116	20:18 (WT3_RH_E)	20:50	100	20:12 (WT3_RH_E)	19:41			18:36			16:48	1	16:16 (GC&T WT1)	16:41	51	12:53 (WT163)
25	05:59		07:47 (MV Zuid WT2)	06:46		07:53 (MV Zuid WT2)	07:35			07:24		16:37 (GC&T WT2)	08:17			08:48		12:02 (WT163)
	21:44	119	20:19 (WT3_RH_E)	20:48	96	20:10 (WT3_RH_E)	19:39			17:34	6	16:43 (GC&T WT2)	16:47			16:42	51	12:53 (WT163)
26	06:00		07:46 (MV Zuid WT2)	06:48		07:55 (MV Zuid WT2)	07:36			07:26		16:33 (GC&T WT2)	08:18			08:49		12:03 (WT163)
	21:42	121	20:19 (WT3_RH_E)	20:46	89	20:08 (WT3_RH_E)	19:37			17:32	12	16:45 (GC&T WT2)	16:46			16:43	51	12:54 (WT163)
27	06:02		07:46 (MV Zuid WT2)	06:49		07:56 (MV Zuid WT2)	07:38			07:28		16:31 (GC&T WT2)	08:20		12:08 (WT163)	08:49		12:04 (WT163)
	21:41	122	20:19 (WT3_RH_E)	20:44	83	20:06 (WT3_RH_E)	19:34			17:30	15	16:46 (GC&T WT2)	16:45	21	16:09 (GC&T WT3)	16:43	50	12:54 (WT163)
28	06:03		07:46 (MV Zuid WT2)	06:51		07:59 (MV Zuid WT2)	07:40			07:29		16:30 (GC&T WT2)	08:21		12:05 (WT163)	08:49		12:04 (WT163)
	21:39	124	20:20 (WT3_RH_E)	20:42	75	20:04 (WT3_RH_E)	19:32			17:28	17	16:47 (GC&T WT2)	16:44	30	16:10 (GC&T WT3)	16:44	51	12:55 (WT163)
29	06:05		07:46 (MV Zuid WT2)	06:52		08:00 (MV Zuid WT2)	07:41			07:31		16:29 (GC&T WT2)	08:23		12:04 (WT163)	08:49		12:05 (WT163)
	21:38	125	20:20 (WT3_RH_E)	20:40	65	20:01 (WT3_RH_E)	19:30			17:26	19	16:48 (GC&T WT2)	16:43	35	16:11 (GC&T WT3)	16:45	50	12:55 (WT163)
30	06:06		07:45 (MV Zuid WT2)	06:54		08:04 (MV Zuid WT2)	07:43			07:33		16:29 (GC&T WT2)	08:24		12:03 (WT163)	08:49		12:06 (WT163)
	21:36	127	20:20 (WT3_RH_E)	20:37	54	19:59 (WT3_RH_E)	19:28			17:25	20	16:49 (GC&T WT2)	16:43	39	16:11 (GC&T WT3)	16:46	49	12:55 (WT163)
31	06:08		07:46 (MV Zuid WT2)	06:55		08:07 (MV Zuid WT2)				07:35		16:28 (GC&T WT2)				08:49		12:07 (WT163)
	21:35	137	20:34 (WT1_RH_E)	20:35	39	19:55 (WT3_RH_E)				17:23	21	16:49 (GC&T WT2)				16:47	48	12:55 (WT163)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		3356			3916			12			202			382			1501	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,60			0,59			0,57			0,67			0,69			0,67	
Total reduction		0,26			0,27			0,24			0,23			0,17			0,14	
Total, real		875			1042			3			47			65			206	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: K - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		12:35 (WT163)	08:24		12:57 (WT163)	07:32		17:32 (GC&T WT2)	07:23			06:20		20:34 (WT06_AB)	05:36		20:04 (WT3_RH_E)
	16:48	87	14:02 (WT163)	17:35	63	14:00 (WT163)	18:25	19	17:51 (GC&T WT2)	20:17			21:06	4	20:38 (WT1_RH_E)	21:50	53	20:57 (WT3_RH_E)
2	08:49		12:35 (WT163)	08:22		12:59 (WT163)	07:30		17:33 (GC&T WT2)	07:21			06:18		20:32 (WT06_AB)	05:36		20:05 (WT3_RH_E)
	16:49	87	14:02 (WT163)	17:36	60	13:59 (WT163)	18:26	17	17:50 (GC&T WT2)	20:19			21:08	7	20:39 (WT1_RH_E)	21:51	53	20:58 (WT3_RH_E)
3	08:49		12:35 (WT163)	08:21		13:01 (WT163)	07:28		17:35 (GC&T WT2)	07:19			06:16		20:31 (WT1_RH_E)	05:35		20:05 (WT3_RH_E)
	16:50	87	14:02 (WT163)	17:38	57	17:09 (GC&T WT1)	18:28	14	17:49 (GC&T WT2)	20:20			21:09	10	20:41 (WT1_RH_E)	21:52	52	20:57 (WT3_RH_E)
4	08:49		12:36 (WT163)	08:19		13:02 (WT163)	07:26		17:36 (GC&T WT2)	07:16			06:15		20:31 (WT1_RH_E)	05:34		20:04 (WT3_RH_E)
	16:51	87	14:03 (WT163)	17:40	58	17:11 (GC&T WT1)	18:30	10	17:46 (GC&T WT2)	20:22			21:11	12	20:43 (WT1_RH_E)	21:53	53	20:57 (WT3_RH_E)
5	08:49		12:37 (WT163)	08:18		13:05 (WT163)	07:23			07:14			06:13		20:22 (WT3_RH_E)	05:34		20:05 (WT3_RH_E)
	16:53	87	14:04 (WT163)	17:42	55	17:13 (GC&T WT1)	18:32			20:23			21:12	22	20:44 (WT1_RH_E)	21:54	53	20:58 (WT3_RH_E)
6	08:48		12:37 (WT163)	08:16		13:08 (WT163)	07:21			07:12			06:11		20:18 (WT3_RH_E)	05:33		20:05 (WT3_RH_E)
	16:54	86	14:03 (WT163)	17:44	53	17:15 (GC&T WT1)	18:33			20:25			21:14	27	20:45 (WT1_RH_E)	21:55	52	20:57 (WT3_RH_E)
7	08:48		12:38 (WT163)	08:14		13:11 (WT163)	07:19		18:08 (WT-ATS)	07:10			06:09		20:16 (WT3_RH_E)	05:32		20:05 (WT3_RH_E)
	16:55	86	14:04 (WT163)	17:45	49	17:17 (GC&T WT1)	18:35	2	18:10 (WT-ATS)	20:27			21:16	31	20:47 (WT1_RH_E)	21:56	53	20:58 (WT3_RH_E)
8	08:48		12:38 (WT163)	08:13		13:15 (WT163)	07:17		18:06 (WT-ATS)	07:08			06:08		20:14 (WT3_RH_E)	05:32		20:06 (WT3_RH_E)
	16:56	86	14:04 (WT163)	17:47	42	17:18 (GC&T WT1)	18:37	6	18:12 (WT-ATS)	20:28			21:17	34	20:48 (WT1_RH_E)	21:57	53	20:59 (WT3_RH_E)
9	08:47		12:38 (WT163)	08:11		13:22 (WT163)	07:15		18:05 (WT-ATS)	07:05			06:06		20:13 (WT3_RH_E)	05:31		20:06 (WT3_RH_E)
	16:58	86	14:04 (WT163)	17:49	33	17:21 (GC&T WT1)	18:38	8	18:13 (WT-ATS)	20:30			21:19	37	20:50 (WT1_RH_E)	21:58	52	20:58 (WT3_RH_E)
10	08:47		12:39 (WT163)	08:09		17:07 (GC&T WT1)	07:13		18:04 (WT-ATS)	07:03			06:04		20:11 (WT3_RH_E)	05:31		20:06 (WT3_RH_E)
	16:59	86	14:05 (WT163)	17:51	15	17:22 (GC&T WT1)	18:40	11	18:15 (WT-ATS)	20:32			21:20	40	20:51 (WT1_RH_E)	21:59	53	20:59 (WT3_RH_E)
11	08:46		12:39 (WT163)	08:07		17:08 (GC&T WT1)	07:10		18:04 (WT-ATS)	07:01			06:03		20:11 (WT3_RH_E)	05:31		20:07 (WT3_RH_E)
	17:00	86	14:05 (WT163)	17:53	13	17:21 (GC&T WT1)	18:42	13	18:17 (WT-ATS)	20:33			21:22	42	20:53 (WT1_RH_E)	21:59	52	20:59 (WT3_RH_E)
12	08:46		12:40 (WT163)	08:06		17:10 (GC&T WT1)	07:08		18:04 (WT-ATS)	06:59			06:01		20:09 (WT3_RH_E)	05:30		20:06 (WT3_RH_E)
	17:02	85	14:05 (WT163)	17:54	10	17:20 (GC&T WT1)	18:44	15	18:19 (WT-ATS)	20:35			21:23	44	20:53 (WT1_RH_E)	22:00	52	20:58 (WT3_RH_E)
13	08:45		12:40 (WT163)	08:04		17:12 (GC&T WT1)	07:06		18:04 (WT-ATS)	06:57			05:59		20:09 (WT3_RH_E)	05:30		20:07 (WT3_RH_E)
	17:03	85	14:05 (WT163)	17:56	5	17:17 (GC&T WT1)	18:45	13	18:17 (WT-ATS)	20:37			21:25	45	20:54 (WT1_RH_E)	22:01	52	20:59 (WT3_RH_E)
14	08:44		12:42 (WT163)	08:02			07:04		18:06 (WT-ATS)	06:55			05:58		20:07 (WT3_RH_E)	05:30		20:07 (WT3_RH_E)
	17:05	84	14:06 (WT163)	17:58			18:47	10	18:16 (WT-ATS)	20:38			21:26	46	20:53 (WT1_RH_E)	22:01	52	20:59 (WT3_RH_E)
15	08:43		12:42 (WT163)	08:00			07:01		18:08 (WT-ATS)	06:52			05:56		20:07 (WT3_RH_E)	05:30		20:07 (WT3_RH_E)
	17:06	84	14:06 (WT163)	18:00			18:49	6	18:14 (WT-ATS)	20:40			21:28	46	20:53 (WT1_RH_E)	22:02	52	20:59 (WT3_RH_E)
16	08:43		12:43 (WT163)	07:58			06:59			06:50			05:55		20:07 (WT3_RH_E)	05:30		20:08 (WT3_RH_E)
	17:08	83	14:06 (WT163)	18:02			18:50			20:42			21:29	46	20:53 (WT1_RH_E)	22:02	52	21:00 (WT3_RH_E)
17	08:42		12:43 (WT163)	07:56			06:57			06:48			05:53		20:05 (WT3_RH_E)	05:30		20:08 (WT3_RH_E)
	17:09	83	14:06 (WT163)	18:03			18:52			20:43			21:31	47	20:52 (WT1_RH_E)	22:03	52	21:00 (WT3_RH_E)
18	08:41		12:44 (WT163)	07:54			06:55			06:46			05:52		20:05 (WT3_RH_E)	05:29		20:08 (WT3_RH_E)
	17:11	82	14:06 (WT163)	18:05			18:54			20:45			21:32	48	20:53 (WT3_RH_E)	22:03	52	21:00 (WT3_RH_E)
19	08:40		12:44 (WT163)	07:52			06:52			06:44			05:51		20:05 (WT3_RH_E)	05:30		20:08 (WT3_RH_E)
	17:12	82	14:06 (WT163)	18:07			18:55			20:46			21:34	49	20:54 (WT3_RH_E)	22:04	52	21:00 (WT3_RH_E)
20	08:39		12:45 (WT163)	07:50		17:38 (GC&T WT2)	06:50			06:42			05:49		20:05 (WT3_RH_E)	05:30		20:08 (WT3_RH_E)
	17:14	81	14:06 (WT163)	18:09	4	17:42 (GC&T WT2)	18:57			20:48			21:35	49	20:54 (WT3_RH_E)	22:04	52	21:00 (WT3_RH_E)
21	08:38		12:46 (WT163)	07:48		17:36 (GC&T WT2)	06:48			06:40			05:48		20:04 (WT3_RH_E)	05:30		20:08 (WT3_RH_E)
	17:16	80	14:06 (WT163)	18:11	8	17:44 (GC&T WT2)	18:59			20:50			21:37	50	20:54 (WT3_RH_E)	22:04	52	21:00 (WT3_RH_E)
22	08:37		12:47 (WT163)	07:46		17:34 (GC&T WT2)	06:46			06:38			05:47		20:04 (WT3_RH_E)	05:30		20:09 (WT3_RH_E)
	17:17	81	16:46 (GC&T WT3)	18:12	12	17:46 (GC&T WT2)	19:00			20:51			21:38	50	20:54 (WT3_RH_E)	22:04	52	21:01 (WT3_RH_E)
23	08:36		12:48 (WT163)	07:44		17:33 (GC&T WT2)	06:43			06:36			05:46		20:04 (WT3_RH_E)	05:30		20:09 (WT3_RH_E)
	17:19	82	16:48 (GC&T WT3)	18:14	15	17:48 (GC&T WT2)	19:02			20:53			21:39	51	20:55 (WT3_RH_E)	22:04	52	21:01 (WT3_RH_E)
24	08:35		12:48 (WT163)	07:42		17:33 (GC&T WT2)	06:41			06:34			05:44		20:04 (WT3_RH_E)	05:30		20:09 (WT3_RH_E)
	17:21	82	16:49 (GC&T WT3)	18:16	17	17:50 (GC&T WT2)	19:04			20:55			21:41	51	20:55 (WT3_RH_E)	22:05	52	21:01 (WT3_RH_E)
25	08:33		12:49 (WT163)	07:40		17:32 (GC&T WT2)	06:39			06:32			05:43		20:04 (WT3_RH_E)	05:31		20:10 (WT3_RH_E)
	17:22	83	16:52 (GC&T WT3)	18:18	20	17:52 (GC&T WT2)	19:05			20:56			21:42	51	20:55 (WT3_RH_E)	22:05	52	21:02 (WT3_RH_E)
26	08:32		12:51 (WT163)	07:38		17:32 (GC&T WT2)	06:37			06:30			05:42		20:03 (WT3_RH_E)	05:31		20:10 (WT3_RH_E)
	17:24	82	16:54 (GC&T WT3)	18:19	21	17:53 (GC&T WT2)	19:07			20:58			21:43	53	20:56 (WT3_RH_E)	22:05	52	21:02 (WT3_RH_E)
27	08:31		12:51 (WT163)	07:36		17:31 (GC&T WT2)	06:34			06:28			05:41		20:03 (WT3_RH_E)	05:32		20:10 (WT3_RH_E)
	17:26	82	16:55 (GC&T WT3)	18:21	21	17:52 (GC&T WT2)	19:09			21:00			21:44	53	20:56 (WT3_RH_E)	22:05	51	21:01 (WT3_RH_E)
28	08:29		12:53 (WT163)	07:34		17:32 (GC&T WT2)	06:32			06:26			05:40		20:03 (WT3_RH_E)	05:32		20:10 (WT3_RH_E)
	17:28	77	16:55 (GC&T WT3)	18:23	20	17:52 (GC&T WT2)	19:10			21:01			21:46	53	20:56 (WT3_RH_E)	22:05	52	21:02 (WT3_RH_E)
29	08:28		12:53 (WT163)				07:30			06:24			05:39		20:04 (WT3_RH_E)	05:33		20:10 (WT3_RH_E)
	17:29	70	14:03 (WT163)				20:12			21:03			21:47	53	20:57 (WT3_RH_E)	22:04	52	21:02 (WT3_RH_E)
30	08:27		12:55 (WT163)				07:28			06:22			05:38		20:04 (WT3_RH_E)	05:33		20:11 (WT3_RH_E)
	17:31	67	14:02 (WT163)				20:14			21:04			21:48	53	20:57 (WT3_RH_E)	22:04	52	21:03 (WT3_RH_E)
31	08:25		12:56 (WT163)				07:25						05:37		20:04 (WT3_RH_E)			
	17:33	65	14:01 (WT163)				20:15						21:49	53	20:57 (WT3_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		2551			651			144						1257			1566	
Sun reduction		0,24			0,29			0,37						0,46			0,44	
Oper. time red.		0,95			0,95			0,95						0,95			0,95	
Wind dir. red.		0,69			0,69			0,64						0,56			0,56	
Total reduction		0,16			0,20			0,24						0,25			0,24	
Total, real		413			128			34						315			381	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: K - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		20:11 (WT3_RH_E)	06:09		20:20 (WT3_RH_E)	06:57			07:44		18:44 (WT-ATS)	07:36		16:37 (GC&T WT1)	08:26		12:22 (WT163)
	22:04	52	21:03 (WT3_RH_E)	21:33	44	21:04 (WT1_RH_E)	20:33			19:25	14	18:58 (WT-ATS)	17:21	15	16:52 (GC&T WT1)	16:42	85	13:47 (WT163)
2	05:34		20:11 (WT3_RH_E)	06:11		20:21 (WT3_RH_E)	06:59			07:46		18:43 (WT-ATS)	07:38		12:49 (WT163)	08:27		12:21 (WT163)
	22:04	52	21:03 (WT3_RH_E)	21:32	42	21:03 (WT1_RH_E)	20:31			19:23	14	18:57 (WT-ATS)	17:19	35	16:50 (GC&T WT1)	16:41	86	13:47 (WT163)
3	05:35		20:11 (WT3_RH_E)	06:12		20:22 (WT3_RH_E)	07:00			07:48		18:42 (WT-ATS)	07:40		12:44 (WT163)	08:29		12:22 (WT163)
	22:03	52	21:03 (WT3_RH_E)	21:30	39	21:01 (WT1_RH_E)	20:29			19:21	12	18:54 (WT-ATS)	17:17	44	16:48 (GC&T WT1)	16:41	86	13:48 (WT163)
4	05:36		20:11 (WT3_RH_E)	06:14		20:23 (WT3_RH_E)	07:02			07:49		18:42 (WT-ATS)	07:42		12:40 (WT163)	08:30		12:22 (WT163)
	22:03	53	21:04 (WT3_RH_E)	21:28	36	20:59 (WT1_RH_E)	20:26			19:19	10	18:52 (WT-ATS)	17:16	49	16:46 (GC&T WT1)	16:40	86	13:48 (WT163)
5	05:37		20:11 (WT3_RH_E)	06:15		20:25 (WT3_RH_E)	07:03			07:51		18:43 (WT-ATS)	07:43		12:37 (WT163)	08:31		12:23 (WT163)
	22:02	52	21:03 (WT3_RH_E)	21:27	33	20:58 (WT1_RH_E)	20:24			19:16	7	18:50 (WT-ATS)	17:14	53	16:44 (GC&T WT1)	16:40	86	13:49 (WT163)
6	05:37		20:11 (WT3_RH_E)	06:17		20:27 (WT3_RH_E)	07:05			07:52		18:43 (WT-ATS)	07:45		12:35 (WT163)	08:32		12:23 (WT163)
	22:02	53	21:04 (WT3_RH_E)	21:25	29	20:56 (WT1_RH_E)	20:22			19:14	4	18:47 (WT-ATS)	17:12	55	16:43 (GC&T WT1)	16:39	86	13:49 (WT163)
7	05:38		20:11 (WT3_RH_E)	06:18		20:29 (WT3_RH_E)	07:06			07:54			07:47		12:33 (WT163)	08:34		12:23 (WT163)
	22:01	53	21:04 (WT3_RH_E)	21:23	26	20:55 (WT1_RH_E)	20:20			19:12			17:11	57	16:41 (GC&T WT1)	16:39	87	13:50 (WT163)
8	05:39		20:12 (WT3_RH_E)	06:20		20:33 (WT3_RH_E)	07:08			07:56			07:49		12:31 (WT163)	08:35		12:24 (WT163)
	22:01	52	21:04 (WT3_RH_E)	21:22	20	20:53 (WT1_RH_E)	20:18			19:10			17:09	58	16:40 (GC&T WT1)	16:39	87	13:51 (WT163)
9	05:40		20:12 (WT3_RH_E)	06:21		20:39 (WT1_RH_E)	07:10			07:57		18:13 (GC&T WT2)	07:50		12:30 (WT163)	08:36		12:24 (WT163)
	22:00	53	21:05 (WT3_RH_E)	21:20	12	20:51 (WT1_RH_E)	20:15			19:07	6	18:19 (GC&T WT2)	17:07	60	13:30 (WT163)	16:39	87	13:51 (WT163)
10	05:41		20:12 (WT3_RH_E)	06:23		20:41 (WT1_RH_E)	07:11			07:59		18:10 (GC&T WT2)	07:52		12:28 (WT163)	08:37		12:24 (WT163)
	21:59	53	21:05 (WT3_RH_E)	21:18	9	20:50 (WT1_RH_E)	20:13			19:05	12	18:22 (GC&T WT2)	17:06	63	13:31 (WT163)	16:38	87	13:51 (WT163)
11	05:42		20:12 (WT3_RH_E)	06:24		20:41 (WT06_AB)	07:13			08:01		18:08 (GC&T WT2)	07:54		12:27 (WT163)	08:38		12:25 (WT163)
	21:59	53	21:05 (WT3_RH_E)	21:16	7	20:48 (WT1_RH_E)	20:11			19:03	16	18:24 (GC&T WT2)	17:04	65	13:32 (WT163)	16:38	87	13:52 (WT163)
12	05:43		20:12 (WT3_RH_E)	06:26		20:44 (WT06_AB)	07:14			08:02		18:06 (GC&T WT2)	07:55		12:26 (WT163)	08:39		12:25 (WT163)
	21:58	53	21:05 (WT3_RH_E)	21:14	2	20:46 (WT06_AB)	20:09			19:01	18	18:24 (GC&T WT2)	17:03	67	13:33 (WT163)	16:38	87	13:52 (WT163)
13	05:44		20:13 (WT3_RH_E)	06:27			07:16			08:04		18:05 (GC&T WT2)	07:57		12:25 (WT163)	08:40		12:26 (WT163)
	21:57	52	21:05 (WT3_RH_E)	21:12			20:06			18:59	20	18:25 (GC&T WT2)	17:01	71	16:24 (GC&T WT3)	16:38	87	13:53 (WT163)
14	05:45		20:13 (WT3_RH_E)	06:29			07:17			08:06		18:05 (GC&T WT2)	07:59		12:24 (WT163)	08:41		12:26 (WT163)
	21:56	52	21:05 (WT3_RH_E)	21:10			20:04			18:57	20	18:25 (GC&T WT2)	17:00	79	16:27 (GC&T WT3)	16:38	87	13:53 (WT163)
15	05:46		20:13 (WT3_RH_E)	06:30			07:19			08:07		18:05 (GC&T WT2)	08:01		12:24 (WT163)	08:42		12:27 (WT163)
	21:55	52	21:05 (WT3_RH_E)	21:08			20:02			18:55	20	18:25 (GC&T WT2)	16:59	82	16:28 (GC&T WT3)	16:38	87	13:54 (WT163)
16	05:48		20:13 (WT3_RH_E)	06:32			07:21			08:09		18:04 (GC&T WT2)	08:02		12:23 (WT163)	08:43		12:27 (WT163)
	21:54	52	21:05 (WT3_RH_E)	21:07			19:59			18:52	20	18:24 (GC&T WT2)	16:57	83	16:27 (GC&T WT3)	16:38	87	13:54 (WT163)
17	05:49		20:13 (WT3_RH_E)	06:33			07:22			08:11		18:04 (GC&T WT2)	08:04		12:22 (WT163)	08:44		12:27 (WT163)
	21:53	52	21:05 (WT3_RH_E)	21:05			19:57			18:50	18	18:22 (GC&T WT2)	16:56	83	16:25 (GC&T WT3)	16:38	87	13:54 (WT163)
18	05:50		20:13 (WT3_RH_E)	06:35			07:24			08:12		18:04 (GC&T WT2)	08:06		12:22 (WT163)	08:44		12:28 (WT163)
	21:52	52	21:05 (WT3_RH_E)	21:03			19:55			18:48	17	18:21 (GC&T WT2)	16:55	82	16:23 (GC&T WT3)	16:39	87	13:55 (WT163)
19	05:51		20:13 (WT3_RH_E)	06:37			07:25			08:14		18:05 (GC&T WT2)	08:07		12:22 (WT163)	08:45		12:28 (WT163)
	21:51	52	21:05 (WT3_RH_E)	21:01			19:53			18:46	14	18:19 (GC&T WT2)	16:53	82	16:22 (GC&T WT3)	16:39	90	15:49 (Skalden WT2)
20	05:52		20:14 (WT3_RH_E)	06:38			07:27			08:16		18:05 (GC&T WT2)	08:09		12:22 (WT163)	08:46		12:28 (WT163)
	21:50	51	21:05 (WT3_RH_E)	20:59			19:50			18:44	11	18:16 (GC&T WT2)	16:52	81	16:21 (GC&T WT3)	16:39	90	15:49 (Skalden WT2)
21	05:54		20:14 (WT3_RH_E)	06:40			07:28			08:17		18:06 (GC&T WT2)	08:11		12:22 (WT163)	08:46		12:29 (WT163)
	21:49	51	21:05 (WT3_RH_E)	20:56			19:48			18:42	8	18:14 (GC&T WT2)	16:51	80	13:42 (WT163)	16:40	91	15:50 (Skalden WT2)
22	05:55		20:14 (WT3_RH_E)	06:41			07:30			08:19		18:09 (GC&T WT2)	08:12		12:21 (WT163)	08:47		12:29 (WT163)
	21:48	51	21:05 (WT3_RH_E)	20:54			19:46			18:40	3	18:12 (GC&T WT2)	16:50	81	13:42 (WT163)	16:40	91	15:50 (Skalden WT2)
23	05:56		20:14 (WT3_RH_E)	06:43			07:32			08:21			08:14		12:21 (WT163)	08:47		12:30 (WT163)
	21:46	50	21:04 (WT3_RH_E)	20:52			19:43			18:38			16:49	82	13:43 (WT163)	16:41	90	15:51 (Skalden WT2)
24	05:58		20:15 (WT3_RH_E)	06:44			07:33			08:22			08:15		12:21 (WT163)	08:48		12:30 (WT163)
	21:45	48	21:03 (WT3_RH_E)	20:50			19:41			18:36			16:48	82	13:43 (WT163)	16:41	90	15:51 (Skalden WT2)
25	05:59		20:16 (WT3_RH_E)	06:46			07:35			07:24			08:17		12:20 (WT163)	08:48		12:31 (WT163)
	21:44	48	21:04 (WT3_RH_E)	20:48			19:39			17:34			16:47	83	13:43 (WT163)	16:42	87	13:58 (WT163)
26	06:00		20:16 (WT3_RH_E)	06:48			07:36			07:26			08:18		12:21 (WT163)	08:48		12:32 (WT163)
	21:42	47	21:03 (WT1_RH_E)	20:46			19:37			17:32			16:46	83	13:44 (WT163)	16:43	87	13:59 (WT163)
27	06:02		20:16 (WT3_RH_E)	06:49			07:38			07:28			08:20		12:21 (WT163)	08:49		12:32 (WT163)
	21:41	47	21:03 (WT1_RH_E)	20:44			19:34			17:30			16:45	84	13:45 (WT163)	16:43	87	13:59 (WT163)
28	06:03		20:17 (WT3_RH_E)	06:51			07:40			07:29			08:21		12:21 (WT163)	08:49		12:32 (WT163)
	21:39	47	21:04 (WT1_RH_E)	20:42			19:32			17:28			16:44	84	13:45 (WT163)	16:44	88	14:00 (WT163)
29	06:05		20:18 (WT3_RH_E)	06:52			07:41		18:47 (WT-ATS)	07:31		16:41 (GC&T WT1)	08:23		12:21 (WT163)	08:49		12:33 (WT163)
	21:38	46	21:04 (WT1_RH_E)	20:40			19:30	9	18:56 (WT-ATS)	17:26	6	16:47 (GC&T WT1)	16:43	85	13:46 (WT163)	16:45	87	14:00 (WT163)
30	06:06		20:18 (WT3_RH_E)	06:54			07:43		18:44 (WT-ATS)	07:33		16:39 (GC&T WT1)	08:24		12:22 (WT163)	08:49		12:33 (WT163)
	21:36	45	21:03 (WT1_RH_E)	20:37			19:28	13	18:57 (WT-ATS)	17:25	11	16:50 (GC&T WT1)	16:43	85	13:47 (WT163)	16:46	88	14:01 (WT163)
31	06:08		20:19 (WT3_RH_E)	06:55						07:35		16:38 (GC&T WT1)				08:49		12:34 (WT163)
	21:35	45	21:04 (WT1_RH_E)	20:35						17:23	13	16:51 (GC&T WT1)				16:47	87	14:01 (WT163)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		1571			299			22			294			2093			2712	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,56			0,56			0,63			0,66			0,69			0,69	
Total reduction		0,25			0,26			0,27			0,24			0,18			0,15	
Total, real		386			77			6			69			368			395	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: L - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		11:47 (WT163)	08:24		11:56 (WT163)	07:32		17:44 (GC&T WT2)	07:23			06:20			05:36		20:45 (WT1_RH_E)
	16:48	110	15:58 (Skalden WT2)	17:35	110	16:58 (GC&T WT3)	18:25	15	17:59 (GC&T WT2)	20:17			21:06			21:50	28	21:13 (WT1_RH_E)
2	08:49		11:47 (WT163)	08:22		11:57 (WT163)	07:30		17:43 (GC&T WT2)	07:21			06:18			05:36		20:46 (WT1_RH_E)
	16:49	106	13:33 (WT163)	17:36	106	13:43 (WT163)	18:26	18	18:01 (GC&T WT2)	20:19			21:08			21:51	27	21:13 (WT1_RH_E)
3	08:49		11:47 (WT163)	08:21		11:57 (WT163)	07:28		17:43 (GC&T WT2)	07:19			06:16			05:35		20:46 (WT1_RH_E)
	16:50	106	13:33 (WT163)	17:38	105	13:42 (WT163)	18:28	20	18:03 (GC&T WT2)	20:20			21:09			21:52	27	21:13 (WT1_RH_E)
4	08:49		11:48 (WT163)	08:19		11:58 (WT163)	07:26		17:42 (GC&T WT2)	07:16			06:15			05:34		20:46 (WT1_RH_E)
	16:51	106	13:34 (WT163)	17:40	104	13:42 (WT163)	18:30	23	18:05 (GC&T WT2)	20:22			21:11			21:53	27	21:13 (WT1_RH_E)
5	08:49		11:48 (WT163)	08:18		11:59 (WT163)	07:23		17:41 (GC&T WT2)	07:14			06:13			05:34		20:47 (WT1_RH_E)
	16:53	107	13:35 (WT163)	17:42	103	13:42 (WT163)	18:32	23	18:04 (GC&T WT2)	20:23			21:12			21:54	27	21:14 (WT3_RH_E)
6	08:48		11:48 (WT163)	08:16		11:59 (WT163)	07:21		17:41 (GC&T WT2)	07:12			06:11			05:33		20:47 (WT1_RH_E)
	16:54	107	13:35 (WT163)	17:44	102	13:41 (WT163)	18:33	23	18:04 (GC&T WT2)	20:25			21:14			21:55	28	21:15 (WT3_RH_E)
7	08:48		11:49 (WT163)	08:14		12:00 (WT163)	07:19		17:42 (GC&T WT2)	07:10			06:09			05:32		20:47 (WT1_RH_E)
	16:55	107	13:36 (WT163)	17:45	102	17:17 (GC&T WT1)	18:35	22	18:04 (GC&T WT2)	20:27			21:16			21:56	30	21:17 (WT3_RH_E)
8	08:48		11:49 (WT163)	08:13		12:00 (WT163)	07:17		17:42 (GC&T WT2)	07:08			06:08			05:32		20:48 (WT1_RH_E)
	16:56	107	13:36 (WT163)	17:47	104	17:18 (WT01-VLS)	18:37	21	18:03 (GC&T WT2)	20:28			21:17			21:57	31	21:19 (WT3_RH_E)
9	08:47		11:49 (WT163)	08:11		12:02 (WT163)	07:15		17:42 (GC&T WT2)	07:05			06:06			05:31		20:48 (WT1_RH_E)
	16:58	107	13:36 (WT163)	17:49	105	17:21 (WT01-VLS)	18:38	19	18:01 (GC&T WT2)	20:30			21:19			21:58	31	21:19 (WT3_RH_E)
10	08:47		11:50 (WT163)	08:09		12:02 (WT163)	07:13		17:43 (GC&T WT2)	07:03			06:04		20:47 (WT06_AB)	05:31		20:49 (WT1_RH_E)
	16:59	107	13:37 (WT163)	17:51	107	17:23 (WT01-VLS)	18:40	17	18:00 (GC&T WT2)	20:32			21:20	4	20:51 (WT06_AB)	21:59	31	21:20 (WT3_RH_E)
11	08:46		11:50 (WT163)	08:07		12:03 (WT163)	07:10		17:45 (GC&T WT2)	07:01			06:03		20:46 (WT06_AB)	05:31		20:49 (WT1_RH_E)
	17:00	107	13:37 (WT163)	17:53	108	17:25 (WT01-VLS)	18:42	18	18:17 (WT-ATS)	20:33			21:22	7	20:53 (WT06_AB)	21:59	32	21:21 (WT3_RH_E)
12	08:46		11:50 (WT163)	08:06		12:04 (WT163)	07:08		17:48 (GC&T WT2)	06:59			06:01		20:45 (WT06_AB)	05:30		20:49 (WT1_RH_E)
	17:02	108	13:38 (WT163)	17:54	108	17:27 (WT01-VLS)	18:44	15	18:19 (WT-ATS)	20:35			21:23	9	20:54 (WT06_AB)	22:00	32	21:21 (WT3_RH_E)
13	08:45		11:50 (WT163)	08:04		12:05 (WT163)	07:06		18:10 (WT-ATS)	06:57			05:59		20:44 (WT06_AB)	05:30		20:50 (WT1_RH_E)
	17:03	108	13:38 (WT163)	17:56	108	17:29 (WT01-VLS)	18:45	10	18:20 (WT-ATS)	20:37			21:25	12	20:56 (WT1_RH_E)	22:01	32	21:22 (WT3_RH_E)
14	08:44		11:51 (WT163)	08:02		12:06 (WT163)	07:04		18:10 (WT-ATS)	06:55			05:58		20:43 (WT06_AB)	05:30		20:50 (WT1_RH_E)
	17:05	108	13:39 (WT163)	17:58	105	17:29 (GC&T WT1)	18:47	12	18:22 (WT-ATS)	20:38			21:26	14	20:57 (WT1_RH_E)	22:01	33	21:23 (WT3_RH_E)
15	08:43		11:51 (WT163)	08:00		12:07 (WT163)	07:01		18:10 (WT-ATS)	06:52			05:56		20:43 (WT06_AB)	05:30		20:50 (WT1_RH_E)
	17:06	109	13:40 (WT163)	18:00	102	17:29 (GC&T WT1)	18:49	14	18:24 (WT-ATS)	20:40			21:28	15	20:58 (WT1_RH_E)	22:02	33	21:23 (WT3_RH_E)
16	08:43		11:52 (WT163)	07:58		12:08 (WT163)	06:59		18:10 (WT-ATS)	06:50			05:55		20:43 (WT06_AB)	05:30		20:51 (WT1_RH_E)
	17:08	108	13:40 (WT163)	18:02	98	17:28 (GC&T WT1)	18:50	15	18:25 (WT-ATS)	20:42			21:29	17	21:00 (WT1_RH_E)	22:02	33	21:24 (WT3_RH_E)
17	08:42		11:52 (WT163)	07:56		12:09 (WT163)	06:57		18:10 (WT-ATS)	06:48			05:53		20:43 (WT06_AB)	05:30		20:51 (WT1_RH_E)
	17:09	108	13:40 (WT163)	18:03	91	17:26 (GC&T WT1)	18:52	13	18:23 (WT-ATS)	20:43			21:31	18	21:01 (WT1_RH_E)	22:03	33	21:24 (WT3_RH_E)
18	08:41		11:52 (WT163)	07:54		12:11 (WT163)	06:55		18:11 (WT-ATS)	06:46			05:52		20:43 (WT06_AB)	05:30		20:51 (WT1_RH_E)
	17:11	109	13:41 (WT163)	18:05	82	17:23 (GC&T WT1)	18:54	11	18:22 (WT-ATS)	20:45			21:32	19	21:02 (WT1_RH_E)	22:03	33	21:24 (WT3_RH_E)
19	08:40		11:52 (WT163)	07:52		12:13 (WT163)	06:52		18:13 (WT-ATS)	06:44			05:51		20:43 (WT06_AB)	05:30		20:52 (WT1_RH_E)
	17:12	108	13:40 (WT163)	18:07	75	13:28 (WT163)	18:55	7	18:20 (WT-ATS)	20:46			21:34	21	21:04 (WT1_RH_E)	22:04	33	21:25 (WT3_RH_E)
20	08:39		11:52 (WT163)	07:50		12:14 (WT163)	06:50			06:42			05:49		20:44 (WT06_AB)	05:30		20:52 (WT1_RH_E)
	17:14	109	13:41 (WT163)	18:09	72	13:26 (WT163)	18:57			20:48			21:35	21	21:05 (WT1_RH_E)	22:04	33	21:25 (WT3_RH_E)
21	08:38		11:53 (WT163)	07:48		12:17 (WT163)	06:48			06:40			05:48		20:43 (WT06_AB)	05:30		20:52 (WT1_RH_E)
	17:16	108	13:41 (WT163)	18:11	66	13:23 (WT163)	18:59			20:50			21:37	23	21:06 (WT1_RH_E)	22:04	33	21:25 (WT3_RH_E)
22	08:37		11:53 (WT163)	07:46		12:19 (WT163)	06:46			06:38			05:47		20:44 (WT1_RH_E)	05:30		20:53 (WT1_RH_E)
	17:17	109	13:42 (WT163)	18:12	61	13:20 (WT163)	19:00			20:51			21:38	23	21:07 (WT1_RH_E)	22:04	33	21:26 (WT3_RH_E)
23	08:36		11:54 (WT163)	07:44		12:23 (WT163)	06:43			06:36			05:46		20:44 (WT1_RH_E)	05:30		20:53 (WT1_RH_E)
	17:19	108	13:42 (WT163)	18:14	54	13:17 (WT163)	19:02			20:53			21:39	24	21:08 (WT1_RH_E)	22:04	33	21:26 (WT3_RH_E)
24	08:35		11:53 (WT163)	07:42		12:26 (WT163)	06:41			06:34			05:44		20:44 (WT1_RH_E)	05:30		20:53 (WT1_RH_E)
	17:21	110	16:49 (GC&T WT3)	18:16	47	13:13 (WT163)	19:04			20:55			21:41	26	21:10 (WT1_RH_E)	22:05	33	21:26 (WT3_RH_E)
25	08:33		11:54 (WT163)	07:40		12:32 (WT163)	06:39			06:32			05:43		20:44 (WT1_RH_E)	05:31		20:53 (WT1_RH_E)
	17:22	111	16:52 (GC&T WT3)	18:18	36	13:08 (WT163)	19:05			20:56			21:42	27	21:11 (WT1_RH_E)	22:05	33	21:26 (WT3_RH_E)
26	08:32		11:55 (WT163)	07:38		12:41 (WT163)	06:37			06:30			05:42		20:44 (WT1_RH_E)	05:31		20:53 (WT1_RH_E)
	17:24	113	16:54 (GC&T WT3)	18:19	17	12:58 (WT163)	19:07			20:58			21:43	28	21:12 (WT1_RH_E)	22:05	33	21:26 (WT3_RH_E)
27	08:31		11:55 (WT163)	07:36		17:48 (GC&T WT2)	06:34			06:28			05:41		20:44 (WT1_RH_E)	05:32		20:53 (WT1_RH_E)
	17:26	114	16:55 (GC&T WT3)	18:21	7	17:55 (GC&T WT2)	19:09			21:00			21:44	28	21:12 (WT1_RH_E)	22:05	32	21:25 (WT3_RH_E)
28	08:29		11:55 (WT163)	07:34		17:46 (GC&T WT2)	06:32			06:26			05:40		20:44 (WT1_RH_E)	05:32		20:53 (WT1_RH_E)
	17:28	116	16:58 (GC&T WT3)	18:23	11	17:57 (GC&T WT2)	19:10			21:01			21:46	28	21:12 (WT1_RH_E)	22:05	33	21:26 (WT3_RH_E)
29	08:28		11:55 (WT163)				07:30			06:24			05:39		20:45 (WT1_RH_E)	05:33		20:53 (WT1_RH_E)
	17:29	117	16:59 (GC&T WT3)				20:12			21:03			21:47	28	21:13 (WT1_RH_E)	22:04	32	21:25 (WT3_RH_E)
30	08:27		11:56 (WT163)				07:28			06:22			05:38		20:45 (WT1_RH_E)	05:33		20:53 (WT1_RH_E)
	17:31	118	17:02 (GC&T WT3)				20:14			21:04			21:48	28	21:13 (WT1_RH_E)	22:04	32	21:25 (WT3_RH_E)
31	08:25		11:56 (WT163)				07:25						05:37		20:45 (WT1_RH_E)			
	17:33	116	17:01 (GC&T WT3)				20:15						21:49	28	21:13 (WT1_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		3392			2296			316						448			941	
Sun reduction		0,24			0,29			0,37						0,46			0,44	
Oper. time red.		0,95			0,95			0,95						0,95			0,95	
Wind dir. red.		0,67			0,67			0,64						0,56			0,56	
Total reduction		0,15			0,19			0,23						0,25			0,24	
Total, real		523			436			73						111			225	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: L - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		20:54 (WT1_RH_E)	06:09		20:55 (WT06_AB)	06:57			07:44		18:29 (GC&T WT2)	07:36		11:32 (WT163)	08:26		11:32 (WT163)
	22:04	32	21:26 (WT3_RH_E)	21:33	9	21:04 (WT06_AB)	20:33			19:25	11	18:58 (WT-ATS)	17:21	106	16:52 (WT01-VLS)	16:42	108	13:20 (WT163)
2	05:34		20:53 (WT1_RH_E)	06:11		20:57 (WT06_AB)	06:59			07:46		18:25 (GC&T WT2)	07:38		11:30 (WT163)	08:27		11:32 (WT163)
	22:04	32	21:25 (WT3_RH_E)	21:32	6	21:03 (WT06_AB)	20:31			19:23	17	18:57 (WT-ATS)	17:19	106	16:50 (WT01-VLS)	16:41	107	13:19 (WT163)
3	05:35		20:53 (WT1_RH_E)	06:12		20:59 (WT06_AB)	07:00			07:48		18:22 (GC&T WT2)	07:40		11:30 (WT163)	08:29		11:33 (WT163)
	22:03	31	21:24 (WT3_RH_E)	21:30	2	21:01 (WT06_AB)	20:29			19:21	17	18:54 (WT-ATS)	17:17	104	16:48 (WT01-VLS)	16:41	107	13:20 (WT163)
4	05:36		20:54 (WT1_RH_E)	06:14			07:02			07:49		18:20 (GC&T WT2)	07:42		11:29 (WT163)	08:30		11:33 (WT163)
	22:03	30	21:24 (WT3_RH_E)	21:28			20:26			19:19	19	18:39 (GC&T WT2)	17:16	102	13:11 (WT163)	16:40	107	13:20 (WT163)
5	05:37		20:53 (WT1_RH_E)	06:15			07:03			07:51		18:19 (GC&T WT2)	07:43		11:29 (WT163)	08:31		11:34 (WT163)
	22:02	30	21:23 (WT3_RH_E)	21:27			20:24			19:16	21	18:40 (GC&T WT2)	17:14	102	13:11 (WT163)	16:40	107	13:21 (WT163)
6	05:38		20:53 (WT1_RH_E)	06:17			07:05			07:52		18:18 (GC&T WT2)	07:45		11:29 (WT163)	08:32		11:34 (WT163)
	22:02	29	21:22 (WT3_RH_E)	21:25			20:22			19:14	21	18:39 (GC&T WT2)	17:12	103	13:12 (WT163)	16:39	107	13:21 (WT163)
7	05:38		20:53 (WT1_RH_E)	06:18			07:06			07:54		18:17 (GC&T WT2)	07:47		11:28 (WT163)	08:34		11:35 (WT163)
	22:01	28	21:21 (WT3_RH_E)	21:23			20:20			19:12	23	18:40 (GC&T WT2)	17:11	104	13:12 (WT163)	16:39	106	13:21 (WT163)
8	05:39		20:53 (WT1_RH_E)	06:20			07:08			07:56		18:17 (GC&T WT2)	07:49		11:28 (WT163)	08:35		11:36 (WT163)
	22:01	27	21:20 (WT1_RH_E)	21:22			20:18			19:10	23	18:40 (GC&T WT2)	17:09	105	13:13 (WT163)	16:39	106	13:22 (WT163)
9	05:40		20:53 (WT1_RH_E)	06:21			07:10			07:57		18:16 (GC&T WT2)	07:50		11:28 (WT163)	08:36		11:36 (WT163)
	22:00	27	21:20 (WT1_RH_E)	21:20			20:15			19:08	23	18:39 (GC&T WT2)	17:07	106	13:14 (WT163)	16:39	106	13:22 (WT163)
10	05:41		20:53 (WT1_RH_E)	06:23			07:11			07:59		18:17 (GC&T WT2)	07:52		11:27 (WT163)	08:37		11:37 (WT163)
	21:59	28	21:21 (WT1_RH_E)	21:18			20:13			19:05	21	18:38 (GC&T WT2)	17:06	111	16:30 (GC&T WT3)	16:38	105	13:22 (WT163)
11	05:42		20:53 (WT1_RH_E)	06:24			07:13			08:01		18:17 (GC&T WT2)	07:54		11:27 (WT163)	08:38		11:37 (WT163)
	21:59	28	21:21 (WT1_RH_E)	21:16			20:11			19:03	19	18:36 (GC&T WT2)	17:04	116	16:32 (GC&T WT3)	16:38	110	15:48 (Skalden WT2)
12	05:43		20:54 (WT1_RH_E)	06:26			07:14			08:02		18:17 (GC&T WT2)	07:55		11:27 (WT163)	08:39		11:37 (WT163)
	21:58	27	21:21 (WT1_RH_E)	21:14			20:09			19:01	16	18:33 (GC&T WT2)	17:03	117	16:32 (GC&T WT3)	16:38	112	15:49 (Skalden WT2)
13	05:44		20:54 (WT1_RH_E)	06:27			07:16			08:04		18:18 (GC&T WT2)	07:57		11:27 (WT163)	08:40		11:38 (WT163)
	21:57	28	21:22 (WT1_RH_E)	21:12			20:06			18:59	13	18:31 (GC&T WT2)	17:01	117	16:31 (GC&T WT3)	16:38	112	15:50 (Skalden WT2)
14	05:45		20:54 (WT1_RH_E)	06:29			07:17			08:06		18:20 (GC&T WT2)	07:59		11:27 (WT163)	08:41		11:39 (WT163)
	21:56	28	21:22 (WT1_RH_E)	21:10			20:04			18:57	9	18:29 (GC&T WT2)	17:00	116	16:30 (GC&T WT3)	16:38	113	15:51 (Skalden WT2)
15	05:46		20:54 (WT1_RH_E)	06:30			07:19			08:07		18:22 (GC&T WT2)	08:01		11:27 (WT163)	08:42		11:39 (WT163)
	21:55	28	21:22 (WT1_RH_E)	21:08			20:02			18:55	5	18:27 (GC&T WT2)	16:59	115	16:28 (GC&T WT3)	16:38	114	15:52 (Skalden WT2)
16	05:48		20:54 (WT1_RH_E)	06:32			07:21			08:09		13:08 (WT163)	08:02		11:28 (WT163)	08:43		11:40 (WT163)
	21:54	28	21:22 (WT1_RH_E)	21:07			19:59			18:52	26	13:34 (WT163)	16:57	113	16:27 (GC&T WT3)	16:38	115	15:53 (Skalden WT2)
17	05:49		20:54 (WT1_RH_E)	06:34			07:22			08:11		13:01 (WT163)	08:04		11:27 (WT163)	08:44		11:40 (WT163)
	21:53	28	21:22 (WT1_RH_E)	21:05			19:57			18:50	40	13:41 (WT163)	16:56	111	16:25 (GC&T WT3)	16:38	114	15:53 (Skalden WT2)
18	05:50		20:54 (WT1_RH_E)	06:35			07:24			08:12		12:56 (WT163)	08:06		11:27 (WT163)	08:44		11:40 (WT163)
	21:52	27	21:21 (WT1_RH_E)	21:03			19:55			18:48	50	13:46 (WT163)	16:55	110	16:23 (GC&T WT3)	16:39	116	15:54 (Skalden WT2)
19	05:51		20:54 (WT1_RH_E)	06:37			07:25			08:14		12:53 (WT163)	08:07		11:28 (WT163)	08:45		11:41 (WT163)
	21:51	26	21:20 (WT1_RH_E)	21:01			19:53			18:46	57	13:50 (WT163)	16:53	108	13:16 (WT163)	16:39	116	15:55 (Skalden WT2)
20	05:52		20:55 (WT1_RH_E)	06:38			07:27			08:16		12:49 (WT163)	08:09		11:28 (WT163)	08:46		11:41 (WT163)
	21:50	25	21:20 (WT1_RH_E)	20:59			19:50			18:44	63	13:52 (WT163)	16:52	109	13:17 (WT163)	16:39	116	15:55 (Skalden WT2)
21	05:54		20:55 (WT1_RH_E)	06:40			07:28			08:17		12:46 (WT163)	08:11		11:29 (WT163)	08:46		11:42 (WT163)
	21:49	23	21:18 (WT1_RH_E)	20:56			19:48			18:42	68	13:54 (WT163)	16:51	108	13:17 (WT163)	16:40	116	15:56 (Skalden WT2)
22	05:55		20:54 (WT06_AB)	06:41			07:30			08:19		12:44 (WT163)	08:12		11:28 (WT163)	08:47		11:42 (WT163)
	21:48	23	21:17 (WT1_RH_E)	20:54			19:46			18:40	73	13:57 (WT163)	16:50	109	13:17 (WT163)	16:40	116	15:56 (Skalden WT2)
23	05:56		20:54 (WT06_AB)	06:43			07:32			08:21		12:42 (WT163)	08:14		11:29 (WT163)	08:47		11:43 (WT163)
	21:46	22	21:16 (WT1_RH_E)	20:52			19:43			18:38	77	13:59 (WT163)	16:49	108	13:17 (WT163)	16:41	116	15:57 (Skalden WT2)
24	05:58		20:53 (WT06_AB)	06:44			07:33		18:58 (WT-ATS)	08:22		12:41 (WT163)	08:15		11:29 (WT163)	08:48		11:43 (WT163)
	21:45	21	21:14 (WT1_RH_E)	20:50			19:41	4	19:02 (WT-ATS)	18:36	86	17:55 (GC&T WT1)	16:48	109	13:18 (WT163)	16:41	116	15:57 (Skalden WT2)
25	05:59		20:54 (WT06_AB)	06:46			07:35		18:54 (WT-ATS)	07:24		11:39 (WT163)	08:17		11:29 (WT163)	08:48		11:43 (WT163)
	21:44	20	21:14 (WT1_RH_E)	20:48			19:39	10	19:04 (WT-ATS)	17:34	93	16:57 (GC&T WT1)	16:47	109	13:18 (WT163)	16:42	116	15:57 (Skalden WT2)
26	06:00		20:53 (WT06_AB)	06:48			07:36		18:53 (WT-ATS)	07:26		11:37 (WT163)	08:18		11:30 (WT163)	08:48		11:45 (WT163)
	21:42	19	21:12 (WT1_RH_E)	20:46			19:37	13	19:06 (WT-ATS)	17:32	99	16:57 (GC&T WT1)	16:46	108	13:18 (WT163)	16:43	114	15:58 (Skalden WT2)
27	06:02		20:53 (WT06_AB)	06:49			07:38		18:52 (WT-ATS)	07:28		11:36 (WT163)	08:20		11:30 (WT163)	08:49		11:45 (WT163)
	21:41	18	21:11 (WT1_RH_E)	20:44			19:34	15	19:07 (WT-ATS)	17:30	103	16:58 (GC&T WT1)	16:45	109	13:19 (WT163)	16:43	115	15:58 (Skalden WT2)
28	06:03		20:54 (WT06_AB)	06:51			07:40		18:51 (WT-ATS)	07:29		11:35 (WT163)	08:21		11:30 (WT163)	08:49		11:45 (WT163)
	21:39	16	21:10 (WT1_RH_E)	20:42			19:32	14	19:05 (WT-ATS)	17:28	106	16:59 (GC&T WT1)	16:44	108	13:18 (WT163)	16:44	114	15:58 (Skalden WT2)
29	06:05		20:54 (WT06_AB)	06:52			07:41		18:50 (WT-ATS)	07:31		11:34 (WT163)	08:23		11:31 (WT163)	08:49		11:45 (WT163)
	21:38	14	21:08 (WT1_RH_E)	20:40			19:30	13	19:03 (WT-ATS)	17:26	108	16:58 (WT01-VLS)	16:44	108	13:19 (WT163)	16:45	114	15:58 (Skalden WT2)
30	06:06		20:54 (WT06_AB)	06:54			07:43		18:50 (WT-ATS)	07:33		11:33 (WT163)	08:24		11:31 (WT163)	08:49		11:46 (WT163)
	21:36	13	21:07 (WT1_RH_E)	20:37			19:28	10	19:00 (WT-ATS)	17:25	108	16:56 (WT01-VLS)	16:43	108	13:19 (WT163)	16:46	113	15:58 (Skalden WT2)
31	06:08		20:55 (WT06_AB)	06:55						07:35		11:32 (WT163)				08:49		11:46 (WT163)
	21:35	11	21:06 (WT1_RH_E)	20:35						17:23	107	16:54 (WT01-VLS)				16:47	112	15:58 (Skalden WT2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		767			17			79			1522			3265			3466	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,56			0,56			0,63			0,67			0,67			0,68	
Total reduction		0,24			0,25			0,26			0,24			0,17			0,14	
Total, real		186			4			21			358			546			482	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: M - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		14:02 (WT163)	08:24		14:17 (WT163)	07:32		17:42 (GC&T WT2)	07:23			06:20		20:02 (WT3_RH_E)	05:36		20:09 (WT3_RH_E)
	16:48	88	16:13 (Skalden WT2)	17:35	74	17:05 (GC&T WT3)	18:25	17	17:59 (GC&T WT2)	20:17			21:06	36	20:38 (WT1_RH_E)	21:50	22	20:31 (WT3_RH_E)
2	08:49		14:03 (WT163)	08:22		14:18 (WT163)	07:30		17:42 (GC&T WT2)	07:21			06:18		20:00 (WT3_RH_E)	05:36		20:11 (WT3_RH_E)
	16:49	88	16:13 (Skalden WT2)	17:36	70	17:05 (GC&T WT3)	18:26	18	18:00 (GC&T WT2)	20:19			21:08	39	20:39 (WT1_RH_E)	21:51	19	20:30 (WT3_RH_E)
3	08:49		14:02 (WT163)	08:21		14:19 (WT163)	07:28		17:43 (GC&T WT2)	07:19			06:16		19:59 (WT3_RH_E)	05:35		20:12 (WT3_RH_E)
	16:50	88	16:13 (Skalden WT2)	17:38	64	15:23 (WT163)	18:28	17	18:00 (GC&T WT2)	20:20			21:09	42	20:41 (WT1_RH_E)	21:52	17	20:29 (WT3_RH_E)
4	08:49		14:03 (WT163)	08:19		14:20 (WT163)	07:26		17:43 (GC&T WT2)	07:16			06:15		19:59 (WT3_RH_E)	05:34		20:13 (WT3_RH_E)
	16:51	86	16:13 (Skalden WT2)	17:40	62	15:22 (WT163)	18:30	15	17:58 (GC&T WT2)	20:22			21:11	44	20:43 (WT1_RH_E)	21:53	15	20:28 (WT3_RH_E)
5	08:49		14:04 (WT163)	08:18		14:22 (WT163)	07:23		17:44 (GC&T WT2)	07:14			06:13		19:59 (WT3_RH_E)	05:34		20:15 (WT3_RH_E)
	16:53	86	16:14 (Skalden WT2)	17:42	60	15:22 (WT163)	18:32	13	17:57 (GC&T WT2)	20:23			21:12	45	20:44 (WT1_RH_E)	21:54	12	20:27 (WT3_RH_E)
6	08:48		14:04 (WT163)	08:16		14:23 (WT163)	07:21		17:46 (GC&T WT2)	07:12			06:11		19:58 (WT3_RH_E)	05:33		20:17 (WT3_RH_E)
	16:54	85	16:13 (Skalden WT2)	17:44	58	15:21 (WT163)	18:33	9	17:55 (GC&T WT2)	20:25			21:14	46	20:44 (WT1_RH_E)	21:55	8	20:25 (WT3_RH_E)
7	08:48		14:05 (WT163)	08:14		14:25 (WT163)	07:19			07:10			06:09		19:58 (WT3_RH_E)	05:32		
	16:55	83	16:13 (Skalden WT2)	17:45	54	15:19 (WT163)	18:35			20:27			21:16	46	20:44 (WT1_RH_E)	21:56		
8	08:48		14:04 (WT163)	08:13		14:26 (WT163)	07:17			07:08			06:08		19:57 (WT3_RH_E)	05:32		
	16:56	82	16:12 (Skalden WT2)	17:47	52	15:18 (WT163)	18:37			20:28			21:17	47	20:44 (WT1_RH_E)	21:57		
9	08:47		14:04 (WT163)	08:11		14:29 (WT163)	07:15			07:05			06:06		19:58 (WT3_RH_E)	05:31		
	16:58	77	15:21 (WT163)	17:49	50	17:21 (GC&T WT1)	18:38			20:30			21:19	46	20:44 (WT1_RH_E)	21:58		
10	08:47		14:05 (WT163)	08:09		14:31 (WT163)	07:13			07:03			06:04		19:57 (WT3_RH_E)	05:31		
	16:59	77	15:22 (WT163)	17:51	50	17:23 (GC&T WT1)	18:40			20:32			21:20	46	20:43 (WT1_RH_E)	21:59		
11	08:46		14:06 (WT163)	08:07		14:33 (WT163)	07:10			07:01			06:03		19:58 (WT3_RH_E)	05:31		
	17:00	77	15:23 (WT163)	17:53	48	17:25 (GC&T WT1)	18:42			20:33			21:22	44	20:42 (WT1_RH_E)	21:59		
12	08:46		14:06 (WT163)	08:06		14:36 (WT163)	07:08			06:59			06:01		19:57 (WT3_RH_E)	05:30		
	17:02	77	15:23 (WT163)	17:54	44	17:27 (GC&T WT1)	18:44			20:35			21:23	44	20:41 (WT1_RH_E)	22:00		
13	08:45		14:06 (WT163)	08:04		14:40 (WT163)	07:06			06:57			05:59		19:58 (WT3_RH_E)	05:30		
	17:03	77	15:23 (WT163)	17:56	39	17:29 (GC&T WT1)	18:45			20:37			21:25	42	20:40 (WT1_RH_E)	22:01		
14	08:44		14:07 (WT163)	08:02		14:45 (WT163)	07:04			06:55			05:58		19:57 (WT3_RH_E)	05:30		
	17:05	77	15:24 (WT163)	17:58	31	17:30 (GC&T WT1)	18:47			20:38			21:26	42	20:39 (WT3_RH_E)	22:01		
15	08:43		14:07 (WT163)	08:00		17:19 (GC&T WT1)	07:01			06:52			05:56		19:58 (WT3_RH_E)	05:30		
	17:06	77	15:24 (WT163)	18:00	11	17:30 (GC&T WT1)	18:49			20:40			21:28	41	20:39 (WT3_RH_E)	22:02		
16	08:43		14:08 (WT163)	07:58		17:21 (GC&T WT1)	06:59			06:50			05:55		19:58 (WT3_RH_E)	05:30		
	17:08	77	15:25 (WT163)	18:02	8	17:29 (GC&T WT1)	18:50			20:42			21:29	41	20:39 (WT3_RH_E)	22:02		
17	08:42		14:08 (WT163)	07:56			06:57			06:48			05:53		19:58 (WT3_RH_E)	05:29		
	17:09	77	15:25 (WT163)	18:03			18:52			20:43			21:31	40	20:38 (WT3_RH_E)	22:03		
18	08:41		14:09 (WT163)	07:54			06:55			06:46			05:52		19:59 (WT3_RH_E)	05:29		
	17:11	76	15:25 (WT163)	18:05			18:54			20:45			21:32	39	20:38 (WT3_RH_E)	22:03		
19	08:40		14:08 (WT163)	07:52			06:52			06:44			05:51		19:59 (WT3_RH_E)	05:30		
	17:12	77	15:25 (WT163)	18:07			18:55			20:46			21:34	39	20:38 (WT3_RH_E)	22:04		
20	08:39		14:09 (WT163)	07:50			06:50			06:42			05:49		20:00 (WT3_RH_E)	05:30		
	17:14	76	15:25 (WT163)	18:09			18:57			20:48			21:35	38	20:38 (WT3_RH_E)	22:04		
21	08:38		14:10 (WT163)	07:48			06:48			06:40			05:48		20:00 (WT3_RH_E)	05:30		
	17:16	75	15:25 (WT163)	18:11			18:59			20:50			21:37	37	20:37 (WT3_RH_E)	22:04		
22	08:37		14:10 (WT163)	07:46			06:46			06:38			05:47		20:01 (WT3_RH_E)	05:30		
	17:17	76	15:26 (WT163)	18:12			19:00			20:51			21:38	35	20:36 (WT3_RH_E)	22:04		
23	08:36		14:11 (WT163)	07:44			06:43			06:36			05:46		20:01 (WT3_RH_E)	05:30		
	17:19	75	15:26 (WT163)	18:14			19:02			20:53			21:39	35	20:36 (WT3_RH_E)	22:04		
24	08:35		14:11 (WT163)	07:42		17:47 (GC&T WT2)	06:41			06:34		20:17 (WT3_RH_E)	05:44		20:02 (WT3_RH_E)	05:30		
	17:21	75	15:26 (WT163)	18:16	3	17:50 (GC&T WT2)	19:04			20:55	5	20:22 (WT3_RH_E)	21:41	34	20:36 (WT3_RH_E)	22:05		
25	08:33		14:12 (WT163)	07:40		17:45 (GC&T WT2)	06:39			06:32		20:12 (WT3_RH_E)	05:43		20:03 (WT3_RH_E)	05:31		
	17:22	74	15:26 (WT163)	18:18	7	17:52 (GC&T WT2)	19:05			20:56	15	20:27 (WT3_RH_E)	21:42	32	20:35 (WT3_RH_E)	22:05		
26	08:32		14:13 (WT163)	07:38		17:44 (GC&T WT2)	06:37			06:30		20:09 (WT3_RH_E)	05:42		20:04 (WT3_RH_E)	05:31		
	17:24	73	15:26 (WT163)	18:19	10	17:54 (GC&T WT2)	19:07			20:58	21	20:30 (WT1_RH_E)	21:43	30	20:34 (WT3_RH_E)	22:05		
27	08:31		14:13 (WT163)	07:36		17:42 (GC&T WT2)	06:34			06:28		20:07 (WT3_RH_E)	05:41		20:05 (WT3_RH_E)	05:32		
	17:26	73	15:26 (WT163)	18:21	13	17:55 (GC&T WT2)	19:09			21:00	25	20:32 (WT1_RH_E)	21:44	29	20:34 (WT3_RH_E)	22:05		
28	08:29		14:14 (WT163)	07:34		17:42 (GC&T WT2)	06:32			06:26		20:05 (WT3_RH_E)	05:40		20:05 (WT3_RH_E)	05:32		
	17:28	74	16:58 (GC&T WT3)	18:23	15	17:57 (GC&T WT2)	19:10			21:01	28	20:33 (WT1_RH_E)	21:46	28	20:33 (WT3_RH_E)	22:05		
29	08:28		14:15 (WT163)				07:30			06:24		20:04 (WT3_RH_E)	05:39		20:07 (WT3_RH_E)	05:33		
	17:29	73	16:59 (GC&T WT3)				20:12			21:03	32	20:36 (WT1_RH_E)	21:47	26	20:33 (WT3_RH_E)	22:04		
30	08:27		14:16 (WT163)				07:28			06:22		20:03 (WT3_RH_E)	05:38		20:08 (WT3_RH_E)	05:33		
	17:31	74	17:02 (GC&T WT3)				20:14			21:04	34	20:37 (WT1_RH_E)	21:48	25	20:33 (WT3_RH_E)	22:04		
31	08:25		14:16 (WT163)				07:25						05:37		20:09 (WT3_RH_E)			
	17:33	75	17:03 (GC&T WT3)				20:15						21:49	23	20:32 (WT3_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		2425			823			89			160			1181			93	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,72			0,72			0,65			0,55			0,55			0,55	
Total reduction		0,17			0,21			0,24			0,25			0,25			0,24	
Total, real		410			170			21			40			294			22	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: M - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September	October			November			December		
1	05:34			06:09		20:08 (WT3_RH_E)	06:57	07:44			07:36		14:00 (WT163)	08:26		13:48 (WT163)
	22:04			21:33	44	20:52 (WT1_RH_E)	20:33	19:25			17:21	50	16:52 (GC&T WT1)	16:42	77	15:05 (WT163)
2	05:34			06:11		20:08 (WT3_RH_E)	06:59	07:46			07:38		13:57 (WT163)	08:27		13:48 (WT163)
	22:04			21:32	45	20:53 (WT1_RH_E)	20:31	19:23			17:19	51	16:50 (GC&T WT1)	16:41	76	15:04 (WT163)
3	05:35			06:12		20:08 (WT3_RH_E)	07:00	07:48			07:40		13:55 (WT163)	08:29		13:48 (WT163)
	22:03			21:30	45	20:53 (WT1_RH_E)	20:29	19:21			17:17	53	14:48 (WT163)	16:41	77	15:05 (WT163)
4	05:36			06:13		20:07 (WT3_RH_E)	07:02	07:49			07:42		13:54 (WT163)	08:30		13:49 (WT163)
	22:03			21:28	46	20:53 (WT1_RH_E)	20:26	19:19			17:16	55	14:49 (WT163)	16:40	81	15:56 (Skalden WT2)
5	05:37			06:15		20:08 (WT3_RH_E)	07:03	07:51			07:43		13:53 (WT163)	08:31		13:50 (WT163)
	22:02			21:27	46	20:54 (WT1_RH_E)	20:24	19:16			17:14	58	14:51 (WT163)	16:40	83	15:58 (Skalden WT2)
6	05:37		20:24 (WT3_RH_E)	06:17		20:08 (WT3_RH_E)	07:05	07:52			07:45		13:52 (WT163)	08:32		13:50 (WT163)
	22:02	6	20:30 (WT3_RH_E)	21:25	46	20:54 (WT1_RH_E)	20:22	19:14			17:12	60	14:52 (WT163)	16:39	85	15:59 (Skalden WT2)
7	05:38		20:22 (WT3_RH_E)	06:18		20:08 (WT3_RH_E)	07:06	07:54		18:24 (GC&T WT2)	07:47		13:51 (WT163)	08:34		13:50 (WT163)
	22:01	11	20:33 (WT3_RH_E)	21:23	47	20:55 (WT1_RH_E)	20:20	19:12	5	18:29 (GC&T WT2)	17:11	62	14:53 (WT163)	16:39	86	16:00 (Skalden WT2)
8	05:39		20:21 (WT3_RH_E)	06:20		20:08 (WT3_RH_E)	07:08	07:56		18:21 (GC&T WT2)	07:49		13:50 (WT163)	08:35		13:51 (WT163)
	22:01	13	20:34 (WT3_RH_E)	21:22	45	20:53 (WT1_RH_E)	20:18	19:10	11	18:32 (GC&T WT2)	17:09	64	14:54 (WT163)	16:39	86	16:01 (Skalden WT2)
9	05:40		20:20 (WT3_RH_E)	06:21		20:08 (WT3_RH_E)	07:10	07:57		18:18 (GC&T WT2)	07:50		13:49 (WT163)	08:36		13:51 (WT163)
	22:00	16	20:36 (WT3_RH_E)	21:20	43	20:51 (WT1_RH_E)	20:15	19:07	14	18:32 (GC&T WT2)	17:07	71	16:36 (GC&T WT3)	16:39	88	16:02 (Skalden WT2)
10	05:41		20:19 (WT3_RH_E)	06:23		20:09 (WT3_RH_E)	07:11	07:59		18:17 (GC&T WT2)	07:52		13:48 (WT163)	08:37		13:52 (WT163)
	21:59	18	20:37 (WT3_RH_E)	21:18	41	20:50 (WT1_RH_E)	20:13	19:05	16	18:33 (GC&T WT2)	17:06	73	16:35 (GC&T WT3)	16:38	87	16:02 (Skalden WT2)
11	05:42		20:18 (WT3_RH_E)	06:24		20:09 (WT3_RH_E)	07:13	08:01		18:17 (GC&T WT2)	07:54		13:47 (WT163)	08:38		13:52 (WT163)
	21:59	21	20:39 (WT3_RH_E)	21:16	39	20:48 (WT1_RH_E)	20:11	19:03	17	18:34 (GC&T WT2)	17:04	74	16:34 (GC&T WT3)	16:38	88	16:03 (Skalden WT2)
12	05:43		20:17 (WT3_RH_E)	06:26		20:10 (WT3_RH_E)	07:14	08:02		18:15 (GC&T WT2)	07:55		13:47 (WT163)	08:39		13:53 (WT163)
	21:58	23	20:40 (WT3_RH_E)	21:14	36	20:46 (WT1_RH_E)	20:08	19:01	18	18:33 (GC&T WT2)	17:03	73	16:32 (GC&T WT3)	16:38	87	16:03 (Skalden WT2)
13	05:44		20:17 (WT3_RH_E)	06:27		20:11 (WT3_RH_E)	07:16	08:04		18:15 (GC&T WT2)	07:57		13:46 (WT163)	08:40		13:53 (WT163)
	21:57	24	20:41 (WT3_RH_E)	21:12	33	20:44 (WT1_RH_E)	20:06	18:59	16	18:31 (GC&T WT2)	17:01	74	16:31 (GC&T WT3)	16:38	89	16:04 (Skalden WT2)
14	05:45		20:16 (WT3_RH_E)	06:29		20:12 (WT3_RH_E)	07:17	08:06		18:15 (GC&T WT2)	07:59		13:46 (WT163)	08:41		13:54 (WT163)
	21:56	25	20:41 (WT3_RH_E)	21:10	31	20:43 (WT1_RH_E)	20:04	18:57	14	18:29 (GC&T WT2)	17:00	74	16:30 (GC&T WT3)	16:38	87	16:04 (Skalden WT2)
15	05:46		20:15 (WT3_RH_E)	06:30		20:13 (WT3_RH_E)	07:19	08:07		18:16 (GC&T WT2)	08:01		13:46 (WT163)	08:42		13:54 (WT163)
	21:55	27	20:42 (WT3_RH_E)	21:08	27	20:40 (WT1_RH_E)	20:02	18:55	11	18:27 (GC&T WT2)	16:59	72	14:58 (WT163)	16:38	88	16:04 (Skalden WT2)
16	05:48		20:14 (WT3_RH_E)	06:32		20:15 (WT3_RH_E)	07:21	08:09		18:16 (GC&T WT2)	08:02		13:46 (WT163)	08:43		13:55 (WT163)
	21:54	29	20:43 (WT3_RH_E)	21:07	24	20:39 (WT1_RH_E)	19:59	18:52	8	18:24 (GC&T WT2)	16:57	73	14:59 (WT163)	16:38	87	16:05 (Skalden WT2)
17	05:49		20:14 (WT3_RH_E)	06:33		20:16 (WT3_RH_E)	07:22	08:11		18:17 (GC&T WT2)	08:04		13:45 (WT163)	08:44		13:55 (WT163)
	21:53	30	20:44 (WT3_RH_E)	21:05	21	20:37 (WT1_RH_E)	19:57	18:50	5	18:22 (GC&T WT2)	16:56	74	14:59 (WT163)	16:38	87	16:04 (Skalden WT2)
18	05:50		20:13 (WT3_RH_E)	06:35		20:19 (WT3_RH_E)	07:24	08:12		18:19 (GC&T WT2)	08:06		13:45 (WT163)	08:44		13:56 (WT163)
	21:52	31	20:44 (WT3_RH_E)	21:03	14	20:33 (WT3_RH_E)	19:55	18:48	2	18:21 (GC&T WT2)	16:55	75	15:00 (WT163)	16:39	87	16:05 (Skalden WT2)
19	05:51		20:12 (WT3_RH_E)	06:37			07:25	08:14			08:07		13:45 (WT163)	08:45		13:56 (WT163)
	21:51	33	20:45 (WT3_RH_E)	21:01			19:53	18:46			16:53	75	15:00 (WT163)	16:39	86	16:05 (Skalden WT2)
20	05:52		20:12 (WT3_RH_E)	06:38			07:27	08:16			08:09		13:45 (WT163)	08:46		13:56 (WT163)
	21:50	34	20:46 (WT3_RH_E)	20:59			19:50	18:44			16:52	76	15:01 (WT163)	16:39	86	16:05 (Skalden WT2)
21	05:54		20:12 (WT3_RH_E)	06:40			07:28	08:17			08:11		13:46 (WT163)	08:46		13:57 (WT163)
	21:49	35	20:47 (WT3_RH_E)	20:56			19:48	18:42			16:51	75	15:01 (WT163)	16:40	86	16:06 (Skalden WT2)
22	05:55		20:11 (WT3_RH_E)	06:41			07:30	08:19			08:12		13:45 (WT163)	08:47		13:57 (WT163)
	21:48	36	20:47 (WT3_RH_E)	20:54			19:46	18:40			16:50	76	15:01 (WT163)	16:40	86	16:06 (Skalden WT2)
23	05:56		20:10 (WT3_RH_E)	06:43			07:32	08:21			08:14		13:45 (WT163)	08:47		13:58 (WT163)
	21:46	37	20:47 (WT3_RH_E)	20:52			19:43	18:38			16:49	77	15:02 (WT163)	16:41	86	16:07 (Skalden WT2)
24	05:58		20:09 (WT3_RH_E)	06:44			07:33	08:22			08:15		13:46 (WT163)	08:48		13:58 (WT163)
	21:45	38	20:47 (WT3_RH_E)	20:50			19:41	18:36			16:48	76	15:02 (WT163)	16:41	86	16:07 (Skalden WT2)
25	05:59		20:10 (WT3_RH_E)	06:46			07:35	07:24		16:53 (GC&T WT1)	08:17		13:45 (WT163)	08:48		13:59 (WT163)
	21:44	39	20:49 (WT3_RH_E)	20:48			19:39	17:34	3	16:56 (GC&T WT1)	16:47	77	15:02 (WT163)	16:42	86	16:07 (Skalden WT2)
26	06:00		20:09 (WT3_RH_E)	06:48			07:36	07:26		16:50 (GC&T WT1)	08:18		13:46 (WT163)	08:48		14:00 (WT163)
	21:42	40	20:49 (WT3_RH_E)	20:46			19:37	17:32	8	16:58 (GC&T WT1)	16:46	77	15:03 (WT163)	16:43	87	16:09 (Skalden WT2)
27	06:02		20:08 (WT3_RH_E)	06:49			07:38	07:28		14:22 (WT163)	08:20		13:46 (WT163)	08:49		14:00 (WT163)
	21:41	41	20:49 (WT3_RH_E)	20:44			19:34	17:30	15	17:00 (GC&T WT1)	16:45	78	15:04 (WT163)	16:43	87	16:09 (Skalden WT2)
28	06:03		20:09 (WT3_RH_E)	06:51			07:39	07:29		14:13 (WT163)	08:21		13:46 (WT163)	08:49		14:00 (WT163)
	21:39	41	20:50 (WT3_RH_E)	20:42			19:32	17:28	33	17:00 (GC&T WT1)	16:44	77	15:03 (WT163)	16:44	88	16:10 (Skalden WT2)
29	06:05		20:08 (WT3_RH_E)	06:52			07:41	07:31		14:09 (WT163)	08:23		13:47 (WT163)	08:49		14:01 (WT163)
	21:38	41	20:49 (WT3_RH_E)	20:40			19:30	17:26	40	16:58 (GC&T WT1)	16:43	77	15:04 (WT163)	16:45	88	16:11 (Skalden WT2)
30	06:06		20:08 (WT3_RH_E)	06:54			07:43	07:33		14:05 (WT163)	08:24		13:47 (WT163)	08:49		14:01 (WT163)
	21:36	41	20:49 (WT1_RH_E)	20:37			19:28	17:25	45	16:56 (GC&T WT1)	16:43	77	15:04 (WT163)	16:46	89	16:12 (Skalden WT2)
31	06:08		20:08 (WT3_RH_E)	06:55				07:35		14:02 (WT163)				08:49		14:02 (WT163)
	21:35	43	20:51 (WT1_RH_E)	20:35				17:23	49	16:54 (GC&T WT1)				16:47	87	16:12 (Skalden WT2)
Potential sun hours	498			451			380	333			269			248		
Total, worst case		773			673				330			2104			2654	
Sun reduction		0,45			0,47				0,36			0,26			0,21	
Oper. time red.		0,95			0,95				0,95			0,95			0,95	
Wind dir. red.		0,55			0,55				0,69			0,72			0,72	
Total reduction		0,24			0,25				0,25			0,18			0,15	
Total, real		189			171				81			386			403	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: N - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:50 (WT163)	08:24		15:54 (WT163)	07:32			07:23		18:59 (MV Zuid WT1)	06:20		18:14 (MV Zuid WT2)	05:36		18:07 (MV Zuid WT2)
	16:48	24	16:14 (WT163)	17:35	39	16:33 (WT163)	18:25			20:17	44	19:51 (WT3_RH_E)	21:06	89	20:38 (WT2_RH_E)	21:50	93	19:40 (MV Zuid WT2)
2	08:49		15:49 (WT163)	08:22		15:55 (WT163)	07:30			07:21		18:57 (MV Zuid WT1)	06:18		18:13 (MV Zuid WT2)	05:36		18:08 (MV Zuid WT2)
	16:49	26	16:15 (WT163)	17:36	38	16:33 (WT163)	18:26			20:18	51	19:53 (WT3_RH_E)	21:08	93	20:39 (WT2_RH_E)	21:51	93	19:41 (MV Zuid WT2)
3	08:49		15:50 (WT163)	08:21		15:56 (WT163)	07:28			07:19		18:56 (MV Zuid WT1)	06:16		18:11 (MV Zuid WT2)	05:35		18:08 (MV Zuid WT2)
	16:50	26	16:16 (WT163)	17:38	36	16:32 (WT163)	18:28			20:20	56	19:55 (WT3_RH_E)	21:09	98	20:41 (WT2_RH_E)	21:52	93	19:41 (MV Zuid WT2)
4	08:49		15:50 (WT163)	08:19		15:56 (WT163)	07:26			07:16		18:54 (MV Zuid WT1)	06:15		18:11 (MV Zuid WT2)	05:34		18:08 (MV Zuid WT2)
	16:51	28	16:18 (WT163)	17:40	35	16:31 (WT163)	18:30			20:22	62	19:57 (WT3_RH_E)	21:11	102	20:43 (WT2_RH_E)	21:53	93	19:41 (MV Zuid WT2)
5	08:49		15:50 (WT163)	08:18		15:58 (WT163)	07:23			07:14		18:52 (MV Zuid WT1)	06:13		18:10 (MV Zuid WT2)	05:33		18:09 (MV Zuid WT2)
	16:52	29	16:19 (WT163)	17:42	33	16:31 (WT163)	18:32			20:23	65	19:57 (WT3_RH_E)	21:12	104	20:44 (WT2_RH_E)	21:54	93	19:42 (MV Zuid WT2)
6	08:48		15:50 (WT163)	08:16		15:59 (WT163)	07:21			07:12		18:51 (MV Zuid WT1)	06:11		18:09 (MV Zuid WT2)	05:33		18:09 (MV Zuid WT2)
	16:54	30	16:20 (WT163)	17:44	31	16:30 (WT163)	18:33			20:25	67	19:58 (WT3_RH_E)	21:14	108	20:45 (WT2_RH_E)	21:55	92	19:41 (MV Zuid WT2)
7	08:48		15:50 (WT163)	08:14		16:01 (WT163)	07:19			07:10		18:51 (MV Zuid WT1)	06:09		18:09 (MV Zuid WT2)	05:32		18:09 (MV Zuid WT2)
	16:55	32	16:22 (WT163)	17:45	27	16:28 (WT163)	18:35			20:27	67	19:58 (WT3_RH_E)	21:16	109	20:46 (WT2_RH_E)	21:56	93	19:42 (MV Zuid WT2)
8	08:48		15:50 (WT163)	08:13		16:03 (WT163)	07:17			07:08		18:50 (MV Zuid WT1)	06:08		18:08 (MV Zuid WT2)	05:32		18:09 (MV Zuid WT2)
	16:56	32	16:22 (WT163)	17:47	24	16:27 (WT163)	18:37			20:28	68	19:58 (WT3_RH_E)	21:17	111	20:46 (WT2_RH_E)	21:57	92	19:41 (MV Zuid WT2)
9	08:47		15:49 (WT163)	08:11		16:06 (WT163)	07:15			07:05		18:50 (MV Zuid WT1)	06:06		18:08 (MV Zuid WT2)	05:31		18:10 (MV Zuid WT2)
	16:58	34	16:23 (WT163)	17:49	20	16:26 (WT163)	18:38			20:30	71	20:05 (WT1_RH_E)	21:19	111	20:46 (WT2_RH_E)	21:58	92	19:42 (MV Zuid WT2)
10	08:47		15:50 (WT163)	08:09		16:09 (WT163)	07:13			07:03		18:49 (MV Zuid WT1)	06:04		18:07 (MV Zuid WT2)	05:31		18:10 (MV Zuid WT2)
	16:59	35	16:25 (WT163)	17:51	13	16:22 (WT163)	18:40			20:32	73	20:06 (WT1_RH_E)	21:20	111	20:45 (WT2_RH_E)	21:59	92	19:42 (MV Zuid WT2)
11	08:46		15:49 (WT163)	08:07		17:23 (GC&T WT1)	07:10			07:01		18:48 (MV Zuid WT1)	06:03		18:07 (MV Zuid WT2)	05:31		18:11 (MV Zuid WT2)
	17:00	36	16:25 (WT163)	17:53	2	17:25 (GC&T WT1)	18:42			20:33	76	20:07 (WT1_RH_E)	21:22	112	20:45 (WT2_RH_E)	21:59	92	19:43 (MV Zuid WT2)
12	08:46		15:49 (WT163)	08:06		17:23 (GC&T WT1)	07:08			06:59		18:48 (MV Zuid WT1)	06:01		18:06 (MV Zuid WT2)	05:30		18:10 (MV Zuid WT2)
	17:02	37	16:26 (WT163)	17:54	4	17:27 (GC&T WT1)	18:44			20:35	78	20:09 (WT1_RH_E)	21:23	112	20:44 (WT2_RH_E)	22:00	93	21:27 (MX WT1)
13	08:45		15:49 (WT163)	08:04		17:24 (GC&T WT1)	07:06			06:57		18:48 (MV Zuid WT1)	05:59		18:07 (MV Zuid WT2)	05:30		18:11 (MV Zuid WT2)
	17:03	37	16:26 (WT163)	17:56	5	17:29 (GC&T WT1)	18:45			20:37	78	20:10 (WT1_RH_E)	21:25	111	20:44 (WT2_RH_E)	22:01	93	21:28 (MX WT1)
14	08:44		15:50 (WT163)	08:02		17:24 (GC&T WT1)	07:04			06:55		18:48 (MV Zuid WT1)	05:58		18:06 (MV Zuid WT2)	05:30		18:11 (MV Zuid WT2)
	17:05	38	16:28 (WT163)	17:58	6	17:30 (GC&T WT1)	18:47			20:38	79	20:12 (WT1_RH_E)	21:26	110	20:43 (WT2_RH_E)	22:01	94	21:29 (MX WT1)
15	08:43		15:50 (WT163)	08:00		17:26 (GC&T WT1)	07:01			06:52		18:48 (MV Zuid WT1)	05:56		18:06 (MV Zuid WT2)	05:30		18:12 (MV Zuid WT2)
	17:06	39	16:29 (WT163)	18:00	6	17:32 (GC&T WT1)	18:49			20:40	76	20:14 (WT1_RH_E)	21:28	110	20:43 (WT2_RH_E)	22:02	93	21:29 (MX WT1)
16	08:43		15:50 (WT163)	07:58			06:59			06:50		18:48 (MV Zuid WT1)	05:55		18:06 (MV Zuid WT2)	05:30		18:12 (MV Zuid WT2)
	17:08	39	16:29 (WT163)	18:02			18:50			20:42	69	20:15 (WT1_RH_E)	21:29	108	20:42 (WT2_RH_E)	22:02	95	21:30 (MX WT1)
17	08:42		15:50 (WT163)	07:56			06:57			06:48		18:48 (MV Zuid WT1)	05:53		18:05 (MV Zuid WT2)	05:29		18:12 (MV Zuid WT2)
	17:09	40	16:30 (WT163)	18:03			18:52			20:43	62	20:16 (WT06_AB)	21:31	106	20:40 (WT2_RH_E)	22:03	95	21:30 (MX WT1)
18	08:41		15:50 (WT163)	07:54			06:55			06:46		18:49 (MV Zuid WT1)	05:52		18:05 (MV Zuid WT2)	05:29		18:12 (MV Zuid WT2)
	17:11	41	16:31 (WT163)	18:05			18:54			20:45	58	20:14 (WT06_AB)	21:32	104	20:39 (WT2_RH_E)	22:03	96	21:31 (MX WT1)
19	08:40		15:49 (WT163)	07:52			06:52			06:44		18:41 (MV Zuid WT2)	05:51		18:06 (MV Zuid WT2)	05:29		18:13 (MV Zuid WT2)
	17:12	41	16:30 (WT163)	18:07			18:55			20:46	60	20:11 (WT1_RH_E)	21:34	97	20:36 (WT2_RH_E)	22:04	95	21:31 (MX WT1)
20	08:39		15:49 (WT163)	07:50			06:50			06:42		18:36 (MV Zuid WT2)	05:49		18:06 (MV Zuid WT2)	05:30		18:13 (MV Zuid WT2)
	17:14	42	16:31 (WT163)	18:09			18:57			20:48	58	20:08 (WT1_RH_E)	21:35	93	19:39 (MV Zuid WT2)	22:04	94	21:31 (MX WT1)
21	08:38		15:50 (WT163)	07:48			06:48			06:40		18:33 (MV Zuid WT2)	05:48		18:05 (MV Zuid WT2)	05:30		18:13 (MV Zuid WT2)
	17:16	42	16:32 (WT163)	18:11			18:59			20:50	56	19:29 (MV Zuid WT1)	21:37	93	19:38 (MV Zuid WT2)	22:04	94	21:31 (MX WT1)
22	08:37		15:50 (WT163)	07:46		17:44 (GC&T WT2)	06:46			06:38		18:30 (MV Zuid WT2)	05:47		18:05 (MV Zuid WT2)	05:30		18:14 (MV Zuid WT2)
	17:17	43	16:33 (WT163)	18:12	2	17:46 (GC&T WT2)	19:00			20:51	58	19:28 (MV Zuid WT1)	21:38	93	19:38 (MV Zuid WT2)	22:04	94	21:32 (MX WT1)
23	08:36		15:51 (WT163)	07:44		17:44 (GC&T WT2)	06:43			06:36		18:27 (MV Zuid WT2)	05:46		18:05 (MV Zuid WT2)	05:30		18:14 (MV Zuid WT2)
	17:19	42	16:33 (WT163)	18:14	4	17:48 (GC&T WT2)	19:02			20:53	60	19:27 (MV Zuid WT1)	21:39	94	19:39 (MV Zuid WT2)	22:04	94	21:32 (MX WT1)
24	08:35		15:50 (WT163)	07:42		17:43 (GC&T WT2)	06:41			06:34		18:25 (MV Zuid WT2)	05:44		18:06 (MV Zuid WT2)	05:30		18:14 (MV Zuid WT2)
	17:21	43	16:33 (WT163)	18:16	7	17:50 (GC&T WT2)	19:04			20:55	60	19:25 (MV Zuid WT1)	21:41	93	19:39 (MV Zuid WT2)	22:05	95	21:32 (MX WT1)
25	08:33		15:51 (WT163)	07:40		17:43 (GC&T WT2)	06:39			06:32		18:23 (MV Zuid WT2)	05:43		18:06 (MV Zuid WT2)	05:31		18:14 (MV Zuid WT2)
	17:22	42	16:33 (WT163)	18:18	9	17:52 (GC&T WT2)	19:05			20:56	60	19:23 (MV Zuid WT1)	21:42	93	19:39 (MV Zuid WT2)	22:05	95	21:32 (MX WT1)
26	08:32		15:50 (WT163)	07:38		17:43 (GC&T WT2)	06:37			06:30		18:21 (MV Zuid WT2)	05:42		18:06 (MV Zuid WT2)	05:31		18:14 (MV Zuid WT2)
	17:24	43	16:33 (WT163)	18:19	10	17:53 (GC&T WT2)	19:07			20:58	61	19:22 (MV Zuid WT1)	21:43	93	19:39 (MV Zuid WT2)	22:05	95	21:32 (MX WT1)
27	08:31		15:51 (WT163)	07:36		17:44 (GC&T WT2)	06:34			06:28		18:19 (MV Zuid WT2)	05:41		18:06 (MV Zuid WT2)	05:32		18:14 (MV Zuid WT2)
	17:26	43	16:34 (WT163)	18:21	10	17:54 (GC&T WT2)	19:09			21:00	66	20:32 (WT2_RH_E)	21:44	93	19:39 (MV Zuid WT2)	22:05	93	21:31 (MX WT1)
28	08:29		15:52 (WT163)	07:34		17:45 (GC&T WT2)	06:32			06:26		18:17 (MV Zuid WT2)	05:40		18:06 (MV Zuid WT2)	05:32		18:15 (MV Zuid WT2)
	17:28	42	16:34 (WT163)	18:23	8	17:53 (GC&T WT2)	19:10			21:01	73	20:33 (WT2_RH_E)	21:46	94	19:40 (MV Zuid WT2)	22:04	93	21:32 (MX WT1)
29	08:28		15:52 (WT163)				07:30		19:09 (MV Zuid WT1)	06:24		18:17 (MV Zuid WT2)	05:39		18:07 (MV Zuid WT2)	05:33		18:14 (MV Zuid WT2)
	17:29	42	16:34 (WT163)				20:12	12	19:21 (MV Zuid WT1)	21:03	79	20:36 (WT2_RH_E)	21:47	94	19:41 (MV Zuid WT2)	22:04	93	21:31 (MX WT1)
30	08:27		15:53 (WT163)				07:28		19:05 (MV Zuid WT1)	06:22		18:15 (MV Zuid WT2)	05:38		18:07 (MV Zuid WT2)	05:33		18:15 (MV Zuid WT2)
	17:31	41	16:34 (WT163)				20:14	28	19:49 (WT3_RH_E)	21:04	85	20:37 (WT2_RH_E)	21:48	94	19:41 (MV Zuid WT2)	22:04	94	21:32 (MX WT1)
31	08:25		15:53 (WT163)				07:25		19:02 (MV Zuid WT1)				05:37		18:07 (MV Zuid WT2)			
	17:33	40	16:33 (WT163)				20:15	36	19:50 (WT3_RH_E)				21:49	94	19:41 (MV Zuid WT2)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		1149			369			76			1976			3127			2806	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,71			0,70			0,61			0,60			0,59			0,59	
Total reduction		0,16			0,20			0,22			0,27			0,26			0,26	
Total, real		185			72			17			526			817			716	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: N - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		18:15 (MV Zuid WT2)	06:09		18:17 (MV Zuid WT2)	06:57		18:48 (MV Zuid WT1)	07:44			07:36		15:37 (WT163)	08:26		15:31 (WT163)
	22:04	93	21:32 (MX WT1)	21:33	111	20:55 (WT2_RH_E)	20:33	76	20:07 (WT1_RH_E)	19:25			17:21	15	15:52 (WT163)	16:42	36	16:07 (WT163)
2	05:34		18:15 (MV Zuid WT2)	06:10		18:17 (MV Zuid WT2)	06:59		18:47 (MV Zuid WT1)	07:46			07:38		15:34 (WT163)	08:27		15:32 (WT163)
	22:04	92	19:47 (MV Zuid WT2)	21:32	112	20:55 (WT2_RH_E)	20:31	73	20:04 (WT1_RH_E)	19:23			17:19	21	15:55 (WT163)	16:41	35	16:07 (WT163)
3	05:35		18:15 (MV Zuid WT2)	06:12		18:18 (MV Zuid WT2)	07:00		18:48 (MV Zuid WT1)	07:48			07:40		15:32 (WT163)	08:29		15:33 (WT163)
	22:03	92	19:47 (MV Zuid WT2)	21:30	112	20:56 (WT2_RH_E)	20:29	71	20:03 (WT1_RH_E)	19:21			17:17	25	15:57 (WT163)	16:41	34	16:07 (WT163)
4	05:36		18:15 (MV Zuid WT2)	06:13		18:18 (MV Zuid WT2)	07:02		18:47 (MV Zuid WT1)	07:49			07:42		15:30 (WT163)	08:30		15:34 (WT163)
	22:03	93	19:48 (MV Zuid WT2)	21:28	111	20:56 (WT2_RH_E)	20:26	68	19:55 (WT3_RH_E)	19:19			17:16	28	15:58 (WT163)	16:40	33	16:07 (WT163)
5	05:37		18:15 (MV Zuid WT2)	06:15		18:19 (MV Zuid WT2)	07:03		18:48 (MV Zuid WT1)	07:51			07:43		15:29 (WT163)	08:31		15:35 (WT163)
	22:02	92	19:47 (MV Zuid WT2)	21:27	109	20:56 (WT2_RH_E)	20:24	68	19:56 (WT3_RH_E)	19:16			17:14	31	16:00 (WT163)	16:40	32	16:07 (WT163)
6	05:37		18:15 (MV Zuid WT2)	06:16		18:19 (MV Zuid WT2)	07:05		18:47 (MV Zuid WT1)	07:52			07:45		15:28 (WT163)	08:32		15:36 (WT163)
	22:02	93	19:48 (MV Zuid WT2)	21:25	109	20:56 (WT2_RH_E)	20:22	68	19:55 (WT3_RH_E)	19:14			17:12	33	16:01 (WT163)	16:39	30	16:06 (WT163)
7	05:38		18:15 (MV Zuid WT2)	06:18		18:20 (MV Zuid WT2)	07:06		18:48 (MV Zuid WT1)	07:54			07:47		15:27 (WT163)	08:34		15:36 (WT163)
	22:01	93	19:48 (MV Zuid WT2)	21:23	106	20:55 (WT2_RH_E)	20:20	66	19:54 (WT3_RH_E)	19:12			17:11	35	16:02 (WT163)	16:39	30	16:06 (WT163)
8	05:39		18:15 (MV Zuid WT2)	06:20		18:20 (MV Zuid WT2)	07:08		18:48 (MV Zuid WT1)	07:56			07:48		15:26 (WT163)	08:35		15:38 (WT163)
	22:01	93	19:48 (MV Zuid WT2)	21:22	104	20:53 (WT2_RH_E)	20:18	63	19:51 (WT3_RH_E)	19:10			17:09	37	16:03 (WT163)	16:39	28	16:06 (WT163)
9	05:40		18:16 (MV Zuid WT2)	06:21		18:20 (MV Zuid WT2)	07:10		18:50 (MV Zuid WT1)	07:57			07:50		15:26 (WT163)	08:36		15:39 (WT163)
	22:00	92	19:48 (MV Zuid WT2)	21:20	100	20:51 (WT2_RH_E)	20:15	57	19:49 (WT3_RH_E)	19:07			17:07	38	16:04 (WT163)	16:38	26	16:05 (WT163)
10	05:41		18:16 (MV Zuid WT2)	06:23		18:21 (MV Zuid WT2)	07:11		18:50 (MV Zuid WT1)	07:59			07:52		15:24 (WT163)	08:37		15:39 (WT163)
	21:59	93	19:49 (MV Zuid WT2)	21:18	97	20:50 (WT2_RH_E)	20:13	51	19:46 (WT3_RH_E)	19:05			17:06	40	16:04 (WT163)	16:38	26	16:05 (WT163)
11	05:42		18:16 (MV Zuid WT2)	06:24		18:21 (MV Zuid WT2)	07:13		18:52 (MV Zuid WT1)	08:01			07:54		15:24 (WT163)	08:38		15:40 (WT163)
	21:59	93	19:49 (MV Zuid WT2)	21:16	93	20:48 (WT2_RH_E)	20:11	46	19:45 (WT3_RH_E)	19:03			17:04	40	16:04 (WT163)	16:38	25	16:05 (WT163)
12	05:43		18:16 (MV Zuid WT2)	06:26		18:23 (MV Zuid WT2)	07:14		18:53 (MV Zuid WT1)	08:02			07:55		15:24 (WT163)	08:39		15:41 (WT163)
	21:58	93	19:49 (MV Zuid WT2)	21:14	87	20:46 (WT2_RH_E)	20:08	38	19:42 (WT3_RH_E)	19:01			17:03	41	16:05 (WT163)	16:38	23	16:04 (WT163)
13	05:44		18:16 (MV Zuid WT2)	06:27		18:23 (MV Zuid WT2)	07:16		18:55 (MV Zuid WT1)	08:04		18:20 (GC&T WT2)	07:57		15:24 (WT163)	08:40		15:42 (WT163)
	21:57	93	19:49 (MV Zuid WT2)	21:12	83	20:44 (WT2_RH_E)	20:06	29	19:40 (WT3_RH_E)	18:59	4	18:24 (GC&T WT2)	17:01	42	16:06 (WT163)	16:38	22	16:04 (WT163)
14	05:45		18:16 (MV Zuid WT2)	06:29		18:25 (MV Zuid WT2)	07:17		18:58 (MV Zuid WT1)	08:06		18:18 (GC&T WT2)	07:59		15:24 (WT163)	08:41		15:43 (WT163)
	21:56	93	19:49 (MV Zuid WT2)	21:10	77	20:43 (WT2_RH_E)	20:04	15	19:37 (WT3_RH_E)	18:57	9	18:27 (GC&T WT2)	17:00	42	16:06 (WT163)	16:38	21	16:04 (WT163)
15	05:46		18:16 (MV Zuid WT2)	06:30		18:25 (MV Zuid WT2)	07:19			08:07		18:16 (GC&T WT2)	08:01		15:24 (WT163)	08:42		15:44 (WT163)
	21:55	93	19:49 (MV Zuid WT2)	21:08	71	20:40 (WT2_RH_E)	20:02			18:55	11	18:27 (GC&T WT2)	16:59	43	16:07 (WT163)	16:38	20	16:04 (WT163)
16	05:48		18:16 (MV Zuid WT2)	06:32		18:27 (MV Zuid WT2)	07:20			08:09		18:15 (GC&T WT2)	08:02		15:24 (WT163)	08:43		15:45 (WT163)
	21:54	93	19:49 (MV Zuid WT2)	21:06	63	19:30 (MV Zuid WT2)	19:59			18:52	9	18:24 (GC&T WT2)	16:57	43	16:07 (WT163)	16:38	20	16:05 (WT163)
17	05:49		18:16 (MV Zuid WT2)	06:33		18:28 (MV Zuid WT2)	07:22			08:11		18:15 (GC&T WT2)	08:04		15:24 (WT163)	08:44		15:45 (WT163)
	21:53	93	19:49 (MV Zuid WT2)	21:05	61	19:29 (MV Zuid WT1)	19:57			18:50	7	18:22 (GC&T WT2)	16:56	42	16:06 (WT163)	16:38	19	16:04 (WT163)
18	05:50		18:15 (MV Zuid WT2)	06:35		18:30 (MV Zuid WT2)	07:24			08:12		18:15 (GC&T WT2)	08:06		15:24 (WT163)	08:44		15:46 (WT163)
	21:52	94	19:49 (MV Zuid WT2)	21:03	60	19:30 (MV Zuid WT1)	19:55			18:48	6	18:21 (GC&T WT2)	16:55	43	16:07 (WT163)	16:39	19	16:05 (WT163)
19	05:51		18:15 (MV Zuid WT2)	06:37		18:31 (MV Zuid WT2)	07:25			08:14		18:15 (GC&T WT2)	08:07		15:25 (WT163)	08:45		15:47 (WT163)
	21:51	94	19:49 (MV Zuid WT2)	21:01	60	19:31 (MV Zuid WT1)	19:53			18:46	4	18:19 (GC&T WT2)	16:53	42	16:07 (WT163)	16:39	18	16:05 (WT163)
20	05:52		18:15 (MV Zuid WT2)	06:38		18:33 (MV Zuid WT2)	07:27			08:16		18:15 (GC&T WT2)	08:09		15:25 (WT163)	08:46		15:47 (WT163)
	21:50	93	19:48 (MV Zuid WT2)	20:58	59	19:32 (MV Zuid WT1)	19:50			18:44	1	18:16 (GC&T WT2)	16:52	43	16:08 (WT163)	16:39	18	16:05 (WT163)
21	05:54		18:16 (MV Zuid WT2)	06:40		18:35 (MV Zuid WT2)	07:28			08:17			08:11		15:26 (WT163)	08:46		15:48 (WT163)
	21:49	93	19:49 (MV Zuid WT2)	20:56	58	19:33 (MV Zuid WT1)	19:48			18:42			16:51	42	16:08 (WT163)	16:40	18	16:06 (WT163)
22	05:55		18:16 (MV Zuid WT2)	06:41		18:38 (MV Zuid WT2)	07:30			08:19			08:12		15:25 (WT163)	08:47		15:48 (WT163)
	21:48	93	19:49 (MV Zuid WT2)	20:54	56	19:34 (MV Zuid WT1)	19:46			18:40			16:50	42	16:07 (WT163)	16:40	18	16:06 (WT163)
23	05:56		18:16 (MV Zuid WT2)	06:43		18:40 (MV Zuid WT2)	07:32			08:21			08:14		15:26 (WT163)	08:47		15:49 (WT163)
	21:46	92	19:48 (MV Zuid WT2)	20:52	59	20:12 (WT1_RH_E)	19:43			18:38			16:49	42	16:08 (WT163)	16:41	18	16:07 (WT163)
24	05:58		18:15 (MV Zuid WT2)	06:44		18:45 (MV Zuid WT2)	07:33			08:22			08:15		15:27 (WT163)	08:48		15:49 (WT163)
	21:45	93	19:48 (MV Zuid WT2)	20:50	62	20:16 (WT06_AB)	19:41			18:36			16:48	41	16:08 (WT163)	16:41	18	16:07 (WT163)
25	05:59		18:16 (MV Zuid WT2)	06:46		18:51 (MV Zuid WT1)	07:35			07:24			08:17		15:27 (WT163)	08:48		15:49 (WT163)
	21:44	100	20:48 (WT2_RH_E)	20:48	58	20:17 (WT06_AB)	19:39			17:34			16:47	40	16:07 (WT163)	16:42	18	16:07 (WT163)
26	06:00		18:16 (MV Zuid WT2)	06:48		18:51 (MV Zuid WT1)	07:36			07:26			08:18		15:28 (WT163)	08:48		15:50 (WT163)
	21:42	104	20:50 (WT2_RH_E)	20:46	62	20:19 (WT06_AB)	19:37			17:32			16:46	39	16:07 (WT163)	16:43	19	16:09 (WT163)
27	06:02		18:16 (MV Zuid WT2)	06:49		18:50 (MV Zuid WT1)	07:38			07:28		16:55 (GC&T WT1)	08:20		15:29 (WT163)	08:49		15:50 (WT163)
	21:41	106	20:51 (WT2_RH_E)	20:44	72	20:17 (WT1_RH_E)	19:34			17:30	6	17:01 (GC&T WT1)	16:45	39	16:08 (WT163)	16:43	19	16:09 (WT163)
28	06:03		18:17 (MV Zuid WT2)	06:51		18:50 (MV Zuid WT1)	07:39			07:29		16:54 (GC&T WT1)	08:21		15:29 (WT163)	08:49		15:50 (WT163)
	21:39	109	20:53 (WT2_RH_E)	20:42	76	20:15 (WT1_RH_E)	19:32			17:28	6	17:00 (GC&T WT1)	16:44	38	16:07 (WT163)	16:44	20	16:10 (WT163)
29	06:05		18:16 (MV Zuid WT2)	06:52		18:48 (MV Zuid WT1)	07:41			07:31		16:53 (GC&T WT1)	08:23		15:30 (WT163)	08:49		15:50 (WT163)
	21:38	110	20:53 (WT2_RH_E)	20:40	79	20:13 (WT1_RH_E)	19:30			17:26	5	16:58 (GC&T WT1)	16:43	37	16:07 (WT163)	16:45	21	16:11 (WT163)
30	06:06		18:16 (MV Zuid WT2)	06:54		18:49 (MV Zuid WT1)	07:43			07:33		16:53 (GC&T WT1)	08:24		15:30 (WT163)	08:49		15:50 (WT163)
	21:36	111	20:54 (WT2_RH_E)	20:37	78	20:11 (WT1_RH_E)	19:28			17:25	3	16:56 (GC&T WT1)	16:43	37	16:07 (WT163)	16:46	22	16:12 (WT163)
31	06:08		18:17 (MV Zuid WT2)	06:55		18:48 (MV Zuid WT1)				07:35		15:43 (WT163)				08:49		15:50 (WT163)
	21:35	111	20:55 (WT2_RH_E)	20:35	78	20:09 (WT1_RH_E)				17:23	5	16:54 (GC&T WT1)				16:47	23	16:13 (WT163)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		2980			2523			789			76			1121			729	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,59			0,59			0,61			0,67			0,71			0,71	
Total reduction		0,26			0,27			0,26			0,23			0,18			0,15	
Total, real		768			677			202			18			196			106	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: O - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:51 (Skalden WT4)	08:24			07:32		16:31 (WT163)	07:23			06:20		20:10 (WT3_RH_E)	05:36		20:22 (MV Zuid WT1)
	16:48	13	16:04 (Skalden WT4)	17:35			18:25	51	17:22 (WT163)	20:17			21:06	28	20:38 (WT1_RH_E)	21:50	44	21:18 (WT2_RH_E)
2	08:49		15:51 (Skalden WT4)	08:22			07:30		16:31 (WT163)	07:21			06:18		20:09 (WT3_RH_E)	05:36		20:22 (MV Zuid WT1)
	16:49	12	16:03 (Skalden WT4)	17:36			18:26	50	17:21 (WT163)	20:18			21:08	30	20:39 (WT1_RH_E)	21:51	46	21:20 (WT2_RH_E)
3	08:49		15:52 (Skalden WT4)	08:21		16:53 (WT163)	07:28		16:32 (WT163)	07:19			06:16		20:09 (WT3_RH_E)	05:35		20:22 (MV Zuid WT1)
	16:50	11	16:03 (Skalden WT4)	17:38	6	16:59 (WT163)	18:28	49	17:21 (WT163)	20:20			21:09	32	20:41 (WT1_RH_E)	21:52	49	21:21 (WT2_RH_E)
4	08:49		15:54 (Skalden WT4)	08:19		16:47 (WT163)	07:26		16:32 (WT163)	07:16			06:15		20:10 (WT3_RH_E)	05:34		20:21 (MV Zuid WT1)
	16:51	9	16:03 (Skalden WT4)	17:40	17	17:04 (WT163)	18:30	47	17:19 (WT163)	20:22			21:11	32	20:42 (WT1_RH_E)	21:53	50	21:21 (WT2_RH_E)
5	08:49		15:54 (Skalden WT4)	08:18		16:45 (WT163)	07:23		16:34 (WT163)	07:14			06:13		20:09 (WT3_RH_E)	05:34		20:21 (MV Zuid WT1)
	16:53	9	16:03 (Skalden WT4)	17:42	23	17:08 (WT163)	18:32	44	17:18 (WT163)	20:23			21:12	32	20:41 (WT1_RH_E)	21:54	53	21:23 (WT2_RH_E)
6	08:48		15:56 (Skalden WT4)	08:16		16:43 (WT163)	07:21		16:35 (WT163)	07:12			06:11		20:09 (WT3_RH_E)	05:33		20:20 (MV Zuid WT1)
	16:54	7	16:03 (Skalden WT4)	17:44	27	17:10 (WT163)	18:33	42	17:17 (WT163)	20:25			21:14	31	20:40 (WT1_RH_E)	21:55	55	21:23 (WT2_RH_E)
7	08:48		15:59 (Skalden WT4)	08:14		16:40 (WT163)	07:19		16:36 (WT163)	07:10			06:09		20:10 (WT3_RH_E)	05:32		20:20 (MV Zuid WT1)
	16:55	3	16:02 (Skalden WT4)	17:45	32	17:12 (WT163)	18:35	39	17:15 (WT163)	20:27			21:16	29	20:39 (WT1_RH_E)	21:56	57	21:24 (WT2_RH_E)
8	08:48			08:13		16:39 (WT163)	07:17		16:38 (WT163)	07:08			06:08		20:10 (WT3_RH_E)	05:32		20:20 (MV Zuid WT1)
	16:56			17:47	35	17:14 (WT163)	18:37	37	18:12 (GC&T WT2)	20:28			21:17	27	20:37 (WT1_RH_E)	21:57	58	21:24 (WT2_RH_E)
9	08:47			08:11		16:38 (WT163)	07:15		16:40 (WT163)	07:05			06:06		20:11 (WT3_RH_E)	05:31		20:20 (MV Zuid WT1)
	16:58			17:49	38	17:16 (WT163)	18:38	35	18:13 (GC&T WT2)	20:30			21:19	26	20:37 (WT3_RH_E)	21:58	59	21:25 (WT2_RH_E)
10	08:47			08:09		16:37 (WT163)	07:13		16:42 (WT163)	07:03			06:04		20:11 (WT3_RH_E)	05:31		20:20 (MV Zuid WT1)
	16:59			17:51	41	17:18 (WT163)	18:40	34	18:15 (GC&T WT2)	20:32			21:20	24	20:35 (WT3_RH_E)	21:59	60	21:26 (WT2_RH_E)
11	08:46			08:07		16:36 (WT163)	07:10		16:45 (WT163)	07:01			06:03		20:13 (WT3_RH_E)	05:31		20:20 (MV Zuid WT1)
	17:00			17:53	45	17:25 (GC&T WT3)	18:42	30	18:17 (GC&T WT2)	20:33			21:22	22	20:35 (WT3_RH_E)	21:59	61	21:27 (WT2_RH_E)
12	08:46			08:06		16:35 (WT163)	07:08		16:51 (WT163)	06:59			06:01		20:13 (WT3_RH_E)	05:30		20:19 (MV Zuid WT1)
	17:02			17:54	48	17:27 (GC&T WT3)	18:44	20	18:19 (GC&T WT2)	20:35			21:23	21	20:34 (WT3_RH_E)	22:00	63	21:27 (WT2_RH_E)
13	08:45			08:04		16:34 (WT163)	07:06		18:08 (GC&T WT2)	06:57			05:59		20:15 (WT3_RH_E)	05:30		20:20 (MV Zuid WT1)
	17:03			17:56	51	17:29 (GC&T WT3)	18:45	12	18:20 (GC&T WT2)	20:37			21:25	18	20:33 (WT3_RH_E)	22:01	63	21:28 (WT2_RH_E)
14	08:44			08:02		16:33 (WT163)	07:04		18:09 (GC&T WT2)	06:55			05:58		20:16 (WT3_RH_E)	05:30		20:20 (MV Zuid WT1)
	17:05			17:58	48	17:21 (WT163)	18:47	11	18:20 (GC&T WT2)	20:38			21:26	15	20:31 (WT3_RH_E)	22:01	64	21:29 (WT2_RH_E)
15	08:43			08:00		16:32 (WT163)	07:01		18:10 (GC&T WT2)	06:52			05:56		20:18 (WT3_RH_E)	05:30		20:20 (MV Zuid WT1)
	17:06			18:00	50	17:22 (WT163)	18:49	8	18:18 (GC&T WT2)	20:40			21:28	12	20:30 (WT3_RH_E)	22:02	64	21:29 (WT2_RH_E)
16	08:43			07:58		16:31 (WT163)	06:59			06:50			05:55		20:21 (WT3_RH_E)	05:30		20:20 (MV Zuid WT1)
	17:08			18:02	52	17:23 (WT163)	18:50			20:42			21:29	6	20:27 (WT3_RH_E)	22:02	66	21:30 (WT2_RH_E)
17	08:42			07:56		16:31 (WT163)	06:57			06:48			05:53			05:29		20:20 (MV Zuid WT1)
	17:09			18:03	52	17:23 (WT163)	18:52			20:43			21:31			22:03	66	21:30 (WT2_RH_E)
18	08:41			07:54		16:30 (WT163)	06:55			06:46			05:52			05:29		20:20 (MV Zuid WT1)
	17:11			18:05	54	17:24 (WT163)	18:54			20:45			21:32			22:03	65	21:30 (WT2_RH_E)
19	08:40			07:52		16:30 (WT163)	06:52			06:44			05:51			05:30		20:20 (MV Zuid WT1)
	17:12			18:07	54	17:24 (WT163)	18:55			20:46			21:34			22:04	67	21:31 (WT2_RH_E)
20	08:39			07:50		16:30 (WT163)	06:50			06:42			05:49			05:30		20:20 (MV Zuid WT1)
	17:14			18:09	54	17:24 (WT163)	18:57			20:48			21:35			22:04	67	21:31 (WT2_RH_E)
21	08:38			07:48		16:30 (WT163)	06:48			06:40			05:48			05:30		20:20 (MV Zuid WT1)
	17:16			18:11	54	17:24 (WT163)	18:59			20:50			21:37			22:04	67	21:31 (WT2_RH_E)
22	08:37			07:46		16:30 (WT163)	06:46			06:38			05:47			05:30		20:21 (MV Zuid WT1)
	17:17			18:12	55	17:46 (GC&T WT1)	19:00			20:51			21:38			22:04	67	21:32 (WT2_RH_E)
23	08:36			07:44		16:30 (WT163)	06:43			06:36		20:20 (WT3_RH_E)	05:46			05:30		20:21 (MV Zuid WT1)
	17:19			18:14	58	17:48 (GC&T WT1)	19:02			20:53	6	20:26 (WT3_RH_E)	21:39			22:04	67	21:32 (WT2_RH_E)
24	08:35			07:42		16:30 (WT163)	06:41			06:34		20:17 (WT3_RH_E)	05:44			05:30		20:21 (MV Zuid WT1)
	17:21			18:16	60	17:50 (GC&T WT1)	19:04			20:55	11	20:28 (WT3_RH_E)	21:41			22:05	66	21:32 (WT2_RH_E)
25	08:33			07:40		16:30 (WT163)	06:39			06:32		20:15 (WT3_RH_E)	05:43		20:33 (MV Zuid WT1)	05:31		20:22 (MV Zuid WT1)
	17:22			18:18	61	17:52 (GC&T WT1)	19:05			20:56	14	20:29 (WT3_RH_E)	21:42	9	21:11 (WT2_RH_E)	22:05	66	21:32 (WT2_RH_E)
26	08:32			07:38		16:29 (WT163)	06:37			06:30		20:14 (WT3_RH_E)	05:42		20:29 (MV Zuid WT1)	05:31		20:22 (MV Zuid WT1)
	17:24			18:19	62	17:53 (GC&T WT1)	19:07			20:58	16	20:30 (WT1_RH_E)	21:43	18	21:12 (WT2_RH_E)	22:05	66	21:32 (WT2_RH_E)
27	08:31			07:36		16:30 (WT163)	06:34			06:28		20:12 (WT3_RH_E)	05:41		20:27 (MV Zuid WT1)	05:32		20:22 (MV Zuid WT1)
	17:26			18:21	58	17:52 (GC&T WT1)	19:09			21:00	20	20:32 (WT1_RH_E)	21:44	24	21:13 (WT2_RH_E)	22:05	65	21:31 (WT2_RH_E)
28	08:29			07:34		16:30 (WT163)	06:32			06:26		20:11 (WT3_RH_E)	05:40		20:26 (MV Zuid WT1)	05:32		20:23 (MV Zuid WT1)
	17:28			18:23	52	17:22 (WT163)	19:10			21:01	22	20:33 (WT1_RH_E)	21:46	29	21:14 (WT2_RH_E)	22:04	64	21:32 (WT2_RH_E)
29	08:28						07:30			06:24		20:11 (WT3_RH_E)	05:39		20:25 (MV Zuid WT1)	05:33		20:23 (MV Zuid WT1)
	17:29						20:12			21:03	25	20:36 (WT1_RH_E)	21:47	34	21:16 (WT2_RH_E)	22:04	63	21:31 (WT2_RH_E)
30	08:27						07:28			06:22		20:11 (WT3_RH_E)	05:38		20:24 (MV Zuid WT1)	05:33		20:24 (MV Zuid WT1)
	17:31						20:14			21:04	26	20:37 (WT1_RH_E)	21:48	38	21:17 (WT2_RH_E)	22:04	63	21:32 (WT2_RH_E)
31	08:25						07:25						05:37		20:23 (MV Zuid WT1)			
	17:33						20:15						21:49	41	21:18 (WT2_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		64			1187			509			140			578			1831	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,71			0,69			0,69			0,55			0,55			0,56	
Total reduction		0,16			0,20			0,25			0,24			0,25			0,24	
Total, real		11			233			126			34			142			440	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: O - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		20:24 (MV Zuid WT1)	06:09		20:23 (WT3_RH_E)	06:57			07:44		18:47 (GC&T WT2)	07:36		16:06 (WT163)	08:26		
	22:04	62	21:32 (WT2_RH_E)	21:33	21	20:44 (WT3_RH_E)	20:33			19:25	11	18:58 (GC&T WT2)	17:21	40	16:46 (WT163)	16:42		
2	05:34		20:24 (MV Zuid WT1)	06:10		20:22 (WT3_RH_E)	06:59			07:46		17:26 (WT163)	07:38		16:07 (WT163)	08:27		
	22:04	62	21:31 (WT2_RH_E)	21:32	23	20:45 (WT3_RH_E)	20:31			19:23	27	18:57 (GC&T WT2)	17:19	38	16:45 (WT163)	16:41		
3	05:35		20:25 (MV Zuid WT1)	06:12		20:22 (WT3_RH_E)	07:00			07:48		17:21 (WT163)	07:40		16:09 (WT163)	08:29		
	22:03	60	21:31 (WT2_RH_E)	21:30	24	20:46 (WT3_RH_E)	20:29			19:21	32	18:54 (GC&T WT2)	17:17	34	16:43 (WT163)	16:41		
4	05:36		20:26 (MV Zuid WT1)	06:13		20:20 (WT3_RH_E)	07:02			07:49		17:19 (WT163)	07:42		16:10 (WT163)	08:30		
	22:03	58	21:31 (WT2_RH_E)	21:28	26	20:46 (WT1_RH_E)	20:26			19:19	35	18:52 (GC&T WT2)	17:16	32	16:42 (WT163)	16:40		
5	05:37		20:26 (MV Zuid WT1)	06:15		20:20 (WT3_RH_E)	07:03			07:51		17:15 (WT163)	07:43		16:13 (WT163)	08:31		15:44 (Skalden WT4)
	22:02	57	21:30 (WT2_RH_E)	21:27	28	20:48 (WT1_RH_E)	20:24			19:16	37	18:49 (GC&T WT2)	17:14	27	16:40 (WT163)	16:40	2	15:46 (Skalden WT4)
6	05:37		20:26 (MV Zuid WT1)	06:16		20:19 (WT3_RH_E)	07:05			07:52		17:13 (WT163)	07:45		16:15 (WT163)	08:32		15:42 (Skalden WT4)
	22:02	55	21:29 (WT2_RH_E)	21:25	30	20:49 (WT1_RH_E)	20:22			19:14	38	17:51 (WT163)	17:12	23	16:38 (WT163)	16:39	6	15:48 (Skalden WT4)
7	05:38		20:27 (MV Zuid WT1)	06:18		20:20 (WT3_RH_E)	07:06			07:54		17:12 (WT163)	07:47		16:18 (WT163)	08:34		15:42 (Skalden WT4)
	22:01	54	21:29 (WT2_RH_E)	21:23	31	20:51 (WT1_RH_E)	20:20			19:12	40	17:52 (WT163)	17:11	17	16:35 (WT163)	16:39	8	15:50 (Skalden WT4)
8	05:39		20:28 (MV Zuid WT1)	06:20		20:19 (WT3_RH_E)	07:08			07:56		17:10 (WT163)	07:48		16:26 (WT163)	08:35		15:41 (Skalden WT4)
	22:01	52	21:29 (WT2_RH_E)	21:22	32	20:51 (WT1_RH_E)	20:18			19:10	43	17:53 (WT163)	17:09	2	16:28 (WT163)	16:39	9	15:50 (Skalden WT4)
9	05:40		20:29 (MV Zuid WT1)	06:21		20:18 (WT3_RH_E)	07:10			07:57		17:08 (WT163)	07:50			08:36		15:42 (Skalden WT4)
	22:00	49	21:28 (WT2_RH_E)	21:20	33	20:51 (WT1_RH_E)	20:15			19:07	45	17:53 (WT163)	17:07			16:39	10	15:52 (Skalden WT4)
10	05:41		20:29 (MV Zuid WT1)	06:23		20:19 (WT3_RH_E)	07:11			07:59		17:07 (WT163)	07:52			08:37		15:41 (Skalden WT4)
	21:59	48	21:28 (WT2_RH_E)	21:18	31	20:50 (WT1_RH_E)	20:13			19:05	47	17:54 (WT163)	17:06			16:38	12	15:53 (Skalden WT4)
11	05:42		20:30 (MV Zuid WT1)	06:24		20:18 (WT3_RH_E)	07:13			08:01		17:06 (WT163)	07:54			08:38		15:41 (Skalden WT4)
	21:59	45	21:27 (WT2_RH_E)	21:16	30	20:48 (WT1_RH_E)	20:11			19:03	49	17:55 (WT163)	17:04			16:38	13	15:54 (Skalden WT4)
12	05:43		20:31 (MV Zuid WT1)	06:26		20:19 (WT3_RH_E)	07:14			08:02		17:04 (WT163)	07:55			08:39		15:41 (Skalden WT4)
	21:58	43	21:27 (WT2_RH_E)	21:14	27	20:46 (WT1_RH_E)	20:08			19:01	51	17:55 (WT163)	17:03			16:38	13	15:54 (Skalden WT4)
13	05:44		20:32 (MV Zuid WT1)	06:27		20:18 (WT3_RH_E)	07:16			08:04		17:04 (WT163)	07:57			08:40		15:42 (Skalden WT4)
	21:57	39	21:26 (WT2_RH_E)	21:12	26	20:44 (WT1_RH_E)	20:06			18:59	51	17:55 (WT163)	17:01			16:38	13	15:55 (Skalden WT4)
14	05:45		20:33 (MV Zuid WT1)	06:29		20:19 (WT3_RH_E)	07:17			08:06		17:03 (WT163)	07:59			08:41		15:42 (Skalden WT4)
	21:56	36	21:25 (WT2_RH_E)	21:10	24	20:43 (WT1_RH_E)	20:04			18:57	53	17:56 (WT163)	17:00			16:38	14	15:56 (Skalden WT4)
15	05:46		20:35 (MV Zuid WT1)	06:30		20:19 (WT3_RH_E)	07:19			08:07		17:03 (WT163)	08:01			08:42		15:42 (Skalden WT4)
	21:55	31	21:24 (WT2_RH_E)	21:08	21	20:40 (WT1_RH_E)	20:02			18:55	60	18:26 (GC&T WT1)	16:59			16:38	14	15:56 (Skalden WT4)
16	05:48		20:36 (MV Zuid WT1)	06:32		20:20 (WT3_RH_E)	07:20			08:09		17:01 (WT163)	08:02			08:43		15:43 (Skalden WT4)
	21:54	27	21:23 (WT2_RH_E)	21:06	19	20:39 (WT1_RH_E)	19:59			18:52	61	18:24 (GC&T WT1)	16:57			16:38	14	15:57 (Skalden WT4)
17	05:49		20:38 (MV Zuid WT1)	06:33		20:21 (WT3_RH_E)	07:22			08:11		17:01 (WT163)	08:04			08:44		15:42 (Skalden WT4)
	21:53	21	21:22 (WT2_RH_E)	21:05	16	20:37 (WT1_RH_E)	19:57			18:50	61	18:22 (GC&T WT1)	16:56			16:38	15	15:57 (Skalden WT4)
18	05:50		20:40 (MV Zuid WT1)	06:35		20:22 (WT3_RH_E)	07:24			08:12		17:01 (WT163)	08:06			08:44		15:43 (Skalden WT4)
	21:52	14	21:21 (WT2_RH_E)	21:03	13	20:35 (WT3_RH_E)	19:55			18:48	60	18:21 (GC&T WT1)	16:55			16:39	15	15:58 (Skalden WT4)
19	05:51			06:37		20:23 (WT3_RH_E)	07:25			08:14		17:01 (WT163)	08:07			08:45		15:44 (Skalden WT4)
	21:51			21:01	10	20:33 (WT3_RH_E)	19:53			18:46	58	18:19 (GC&T WT1)	16:53			16:39	15	15:59 (Skalden WT4)
20	05:52			06:38		20:26 (WT3_RH_E)	07:27			08:16		17:00 (WT163)	08:09			08:46		15:44 (Skalden WT4)
	21:50			20:58	6	20:32 (WT3_RH_E)	19:50			18:44	56	18:16 (GC&T WT1)	16:52			16:39	14	15:58 (Skalden WT4)
21	05:54			06:40			07:28			08:17		17:00 (WT163)	08:10			08:46		15:45 (Skalden WT4)
	21:49			20:56			19:48			18:42	55	17:55 (WT163)	16:51			16:40	14	15:59 (Skalden WT4)
22	05:55			06:41			07:30			08:19		17:00 (WT163)	08:12			08:47		15:45 (Skalden WT4)
	21:48			20:54			19:46			18:40	54	17:54 (WT163)	16:50			16:40	14	15:59 (Skalden WT4)
23	05:56			06:43			07:32			08:21		17:01 (WT163)	08:14			08:47		15:46 (Skalden WT4)
	21:46			20:52			19:43			18:38	53	17:54 (WT163)	16:49			16:41	14	16:00 (Skalden WT4)
24	05:58			06:44			07:33			08:22		17:01 (WT163)	08:15			08:48		15:46 (Skalden WT4)
	21:45			20:50			19:41			18:36	53	17:54 (WT163)	16:48			16:41	14	16:00 (Skalden WT4)
25	05:59			06:46			07:35			07:24		16:00 (WT163)	08:17			08:48		15:46 (Skalden WT4)
	21:44			20:48			19:39			17:34	52	16:52 (WT163)	16:47			16:42	15	16:01 (Skalden WT4)
26	06:00			06:48			07:36			07:26		16:01 (WT163)	08:18			08:48		15:47 (Skalden WT4)
	21:42			20:46			19:37			17:32	51	16:52 (WT163)	16:46			16:43	15	16:02 (Skalden WT4)
27	06:02			06:49			07:38			07:28		16:02 (WT163)	08:20			08:49		15:48 (Skalden WT4)
	21:41			20:44			19:34			17:30	49	16:51 (WT163)	16:45			16:43	14	16:02 (Skalden WT4)
28	06:03		20:30 (WT3_RH_E)	06:51			07:39		18:52 (GC&T WT2)	07:29		16:03 (WT163)	08:21			08:49		15:48 (Skalden WT4)
	21:39	9	20:39 (WT3_RH_E)	20:42			19:32	6	18:58 (GC&T WT2)	17:28	49	16:58 (GC&T WT3)	16:44			16:44	14	16:02 (Skalden WT4)
29	06:05		20:27 (WT3_RH_E)	06:52			07:41		18:50 (GC&T WT2)	07:31		16:03 (WT163)	08:23			08:49		15:49 (Skalden WT4)
	21:38	14	20:41 (WT3_RH_E)	20:40			19:30	10	19:00 (GC&T WT2)	17:26	51	16:58 (GC&T WT3)	16:43			16:45	14	16:03 (Skalden WT4)
30	06:06		20:26 (WT3_RH_E)	06:54			07:43		18:48 (GC&T WT2)	07:33		16:04 (WT163)	08:24			08:49		15:49 (Skalden WT4)
	21:36	16	20:42 (WT3_RH_E)	20:37			19:28	12	19:00 (GC&T WT2)	17:25	48	16:56 (GC&T WT3)	16:43			16:46	14	16:03 (Skalden WT4)
31	06:08		20:25 (WT3_RH_E)	06:55						07:35		16:05 (WT163)				08:49		15:50 (Skalden WT4)
	21:35	19	20:44 (WT3_RH_E)	20:35						17:23	44	16:54 (GC&T WT3)				16:47	13	16:03 (Skalden WT4)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		871			471			28			1474			213			342	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,56			0,55			0,63			0,69			0,69			0,71	
Total reduction		0,24			0,25			0,27			0,24			0,17			0,15	
Total, real		212			118			7			361			37			51	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: P - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:55 (Skalden WTB1)	08:24		16:44 (Skalden WT4)	07:32		17:56 (GC&T WT3)	07:23		19:13 (WT163)	06:20			05:36		20:52 (WT3_RH_E)
	16:48	17	16:15 (Skalden WTB3)	17:35	15	16:59 (Skalden WT4)	18:25	3	17:59 (GC&T WT3)	20:17	38	19:51 (GC&T WT2)	21:06			21:50	23	21:15 (WT3_RH_E)
2	08:49		15:55 (Skalden WTB1)	08:22		16:46 (Skalden WT4)	07:30			07:21		19:12 (WT163)	06:18			05:36		20:53 (WT3_RH_E)
	16:49	18	16:15 (Skalden WTB3)	17:36	13	16:59 (Skalden WT4)	18:26			20:18	41	19:53 (GC&T WT2)	21:08			21:51	22	21:15 (WT3_RH_E)
3	08:49		15:56 (Skalden WTB1)	08:21		16:47 (Skalden WT4)	07:28			07:19		19:11 (WT163)	06:16			05:35		20:53 (WT3_RH_E)
	16:50	18	16:16 (Skalden WTB3)	17:38	11	16:58 (Skalden WT4)	18:28			20:20	42	19:53 (GC&T WT2)	21:09			21:52	22	21:15 (WT3_RH_E)
4	08:49		15:57 (Skalden WTB1)	08:19		16:48 (Skalden WT4)	07:26			07:16		19:10 (WT163)	06:15			05:34		20:53 (WT3_RH_E)
	16:51	20	16:18 (Skalden WTB3)	17:40	8	16:56 (Skalden WT4)	18:30			20:22	43	19:53 (WT163)	21:11			21:53	21	21:14 (WT3_RH_E)
5	08:49		15:57 (Skalden WTB1)	08:18			07:23			07:14		19:08 (WT163)	06:13			05:34		20:54 (WT3_RH_E)
	16:53	20	16:18 (Skalden WTB3)	17:42			18:32			20:23	44	19:52 (WT163)	21:12			21:54	21	21:15 (WT3_RH_E)
6	08:48		15:59 (Skalden WTB1)	08:16			07:21			07:12		19:08 (WT163)	06:11			05:33		20:54 (WT3_RH_E)
	16:54	19	16:20 (Skalden WTB3)	17:44			18:33			20:25	45	19:53 (WT163)	21:14			21:55	20	21:14 (WT3_RH_E)
7	08:48		16:00 (Skalden WTB1)	08:14			07:19			07:10		19:07 (WT163)	06:09			05:32		20:55 (WT3_RH_E)
	16:55	21	16:22 (Skalden WTB3)	17:45			18:35			20:27	46	19:53 (WT163)	21:16			21:56	20	21:15 (WT3_RH_E)
8	08:48		16:02 (Skalden WTB1)	08:13			07:17			07:08		19:07 (WT163)	06:08			05:32		20:55 (WT3_RH_E)
	16:56	18	16:23 (Skalden WTB3)	17:47			18:37			20:28	47	19:54 (WT163)	21:17			21:57	19	21:14 (WT3_RH_E)
9	08:47		16:04 (Skalden WTB1)	08:11			07:15			07:05		19:06 (WT163)	06:06			05:31		20:56 (WT3_RH_E)
	16:58	16	16:24 (Skalden WTB3)	17:49			18:38			20:30	48	19:54 (WT163)	21:19			21:58	18	21:14 (WT3_RH_E)
10	08:47		16:10 (Skalden WTB3)	08:09			07:13			07:03		19:06 (WT163)	06:04			05:31		20:56 (WT3_RH_E)
	16:59	16	16:26 (Skalden WTB3)	17:51			18:40			20:32	48	19:54 (WT163)	21:20			21:59	19	21:15 (WT3_RH_E)
11	08:46		16:10 (Skalden WTB3)	08:07			07:10			07:01		19:05 (WT163)	06:03			05:31		20:57 (WT3_RH_E)
	17:00	17	16:27 (Skalden WTB3)	17:53			18:42			20:33	48	19:53 (WT163)	21:22			21:59	18	21:15 (WT3_RH_E)
12	08:46		16:10 (Skalden WTB3)	08:06			07:08			06:59		19:05 (WT163)	06:01		20:52 (WT1_RH_E)	05:30		20:57 (WT3_RH_E)
	17:02	18	16:28 (Skalden WTB3)	17:54			18:44			20:35	47	19:52 (WT163)	21:23	2	20:54 (WT1_RH_E)	22:00	17	21:14 (WT3_RH_E)
13	08:45		16:10 (Skalden WTB3)	08:04			07:06		18:18 (GC&T WT1)	06:57		19:05 (WT163)	05:59		20:51 (WT1_RH_E)	05:30		20:58 (WT3_RH_E)
	17:03	20	16:30 (Skalden WT3)	17:56			18:45	2	18:20 (GC&T WT1)	20:37	47	19:52 (WT163)	21:25	5	20:56 (WT1_RH_E)	22:01	16	21:14 (WT3_RH_E)
14	08:44		16:10 (Skalden WTB3)	08:02			07:04		18:18 (GC&T WT1)	06:55		19:05 (WT163)	05:58		20:51 (WT1_RH_E)	05:30		20:58 (WT3_RH_E)
	17:05	22	16:32 (Skalden WT3)	17:58			18:47	4	18:22 (GC&T WT1)	20:38	47	19:52 (WT163)	21:26	6	20:57 (WT1_RH_E)	22:01	16	21:14 (WT3_RH_E)
15	08:43		16:11 (Skalden WTB3)	08:00			07:01		18:18 (GC&T WT1)	06:52		19:06 (WT163)	05:56		20:51 (WT1_RH_E)	05:30		20:59 (WT3_RH_E)
	17:06	23	16:34 (Skalden WT3)	18:00			18:49	6	18:24 (GC&T WT1)	20:40	45	19:51 (WT163)	21:28	7	20:58 (WT1_RH_E)	22:02	15	21:14 (WT3_RH_E)
16	08:43		16:11 (Skalden WTB3)	07:58			06:59		18:19 (GC&T WT1)	06:50		19:06 (WT163)	05:55		20:51 (WT1_RH_E)	05:30		20:59 (WT3_RH_E)
	17:08	25	16:36 (Skalden WT3)	18:02			18:50	7	18:26 (GC&T WT1)	20:42	45	19:51 (WT163)	21:29	9	21:00 (WT1_RH_E)	22:02	15	21:14 (WT3_RH_E)
17	08:42		16:12 (Skalden WTB3)	07:56			06:57		18:22 (GC&T WT1)	06:48		19:06 (WT163)	05:53		20:50 (WT1_RH_E)	05:29		21:00 (WT3_RH_E)
	17:09	26	16:38 (Skalden WT3)	18:03			18:52	1	18:23 (GC&T WT1)	20:43	44	19:50 (WT163)	21:31	11	21:01 (WT1_RH_E)	22:03	14	21:14 (WT3_RH_E)
18	08:41		16:12 (Skalden WTB3)	07:54			06:55			06:46		19:07 (WT163)	05:52		20:51 (WT1_RH_E)	05:29		21:00 (WT3_RH_E)
	17:11	27	16:39 (Skalden WT3)	18:05			18:54			20:45	42	19:49 (WT163)	21:32	11	21:02 (WT1_RH_E)	22:03	14	21:14 (WT3_RH_E)
19	08:40		16:12 (Skalden WTB3)	07:52			06:52			06:44		19:08 (WT163)	05:51		20:51 (WT1_RH_E)	05:30		21:00 (WT3_RH_E)
	17:12	28	16:40 (Skalden WT3)	18:07			18:55			20:46	40	19:48 (WT163)	21:34	13	21:04 (WT1_RH_E)	22:03	14	21:14 (WT3_RH_E)
20	08:39		16:13 (Skalden WTB3)	07:50			06:50			06:42		19:08 (WT163)	05:49		20:52 (WT1_RH_E)	05:30		21:00 (WT3_RH_E)
	17:14	29	16:42 (Skalden WT3)	18:09			18:57			20:48	39	19:47 (WT163)	21:35	13	21:05 (WT1_RH_E)	22:04	14	21:14 (WT3_RH_E)
21	08:38		16:14 (Skalden WTB3)	07:48			06:48			06:40		19:09 (WT163)	05:48		20:51 (WT3_RH_E)	05:30		21:00 (WT3_RH_E)
	17:16	28	16:43 (Skalden WT3)	18:11			18:59			20:50	37	19:46 (WT163)	21:36	15	21:06 (WT1_RH_E)	22:04	14	21:14 (WT3_RH_E)
22	08:37		16:15 (Skalden WTB3)	07:46			06:46			06:38		19:10 (WT163)	05:47		20:51 (WT3_RH_E)	05:30		21:01 (WT3_RH_E)
	17:17	26	16:43 (Skalden WT3)	18:12			19:00			20:51	34	19:44 (WT163)	21:38	16	21:07 (WT3_RH_E)	22:04	14	21:15 (WT3_RH_E)
23	08:36		16:16 (Skalden WTB3)	07:44			06:43			06:36		19:12 (WT163)	05:46		20:51 (WT3_RH_E)	05:30		21:01 (WT3_RH_E)
	17:19	26	16:48 (Skalden WT4)	18:14			19:02			20:53	31	19:43 (WT163)	21:39	17	21:08 (WT3_RH_E)	22:04	14	21:15 (WT3_RH_E)
24	08:34		16:17 (Skalden WTB3)	07:42			06:41			06:34		19:13 (WT163)	05:44		20:51 (WT3_RH_E)	05:30		21:01 (WT3_RH_E)
	17:21	23	16:50 (Skalden WT4)	18:16			19:04			20:55	28	19:41 (WT163)	21:41	19	21:10 (WT3_RH_E)	22:05	14	21:15 (WT3_RH_E)
25	08:33		16:19 (Skalden WTB3)	07:40			06:39			06:32		19:15 (WT163)	05:43		20:51 (WT3_RH_E)	05:31		21:02 (WT3_RH_E)
	17:22	18	16:52 (Skalden WT4)	18:18			19:05			20:56	24	19:39 (WT163)	21:42	20	21:11 (WT3_RH_E)	22:05	14	21:16 (WT3_RH_E)
26	08:32		16:23 (Skalden WTB3)	07:38			06:37			06:30		19:17 (WT163)	05:42		20:51 (WT3_RH_E)	05:31		21:01 (WT3_RH_E)
	17:24	12	16:53 (Skalden WT4)	18:19			19:07			20:58	19	19:36 (WT163)	21:43	21	21:12 (WT3_RH_E)	22:05	15	21:16 (WT3_RH_E)
27	08:31		16:43 (Skalden WT4)	07:36			06:34		18:27 (WT163)	06:28		19:20 (WT163)	05:41		20:51 (WT3_RH_E)	05:32		21:01 (WT3_RH_E)
	17:26	12	16:55 (Skalden WT4)	18:21			19:09	14	18:41 (WT163)	21:00	12	19:32 (WT163)	21:44	22	21:13 (WT3_RH_E)	22:05	15	21:16 (WT3_RH_E)
28	08:29		16:43 (Skalden WT4)	07:34		17:55 (GC&T WT3)	06:32		18:22 (WT163)	06:26			05:40		20:51 (WT3_RH_E)	05:32		21:01 (WT3_RH_E)
	17:28	15	16:58 (Skalden WT4)	18:23	2	17:57 (GC&T WT3)	19:10	21	18:43 (WT163)	21:01			21:46	23	21:14 (WT3_RH_E)	22:04	16	21:17 (WT3_RH_E)
29	08:28		16:43 (Skalden WT4)				07:30		19:19 (WT163)	06:24			05:39		20:52 (WT3_RH_E)	05:33		21:01 (WT3_RH_E)
	17:29	16	16:59 (Skalden WT4)				20:12	28	19:47 (GC&T WT2)	21:03			21:47	23	21:15 (WT3_RH_E)	22:04	16	21:17 (WT3_RH_E)
30	08:27		16:44 (Skalden WT4)				07:28		19:17 (WT163)	06:22			05:38		20:52 (WT3_RH_E)	05:33		21:01 (WT3_RH_E)
	17:31	16	17:00 (Skalden WT4)				20:14	31	19:48 (WT163)	21:04			21:48	23	21:15 (WT3_RH_E)	22:04	17	21:18 (WT3_RH_E)
31	08:25		16:44 (Skalden WT4)				07:25		19:16 (WT163)				05:37		20:52 (WT3_RH_E)			
	17:33	15	16:59 (Skalden WT4)				20:15	34	19:50 (WT163)				21:49	23	21:15 (WT3_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		625			49			151			1071			299			507	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,71			0,70			0,61			0,61			0,56			0,56	
Total reduction		0,16			0,20			0,22			0,27			0,25			0,24	
Total, real		102			10			33			289			74			122	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: P - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:02 (WT3_RH_E)	06:09		21:02 (WT1_RH_E)	06:57		19:05 (WT163)	07:44			07:36			08:26		15:52 (Skalden WTB3)
	22:04	17	21:19 (WT3_RH_E)	21:33	2	21:04 (WT1_RH_E)	20:33	48	19:53 (WT163)	19:25			17:21			16:42	18	16:10 (Skalden WTB3)
2	05:34		21:01 (WT3_RH_E)	06:10			06:59		19:04 (WT163)	07:46			07:38			08:27		15:52 (Skalden WTB3)
	22:04	18	21:19 (WT3_RH_E)	21:32			20:31	48	19:52 (WT163)	19:23			17:19			16:41	16	16:08 (Skalden WTB3)
3	05:35		21:01 (WT3_RH_E)	06:12			07:00		19:04 (WT163)	07:47			07:40			08:28		15:53 (Skalden WTB3)
	22:03	18	21:19 (WT3_RH_E)	21:30			20:29	48	19:52 (WT163)	19:21			17:17			16:41	15	16:08 (Skalden WTB3)
4	05:36		21:01 (WT3_RH_E)	06:13			07:02		19:04 (WT163)	07:49			07:42			08:30		15:46 (Skalden WTB1)
	22:03	19	21:20 (WT3_RH_E)	21:28			20:26	47	19:51 (WT163)	19:19			17:16			16:40	18	16:07 (Skalden WTB3)
5	05:37		21:00 (WT3_RH_E)	06:15			07:03		19:04 (WT163)	07:51			07:43			08:31		15:46 (Skalden WTB1)
	22:02	20	21:20 (WT3_RH_E)	21:27			20:24	46	19:50 (WT163)	19:16			17:14			16:40	20	16:07 (Skalden WTB3)
6	05:37		21:00 (WT3_RH_E)	06:16			07:05		19:04 (WT163)	07:52			07:45			08:32		15:45 (Skalden WTB1)
	22:02	21	21:21 (WT3_RH_E)	21:25			20:22	45	19:49 (WT163)	19:14			17:12			16:39	19	16:06 (Skalden WTB3)
7	05:38		21:01 (WT3_RH_E)	06:18			07:06		19:04 (WT163)	07:54			07:47		16:19 (Skalden WT4)	08:34		15:44 (Skalden WTB1)
	22:01	20	21:21 (WT3_RH_E)	21:23			20:20	45	19:49 (WT163)	19:12			17:11	8	16:27 (Skalden WT4)	16:39	21	16:06 (Skalden WTB3)
8	05:39		21:01 (WT3_RH_E)	06:20			07:08		19:04 (WT163)	07:56			07:48		16:17 (Skalden WT4)	08:35		15:44 (Skalden WTB1)
	22:01	21	21:22 (WT3_RH_E)	21:21			20:17	43	19:47 (WT163)	19:10			17:09	12	16:29 (Skalden WT4)	16:39	20	16:05 (Skalden WTB3)
9	05:40		21:01 (WT3_RH_E)	06:21			07:10		19:05 (WT163)	07:57			07:50		16:16 (Skalden WT4)	08:36		15:45 (Skalden WTB1)
	22:00	21	21:22 (WT3_RH_E)	21:20			20:15	42	19:47 (GC&T WT2)	19:07			17:07	14	16:30 (Skalden WT4)	16:39	18	16:05 (Skalden WTB3)
10	05:41		21:01 (WT3_RH_E)	06:23			07:11		19:05 (WT163)	07:59			07:52		16:15 (Skalden WT4)	08:37		15:45 (Skalden WTB1)
	21:59	22	21:23 (WT3_RH_E)	21:18			20:13	41	19:46 (GC&T WT2)	19:05			17:06	15	16:30 (Skalden WT4)	16:38	18	16:05 (Skalden WTB3)
11	05:42		21:01 (WT3_RH_E)	06:24			07:13		19:06 (WT163)	08:01			07:54		16:15 (Skalden WT4)	08:38		15:45 (Skalden WTB1)
	21:59	22	21:23 (WT3_RH_E)	21:16			20:11	39	19:45 (GC&T WT2)	19:03			17:04	15	16:30 (Skalden WT4)	16:38	17	16:05 (Skalden WTB3)
12	05:43		21:01 (WT3_RH_E)	06:26			07:14		19:07 (WT163)	08:02		18:30 (GC&T WT3)	07:55		16:15 (Skalden WT4)	08:39		15:45 (Skalden WTB1)
	21:58	22	21:23 (WT3_RH_E)	21:14			20:08	35	19:42 (GC&T WT2)	19:01	3	18:33 (GC&T WT3)	17:03	16	16:31 (Skalden WT4)	16:38	16	16:04 (Skalden WTB3)
13	05:44		21:00 (WT3_RH_E)	06:27			07:16		19:08 (WT163)	08:04		18:29 (GC&T WT3)	07:57		16:15 (Skalden WT4)	08:40		15:45 (Skalden WTB1)
	21:57	24	21:24 (WT3_RH_E)	21:12			20:06	32	19:40 (GC&T WT2)	18:59	2	18:31 (GC&T WT3)	17:01	16	16:31 (Skalden WT4)	16:38	15	16:00 (Skalden WTB1)
14	05:45		21:00 (WT3_RH_E)	06:29			07:17		19:09 (WT163)	08:06		18:28 (GC&T WT3)	07:59		16:15 (Skalden WT4)	08:41		15:46 (Skalden WTB1)
	21:56	24	21:24 (WT3_RH_E)	21:10			20:04	28	19:37 (WT163)	18:57	1	18:29 (GC&T WT3)	17:00	15	16:30 (Skalden WT4)	16:38	14	16:00 (Skalden WTB1)
15	05:46		21:00 (WT3_RH_E)	06:30			07:19		19:12 (WT163)	08:07			08:00		16:16 (Skalden WT4)	08:42		15:46 (Skalden WTB1)
	21:55	24	21:24 (WT3_RH_E)	21:08			20:02	22	19:34 (WT163)	18:55			16:59	12	16:28 (Skalden WT4)	16:38	15	16:01 (Skalden WTB1)
16	05:48		21:00 (WT3_RH_E)	06:32		19:27 (WT163)	07:20		19:14 (WT163)	08:09			08:02		15:56 (Skalden WTB3)	08:43		15:47 (Skalden WTB1)
	21:54	23	21:23 (WT3_RH_E)	21:06	14	19:41 (WT163)	19:59	16	19:30 (WT163)	18:52			16:57	14	16:27 (Skalden WT4)	16:38	15	16:02 (Skalden WTB1)
17	05:49		21:00 (WT3_RH_E)	06:33		19:23 (WT163)	07:22			08:11			08:04		15:52 (Skalden WTB3)	08:44		15:46 (Skalden WTB1)
	21:53	22	21:22 (WT3_RH_E)	21:05	20	19:43 (WT163)	19:57			18:50			16:56	18	16:25 (Skalden WT4)	16:38	15	16:01 (Skalden WTB1)
18	05:50		21:00 (WT3_RH_E)	06:35		19:21 (WT163)	07:24			08:12			08:06		15:51 (Skalden WTB3)	08:44		15:47 (Skalden WTB1)
	21:52	21	21:21 (WT3_RH_E)	21:03	25	19:46 (WT163)	19:55			18:48			16:55	23	16:24 (Skalden WT4)	16:39	15	16:02 (Skalden WTB1)
19	05:51		21:00 (WT3_RH_E)	06:37		19:18 (WT163)	07:25			08:14			08:07		15:50 (Skalden WTB3)	08:45		15:48 (Skalden WTB1)
	21:51	20	21:20 (WT3_RH_E)	21:01	29	19:47 (WT163)	19:53			18:46			16:53	26	16:22 (Skalden WT4)	16:39	15	16:03 (Skalden WTB1)
20	05:52		21:00 (WT3_RH_E)	06:38		19:17 (WT163)	07:27			08:16			08:09		15:50 (Skalden WTB3)	08:46		15:48 (Skalden WTB1)
	21:50	19	21:19 (WT3_RH_E)	20:58	32	19:49 (WT163)	19:50			18:44			16:52	26	16:18 (Skalden WT3)	16:39	15	16:03 (Skalden WTB1)
21	05:54		21:01 (WT3_RH_E)	06:40		19:15 (WT163)	07:28			08:17			08:10		15:50 (Skalden WTB3)	08:46		15:49 (Skalden WTB1)
	21:49	17	21:18 (WT3_RH_E)	20:56	34	19:49 (WT163)	19:48			18:42			16:51	28	16:19 (Skalden WT3)	16:40	15	16:04 (Skalden WTB1)
22	05:55		21:02 (WT3_RH_E)	06:41		19:14 (WT163)	07:30			08:19			08:12		15:49 (Skalden WTB3)	08:47		15:49 (Skalden WTB1)
	21:48	15	21:17 (WT3_RH_E)	20:54	37	19:51 (WT163)	19:46			18:40			16:50	29	16:18 (Skalden WT3)	16:40	15	16:04 (Skalden WTB1)
23	05:56		21:02 (WT1_RH_E)	06:43		19:12 (WT163)	07:32			08:21			08:14		15:49 (Skalden WTB3)	08:47		15:50 (Skalden WTB1)
	21:46	14	21:16 (WT1_RH_E)	20:52	39	19:51 (WT163)	19:43			18:38			16:49	28	16:17 (Skalden WT3)	16:41	15	16:05 (Skalden WTB1)
24	05:58		21:01 (WT1_RH_E)	06:44		19:11 (WT163)	07:33			08:22			08:15		15:49 (Skalden WTB3)	08:48		15:50 (Skalden WTB1)
	21:45	13	21:14 (WT1_RH_E)	20:50	41	19:52 (WT163)	19:41			18:36			16:48	27	16:16 (Skalden WT3)	16:41	15	16:05 (Skalden WTB1)
25	05:59		21:02 (WT1_RH_E)	06:46		19:10 (WT163)	07:35			07:24			08:17		15:49 (Skalden WTB3)	08:48		15:50 (Skalden WTB1)
	21:44	12	21:14 (WT1_RH_E)	20:48	42	19:52 (WT163)	19:39			17:34			16:47	26	16:15 (Skalden WT3)	16:42	15	16:05 (Skalden WTB1)
26	06:00		21:01 (WT1_RH_E)	06:48		19:09 (WT163)	07:36			07:26			08:18		15:49 (Skalden WTB3)	08:48		15:51 (Skalden WTB1)
	21:42	11	21:12 (WT1_RH_E)	20:46	44	19:53 (WT163)	19:37			17:32			16:46	25	16:14 (Skalden WT3)	16:43	15	16:06 (Skalden WTB1)
27	06:02		21:01 (WT1_RH_E)	06:49		19:08 (WT163)	07:38		19:01 (GC&T WT1)	07:28			08:20		15:50 (Skalden WTB3)	08:49		15:52 (Skalden WTB1)
	21:41	10	21:11 (WT1_RH_E)	20:44	44	19:52 (WT163)	19:34	6	19:07 (GC&T WT1)	17:30			16:45	23	16:13 (Skalden WT3)	16:43	14	16:06 (Skalden WTB1)
28	06:03		21:01 (WT1_RH_E)	06:51		19:07 (WT163)	07:39		18:59 (GC&T WT1)	07:29			08:21		15:50 (Skalden WTB3)	08:49		15:52 (Skalden WTB1)
	21:39	9	21:10 (WT1_RH_E)	20:42	46	19:53 (WT163)	19:32	6	19:05 (GC&T WT1)	17:28			16:44	22	16:12 (Skalden WT3)	16:44	15	16:07 (Skalden WTB1)
29	06:05		21:01 (WT1_RH_E)	06:52		19:06 (WT163)	07:41		18:59 (GC&T WT1)	07:31			08:23		15:51 (Skalden WTB3)	08:49		15:53 (Skalden WTB1)
	21:38	7	21:08 (WT1_RH_E)	20:40	47	19:53 (WT163)	19:30	4	19:03 (GC&T WT1)	17:26			16:43	20	16:11 (Skalden WT3)	16:45	14	16:07 (Skalden WTB1)
30	06:06		21:01 (WT1_RH_E)	06:54		19:06 (WT163)	07:43		18:57 (GC&T WT1)	07:33			08:24		15:51 (Skalden WTB3)	08:49		15:53 (Skalden WTB1)
	21:36	6	21:07 (WT1_RH_E)	20:37	47	19:53 (WT163)	19:28	3	19:00 (GC&T WT1)	17:25			16:43	18	16:09 (Skalden WTB3)	16:46	14	16:07 (Skalden WTB1)
31	06:08		21:02 (WT1_RH_E)	06:55		19:05 (WT163)				07:35						08:49		15:54 (Skalden WTB1)
	21:35	4	21:06 (WT1_RH_E)	20:35	47	19:52 (WT163)				17:23						16:47	16	16:13 (Skalden WTB3)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		536			590			644			6			476			498	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,56			0,61			0,61			0,64			0,71			0,71	
Total reduction		0,24			0,28			0,26			0,23			0,18			0,15	
Total, real		131			163			165			1			84			73	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: Q - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:19 (Skalden WTB4)	08:24		16:39 (Skalden WTB3)	07:32			07:23			06:20		19:40 (WT163)	05:36		20:56 (WT3_RH_E)
	16:48	27	16:06 (Skalden WTB2)	17:35	17	16:56 (Skalden WTB3)	18:25			20:17			21:06	14	19:54 (WT163)	21:50	19	21:15 (WT3_RH_E)
2	08:49		15:20 (Skalden WTB4)	08:22		16:40 (Skalden WTB3)	07:30			07:21		19:52 (GC&T WT2)	06:18		19:45 (WT163)	05:36		20:57 (WT3_RH_E)
	16:49	23	16:05 (Skalden WTB2)	17:36	17	17:07 (Skalden WT4)	18:26			20:18	1	19:53 (GC&T WT2)	21:08	3	19:48 (WT163)	21:51	19	21:16 (WT3_RH_E)
3	08:49		15:22 (Skalden WTB4)	08:21		16:41 (Skalden WTB3)	07:28			07:19		19:52 (GC&T WT2)	06:16			05:35		20:57 (WT3_RH_E)
	16:50	21	16:06 (Skalden WTB2)	17:38	19	17:09 (Skalden WT4)	18:28			20:20	3	19:55 (GC&T WT2)	21:09			21:52	18	21:15 (WT3_RH_E)
4	08:49		15:51 (Skalden WTB2)	08:19		16:42 (Skalden WTB3)	07:26			07:16		19:52 (GC&T WT2)	06:15			05:34		20:57 (WT3_RH_E)
	16:51	17	16:18 (Skalden WTB1)	17:40	20	17:11 (Skalden WT4)	18:30			20:22	5	19:57 (GC&T WT2)	21:11			21:53	18	21:15 (WT3_RH_E)
5	08:49		15:51 (Skalden WTB2)	08:18		16:45 (Skalden WTB3)	07:23			07:14		19:44 (WT163)	06:13			05:34		20:58 (WT3_RH_E)
	16:53	17	16:18 (Skalden WTB1)	17:42	17	17:13 (Skalden WT4)	18:32			20:23	13	19:57 (WT163)	21:12			21:54	17	21:15 (WT3_RH_E)
6	08:48		15:52 (Skalden WTB2)	08:16		17:03 (Skalden WT4)	07:21			07:12		19:41 (WT163)	06:11			05:33		20:58 (WT3_RH_E)
	16:54	18	16:20 (Skalden WTB1)	17:44	12	17:15 (Skalden WT4)	18:33			20:25	18	19:59 (WT163)	21:14			21:55	16	21:14 (WT3_RH_E)
7	08:48		15:54 (Skalden WTB2)	08:14		17:03 (Skalden WT4)	07:19			07:10		19:39 (WT163)	06:09			05:32		20:59 (WT3_RH_E)
	16:55	18	16:22 (Skalden WTB1)	17:45	14	17:17 (Skalden WT4)	18:35			20:27	22	20:01 (WT163)	21:16			21:56	16	21:15 (WT3_RH_E)
8	08:48		15:54 (Skalden WTB2)	08:13		17:03 (Skalden WT4)	07:17			07:08		19:37 (WT163)	06:08			05:32		20:59 (WT3_RH_E)
	16:56	18	16:23 (Skalden WTB1)	17:47	15	17:18 (Skalden WT4)	18:37			20:28	26	20:03 (WT163)	21:17			21:57	15	21:14 (WT3_RH_E)
9	08:47		15:55 (Skalden WTB2)	08:11		17:03 (Skalden WT4)	07:15			07:05		19:35 (WT163)	06:06			05:31		21:00 (WT3_RH_E)
	16:58	19	16:24 (Skalden WTB1)	17:49	14	17:17 (Skalden WT4)	18:38			20:30	29	20:04 (WT163)	21:19			21:58	14	21:14 (WT3_RH_E)
10	08:47		15:57 (Skalden WTB2)	08:09		17:04 (Skalden WT4)	07:13			07:03		19:34 (WT163)	06:04			05:31		21:01 (WT3_RH_E)
	16:59	18	16:26 (Skalden WTB1)	17:51	14	17:18 (Skalden WT4)	18:40			20:32	32	20:06 (WT163)	21:20			21:59	13	21:14 (WT3_RH_E)
11	08:46		15:59 (Skalden WTB2)	08:07		17:05 (Skalden WT4)	07:10			07:01		19:32 (WT163)	06:03			05:31		21:02 (WT3_RH_E)
	17:00	15	16:27 (Skalden WTB1)	17:53	12	17:17 (Skalden WT4)	18:42			20:33	35	20:07 (WT163)	21:22			21:59	12	21:14 (WT3_RH_E)
12	08:46		16:17 (Skalden WTB1)	08:06		17:07 (Skalden WT4)	07:08			06:59		19:31 (WT163)	06:01			05:30		21:02 (WT3_RH_E)
	17:02	12	16:29 (Skalden WTB1)	17:54	8	17:15 (Skalden WT4)	18:44			20:35	37	20:08 (WT163)	21:23			22:00	11	21:13 (WT3_RH_E)
13	08:45		16:17 (Skalden WTB1)	08:04			07:06			06:57		19:31 (WT163)	05:59		20:54 (WT1_RH_E)	05:30		21:03 (WT3_RH_E)
	17:03	13	16:30 (Skalden WTB1)	17:56			18:45			20:37	37	20:08 (WT163)	21:25	2	20:56 (WT1_RH_E)	22:01	10	21:13 (WT3_RH_E)
14	08:44		16:18 (Skalden WTB1)	08:02			07:04			06:54		19:30 (WT163)	05:58		20:53 (WT1_RH_E)	05:30		21:04 (WT3_RH_E)
	17:05	14	16:32 (Skalden WTB1)	17:58			18:47			20:38	39	20:09 (WT163)	21:26	4	20:57 (WT1_RH_E)	22:01	9	21:13 (WT3_RH_E)
15	08:43		16:19 (Skalden WTB1)	08:00			07:01			06:52		19:30 (WT163)	05:56		20:53 (WT1_RH_E)	05:30		21:04 (WT3_RH_E)
	17:06	15	16:34 (Skalden WTB1)	18:00			18:49			20:40	39	20:09 (WT163)	21:28	5	20:58 (WT1_RH_E)	22:02	9	21:13 (WT3_RH_E)
16	08:43		16:20 (Skalden WTB1)	07:58			06:59			06:50		19:29 (WT163)	05:55		20:53 (WT1_RH_E)	05:30		21:05 (WT3_RH_E)
	17:08	14	16:34 (Skalden WTB1)	18:02			18:50			20:42	40	20:09 (WT163)	21:29	7	21:00 (WT1_RH_E)	22:02	8	21:13 (WT3_RH_E)
17	08:42		16:20 (Skalden WTB1)	07:56			06:57			06:48		19:29 (WT163)	05:53		20:53 (WT1_RH_E)	05:29		21:06 (WT3_RH_E)
	17:09	14	16:34 (Skalden WTB1)	18:03			18:52			20:43	40	20:09 (WT163)	21:31	8	21:01 (WT1_RH_E)	22:03	7	21:13 (WT3_RH_E)
18	08:41		16:20 (Skalden WTB1)	07:54			06:55		18:27 (GC&T WT1)	06:46		19:29 (WT163)	05:52		20:53 (WT1_RH_E)	05:29		21:06 (WT3_RH_E)
	17:11	13	16:33 (Skalden WTB1)	18:05			18:54	2	18:29 (GC&T WT1)	20:45	39	20:08 (WT163)	21:32	9	21:02 (WT1_RH_E)	22:03	6	21:12 (WT3_RH_E)
19	08:40		16:21 (Skalden WTB1)	07:52			06:52		18:27 (GC&T WT1)	06:44		19:29 (WT163)	05:51		20:54 (WT1_RH_E)	05:30		21:07 (WT3_RH_E)
	17:12	12	16:33 (Skalden WTB1)	18:07			18:55	4	18:31 (GC&T WT1)	20:46	39	20:08 (WT163)	21:34	10	21:04 (WT1_RH_E)	22:03	5	21:12 (WT3_RH_E)
20	08:39		16:23 (Skalden WTB1)	07:50			06:50		18:27 (GC&T WT1)	06:42		19:29 (WT163)	05:49		20:55 (WT1_RH_E)	05:30		21:07 (WT3_RH_E)
	17:14	9	16:32 (Skalden WTB1)	18:09			18:57	5	18:32 (GC&T WT1)	20:48	39	20:08 (WT163)	21:35	10	21:05 (WT1_RH_E)	22:04	5	21:12 (WT3_RH_E)
21	08:38		16:25 (Skalden WTB1)	07:48			06:48		18:29 (GC&T WT1)	06:40		19:29 (WT163)	05:48		20:54 (WT1_RH_E)	05:30		21:07 (WT3_RH_E)
	17:16	9	16:44 (Skalden WTB3)	18:11			18:59	4	18:33 (GC&T WT1)	20:50	38	20:07 (WT163)	21:36	12	21:06 (WT1_RH_E)	22:04	5	21:12 (WT3_RH_E)
22	08:37		16:40 (Skalden WTB3)	07:46			06:46			06:38		19:29 (WT163)	05:47		20:54 (WT3_RH_E)	05:30		21:08 (WT3_RH_E)
	17:17	6	16:46 (Skalden WTB3)	18:12			19:00			20:51	38	20:07 (WT163)	21:38	13	21:07 (WT3_RH_E)	22:04	5	21:13 (WT3_RH_E)
23	08:36		16:40 (Skalden WTB3)	07:44			06:43			06:36		19:30 (WT163)	05:46		20:54 (WT3_RH_E)	05:30		21:08 (WT3_RH_E)
	17:19	8	16:48 (Skalden WTB3)	18:14			19:02			20:53	36	20:06 (WT163)	21:39	14	21:08 (WT3_RH_E)	22:04	5	21:13 (WT3_RH_E)
24	08:34		16:38 (Skalden WTB3)	07:42			06:41			06:34		19:30 (WT163)	05:44		20:54 (WT3_RH_E)	05:30		21:07 (WT3_RH_E)
	17:21	12	16:50 (Skalden WTB3)	18:16			19:04			20:55	35	20:05 (WT163)	21:41	16	21:10 (WT3_RH_E)	22:05	6	21:13 (WT3_RH_E)
25	08:33		16:38 (Skalden WTB3)	07:40			06:39			06:32		19:31 (WT163)	05:43		20:54 (WT3_RH_E)	05:31		21:08 (WT3_RH_E)
	17:22	14	16:52 (Skalden WTB3)	18:18			19:05			20:56	33	20:04 (WT163)	21:42	17	21:11 (WT3_RH_E)	22:05	7	21:15 (WT3_RH_E)
26	08:32		16:37 (Skalden WTB3)	07:38			06:37			06:30		19:32 (WT163)	05:42		20:54 (WT3_RH_E)	05:31		21:07 (WT3_RH_E)
	17:24	16	16:53 (Skalden WTB3)	18:19			19:07			20:58	31	20:03 (WT163)	21:43	18	21:12 (WT3_RH_E)	22:05	8	21:15 (WT3_RH_E)
27	08:31		16:38 (Skalden WTB3)	07:36			06:34			06:28		19:32 (WT163)	05:41		20:54 (WT3_RH_E)	05:32		21:07 (WT3_RH_E)
	17:26	17	16:55 (Skalden WTB3)	18:21			19:09			21:00	29	20:01 (WT163)	21:44	19	21:13 (WT3_RH_E)	22:05	8	21:15 (WT3_RH_E)
28	08:29		16:38 (Skalden WTB3)	07:34			06:32			06:26		19:34 (WT163)	05:40		20:54 (WT3_RH_E)	05:32		21:07 (WT3_RH_E)
	17:28	18	16:56 (Skalden WTB3)	18:23			19:10			21:01	26	20:00 (WT163)	21:46	20	21:14 (WT3_RH_E)	22:04	9	21:16 (WT3_RH_E)
29	08:28		16:38 (Skalden WTB3)				07:30			06:24		19:36 (WT163)	05:39		20:56 (WT3_RH_E)	05:33		21:06 (WT3_RH_E)
	17:29	18	16:56 (Skalden WTB3)				20:12			21:03	23	19:59 (WT163)	21:47	20	21:16 (WT3_RH_E)	22:04	10	21:16 (WT3_RH_E)
30	08:27		16:39 (Skalden WTB3)				07:28			06:22		19:38 (WT163)	05:38		20:56 (WT3_RH_E)	05:33		21:06 (WT3_RH_E)
	17:31	18	16:57 (Skalden WTB3)				20:14			21:04	19	19:57 (WT163)	21:48	20	21:16 (WT3_RH_E)	22:04	11	21:17 (WT3_RH_E)
31	08:25		16:39 (Skalden WTB3)				07:25						05:37		20:56 (WT3_RH_E)			
	17:33	17	16:56 (Skalden WTB3)				20:15						21:49	20	21:16 (WT3_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		480			179			15			841			261			321	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,71			0,70			0,62			0,59			0,56			0,56	
Total reduction		0,17			0,20			0,23			0,26			0,25			0,24	
Total, real		79			36			3			221			66			78	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: Q - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:07 (WT3_RH_E)	06:09			06:57		19:32 (WT163)	07:44			07:36		16:33 (Skalden WT4)	08:26		15:41 (Skalden WTB2)
	22:04	11	21:18 (WT3_RH_E)	21:33			20:33	35	20:07 (WT163)	19:25			17:21	13	16:46 (Skalden WT4)	16:42	16	16:10 (Skalden WTB1)
2	05:34		21:06 (WT3_RH_E)	06:10			06:59		19:32 (WT163)	07:46			07:38		16:32 (Skalden WT4)	08:27		15:40 (Skalden WTB2)
	22:04	12	21:18 (WT3_RH_E)	21:32			20:31	32	20:04 (WT163)	19:23			17:19	15	16:47 (Skalden WT4)	16:41	17	16:08 (Skalden WTB1)
3	05:35		21:06 (WT3_RH_E)	06:12			07:00		19:33 (WT163)	07:47			07:40		16:32 (Skalden WT4)	08:28		15:39 (Skalden WTB2)
	22:03	13	21:19 (WT3_RH_E)	21:30			20:29	30	20:03 (WT163)	19:21			17:17	16	16:48 (Skalden WT4)	16:41	19	16:08 (Skalden WTB1)
4	05:36		21:06 (WT3_RH_E)	06:13			07:02		19:34 (WT163)	07:49			07:42		16:32 (Skalden WT4)	08:30		15:39 (Skalden WTB2)
	22:03	14	21:20 (WT3_RH_E)	21:28			20:26	26	20:00 (WT163)	19:19			17:16	14	16:46 (Skalden WT4)	16:40	17	16:07 (Skalden WTB1)
5	05:37		21:05 (WT3_RH_E)	06:15			07:03		19:36 (WT163)	07:51			07:43		16:33 (Skalden WT4)	08:31		15:39 (Skalden WTB2)
	22:02	15	21:20 (WT3_RH_E)	21:27			20:24	22	19:58 (WT163)	19:16			17:14	11	16:44 (Skalden WT4)	16:40	18	16:07 (Skalden WTB1)
6	05:37		21:05 (WT3_RH_E)	06:16			07:05		19:37 (WT163)	07:52			07:45		16:15 (Skalden WTB3)	08:32		15:39 (Skalden WTB2)
	22:02	16	21:21 (WT3_RH_E)	21:25			20:22	18	19:55 (WT163)	19:14			17:12	17	16:43 (Skalden WT4)	16:39	17	16:06 (Skalden WTB1)
7	05:38		21:05 (WT3_RH_E)	06:18			07:06		19:40 (WT163)	07:54			07:47		16:13 (Skalden WTB3)	08:34		15:38 (Skalden WTB2)
	22:01	16	21:21 (WT3_RH_E)	21:23			20:20	14	19:54 (WT163)	19:12			17:11	18	16:41 (Skalden WT4)	16:39	18	16:06 (Skalden WTB1)
8	05:39		21:05 (WT3_RH_E)	06:20			07:08		19:45 (WT163)	07:56			07:48		16:12 (Skalden WTB3)	08:35		15:38 (Skalden WTB2)
	22:01	17	21:22 (WT3_RH_E)	21:21			20:17	6	19:51 (GC&T WT2)	19:10			17:09	19	16:40 (Skalden WT4)	16:39	17	16:05 (Skalden WTB1)
9	05:40		21:05 (WT3_RH_E)	06:21			07:10		19:46 (GC&T WT2)	07:57			07:50		16:11 (Skalden WTB3)	08:36		15:12 (Skalden WTB4)
	22:00	17	21:22 (WT3_RH_E)	21:20			20:15	3	19:49 (GC&T WT2)	19:07			17:07	17	16:38 (Skalden WT4)	16:39	19	15:55 (Skalden WTB2)
10	05:41		21:04 (WT3_RH_E)	06:23			07:11			07:59			07:52		16:10 (Skalden WTB3)	08:37		15:10 (Skalden WTB4)
	21:59	19	21:23 (WT3_RH_E)	21:18			20:13			19:05			17:06	17	16:27 (Skalden WTB3)	16:38	23	15:55 (Skalden WTB2)
11	05:42		21:04 (WT3_RH_E)	06:24		19:51 (WT163)	07:13			08:01			07:54		16:09 (Skalden WTB3)	08:38		15:10 (Skalden WTB4)
	21:59	19	21:23 (WT3_RH_E)	21:16	8	19:59 (WT163)	20:11			19:03			17:04	18	16:27 (Skalden WTB3)	16:38	26	15:56 (Skalden WTB2)
12	05:43		21:04 (WT3_RH_E)	06:26		19:48 (WT163)	07:14			08:02			07:55		16:10 (Skalden WTB3)	08:39		15:09 (Skalden WTB4)
	21:58	20	21:24 (WT3_RH_E)	21:14	15	20:03 (WT163)	20:08			19:01			17:03	18	16:28 (Skalden WTB3)	16:38	27	15:56 (Skalden WTB2)
13	05:44		21:04 (WT3_RH_E)	06:27		19:45 (WT163)	07:16			08:04			07:57		16:10 (Skalden WTB3)	08:40		15:09 (Skalden WTB4)
	21:57	20	21:24 (WT3_RH_E)	21:12	20	20:05 (WT163)	20:06			18:59			17:01	18	16:28 (Skalden WTB3)	16:38	29	15:57 (Skalden WTB2)
14	05:45		21:04 (WT3_RH_E)	06:29		19:43 (WT163)	07:17			08:06			07:59		16:10 (Skalden WTB3)	08:41		15:09 (Skalden WTB4)
	21:56	21	21:25 (WT3_RH_E)	21:10	24	20:07 (WT163)	20:04			18:57			17:00	18	16:28 (Skalden WTB3)	16:38	30	15:57 (Skalden WTB2)
15	05:46		21:04 (WT3_RH_E)	06:30		19:41 (WT163)	07:19			08:07			08:00		16:11 (Skalden WTB3)	08:42		15:09 (Skalden WTB4)
	21:55	20	21:24 (WT3_RH_E)	21:08	27	20:08 (WT163)	20:02			18:54			16:59	17	16:28 (Skalden WTB3)	16:38	31	15:58 (Skalden WTB2)
16	05:48		21:04 (WT3_RH_E)	06:32		19:40 (WT163)	07:20			08:09			08:02		16:11 (Skalden WTB3)	08:43		15:09 (Skalden WTB4)
	21:54	19	21:23 (WT3_RH_E)	21:06	29	20:09 (WT163)	19:59			18:52			16:57	16	16:27 (Skalden WTB3)	16:38	33	15:59 (Skalden WTB2)
17	05:49		21:04 (WT3_RH_E)	06:33		19:38 (WT163)	07:22			08:11			08:04		16:11 (Skalden WTB3)	08:44		15:09 (Skalden WTB4)
	21:53	18	21:22 (WT3_RH_E)	21:04	31	20:09 (WT163)	19:57			18:50			16:56	14	16:25 (Skalden WTB3)	16:38	32	15:58 (Skalden WTB2)
18	05:50		21:04 (WT3_RH_E)	06:35		19:37 (WT163)	07:24			08:12			08:06		16:12 (Skalden WTB3)	08:44		15:09 (Skalden WTB4)
	21:52	17	21:21 (WT3_RH_E)	21:02	34	20:11 (WT163)	19:55			18:48			16:55	12	16:24 (Skalden WTB3)	16:39	33	15:59 (Skalden WTB2)
19	05:51		21:04 (WT3_RH_E)	06:37		19:36 (WT163)	07:25			08:14			08:07		16:14 (Skalden WTB3)	08:45		15:10 (Skalden WTB4)
	21:51	16	21:20 (WT3_RH_E)	21:00	35	20:11 (WT163)	19:53			18:46			16:53	8	16:22 (Skalden WTB3)	16:39	33	16:00 (Skalden WTB2)
20	05:52		21:04 (WT3_RH_E)	06:38		19:35 (WT163)	07:27			08:16			08:09		16:15 (Skalden WTB3)	08:46		15:10 (Skalden WTB4)
	21:50	15	21:19 (WT3_RH_E)	20:58	37	20:12 (WT163)	19:50			18:44			16:52	6	16:21 (Skalden WTB3)	16:39	34	16:00 (Skalden WTB2)
21	05:54		21:05 (WT3_RH_E)	06:40		19:34 (WT163)	07:28			08:17			08:10		16:01 (Skalden WTB1)	08:46		15:11 (Skalden WTB4)
	21:49	13	21:18 (WT3_RH_E)	20:56	37	20:11 (WT163)	19:48			18:42			16:51	9	16:20 (Skalden WTB3)	16:40	34	16:01 (Skalden WTB2)
22	05:55		21:05 (WT1_RH_E)	06:41		19:34 (WT163)	07:30		19:16 (GC&T WT1)	08:19			08:12		15:59 (Skalden WTB1)	08:47		15:11 (Skalden WTB4)
	21:48	12	21:17 (WT1_RH_E)	20:54	38	20:12 (WT163)	19:46	1	19:17 (GC&T WT1)	18:40			16:50	9	16:08 (Skalden WTB1)	16:40	33	16:01 (Skalden WTB2)
23	05:56		21:05 (WT1_RH_E)	06:43		19:33 (WT163)	07:32		19:12 (GC&T WT1)	08:21			08:14		15:58 (Skalden WTB1)	08:47		15:12 (Skalden WTB4)
	21:46	11	21:16 (WT1_RH_E)	20:52	39	20:12 (WT163)	19:43	5	19:17 (GC&T WT1)	18:38			16:49	12	16:10 (Skalden WTB1)	16:41	34	16:02 (Skalden WTB2)
24	05:58		21:04 (WT1_RH_E)	06:44		19:33 (WT163)	07:33		19:11 (GC&T WT1)	08:22			08:15		15:58 (Skalden WTB1)	08:48		15:12 (Skalden WTB4)
	21:45	10	21:14 (WT1_RH_E)	20:50	39	20:12 (WT163)	19:41	4	19:15 (GC&T WT1)	18:36			16:48	13	16:11 (Skalden WTB1)	16:41	33	16:02 (Skalden WTB2)
25	05:59		21:04 (WT1_RH_E)	06:46		19:32 (WT163)	07:35		19:09 (GC&T WT1)	07:24			08:17		15:57 (Skalden WTB1)	08:48		15:12 (Skalden WTB4)
	21:44	10	21:14 (WT1_RH_E)	20:48	39	20:11 (WT163)	19:39	3	19:12 (GC&T WT1)	17:34			16:47	14	16:11 (Skalden WTB1)	16:42	33	16:02 (Skalden WTB2)
26	06:00		21:04 (WT1_RH_E)	06:48		19:32 (WT163)	07:36			07:26			08:18		15:58 (Skalden WTB1)	08:48		15:14 (Skalden WTB4)
	21:42	8	21:12 (WT1_RH_E)	20:46	39	20:11 (WT163)	19:37			17:32			16:46	14	16:12 (Skalden WTB1)	16:43	32	16:03 (Skalden WTB2)
27	06:02		21:03 (WT1_RH_E)	06:49		19:31 (WT163)	07:38			07:28			08:20		15:58 (Skalden WTB1)	08:49		15:14 (Skalden WTB4)
	21:41	8	21:11 (WT1_RH_E)	20:44	40	20:11 (WT163)	19:34			17:30			16:45	15	16:13 (Skalden WTB1)	16:43	33	16:04 (Skalden WTB2)
28	06:03		21:04 (WT1_RH_E)	06:51		19:32 (WT163)	07:39			07:29			08:21		15:58 (Skalden WTB1)	08:49		15:15 (Skalden WTB4)
	21:39	6	21:10 (WT1_RH_E)	20:42	39	20:11 (WT163)	19:32			17:28			16:44	14	16:12 (Skalden WTB1)	16:44	31	16:04 (Skalden WTB2)
29	06:05		21:04 (WT1_RH_E)	06:52		19:31 (WT163)	07:41			07:31		16:40 (Skalden WT4)	08:23		15:58 (Skalden WTB1)	08:49		15:16 (Skalden WTB4)
	21:38	4	21:08 (WT1_RH_E)	20:40	38	20:09 (WT163)	19:30			17:26	1	16:41 (Skalden WT4)	16:43	13	16:11 (Skalden WTB1)	16:45	30	16:04 (Skalden WTB2)
30	06:06		21:04 (WT1_RH_E)	06:54		19:32 (WT163)	07:43			07:33		16:36 (Skalden WT4)	08:24		15:58 (Skalden WTB1)	08:49		15:17 (Skalden WTB4)
	21:36	2	21:06 (WT1_RH_E)	20:37	37	20:09 (WT163)	19:27			17:25	9	16:45 (Skalden WT4)	16:43	12	16:10 (Skalden WTB1)	16:46	29	16:05 (Skalden WTB2)
31	06:08		21:05 (WT1_RH_E)	06:55		19:31 (WT163)				07:35		16:35 (Skalden WT4)				08:49		15:18 (Skalden WTB4)
	21:35	1	21:06 (WT1_RH_E)	20:35	37	20:08 (WT163)				17:23	11	16:46 (Skalden WT4)				16:47	28	16:05 (Skalden WTB2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		420			682			199			21			427			839	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,56			0,59			0,59			0,70			0,70			0,72	
Total reduction		0,25			0,27			0,25			0,25			0,18			0,15	
Total, real		104			184			50			5			76			126	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: R - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:46 (Skalden WTB2)	08:24		16:36 (Skalden WTB3)	07:32			07:23			06:20		19:35 (WT163)	05:36		21:02 (WT3_RH_E)
	16:48	17	16:15 (Skalden WTB1)	17:35	18	16:54 (Skalden WTB3)	18:25			20:17			21:06	38	20:13 (WT163)	21:50	16	21:18 (WT3_RH_E)
2	08:49		15:45 (Skalden WTB2)	08:22		16:38 (Skalden WTB3)	07:30			07:21			06:18		19:36 (WT163)	05:36		21:03 (WT3_RH_E)
	16:49	19	16:15 (Skalden WTB1)	17:36	19	17:07 (Skalden WT4)	18:26			20:18			21:08	36	20:12 (WT163)	21:51	17	21:20 (WT3_RH_E)
3	08:49		15:47 (Skalden WTB2)	08:21		16:39 (Skalden WTB3)	07:28			07:19			06:16		19:36 (WT163)	05:35		21:03 (WT3_RH_E)
	16:50	18	16:16 (Skalden WTB1)	17:38	20	17:09 (Skalden WT4)	18:28			20:20			21:09	34	20:10 (WT163)	21:52	18	21:21 (WT3_RH_E)
4	08:49		15:48 (Skalden WTB2)	08:19		16:40 (Skalden WTB3)	07:26			07:16		19:56 (GC&T WT2)	06:15		19:38 (WT163)	05:34		21:02 (WT3_RH_E)
	16:51	19	16:18 (Skalden WTB1)	17:40	20	17:11 (Skalden WT4)	18:30			20:22	1	19:57 (GC&T WT2)	21:11	32	20:10 (WT163)	21:53	19	21:21 (WT3_RH_E)
5	08:49		15:48 (Skalden WTB2)	08:18		16:43 (Skalden WTB3)	07:23			07:14		19:54 (GC&T WT2)	06:13		19:39 (WT163)	05:34		21:03 (WT3_RH_E)
	16:53	19	16:18 (Skalden WTB1)	17:42	18	17:13 (Skalden WT4)	18:32			20:23	3	19:57 (GC&T WT2)	21:12	30	20:09 (WT163)	21:54	20	21:23 (WT3_RH_E)
6	08:48		15:49 (Skalden WTB2)	08:16		17:01 (Skalden WT4)	07:21			07:12		19:54 (GC&T WT2)	06:11		19:40 (WT163)	05:33		21:03 (WT3_RH_E)
	16:54	19	16:20 (Skalden WTB1)	17:44	14	17:15 (Skalden WT4)	18:33			20:25	5	19:59 (GC&T WT2)	21:14	27	20:07 (WT163)	21:55	20	21:23 (WT3_RH_E)
7	08:48		15:51 (Skalden WTB2)	08:14		17:01 (Skalden WT4)	07:19			07:10		19:54 (GC&T WT2)	06:09		19:42 (WT163)	05:32		21:04 (WT3_RH_E)
	16:55	19	16:22 (Skalden WTB1)	17:45	16	17:17 (Skalden WT4)	18:35			20:27	7	20:01 (GC&T WT2)	21:16	24	20:06 (WT163)	21:56	20	21:24 (WT3_RH_E)
8	08:48		15:52 (Skalden WTB2)	08:13		17:01 (Skalden WT4)	07:17			07:08		19:55 (GC&T WT2)	06:08		19:43 (WT163)	05:32		21:03 (WT3_RH_E)
	16:56	19	16:23 (Skalden WTB1)	17:47	16	17:17 (Skalden WT4)	18:37			20:28	8	20:03 (GC&T WT2)	21:17	21	20:04 (WT163)	21:57	21	21:24 (WT3_RH_E)
9	08:47		15:53 (Skalden WTB2)	08:11		17:01 (Skalden WT4)	07:15			07:05		19:53 (WT163)	06:06		19:46 (WT163)	05:31		21:04 (WT3_RH_E)
	16:58	18	16:24 (Skalden WTB1)	17:49	16	17:17 (Skalden WT4)	18:38			20:30	11	20:04 (WT163)	21:19	16	20:02 (WT163)	21:58	21	21:25 (WT3_RH_E)
10	08:47		16:14 (Skalden WTB1)	08:09		17:03 (Skalden WT4)	07:13			07:03		19:49 (WT163)	06:04		19:48 (WT163)	05:31		21:04 (WT3_RH_E)
	16:59	12	16:26 (Skalden WTB1)	17:51	14	17:17 (Skalden WT4)	18:40			20:32	17	20:06 (WT163)	21:20	11	19:59 (WT163)	21:59	22	21:26 (WT3_RH_E)
11	08:46		16:14 (Skalden WTB1)	08:07		17:04 (Skalden WT4)	07:10			07:01		19:45 (WT163)	06:03			05:31		21:05 (WT3_RH_E)
	17:00	13	16:27 (Skalden WTB1)	17:53	12	17:16 (Skalden WT4)	18:42			20:33	22	20:07 (WT163)	21:22			21:59	21	21:26 (WT3_RH_E)
12	08:46		16:14 (Skalden WTB1)	08:06		17:06 (Skalden WT4)	07:08			06:59		19:43 (WT163)	06:01			05:30		21:05 (WT3_RH_E)
	17:02	15	16:29 (Skalden WTB1)	17:54	8	17:14 (Skalden WT4)	18:44			20:35	26	20:09 (WT163)	21:23			22:00	20	21:25 (WT3_RH_E)
13	08:45		16:15 (Skalden WTB1)	08:04			07:06			06:57		19:42 (WT163)	05:59			05:30		21:05 (WT3_RH_E)
	17:03	15	16:30 (Skalden WTB1)	17:56			18:45			20:37	28	20:10 (WT163)	21:25			22:01	21	21:26 (WT3_RH_E)
14	08:44		16:15 (Skalden WTB1)	08:02			07:04			06:55		19:40 (WT163)	05:58			05:30		21:05 (WT3_RH_E)
	17:05	15	16:30 (Skalden WTB1)	17:58			18:47			20:38	32	20:12 (WT163)	21:26			22:01	21	21:26 (WT3_RH_E)
15	08:43		16:17 (Skalden WTB1)	08:00			07:01			06:52		19:39 (WT163)	05:56			05:30		21:06 (WT3_RH_E)
	17:06	14	16:31 (Skalden WTB1)	18:00			18:49			20:40	35	20:14 (WT163)	21:28			22:02	20	21:26 (WT3_RH_E)
16	08:43		16:17 (Skalden WTB1)	07:58			06:59			06:50		19:38 (WT163)	05:55			05:30		21:06 (WT3_RH_E)
	17:08	14	16:31 (Skalden WTB1)	18:02			18:50			20:42	37	20:15 (WT163)	21:29			22:02	20	21:26 (WT3_RH_E)
17	08:42		16:18 (Skalden WTB1)	07:56			06:57			06:48		19:37 (WT163)	05:53		20:58 (WT1_RH_E)	05:29		21:06 (WT3_RH_E)
	17:09	13	16:31 (Skalden WTB1)	18:03			18:52			20:43	39	20:16 (WT163)	21:31	3	21:01 (WT1_RH_E)	22:03	20	21:26 (WT3_RH_E)
18	08:41		16:18 (Skalden WTB1)	07:54			06:55			06:46		19:36 (WT163)	05:52		20:58 (WT1_RH_E)	05:29		21:07 (WT3_RH_E)
	17:11	12	16:30 (Skalden WTB1)	18:05			18:54			20:45	40	20:16 (WT163)	21:32	4	21:02 (WT1_RH_E)	22:03	20	21:27 (WT3_RH_E)
19	08:40		16:20 (Skalden WTB1)	07:52			06:52		18:29 (GC&T WT1)	06:44		19:35 (WT163)	05:51		20:59 (WT1_RH_E)	05:30		21:07 (WT3_RH_E)
	17:12	9	16:29 (Skalden WTB1)	18:07			18:55	2	18:31 (GC&T WT1)	20:46	41	20:16 (WT163)	21:34	5	21:04 (WT1_RH_E)	22:03	20	21:27 (WT3_RH_E)
20	08:39		16:22 (Skalden WTB1)	07:50			06:50		18:28 (GC&T WT1)	06:42		19:35 (WT163)	05:49		20:59 (WT1_RH_E)	05:30		21:07 (WT3_RH_E)
	17:14	10	16:42 (Skalden WTB3)	18:09			18:57	4	18:32 (GC&T WT1)	20:48	42	20:17 (WT163)	21:35	6	21:05 (WT1_RH_E)	22:04	20	21:27 (WT3_RH_E)
21	08:38		16:37 (Skalden WTB3)	07:48			06:48		18:29 (GC&T WT1)	06:40		19:34 (WT163)	05:48		20:58 (WT1_RH_E)	05:30		21:07 (WT3_RH_E)
	17:16	7	16:44 (Skalden WTB3)	18:11			18:59	4	18:33 (GC&T WT1)	20:50	43	20:17 (WT163)	21:36	8	21:06 (WT1_RH_E)	22:04	20	21:27 (WT3_RH_E)
22	08:37		16:36 (Skalden WTB3)	07:46			06:46		18:30 (GC&T WT1)	06:38		19:34 (WT163)	05:47		20:58 (WT1_RH_E)	05:30		21:08 (WT3_RH_E)
	17:17	10	16:46 (Skalden WTB3)	18:12			19:00	5	18:35 (GC&T WT1)	20:51	43	20:17 (WT163)	21:38	9	21:07 (WT1_RH_E)	22:04	20	21:28 (WT3_RH_E)
23	08:36		16:36 (Skalden WTB3)	07:44			06:43			06:36		19:34 (WT163)	05:46		20:59 (WT1_RH_E)	05:30		21:08 (WT3_RH_E)
	17:19	12	16:48 (Skalden WTB3)	18:14			19:02			20:53	42	20:16 (WT163)	21:39	9	21:08 (WT1_RH_E)	22:04	20	21:28 (WT3_RH_E)
24	08:34		16:35 (Skalden WTB3)	07:42			06:41			06:34		19:33 (WT163)	05:44		20:59 (WT1_RH_E)	05:30		21:08 (WT3_RH_E)
	17:21	15	16:50 (Skalden WTB3)	18:16			19:04			20:55	43	20:16 (WT163)	21:41	11	21:10 (WT1_RH_E)	22:05	20	21:28 (WT3_RH_E)
25	08:33		16:35 (Skalden WTB3)	07:40			06:39			06:32		19:33 (WT163)	05:43		21:00 (WT1_RH_E)	05:31		21:08 (WT3_RH_E)
	17:22	17	16:52 (Skalden WTB3)	18:18			19:05			20:56	43	20:16 (WT163)	21:42	11	21:11 (WT1_RH_E)	22:05	20	21:28 (WT3_RH_E)
26	08:32		16:34 (Skalden WTB3)	07:38			06:37			06:30		19:33 (WT163)	05:42		21:00 (WT1_RH_E)	05:31		21:08 (WT3_RH_E)
	17:24	19	16:53 (Skalden WTB3)	18:19			19:07			20:58	42	20:15 (WT163)	21:43	12	21:12 (WT1_RH_E)	22:05	20	21:28 (WT3_RH_E)
27	08:31		16:35 (Skalden WTB3)	07:36			06:34			06:28		19:33 (WT163)	05:41		21:01 (WT1_RH_E)	05:32		21:08 (WT3_RH_E)
	17:26	20	16:55 (Skalden WT3)	18:21			19:09			21:00	42	20:15 (WT163)	21:44	12	21:13 (WT3_RH_E)	22:05	20	21:28 (WT3_RH_E)
28	08:29		16:35 (Skalden WTB3)	07:34			06:32			06:26		19:33 (WT163)	05:40		21:02 (WT1_RH_E)	05:32		21:09 (WT3_RH_E)
	17:28	23	16:58 (Skalden WT3)	18:23			19:10			21:01	41	20:14 (WT163)	21:46	12	21:14 (WT3_RH_E)	22:04	20	21:29 (WT3_RH_E)
29	08:28		16:35 (Skalden WTB3)				07:30			06:24		19:35 (WT163)	05:39		21:03 (WT3_RH_E)	05:33		21:08 (WT3_RH_E)
	17:29	24	16:59 (Skalden WT3)				20:12			21:03	39	20:14 (WT163)	21:47	13	21:16 (WT3_RH_E)	22:04	21	21:29 (WT3_RH_E)
30	08:27		16:36 (Skalden WTB3)				07:28			06:22		19:35 (WT163)	05:38		21:03 (WT3_RH_E)	05:33		21:09 (WT3_RH_E)
	17:31	23	16:59 (Skalden WT3)				20:14			21:04	39	20:14 (WT163)	21:48	14	21:17 (WT3_RH_E)	22:04	20	21:29 (WT3_RH_E)
31	08:25		16:36 (Skalden WTB3)				07:25						05:37		21:02 (WT3_RH_E)			
	17:33	22	16:58 (Skalden WT3)				20:15						21:49	16	21:18 (WT3_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		501			191			15			811			414			598	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,71			0,70			0,62			0,57			0,57			0,56	
Total reduction		0,16			0,20			0,23			0,26			0,26			0,24	
Total, real		82			38			3			209			106			145	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: R - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:09 (WT3_RH_E)	06:09			06:57		19:45 (WT163)	07:44			07:36		16:32 (Skalden WT4)	08:26		15:56 (Skalden WTB1)
	22:04	21	21:30 (WT3_RH_E)	21:33			20:33	22	20:07 (WT163)	19:25			17:21	14	16:46 (Skalden WT4)	16:42	14	16:10 (Skalden WTB1)
2	05:34		21:09 (WT3_RH_E)	06:10		20:02 (WT163)	06:59		19:47 (WT163)	07:46			07:38		16:31 (Skalden WT4)	08:27		15:56 (Skalden WTB1)
	22:04	21	21:30 (WT3_RH_E)	21:32	2	20:04 (WT163)	20:31	17	20:04 (WT163)	19:23			17:19	15	16:46 (Skalden WT4)	16:41	12	16:08 (Skalden WTB1)
3	05:35		21:09 (WT3_RH_E)	06:12		19:57 (WT163)	07:00		19:51 (WT163)	07:47			07:40		16:31 (Skalden WT4)	08:28		15:38 (Skalden WTB2)
	22:03	21	21:30 (WT3_RH_E)	21:30	14	20:11 (WT163)	20:29	11	20:02 (WT163)	19:21			17:17	16	16:47 (Skalden WT4)	16:41	16	16:08 (Skalden WTB1)
4	05:36		21:09 (WT3_RH_E)	06:13		19:54 (WT163)	07:02		19:52 (GC&T WT2)	07:49			07:42		16:31 (Skalden WT4)	08:30		15:36 (Skalden WTB2)
	22:03	22	21:31 (WT3_RH_E)	21:28	19	20:13 (WT163)	20:26	8	20:00 (GC&T WT2)	19:19			17:16	15	16:46 (Skalden WT4)	16:40	19	16:07 (Skalden WTB1)
5	05:37		21:09 (WT3_RH_E)	06:15		19:53 (WT163)	07:03		19:51 (GC&T WT2)	07:51			07:43		16:31 (Skalden WT4)	08:31		15:36 (Skalden WTB2)
	22:02	21	21:30 (WT3_RH_E)	21:27	22	20:15 (WT163)	20:24	7	19:58 (GC&T WT2)	19:16			17:14	13	16:44 (Skalden WT4)	16:40	19	16:07 (Skalden WTB1)
6	05:37		21:09 (WT3_RH_E)	06:16		19:50 (WT163)	07:05		19:50 (GC&T WT2)	07:52			07:45		16:13 (Skalden WTB3)	08:32		15:36 (Skalden WTB2)
	22:02	20	21:29 (WT3_RH_E)	21:25	26	20:16 (WT163)	20:22	5	19:55 (GC&T WT2)	19:14			17:12	18	16:43 (Skalden WT4)	16:39	18	16:06 (Skalden WTB1)
7	05:38		21:09 (WT3_RH_E)	06:18		19:50 (WT163)	07:06		19:50 (GC&T WT2)	07:54			07:47		16:11 (Skalden WTB3)	08:34		15:35 (Skalden WTB2)
	22:01	20	21:29 (WT3_RH_E)	21:23	28	20:18 (WT163)	20:20	4	19:54 (GC&T WT2)	19:12			17:11	20	16:41 (Skalden WT4)	16:39	20	16:06 (Skalden WTB1)
8	05:39		21:10 (WT3_RH_E)	06:20		19:48 (WT163)	07:08		19:50 (GC&T WT2)	07:56			07:48		16:09 (Skalden WTB3)	08:35		15:35 (Skalden WTB2)
	22:01	19	21:29 (WT3_RH_E)	21:21	30	20:18 (WT163)	20:17	1	19:51 (GC&T WT2)	19:10			17:09	22	16:40 (Skalden WT4)	16:39	19	16:05 (Skalden WTB1)
9	05:40		21:10 (WT3_RH_E)	06:21		19:46 (WT163)	07:10			07:57			07:50		16:09 (Skalden WTB3)	08:36		15:36 (Skalden WTB2)
	22:00	18	21:28 (WT3_RH_E)	21:20	33	20:19 (WT163)	20:15			19:07			17:07	19	16:38 (Skalden WT4)	16:39	18	16:05 (Skalden WTB1)
10	05:41		21:10 (WT3_RH_E)	06:23		19:45 (WT163)	07:11			07:59			07:52		16:07 (Skalden WTB3)	08:37		15:36 (Skalden WTB2)
	21:59	18	21:28 (WT3_RH_E)	21:18	35	20:20 (WT163)	20:13			19:05			17:06	19	16:26 (Skalden WT3)	16:38	18	16:05 (Skalden WTB1)
11	05:42		21:10 (WT3_RH_E)	06:24		19:44 (WT163)	07:13			08:01			07:54		16:07 (Skalden WTB3)	08:38		15:36 (Skalden WTB2)
	21:59	17	21:27 (WT3_RH_E)	21:16	36	20:20 (WT163)	20:11			19:03			17:04	22	16:29 (Skalden WT3)	16:38	17	16:05 (Skalden WTB1)
12	05:43		21:11 (WT3_RH_E)	06:26		19:44 (WT163)	07:14			08:02			07:55		16:07 (Skalden WTB3)	08:39		15:36 (Skalden WTB2)
	21:58	15	21:26 (WT3_RH_E)	21:14	37	20:21 (WT163)	20:08			19:01			17:03	23	16:30 (Skalden WT3)	16:38	18	16:05 (Skalden WTB1)
13	05:44		21:11 (WT3_RH_E)	06:27		19:42 (WT163)	07:16			08:04			07:57		16:07 (Skalden WTB3)	08:40		15:06 (Skalden WTB4)
	21:57	15	21:26 (WT3_RH_E)	21:12	39	20:21 (WT163)	20:06			18:59			17:01	24	16:31 (Skalden WT3)	16:38	20	15:53 (Skalden WTB2)
14	05:45		21:11 (WT3_RH_E)	06:29		19:42 (WT163)	07:17			08:06			07:59		16:07 (Skalden WTB3)	08:41		15:05 (Skalden WTB4)
	21:56	14	21:25 (WT3_RH_E)	21:10	40	20:22 (WT163)	20:04			18:57			17:00	23	16:30 (Skalden WT3)	16:38	22	15:53 (Skalden WTB2)
15	05:46		21:11 (WT3_RH_E)	06:30		19:41 (WT163)	07:19			08:07			08:00		16:08 (Skalden WTB3)	08:42		15:04 (Skalden WTB4)
	21:55	13	21:24 (WT3_RH_E)	21:08	41	20:22 (WT163)	20:02			18:55			16:59	20	16:28 (Skalden WT3)	16:38	25	15:54 (Skalden WTB2)
16	05:48		21:11 (WT1_RH_E)	06:32		19:41 (WT163)	07:20			08:09			08:02		16:08 (Skalden WTB3)	08:43		15:05 (Skalden WTB4)
	21:54	12	21:23 (WT1_RH_E)	21:06	42	20:23 (WT163)	19:59			18:52			16:57	19	16:27 (Skalden WTB3)	16:38	25	15:55 (Skalden WTB2)
17	05:49		21:10 (WT1_RH_E)	06:33		19:40 (WT163)	07:22			08:11			08:04		16:08 (Skalden WTB3)	08:44		15:04 (Skalden WTB4)
	21:53	12	21:22 (WT1_RH_E)	21:04	42	20:22 (WT163)	19:57			18:50			16:56	17	16:25 (Skalden WTB3)	16:38	27	15:54 (Skalden WTB2)
18	05:50		21:09 (WT1_RH_E)	06:35		19:40 (WT163)	07:24			08:12			08:06		16:09 (Skalden WTB3)	08:44		15:04 (Skalden WTB4)
	21:52	12	21:21 (WT1_RH_E)	21:03	43	20:23 (WT163)	19:55			18:48			16:55	15	16:24 (Skalden WTB3)	16:39	28	15:55 (Skalden WTB2)
19	05:51		21:09 (WT1_RH_E)	06:37		19:39 (WT163)	07:25			08:14			08:07		16:10 (Skalden WTB3)	08:45		15:05 (Skalden WTB4)
	21:51	11	21:20 (WT1_RH_E)	21:00	43	20:22 (WT163)	19:53			18:46			16:53	12	16:22 (Skalden WTB3)	16:39	28	15:56 (Skalden WTB2)
20	05:52		21:08 (WT1_RH_E)	06:38		19:39 (WT163)	07:27			08:16			08:09		16:11 (Skalden WTB3)	08:46		15:04 (Skalden WTB4)
	21:50	11	21:19 (WT1_RH_E)	20:58	43	20:22 (WT163)	19:50			18:44			16:52	10	16:21 (Skalden WTB3)	16:39	30	15:56 (Skalden WTB2)
21	05:54		21:09 (WT1_RH_E)	06:40		19:39 (WT163)	07:28		19:16 (GC&T WT1)	08:17			08:10		16:13 (Skalden WTB3)	08:46		15:05 (Skalden WTB4)
	21:49	9	21:18 (WT1_RH_E)	20:56	42	20:21 (WT163)	19:48	5	19:21 (GC&T WT1)	18:42			16:51	7	16:20 (Skalden WTB3)	16:40	30	15:57 (Skalden WTB2)
22	05:55		21:09 (WT1_RH_E)	06:41		19:39 (WT163)	07:30		19:14 (GC&T WT1)	08:19			08:12		15:58 (Skalden WTB1)	08:47		15:05 (Skalden WTB4)
	21:48	8	21:17 (WT1_RH_E)	20:54	42	20:21 (WT163)	19:46	6	19:20 (GC&T WT1)	18:40			16:50	10	16:18 (Skalden WTB3)	16:40	30	15:57 (Skalden WTB2)
23	05:56		21:08 (WT1_RH_E)	06:43		19:39 (WT163)	07:32		19:13 (GC&T WT1)	08:21			08:14		15:57 (Skalden WTB1)	08:47		15:06 (Skalden WTB4)
	21:46	8	21:16 (WT1_RH_E)	20:52	41	20:20 (WT163)	19:43	4	19:17 (GC&T WT1)	18:38			16:49	9	16:06 (Skalden WTB1)	16:41	30	15:58 (Skalden WTB2)
24	05:58		21:08 (WT1_RH_E)	06:44		19:39 (WT163)	07:33		19:12 (GC&T WT1)	08:22			08:15		15:56 (Skalden WTB1)	08:48		15:07 (Skalden WTB4)
	21:45	6	21:14 (WT1_RH_E)	20:50	41	20:20 (WT163)	19:41	3	19:15 (GC&T WT1)	18:36			16:48	12	16:08 (Skalden WTB1)	16:41	29	15:58 (Skalden WTB2)
25	05:59		21:09 (WT1_RH_E)	06:46		19:39 (WT163)	07:35			07:24			08:17		15:55 (Skalden WTB1)	08:48		15:07 (Skalden WTB4)
	21:44	5	21:14 (WT1_RH_E)	20:48	40	20:19 (WT163)	19:39			17:34			16:47	13	16:08 (Skalden WTB1)	16:42	28	15:58 (Skalden WTB2)
26	06:00		21:09 (WT1_RH_E)	06:48		19:40 (WT163)	07:36			07:26			08:18		15:55 (Skalden WTB1)	08:48		15:08 (Skalden WTB4)
	21:42	3	21:12 (WT1_RH_E)	20:46	38	20:18 (WT163)	19:37			17:32			16:46	14	16:09 (Skalden WTB1)	16:43	28	15:59 (Skalden WTB2)
27	06:02		21:09 (WT1_RH_E)	06:49		19:40 (WT163)	07:38			07:28			08:20		15:56 (Skalden WTB1)	08:49		15:09 (Skalden WTB4)
	21:41	2	21:11 (WT1_RH_E)	20:44	37	20:17 (WT163)	19:34			17:30			16:45	14	16:10 (Skalden WTB1)	16:43	28	16:00 (Skalden WTB2)
28	06:03			06:51		19:41 (WT163)	07:39			07:29			08:21		15:55 (Skalden WTB1)	08:49		15:10 (Skalden WTB4)
	21:39			20:42	34	20:15 (WT163)	19:32			17:28			16:44	15	16:10 (Skalden WTB1)	16:44	25	16:00 (Skalden WTB2)
29	06:05			06:52		19:41 (WT163)	07:41			07:31		16:38 (Skalden WT4)	08:23		15:56 (Skalden WTB1)	08:49		15:11 (Skalden WTB4)
	21:38			20:40	32	20:13 (WT163)	19:30			17:26	3	16:41 (Skalden WT4)	16:43	15	16:11 (Skalden WTB1)	16:45	24	16:00 (Skalden WTB2)
30	06:06			06:54		19:42 (WT163)	07:43			07:33		16:35 (Skalden WT4)	08:24		15:55 (Skalden WTB1)	08:49		15:13 (Skalden WTB4)
	21:36			20:37	29	20:11 (WT163)	19:28			17:25	9	16:44 (Skalden WT4)	16:43	15	16:10 (Skalden WTB1)	16:46	20	16:00 (Skalden WTB2)
31	06:08			06:55		19:43 (WT163)				07:35		16:33 (Skalden WT4)				08:49		15:45 (Skalden WTB2)
	21:35			20:35	25	20:08 (WT163)				17:23	13	16:46 (Skalden WT4)				16:47	17	16:13 (Skalden WTB1)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		374			1016			93			25			480			702	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,56			0,57			0,59			0,70			0,70			0,72	
Total reduction		0,25			0,26			0,25			0,25			0,18			0,15	
Total, real		92			268			23			6			85			105	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: S - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:38 (Skalden WTB2)	08:24		16:32 (Skalden WTB3)	07:32			07:23			06:20		20:00 (WT163)	05:36		19:58 (WT163)
	16:48	24	16:15 (Skalden WTB1)	17:35	25	16:57 (Skalden WT3)	18:25			20:17			21:06	37	20:37 (WT163)	21:50	49	21:18 (WT1_RH_E)
2	08:49		15:38 (Skalden WTB2)	08:22		16:34 (Skalden WTB3)	07:30			07:21			06:18		19:58 (WT163)	05:36		19:59 (WT163)
	16:49	25	16:15 (Skalden WTB1)	17:36	21	16:55 (Skalden WT3)	18:26			20:18			21:08	40	20:38 (WT163)	21:51	49	21:20 (WT1_RH_E)
3	08:49		15:39 (Skalden WTB2)	08:21		16:34 (Skalden WTB3)	07:28			07:19			06:16		19:57 (WT163)	05:35		19:59 (WT163)
	16:50	24	16:16 (Skalden WTB1)	17:38	24	17:09 (Skalden WT4)	18:28			20:20			21:09	41	20:38 (WT163)	21:52	50	21:21 (WT1_RH_E)
4	08:49		15:41 (Skalden WTB2)	08:19		16:35 (Skalden WTB3)	07:26			07:16			06:15		19:57 (WT163)	05:34		20:00 (WT163)
	16:51	24	16:18 (Skalden WTB1)	17:40	25	17:11 (Skalden WT4)	18:30			20:22			21:11	43	20:40 (WT163)	21:53	49	21:21 (WT1_RH_E)
5	08:49		15:41 (Skalden WTB2)	08:18		16:37 (Skalden WTB3)	07:23			07:14			06:13		19:56 (WT163)	05:34		20:01 (WT163)
	16:53	24	16:18 (Skalden WTB1)	17:42	26	17:13 (Skalden WT4)	18:32			20:23			21:12	44	20:40 (WT163)	21:54	48	21:22 (WT1_RH_E)
6	08:48		15:43 (Skalden WTB2)	08:16		16:38 (Skalden WTB3)	07:21			07:12			06:11		19:55 (WT163)	05:33		20:01 (WT163)
	16:54	23	16:20 (Skalden WTB1)	17:44	25	17:15 (Skalden WT4)	18:33			20:25			21:14	45	20:40 (WT163)	21:55	49	21:23 (WT1_RH_E)
7	08:48		15:44 (Skalden WTB2)	08:14		16:41 (Skalden WTB3)	07:19		18:09 (GC&T WT3)	07:10			06:09		19:55 (WT163)	05:32		20:02 (WT163)
	16:55	24	16:22 (Skalden WTB1)	17:45	22	17:17 (Skalden WT4)	18:35	1	18:10 (GC&T WT3)	20:27			21:16	46	20:41 (WT163)	21:56	48	21:24 (WT1_RH_E)
8	08:48		15:45 (Skalden WTB2)	08:13		17:01 (Skalden WT4)	07:17		18:09 (GC&T WT3)	07:08			06:08		19:54 (WT163)	05:32		20:02 (WT163)
	16:56	23	16:23 (Skalden WTB1)	17:47	17	17:18 (Skalden WT4)	18:37	3	18:12 (GC&T WT3)	20:28			21:17	47	20:41 (WT163)	21:57	48	21:24 (WT1_RH_E)
9	08:47		15:47 (Skalden WTB2)	08:11		17:02 (Skalden WT4)	07:15		18:09 (GC&T WT3)	07:05			06:06		19:54 (WT163)	05:31		20:03 (WT163)
	16:58	21	16:24 (Skalden WTB1)	17:49	17	17:19 (Skalden WT4)	18:38	4	18:13 (GC&T WT3)	20:30			21:19	48	20:42 (WT163)	21:58	47	21:25 (WT1_RH_E)
10	08:47		16:10 (Skalden WTB1)	08:09		17:02 (Skalden WT4)	07:13		18:11 (GC&T WT3)	07:03		20:05 (GC&T WT2)	06:04		19:53 (WT163)	05:31		20:04 (WT163)
	16:59	16	16:26 (Skalden WTB1)	17:51	17	17:19 (Skalden WT4)	18:40	4	18:15 (GC&T WT3)	20:32	1	20:06 (GC&T WT2)	21:20	49	20:42 (WT163)	21:59	47	21:26 (WT1_RH_E)
11	08:46		16:10 (Skalden WTB1)	08:07		17:02 (Skalden WT4)	07:10			07:01		20:03 (GC&T WT2)	06:03		19:53 (WT163)	05:31		20:04 (WT163)
	17:00	17	16:27 (Skalden WTB1)	17:53	16	17:18 (Skalden WT4)	18:42			20:33	4	20:07 (GC&T WT2)	21:22	50	20:43 (WT163)	21:59	48	21:27 (WT1_RH_E)
12	08:46		16:10 (Skalden WTB1)	08:06		17:03 (Skalden WT4)	07:08			06:59		20:02 (GC&T WT2)	06:01		19:53 (WT163)	05:30		20:04 (WT163)
	17:02	17	16:27 (Skalden WTB1)	17:54	15	17:18 (Skalden WT4)	18:44			20:35	7	20:09 (GC&T WT2)	21:23	49	20:42 (WT163)	22:00	47	21:27 (WT1_RH_E)
13	08:45		16:11 (Skalden WTB1)	08:04		17:04 (Skalden WT4)	07:06			06:57		20:02 (GC&T WT2)	05:59		19:53 (WT163)	05:30		20:05 (WT163)
	17:03	16	16:27 (Skalden WTB1)	17:56	13	17:17 (Skalden WT4)	18:45			20:37	8	20:10 (GC&T WT2)	21:25	50	20:43 (WT163)	22:01	47	21:28 (WT1_RH_E)
14	08:44		16:11 (Skalden WTB1)	08:02		17:05 (Skalden WT4)	07:04			06:55		20:03 (GC&T WT2)	05:58		19:52 (WT163)	05:30		20:05 (WT163)
	17:05	16	16:27 (Skalden WTB1)	17:58	12	17:31 (Skalden WT2)	18:47			20:38	9	20:12 (GC&T WT2)	21:26	51	20:43 (WT163)	22:01	47	21:29 (WT1_RH_E)
15	08:43		16:13 (Skalden WTB1)	08:00		17:08 (Skalden WT4)	07:01			06:52		20:03 (GC&T WT2)	05:56		19:53 (WT163)	05:30		20:06 (WT163)
	17:06	15	16:28 (Skalden WTB1)	18:00	8	17:32 (Skalden WT2)	18:49			20:40	11	20:14 (GC&T WT2)	21:28	50	20:43 (WT163)	22:02	46	21:29 (WT1_RH_E)
16	08:43		16:13 (Skalden WTB1)	07:58		17:28 (Skalden WT2)	06:59			06:50		20:05 (GC&T WT2)	05:55		19:53 (WT163)	05:30		20:06 (WT163)
	17:08	15	16:28 (Skalden WTB1)	18:02	6	17:34 (Skalden WT2)	18:50			20:42	7	20:12 (GC&T WT2)	21:29	50	20:43 (WT163)	22:02	47	21:30 (WT1_RH_E)
17	08:42		16:14 (Skalden WTB1)	07:56		17:28 (Skalden WT2)	06:57			06:48			05:53		19:52 (WT163)	05:30		20:07 (WT163)
	17:09	14	16:28 (Skalden WTB1)	18:03	8	17:36 (Skalden WT2)	18:52			20:43			21:31	51	20:43 (WT163)	22:03	45	21:30 (WT1_RH_E)
18	08:41		16:15 (Skalden WTB1)	07:54		17:28 (Skalden WT2)	06:55			06:46			05:52		19:53 (WT163)	05:29		20:07 (WT163)
	17:11	13	16:28 (Skalden WTB1)	18:05	10	17:38 (Skalden WT2)	18:54			20:45			21:32	50	20:43 (WT163)	22:03	46	21:30 (WT1_RH_E)
19	08:40		16:15 (Skalden WTB1)	07:52		17:29 (Skalden WT2)	06:52			06:44			05:51		19:53 (WT163)	05:30		20:07 (WT163)
	17:12	12	16:27 (Skalden WTB1)	18:07	11	17:40 (Skalden WT2)	18:55			20:46			21:34	50	20:43 (WT163)	22:03	47	21:31 (WT1_RH_E)
20	08:39		16:17 (Skalden WTB1)	07:50		17:30 (Skalden WT2)	06:50			06:42			05:49		19:54 (WT163)	05:30		20:07 (WT163)
	17:14	14	16:42 (Skalden WTB3)	18:09	9	17:39 (Skalden WT2)	18:57			20:48			21:35	49	20:43 (WT163)	22:04	47	21:31 (WT1_RH_E)
21	08:38		16:20 (Skalden WTB1)	07:48		17:32 (Skalden WT2)	06:48			06:40			05:48		19:53 (WT163)	05:30		20:07 (WT163)
	17:16	14	16:44 (Skalden WTB3)	18:11	4	17:36 (Skalden WT2)	18:59			20:50			21:36	49	20:42 (WT163)	22:04	47	21:31 (WT1_RH_E)
22	08:37		16:34 (Skalden WTB3)	07:46			06:46			06:38			05:47		19:54 (WT163)	05:30		20:08 (WT163)
	17:17	12	16:46 (Skalden WTB3)	18:12			19:00			20:51			21:38	48	20:42 (WT163)	22:04	47	21:32 (WT1_RH_E)
23	08:36		16:34 (Skalden WTB3)	07:44			06:43		18:34 (GC&T WT1)	06:36			05:46		19:54 (WT163)	05:30		20:08 (WT163)
	17:19	14	16:48 (Skalden WTB3)	18:14			19:02	3	18:37 (GC&T WT1)	20:53			21:39	48	20:42 (WT163)	22:04	47	21:32 (WT1_RH_E)
24	08:34		16:32 (Skalden WTB3)	07:42			06:41		18:33 (GC&T WT1)	06:34			05:44		19:54 (WT163)	05:30		20:08 (WT163)
	17:21	18	16:50 (Skalden WTB3)	18:16			19:04	5	18:38 (GC&T WT1)	20:55			21:41	48	20:42 (WT163)	22:05	47	21:32 (WT1_RH_E)
25	08:33		16:32 (Skalden WTB3)	07:40			06:39		18:34 (GC&T WT1)	06:32		20:14 (WT163)	05:43		19:55 (WT163)	05:31		20:09 (WT163)
	17:22	20	16:52 (Skalden WT3)	18:18			19:05	6	18:40 (GC&T WT1)	20:56	10	20:24 (WT163)	21:42	47	20:42 (WT163)	22:05	45	21:32 (WT1_RH_E)
26	08:32		16:32 (Skalden WTB3)	07:38			06:37		18:35 (GC&T WT1)	06:30		20:09 (WT163)	05:42		19:55 (WT163)	05:31		20:09 (WT163)
	17:24	21	16:53 (Skalden WT3)	18:19			19:07	7	18:42 (GC&T WT1)	20:58	19	20:28 (WT163)	21:43	47	20:42 (WT163)	22:05	45	21:32 (WT1_RH_E)
27	08:31		16:32 (Skalden WTB3)	07:36			06:34		18:37 (GC&T WT1)	06:28		20:06 (WT163)	05:41		19:55 (WT163)	05:32		20:08 (WT163)
	17:26	23	16:55 (Skalden WT3)	18:21			19:09	4	18:41 (GC&T WT1)	21:00	25	20:31 (WT163)	21:44	47	20:42 (WT163)	22:05	46	21:31 (WT1_RH_E)
28	08:29		16:32 (Skalden WTB3)	07:34			06:32			06:26		20:04 (WT163)	05:40		19:56 (WT163)	05:32		20:09 (WT163)
	17:28	26	16:58 (Skalden WT3)	18:23			19:10			21:01	28	20:32 (WT163)	21:46	47	21:14 (WT1_RH_E)	22:04	46	21:32 (WT1_RH_E)
29	08:28		16:32 (Skalden WTB3)				07:30			06:24		20:03 (WT163)	05:39		19:57 (WT163)	05:33		20:08 (WT163)
	17:29	27	16:59 (Skalden WT3)				20:12			21:03	32	20:35 (WT163)	21:47	48	21:16 (WT1_RH_E)	22:04	47	21:31 (WT1_RH_E)
30	08:27		16:32 (Skalden WTB3)				07:28			06:22		20:01 (WT163)	05:38		19:57 (WT163)	05:33		20:08 (WT163)
	17:31	27	16:59 (Skalden WT3)				20:14			21:04	35	20:36 (WT163)	21:48	49	21:17 (WT1_RH_E)	22:04	47	21:31 (WT1_RH_E)
31	08:25		16:32 (Skalden WTB3)				07:25						05:37		19:58 (WT163)			
	17:33	26	16:58 (Skalden WT3)				20:15						21:49	49	21:18 (WT1_RH_E)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		605			331			37			196			1467			1415	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,71			0,70			0,62			0,56			0,55			0,55	
Total reduction		0,16			0,20			0,23			0,25			0,25			0,24	
Total, real		100			66			8			49			364			341	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: S - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		20:09 (WT163)	06:09		20:03 (WT163)	06:57		20:03 (GC&T WT2)	07:44			07:36		16:30 (Skalden WT4)	08:26		15:52 (Skalden WTB1)
	22:04	48	21:32 (WT1_RH_E)	21:33	50	20:53 (WT163)	20:33	4	20:07 (GC&T WT2)	19:25			17:21	18	16:48 (Skalden WT4)	16:42	17	16:09 (Skalden WTB1)
2	05:34		20:08 (WT163)	06:11		20:04 (WT163)	06:59		20:03 (GC&T WT2)	07:46			07:38		16:30 (Skalden WT4)	08:27		15:52 (Skalden WTB1)
	22:04	48	21:31 (WT1_RH_E)	21:32	49	20:53 (WT163)	20:31	1	20:04 (GC&T WT2)	19:23			17:19	18	16:48 (Skalden WT4)	16:41	16	16:08 (Skalden WTB1)
3	05:35		20:08 (WT163)	06:12		20:04 (WT163)	07:00			07:47			07:40		16:30 (Skalden WT4)	08:28		15:31 (Skalden WTB2)
	22:03	49	21:31 (WT1_RH_E)	21:30	48	20:52 (WT163)	20:29			19:21			17:17	18	16:48 (Skalden WT4)	16:41	21	16:08 (Skalden WTB1)
4	05:36		20:08 (WT163)	06:13		20:04 (WT163)	07:02			07:49		18:48 (GC&T WT3)	07:42		16:10 (Skalden WTB3)	08:30		15:30 (Skalden WTB2)
	22:03	48	21:31 (WT1_RH_E)	21:28	48	20:52 (WT163)	20:26			19:19	4	18:52 (GC&T WT3)	17:16	23	16:46 (Skalden WT4)	16:40	22	16:07 (Skalden WTB1)
5	05:37		20:07 (WT163)	06:15		20:04 (WT163)	07:03			07:51		18:46 (GC&T WT3)	07:43		16:08 (Skalden WTB3)	08:31		15:30 (Skalden WTB2)
	22:02	49	21:30 (WT1_RH_E)	21:27	48	20:52 (WT163)	20:24			19:16	3	18:49 (GC&T WT3)	17:14	25	16:44 (Skalden WT4)	16:40	23	16:07 (Skalden WTB1)
6	05:37		20:07 (WT163)	06:17		20:04 (WT163)	07:05			07:52		18:45 (GC&T WT3)	07:45		16:06 (Skalden WTB3)	08:32		15:29 (Skalden WTB2)
	22:02	49	21:29 (WT1_RH_E)	21:25	47	20:51 (WT163)	20:22			19:14	2	18:47 (GC&T WT3)	17:12	27	16:43 (Skalden WT4)	16:39	23	16:06 (Skalden WTB1)
7	05:38		20:07 (WT163)	06:18		20:05 (WT163)	07:06			07:54			07:47		16:05 (Skalden WTB3)	08:34		15:28 (Skalden WTB2)
	22:01	49	21:29 (WT1_RH_E)	21:23	46	20:51 (WT163)	20:20			19:12			17:11	25	16:41 (Skalden WT4)	16:39	25	16:06 (Skalden WTB1)
8	05:39		20:07 (WT163)	06:20		20:05 (WT163)	07:08			07:56			07:48		16:05 (Skalden WTB3)	08:35		15:28 (Skalden WTB2)
	22:01	49	21:29 (WT1_RH_E)	21:21	44	20:49 (WT163)	20:17			19:10			17:09	24	16:40 (Skalden WT4)	16:39	24	16:05 (Skalden WTB1)
9	05:40		20:07 (WT163)	06:21		20:06 (WT163)	07:10			07:57			07:50		16:04 (Skalden WTB3)	08:36		15:29 (Skalden WTB2)
	22:00	49	21:28 (WT1_RH_E)	21:20	42	20:48 (WT163)	20:15			19:07			17:07	22	16:26 (Skalden WT3)	16:39	23	16:05 (Skalden WTB1)
10	05:41		20:07 (WT163)	06:23		20:07 (WT163)	07:11			07:59			07:52		16:03 (Skalden WTB3)	08:37		15:29 (Skalden WTB2)
	21:59	49	21:28 (WT1_RH_E)	21:18	41	20:48 (WT163)	20:13			19:05			17:06	25	16:28 (Skalden WT3)	16:38	23	16:05 (Skalden WTB1)
11	05:42		20:07 (WT163)	06:24		20:07 (WT163)	07:13			08:01			07:54		16:03 (Skalden WTB3)	08:38		15:28 (Skalden WTB2)
	21:59	49	21:27 (WT1_RH_E)	21:16	39	20:46 (WT163)	20:11			19:03			17:04	26	16:29 (Skalden WT3)	16:38	23	16:05 (Skalden WTB1)
12	05:43		20:06 (WT163)	06:26		20:09 (WT163)	07:14			08:02			07:55		16:03 (Skalden WTB3)	08:39		15:29 (Skalden WTB2)
	21:58	48	21:26 (WT1_RH_E)	21:14	36	20:45 (WT163)	20:08			19:01			17:03	27	16:30 (Skalden WT3)	16:38	23	16:05 (Skalden WTB1)
13	05:44		20:06 (WT163)	06:27		20:09 (WT163)	07:16			08:04			07:57		16:04 (Skalden WTB3)	08:40		14:50 (Skalden WTB4)
	21:57	49	21:26 (WT1_RH_E)	21:12	34	20:43 (WT163)	20:06			18:59			17:01	27	16:31 (Skalden WT3)	16:38	25	16:04 (Skalden WTB1)
14	05:45		20:06 (WT163)	06:29		20:11 (WT163)	07:17			08:06			07:59		16:04 (Skalden WTB3)	08:41		14:49 (Skalden WTB4)
	21:56	48	21:25 (WT1_RH_E)	21:10	31	20:42 (WT163)	20:04			18:57			17:00	26	16:30 (Skalden WT3)	16:38	29	16:04 (Skalden WTB1)
15	05:46		20:05 (WT163)	06:30		20:12 (WT163)	07:19			08:07			08:00		16:05 (Skalden WTB3)	08:42		14:49 (Skalden WTB4)
	21:55	48	21:24 (WT1_RH_E)	21:08	28	20:40 (WT163)	20:02			18:55			16:59	23	16:28 (Skalden WT3)	16:38	30	16:05 (Skalden WTB1)
16	05:48		20:05 (WT163)	06:32		20:15 (WT163)	07:20		19:27 (GC&T WT1)	08:09			08:02		16:05 (Skalden WTB3)	08:43		14:49 (Skalden WTB4)
	21:54	47	21:23 (WT1_RH_E)	21:06	23	20:38 (WT163)	19:59	1	19:28 (GC&T WT1)	18:52			16:57	22	16:27 (Skalden WT3)	16:38	31	16:05 (Skalden WTB1)
17	05:49		20:05 (WT163)	06:33		20:17 (WT163)	07:22		19:24 (GC&T WT1)	08:11			08:04		16:05 (Skalden WTB3)	08:44		14:48 (Skalden WTB4)
	21:53	46	20:51 (WT163)	21:04	17	20:34 (WT163)	19:57	7	19:31 (GC&T WT1)	18:50			16:56	20	16:25 (Skalden WT3)	16:38	31	16:04 (Skalden WTB1)
18	05:50		20:04 (WT163)	06:35		20:22 (WT163)	07:24		19:21 (GC&T WT1)	08:12			08:06		16:06 (Skalden WTB3)	08:44		14:48 (Skalden WTB4)
	21:52	47	20:51 (WT163)	21:03	8	20:30 (WT163)	19:55	7	19:28 (GC&T WT1)	18:48			16:55	18	16:24 (Skalden WTB3)	16:39	32	16:05 (Skalden WTB1)
19	05:51		20:04 (WT163)	06:37			07:25		19:21 (GC&T WT1)	08:14			08:07		16:08 (Skalden WTB3)	08:45		14:49 (Skalden WTB4)
	21:51	48	20:52 (WT163)	21:00			19:53	5	19:26 (GC&T WT1)	18:46			16:53	14	16:22 (Skalden WTB3)	16:39	32	16:05 (Skalden WTB1)
20	05:52		20:05 (WT163)	06:38			07:27		19:20 (GC&T WT1)	08:16			08:09		16:09 (Skalden WTB3)	08:46		14:48 (Skalden WTB4)
	21:50	48	20:53 (WT163)	20:58			19:50	3	19:23 (GC&T WT1)	18:44			16:52	12	16:21 (Skalden WTB3)	16:39	33	16:05 (Skalden WTB1)
21	05:54		20:04 (WT163)	06:40			07:28		19:20 (GC&T WT1)	08:17		18:02 (Skalden WT2)	08:10		15:56 (Skalden WTB1)	08:46		14:49 (Skalden WTB4)
	21:49	49	20:53 (WT163)	20:56			19:48	1	19:21 (GC&T WT1)	18:42	6	18:08 (Skalden WT2)	16:51	14	16:20 (Skalden WTB3)	16:40	33	16:06 (Skalden WTB1)
22	05:55		20:04 (WT163)	06:41			07:30			08:19		18:00 (Skalden WT2)	08:12		15:53 (Skalden WTB1)	08:47		14:49 (Skalden WTB4)
	21:48	49	20:53 (WT163)	20:54			19:46			18:40	10	18:10 (Skalden WT2)	16:50	14	16:18 (Skalden WTB3)	16:40	33	16:06 (Skalden WTB1)
23	05:56		20:03 (WT163)	06:43			07:32			08:21		17:59 (Skalden WT2)	08:14		15:52 (Skalden WTB1)	08:47		14:50 (Skalden WTB4)
	21:46	50	20:53 (WT163)	20:52			19:43			18:38	11	18:10 (Skalden WT2)	16:49	12	16:04 (Skalden WTB1)	16:41	33	16:07 (Skalden WTB1)
24	05:58		20:03 (WT163)	06:44			07:33			08:22		17:58 (Skalden WT2)	08:15		15:52 (Skalden WTB1)	08:48		14:51 (Skalden WTB4)
	21:45	50	20:53 (WT163)	20:50			19:41			18:36	10	18:08 (Skalden WT2)	16:48	13	16:05 (Skalden WTB1)	16:41	32	16:07 (Skalden WTB1)
25	05:59		20:04 (WT163)	06:46			07:35			07:24		16:57 (Skalden WT2)	08:17		15:51 (Skalden WTB1)	08:48		14:51 (Skalden WTB4)
	21:44	50	20:54 (WT163)	20:48			19:39			17:34	8	17:05 (Skalden WT2)	16:47	14	16:05 (Skalden WTB1)	16:42	33	16:08 (Skalden WTB1)
26	06:00		20:03 (WT163)	06:48		20:11 (GC&T WT2)	07:36			07:26		16:58 (Skalden WT2)	08:18		15:51 (Skalden WTB1)	08:48		14:53 (Skalden WTB4)
	21:42	50	20:53 (WT163)	20:46	1	20:12 (GC&T WT2)	19:37			17:32	5	17:03 (Skalden WT2)	16:46	16	16:07 (Skalden WTB1)	16:43	31	16:09 (Skalden WTB1)
27	06:02		20:03 (WT163)	06:49		20:06 (GC&T WT2)	07:38			07:28		16:37 (Skalden WT4)	08:20		15:52 (Skalden WTB1)	08:49		14:53 (Skalden WTB4)
	21:41	50	20:53 (WT163)	20:44	8	20:14 (GC&T WT2)	19:34			17:30	9	17:01 (Skalden WT2)	16:45	16	16:08 (Skalden WTB1)	16:43	32	16:10 (Skalden WTB1)
28	06:03		20:04 (WT163)	06:51		20:05 (GC&T WT2)	07:39			07:29		16:34 (Skalden WT4)	08:21		15:51 (Skalden WTB1)	08:49		14:54 (Skalden WTB4)
	21:39	50	20:54 (WT163)	20:42	10	20:15 (GC&T WT2)	19:32			17:28	12	17:00 (Skalden WT2)	16:44	16	16:07 (Skalden WTB1)	16:44	30	16:10 (Skalden WTB1)
29	06:05		20:03 (WT163)	06:52		20:03 (GC&T WT2)	07:41			07:31		16:33 (Skalden WT4)	08:23		15:52 (Skalden WTB1)	08:49		14:56 (Skalden WTB4)
	21:38	50	20:53 (WT163)	20:40	10	20:13 (GC&T WT2)	19:30			17:26	14	16:47 (Skalden WT4)	16:43	16	16:08 (Skalden WTB1)	16:45	29	16:11 (Skalden WTB1)
30	06:06		20:03 (WT163)	06:54		20:03 (GC&T WT2)	07:43			07:33		16:32 (Skalden WT4)	08:24		15:51 (Skalden WTB1)	08:49		14:57 (Skalden WTB4)
	21:36	50	20:53 (WT163)	20:37	8	20:11 (GC&T WT2)	19:28			17:25	16	16:48 (Skalden WT4)	16:43	17	16:08 (Skalden WTB1)	16:46	26	16:12 (Skalden WTB1)
31	06:08		20:04 (WT163)	06:55		20:02 (GC&T WT2)				07:35		16:31 (Skalden WT4)				08:49		15:37 (Skalden WTB2)
	21:35	49	20:53 (WT163)	20:35	6	20:08 (GC&T WT2)				17:23	17	16:48 (Skalden WT4)				16:47	23	16:13 (Skalden WTB1)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		1512			722			29			127			588			841	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,55			0,55			0,61			0,68			0,70			0,72	
Total reduction		0,24			0,25			0,26			0,24			0,18			0,15	
Total, real		368			184			8			31			104			126	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: T - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June
1	08:49		15:17 (Skalden WTB2)	08:24		16:15 (Skalden WTB3)	07:32			07:23		19:45 (GC&T WT1)	06:20		20:23 (GC&T WT2)	05:36
	16:48	31	16:11 (Skalden WTB1)	17:35	37	16:52 (Skalden WT3)	18:25			20:17	6	19:51 (GC&T WT1)	21:06	15	20:38 (GC&T WT2)	21:50
2	08:49		15:17 (Skalden WTB2)	08:22		16:17 (Skalden WTB3)	07:30			07:21		19:45 (GC&T WT1)	06:18		20:24 (GC&T WT2)	05:36
	16:49	28	16:10 (Skalden WTB1)	17:36	34	16:51 (Skalden WT3)	18:26			20:18	8	19:53 (GC&T WT1)	21:08	13	20:37 (GC&T WT2)	21:51
3	08:49		15:20 (Skalden WTB2)	08:21		16:17 (Skalden WTB3)	07:28			07:19		19:45 (GC&T WT1)	06:16		20:24 (GC&T WT2)	05:35
	16:50	25	16:11 (Skalden WTB1)	17:38	34	17:09 (Skalden WT4)	18:28			20:20	10	19:55 (GC&T WT1)	21:09	12	20:36 (GC&T WT2)	21:52
4	08:49		15:51 (Skalden WTB1)	08:19		16:17 (Skalden WTB3)	07:26			07:16		19:46 (GC&T WT1)	06:15		20:27 (GC&T WT2)	05:34
	16:51	21	16:12 (Skalden WTB1)	17:40	38	17:11 (Skalden WT4)	18:30			20:22	11	19:57 (GC&T WT1)	21:11	8	20:35 (GC&T WT2)	21:53
5	08:49		15:51 (Skalden WTB1)	08:18		16:19 (Skalden WTB3)	07:23			07:14		19:46 (GC&T WT1)	06:13			05:34
	16:53	21	16:12 (Skalden WTB1)	17:42	38	17:13 (Skalden WT4)	18:32			20:23	10	19:56 (GC&T WT1)	21:12			21:54
6	08:48		15:52 (Skalden WTB1)	08:16		16:20 (Skalden WTB3)	07:21			07:12		19:48 (GC&T WT1)	06:11			05:33
	16:54	21	16:13 (Skalden WTB1)	17:44	38	17:14 (Skalden WT4)	18:33			20:25	6	19:54 (GC&T WT1)	21:14			21:55
7	08:48		15:53 (Skalden WTB1)	08:14		16:21 (Skalden WTB3)	07:19			07:10			06:09			05:32
	16:55	21	16:14 (Skalden WTB1)	17:45	40	17:17 (Skalden WT1)	18:35			20:27			21:16			21:56
8	08:48		15:53 (Skalden WTB1)	08:13		16:23 (Skalden WTB3)	07:17			07:08			06:08			05:32
	16:56	20	16:13 (Skalden WTB1)	17:47	39	17:19 (Skalden WT1)	18:37			20:28			21:17			21:57
9	08:47		15:53 (Skalden WTB1)	08:11		16:26 (Skalden WTB3)	07:15			07:05			06:06			05:31
	16:58	20	16:13 (Skalden WTB1)	17:49	37	17:21 (Skalden WT1)	18:38			20:30			21:19			21:58
10	08:47		15:54 (Skalden WTB1)	08:09		16:55 (Skalden WT4)	07:13			07:03			06:04			05:31
	16:59	20	16:14 (Skalden WTB1)	17:51	28	17:23 (Skalden WT1)	18:40			20:32			21:20			21:59
11	08:46		15:55 (Skalden WTB1)	08:07		16:55 (Skalden WT4)	07:10		18:16 (GC&T WT3)	07:01			06:03			05:31
	17:00	19	16:14 (Skalden WTB1)	17:53	30	17:25 (Skalden WT1)	18:42	1	18:17 (GC&T WT3)	20:33			21:22			21:59
12	08:46		15:55 (Skalden WTB1)	08:06		16:55 (Skalden WT4)	07:08		18:16 (GC&T WT3)	06:59			06:01			05:30
	17:02	19	16:14 (Skalden WTB1)	17:54	31	17:26 (Skalden WT1)	18:44	3	18:19 (GC&T WT3)	20:35			21:23			22:00
13	08:45		15:56 (Skalden WTB1)	08:04		16:55 (Skalden WT4)	07:06		18:15 (GC&T WT3)	06:57			05:59			05:30
	17:03	18	16:14 (Skalden WTB1)	17:56	30	17:25 (Skalden WT1)	18:45	5	18:20 (GC&T WT3)	20:37			21:25			22:01
14	08:44		15:56 (Skalden WTB1)	08:02		16:56 (Skalden WT4)	07:04		18:15 (GC&T WT3)	06:55			05:58			05:30
	17:05	18	16:14 (Skalden WTB1)	17:58	27	17:24 (Skalden WT1)	18:47	7	18:22 (GC&T WT3)	20:38			21:26			22:01
15	08:43		15:58 (Skalden WTB1)	08:00		16:57 (Skalden WT4)	07:01		18:16 (GC&T WT3)	06:52			05:56			05:30
	17:06	17	16:15 (Skalden WTB1)	18:00	18	17:15 (Skalden WT4)	18:49	8	18:24 (GC&T WT3)	20:40			21:28			22:02
16	08:43		15:59 (Skalden WTB1)	07:58		16:58 (Skalden WT4)	06:59		18:19 (GC&T WT3)	06:50			05:55			05:30
	17:08	20	16:28 (Skalden WTB3)	18:02	20	17:34 (Skalden WT2)	18:50	4	18:23 (GC&T WT3)	20:42			21:29			22:02
17	08:42		16:01 (Skalden WTB1)	07:56		16:59 (Skalden WT4)	06:57			06:48			05:53			05:30
	17:09	24	16:31 (Skalden WTB3)	18:03	21	17:36 (Skalden WT2)	18:52			20:43			21:31			22:03
18	08:41		16:02 (Skalden WTB1)	07:54		17:02 (Skalden WT4)	06:55			06:46			05:52			05:30
	17:11	25	16:33 (Skalden WTB3)	18:05	18	17:38 (Skalden WT2)	18:54			20:45			21:32			22:03
19	08:40		16:04 (Skalden WTB1)	07:52		17:28 (Skalden WT2)	06:52			06:44			05:51			05:30
	17:12	25	16:40 (Skalden WT3)	18:07	12	17:40 (Skalden WT2)	18:55			20:46			21:34			22:03
20	08:39		16:17 (Skalden WTB3)	07:50		17:28 (Skalden WT2)	06:50			06:42			05:49			05:30
	17:14	23	16:42 (Skalden WT3)	18:09	14	17:42 (Skalden WT2)	18:57			20:48			21:35			22:04
21	08:38		16:16 (Skalden WTB3)	07:48		17:28 (Skalden WT2)	06:48			06:40			05:48			05:30
	17:16	27	16:44 (Skalden WT3)	18:11	15	17:43 (Skalden WT2)	18:59			20:50			21:37			22:04
22	08:37		16:16 (Skalden WTB3)	07:46		17:29 (Skalden WT2)	06:46			06:38			05:47			05:30
	17:17	30	16:46 (Skalden WT3)	18:12	13	17:42 (Skalden WT2)	19:00			20:51			21:38			22:04
23	08:36		16:16 (Skalden WTB3)	07:44		17:30 (Skalden WT2)	06:43			06:36			05:46			05:30
	17:19	32	16:48 (Skalden WT3)	18:14	11	17:41 (Skalden WT2)	19:02			20:53			21:39			22:04
24	08:35		16:15 (Skalden WTB3)	07:42		17:32 (Skalden WT2)	06:41			06:34		20:27 (GC&T WT2)	05:44			05:30
	17:21	35	16:50 (Skalden WT3)	18:16	7	17:39 (Skalden WT2)	19:04			20:55	1	20:28 (GC&T WT2)	21:41			22:05
25	08:33		16:15 (Skalden WTB3)	07:40			06:39			06:32		20:25 (GC&T WT2)	05:43			05:31
	17:22	37	16:52 (Skalden WT3)	18:18			19:05			20:56	4	20:29 (GC&T WT2)	21:42			22:05
26	08:32		16:14 (Skalden WTB3)	07:38			06:37			06:30		20:24 (GC&T WT2)	05:42			05:31
	17:24	39	16:53 (Skalden WT3)	18:19			19:07			20:58	6	20:30 (GC&T WT2)	21:43			22:05
27	08:31		16:15 (Skalden WTB3)	07:36			06:34			06:28		20:23 (GC&T WT2)	05:41			05:32
	17:26	39	16:54 (Skalden WT3)	18:21			19:09			21:00	9	20:32 (GC&T WT2)	21:44			22:05
28	08:29		16:15 (Skalden WTB3)	07:34			06:32			06:26		20:23 (GC&T WT2)	05:40			05:32
	17:28	40	16:55 (Skalden WT3)	18:23			19:10			21:01	10	20:33 (GC&T WT2)	21:46			22:04
29	08:28		16:15 (Skalden WTB3)				07:30			06:24		20:23 (GC&T WT2)	05:39			05:33
	17:29	39	16:54 (Skalden WT3)				20:12			21:03	13	20:36 (GC&T WT2)	21:47			22:04
30	08:27		16:16 (Skalden WTB3)				07:28			06:22		20:23 (GC&T WT2)	05:38			05:33
	17:31	38	16:54 (Skalden WT3)				20:14			21:04	14	20:37 (GC&T WT2)	21:48			22:04
31	08:25		16:15 (Skalden WTB3)				07:25		19:47 (GC&T WT1)				05:37			
	17:33	38	16:53 (Skalden WT3)				20:15	3	19:50 (GC&T WT1)				21:49			
Potential sun hours	262			279			367			414			482			494
Total, worst case		830			630			31			108			48		
Sun reduction		0,24			0,29			0,37			0,46			0,46		
Oper. time red.		0,95			0,95			0,95			0,95			0,95		
Wind dir. red.		0,71			0,70			0,63			0,57			0,55		
Total reduction		0,16			0,20			0,23			0,25			0,24		
Total, real		134			123			7			27			12		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: T - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:34		06:09		06:57		07:44		07:36		08:26	
	22:04		21:33		20:33		19:25	3	17:21	29	16:42	19
2	05:34		06:11		06:59		07:46		07:38		08:27	
	22:04		21:32		20:31		19:23	2	17:19	38	16:41	20
3	05:35		06:12		07:00		07:48		07:40		08:28	
	22:03		21:30		20:29		19:21		17:17	39	16:41	20
4	05:36		06:14		07:02		07:49		07:42		08:30	
	22:03		21:28		20:26		19:19		17:16	41	16:40	21
5	05:37		06:15		07:03		07:51		07:43		08:31	
	22:02		21:27		20:24		19:16		17:14	40	16:40	21
6	05:38		06:17		07:05		19:44 (GC&T WT1)	07:52		07:45		08:32
	22:02		21:25		20:22	6	19:50 (GC&T WT1)	19:14		17:12	38	16:43
7	05:38		06:18		07:06		19:42 (GC&T WT1)	07:54		07:47		08:34
	22:01		21:23		20:20	10	19:52 (GC&T WT1)	19:12		17:11	37	16:41
8	05:39		06:20		20:37 (GC&T WT2)	07:08		19:40 (GC&T WT1)	07:56		07:48	
	22:01		21:22	5	20:42 (GC&T WT2)	20:18	11	19:51 (GC&T WT1)	19:10		17:09	34
9	05:40		06:21		20:35 (GC&T WT2)	07:10		19:39 (GC&T WT1)	07:57		07:50	
	22:00		21:20	9	20:44 (GC&T WT2)	20:15	10	19:49 (GC&T WT1)	19:07		17:07	34
10	05:41		06:23		20:34 (GC&T WT2)	07:11		19:38 (GC&T WT1)	07:59		07:52	
	21:59		21:18	11	20:45 (GC&T WT2)	20:13	8	19:46 (GC&T WT1)	19:05		17:06	37
11	05:42		06:24		20:32 (GC&T WT2)	07:13		19:39 (GC&T WT1)	08:01		07:54	
	21:59		21:16	14	20:46 (GC&T WT2)	20:11	6	19:45 (GC&T WT1)	19:03		17:04	38
12	05:43		06:26		20:32 (GC&T WT2)	07:14		19:38 (GC&T WT1)	08:02		07:55	
	21:58		21:14	14	20:46 (GC&T WT2)	20:08	4	19:42 (GC&T WT1)	19:01		17:03	38
13	05:44		06:27		20:31 (GC&T WT2)	07:16		19:39 (GC&T WT1)	08:04		07:57	
	21:57		21:12	13	20:44 (GC&T WT2)	20:06	1	19:40 (GC&T WT1)	18:59		17:01	39
14	05:45		06:29		20:31 (GC&T WT2)	07:17			08:06		07:59	
	21:56		21:10	12	20:43 (GC&T WT2)	20:04			18:57		17:00	40
15	05:46		06:30		20:30 (GC&T WT2)	07:19			08:07		08:01	
	21:55		21:08	10	20:40 (GC&T WT2)	20:02			18:55		16:59	39
16	05:48		06:32		20:31 (GC&T WT2)	07:21			08:09		08:02	
	21:54		21:06	8	20:39 (GC&T WT2)	19:59			18:52		16:57	39
17	05:49		06:33		20:31 (GC&T WT2)	07:22			08:11		08:04	
	21:53		21:05	6	20:37 (GC&T WT2)	19:57			18:50		16:56	37
18	05:50		06:35		20:32 (GC&T WT2)	07:24			08:12		18:03 (Skalden WT2)	08:06
	21:52		21:03	3	20:35 (GC&T WT2)	19:55			18:48	8	18:11 (Skalden WT2)	16:55
19	05:51		06:37			07:25			08:14		18:01 (Skalden WT2)	08:07
	21:51		21:01			19:53			18:46	12	18:13 (Skalden WT2)	16:53
20	05:52		06:38			07:27			08:16		17:59 (Skalden WT2)	08:09
	21:50		20:58			19:50			18:44	14	18:13 (Skalden WT2)	16:52
21	05:54		06:40			07:28			08:17		17:59 (Skalden WT2)	08:10
	21:49		20:56			19:48			18:42	14	18:13 (Skalden WT2)	16:51
22	05:55		06:41			07:30			08:19		17:58 (Skalden WT2)	08:12
	21:48		20:54			19:46			18:40	14	18:12 (Skalden WT2)	16:50
23	05:56		06:43			07:32			08:21		17:59 (Skalden WT2)	08:14
	21:46		20:52			19:43			18:38	11	18:10 (Skalden WT2)	16:49
24	05:58		06:44			07:33			08:22		17:32 (Skalden WT4)	08:15
	21:45		20:50			19:41			18:36	18	18:08 (Skalden WT2)	16:48
25	05:59		06:46			07:35			07:24		16:28 (Skalden WT4)	08:17
	21:44		20:48			19:39			17:34	21	17:05 (Skalden WT2)	16:47
26	06:00		06:48			07:36			07:26		16:27 (Skalden WT4)	08:18
	21:42		20:46			19:37			17:32	20	17:03 (Skalden WT2)	16:46
27	06:02		06:49			07:38			07:28		16:26 (Skalden WT4)	08:20
	21:41		20:44			19:34			17:30	19	16:45 (Skalden WT4)	16:45
28	06:03		06:51			07:39		18:58 (GC&T WT3)	07:29		16:25 (Skalden WT4)	08:21
	21:39		20:42			19:32	7	19:05 (GC&T WT3)	17:28	29	16:54 (Skalden WT1)	16:44
29	06:05		06:52			07:41		18:56 (GC&T WT3)	07:31		16:25 (Skalden WT4)	08:23
	21:38		20:40			19:30	7	19:03 (GC&T WT3)	17:26	30	16:55 (Skalden WT1)	16:44
30	06:06		06:54			07:43		18:55 (GC&T WT3)	07:33		16:25 (Skalden WT4)	08:24
	21:36		20:37			19:28	5	19:00 (GC&T WT3)	17:25	31	16:56 (Skalden WT1)	16:43
31	06:08		06:55						07:35		16:25 (Skalden WT4)	
	21:35		20:35						17:23	29	16:54 (Skalden WT1)	
Potential sun hours	498		451		380		333		269		248	
Total, worst case			105			75		275		950		935
Sun reduction			0,47			0,43		0,36		0,26		0,21
Oper. time red.			0,95			0,95		0,95		0,95		0,95
Wind dir. red.			0,55			0,61		0,69		0,71		0,72
Total reduction			0,25			0,25		0,24		0,17		0,15
Total, real			26			19		66		166		138

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: U - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		10:35 (Skalden WTB4)	08:24		15:46 (Skalden WT4)	07:32			07:23			06:20			05:36		21:03 (GC&T WT2)
	16:48	100	15:59 (Skalden WT4)	17:35	45	17:00 (Skalden WT1)	18:25			20:17			21:06			21:50	15	21:18 (GC&T WT2)
2	08:49		10:35 (Skalden WTB4)	08:22		15:48 (Skalden WT4)	07:30			07:21			06:18			05:36		21:03 (GC&T WT2)
	16:49	100	16:00 (Skalden WT4)	17:36	40	17:00 (Skalden WT1)	18:26			20:19			21:08			21:51	17	21:20 (GC&T WT2)
3	08:49		10:36 (Skalden WTB4)	08:21		15:49 (Skalden WT4)	07:28			07:19			06:16			05:35		21:02 (GC&T WT2)
	16:50	99	16:01 (Skalden WT4)	17:38	37	16:59 (Skalden WT1)	18:28			20:20			21:09			21:52	19	21:21 (GC&T WT2)
4	08:49		10:37 (Skalden WTB4)	08:19		15:51 (Skalden WT4)	07:26			07:16			06:15			05:34		21:02 (GC&T WT2)
	16:51	98	16:02 (Skalden WT4)	17:40	38	17:11 (Skalden WT2)	18:30			20:22			21:11			21:53	19	21:21 (GC&T WT2)
5	08:49		10:37 (Skalden WTB4)	08:18		15:54 (Skalden WT4)	07:23			07:14			06:13			05:34		21:02 (GC&T WT2)
	16:53	98	16:02 (Skalden WT4)	17:42	33	17:13 (Skalden WT2)	18:32			20:23			21:12			21:54	20	21:22 (GC&T WT2)
6	08:48		10:38 (Skalden WTB4)	08:16		16:50 (Skalden WT1)	07:21			07:12			06:11			05:33		21:02 (GC&T WT2)
	16:54	98	16:04 (Skalden WT4)	17:44	18	17:15 (Skalden WT2)	18:33			20:25			21:14			21:55	21	21:23 (GC&T WT2)
7	08:48		10:40 (Skalden WTB4)	08:14		17:00 (Skalden WT2)	07:19			07:10		19:59 (GC&T WT1)	06:09			05:32		21:02 (GC&T WT2)
	16:55	96	16:05 (Skalden WT4)	17:45	17	17:17 (Skalden WT2)	18:35			20:27	2	20:01 (GC&T WT1)	21:16			21:56	22	21:24 (GC&T WT2)
8	08:48		10:40 (Skalden WTB4)	08:13		16:59 (Skalden WT2)	07:17			07:08		19:55 (GC&T WT1)	06:08			05:32		21:03 (GC&T WT2)
	16:56	96	16:06 (Skalden WT4)	17:47	19	17:18 (Skalden WT2)	18:37			20:28	8	20:03 (GC&T WT1)	21:17			21:57	22	21:25 (GC&T WT2)
9	08:47		10:41 (Skalden WTB4)	08:11		16:59 (Skalden WT2)	07:15		18:10 (GC&T WT3)	07:05		19:54 (GC&T WT1)	06:06			05:31		21:02 (GC&T WT2)
	16:58	94	16:06 (Skalden WT4)	17:49	20	17:19 (Skalden WT2)	18:38	3	18:13 (GC&T WT3)	20:30	10	20:04 (GC&T WT1)	21:19			21:58	23	21:25 (GC&T WT2)
10	08:47		10:42 (Skalden WTB4)	08:09		16:59 (Skalden WT2)	07:13		18:08 (GC&T WT3)	07:03		19:52 (GC&T WT1)	06:04			05:31		21:02 (GC&T WT2)
	16:59	94	16:08 (Skalden WT4)	17:51	21	17:20 (Skalden WT2)	18:40	7	18:15 (GC&T WT3)	20:32	14	20:06 (GC&T WT1)	21:20			21:59	24	21:26 (GC&T WT2)
11	08:46		10:43 (Skalden WTB4)	08:07		16:59 (Skalden WT2)	07:10		18:07 (GC&T WT3)	07:01		19:51 (GC&T WT1)	06:03			05:31		21:03 (GC&T WT2)
	17:00	91	16:08 (Skalden WT4)	17:53	22	17:25 (WT-MER)	18:42	10	18:17 (GC&T WT3)	20:33	16	20:07 (GC&T WT1)	21:22			21:59	24	21:27 (GC&T WT2)
12	08:46		10:44 (Skalden WTB4)	08:06		16:59 (Skalden WT2)	07:08		18:07 (GC&T WT3)	06:59		19:50 (GC&T WT1)	06:01			05:30		21:02 (GC&T WT2)
	17:02	89	16:09 (Skalden WT4)	17:54	26	17:27 (WT-MER)	18:44	12	18:19 (GC&T WT3)	20:35	19	20:09 (GC&T WT1)	21:23			22:00	24	21:26 (GC&T WT2)
13	08:45		10:45 (Skalden WTB4)	08:04		16:59 (Skalden WT2)	07:06		18:06 (GC&T WT3)	06:57		19:49 (GC&T WT1)	05:59			05:30		21:02 (GC&T WT2)
	17:03	86	16:09 (Skalden WT4)	17:56	28	17:29 (WT-MER)	18:45	14	18:20 (WT01-VLS)	20:37	21	20:10 (GC&T WT1)	21:25			22:01	25	21:27 (GC&T WT2)
14	08:44		10:48 (Skalden WTB4)	08:02		16:59 (Skalden WT2)	07:04		18:06 (GC&T WT3)	06:55		19:49 (GC&T WT1)	05:58			05:30		21:03 (GC&T WT2)
	17:05	82	16:11 (Skalden WT4)	17:58	31	17:31 (WT-MER)	18:47	16	18:22 (WT01-VLS)	20:38	21	20:10 (GC&T WT1)	21:26			22:01	24	21:27 (GC&T WT2)
15	08:43		10:50 (Skalden WTB4)	08:00		17:00 (Skalden WT2)	07:01		18:06 (GC&T WT3)	06:52		19:49 (GC&T WT1)	05:56			05:30		21:03 (GC&T WT2)
	17:06	78	16:12 (Skalden WT4)	18:00	31	17:32 (WT-MER)	18:49	18	18:24 (WT01-VLS)	20:40	21	20:10 (GC&T WT1)	21:28			22:02	25	21:28 (GC&T WT2)
16	08:43		10:53 (Skalden WTB4)	07:58		17:01 (Skalden WT2)	06:59		18:07 (GC&T WT3)	06:50		19:50 (GC&T WT1)	05:55			05:30		21:03 (GC&T WT2)
	17:08	69	16:12 (Skalden WT4)	18:02	31	17:34 (WT-MER)	18:50	19	18:26 (WT01-VLS)	20:42	20	20:15 (WT-ATS)	21:29			22:02	25	21:28 (GC&T WT2)
17	08:42		14:17 (Skalden WTB3)	07:56		17:02 (Skalden WT2)	06:57		18:08 (GC&T WT3)	06:48		19:50 (GC&T WT1)	05:54			05:30		21:03 (GC&T WT2)
	17:09	57	16:13 (Skalden WT4)	18:03	31	17:36 (WT-MER)	18:52	19	18:27 (WT01-VLS)	20:43	23	20:17 (WT-ATS)	21:31			22:03	25	21:28 (GC&T WT2)
18	08:41		14:19 (Skalden WTB3)	07:54		17:05 (Skalden WT2)	06:55		18:11 (GC&T WT3)	06:46		19:51 (GC&T WT1)	05:52			05:30		21:03 (GC&T WT2)
	17:11	54	16:13 (Skalden WT4)	18:05	27	17:37 (WT-MER)	18:54	18	18:29 (WT01-VLS)	20:45	24	20:18 (WT-ATS)	21:32			22:03	25	21:28 (GC&T WT2)
19	08:40		14:21 (Skalden WTB3)	07:52		17:20 (WT-MER)	06:52		18:17 (WT01-VLS)	06:44		19:52 (GC&T WT1)	05:51			05:30		21:04 (GC&T WT2)
	17:12	51	16:13 (Skalden WT4)	18:07	16	17:36 (WT-MER)	18:55	12	18:29 (WT01-VLS)	20:46	25	20:20 (WT-ATS)	21:34			22:04	24	21:28 (GC&T WT2)
20	08:39		14:25 (Skalden WTB3)	07:50		17:20 (WT-MER)	06:50		18:19 (WT01-VLS)	06:42		19:54 (GC&T WT1)	05:49			05:30		21:04 (GC&T WT2)
	17:14	45	16:14 (Skalden WT4)	18:09	16	17:36 (WT-MER)	18:57	9	18:28 (WT01-VLS)	20:48	23	20:22 (WT-ATS)	21:35			22:04	24	21:28 (GC&T WT2)
21	08:38		15:39 (Skalden WT4)	07:48		17:22 (WT-MER)	06:48			06:40		20:08 (WT-ATS)	05:48			05:30		21:04 (GC&T WT2)
	17:16	35	16:14 (Skalden WT4)	18:11	13	17:35 (WT-MER)	18:59			20:50	15	20:23 (WT-ATS)	21:37			22:04	24	21:28 (GC&T WT2)
22	08:37		15:39 (Skalden WT4)	07:46		17:24 (WT-MER)	06:46			06:38		20:08 (WT-ATS)	05:47			05:30		21:05 (GC&T WT2)
	17:17	36	16:15 (Skalden WT4)	18:12	9	17:33 (WT-MER)	19:00			20:51	17	20:25 (WT-ATS)	21:38			22:04	24	21:29 (GC&T WT2)
23	08:36		15:40 (Skalden WT4)	07:44			06:43			06:36		20:08 (WT-ATS)	05:46			05:30		21:05 (GC&T WT2)
	17:19	38	16:48 (Skalden WT1)	18:14			19:02			20:53	16	20:24 (WT-ATS)	21:39			22:04	24	21:29 (GC&T WT2)
24	08:35		15:40 (Skalden WT4)	07:42			06:41			06:34		20:09 (WT-ATS)	05:44			05:31		21:04 (GC&T WT2)
	17:21	42	16:50 (Skalden WT1)	18:16			19:04			20:55	15	20:24 (WT-ATS)	21:41			22:05	25	21:29 (GC&T WT2)
25	08:33		15:41 (Skalden WT4)	07:40			06:39			06:32		20:09 (WT-ATS)	05:43			05:31		21:05 (GC&T WT2)
	17:22	43	16:52 (Skalden WT1)	18:18			19:05			20:56	13	20:22 (WT-ATS)	21:42			22:05	25	21:30 (GC&T WT2)
26	08:32		15:40 (Skalden WT4)	07:38			06:37			06:30		20:10 (WT-ATS)	05:42		21:08 (GC&T WT2)	05:31		21:05 (GC&T WT2)
	17:24	46	16:53 (Skalden WT1)	18:19			19:07			20:58	11	20:21 (WT-ATS)	21:43	4	21:12 (GC&T WT2)	22:05	25	21:30 (GC&T WT2)
27	08:31		15:41 (Skalden WT4)	07:36			06:34			06:28		20:12 (WT-ATS)	05:41		21:06 (GC&T WT2)	05:32		21:06 (GC&T WT2)
	17:26	47	16:55 (Skalden WT1)	18:21			19:09			21:00	6	20:18 (WT-ATS)	21:44	7	21:13 (GC&T WT2)	22:05	25	21:31 (GC&T WT2)
28	08:29		15:43 (Skalden WT4)	07:34			06:32			06:26			05:40		21:05 (GC&T WT2)	05:32		21:06 (GC&T WT2)
	17:28	48	16:58 (Skalden WT1)	18:23			19:10			21:01			21:46	9	21:14 (GC&T WT2)	22:04	24	21:30 (GC&T WT2)
29	08:28		15:43 (Skalden WT4)				07:30			06:24			05:39		21:05 (GC&T WT2)	05:33		21:06 (GC&T WT2)
	17:29	49	16:59 (Skalden WT1)				20:12			21:03			21:47	11	21:16 (GC&T WT2)	22:04	25	21:31 (GC&T WT2)
30	08:27		15:44 (Skalden WT4)				07:28			06:22			05:38		21:04 (GC&T WT2)	05:33		21:06 (GC&T WT2)
	17:31	48	17:00 (Skalden WT1)				20:14			21:04			21:48	13	21:17 (GC&T WT2)	22:04	24	21:30 (GC&T WT2)
31	08:25		15:45 (Skalden WT4)				07:25						05:37		21:03 (GC&T WT2)			
	17:33	47	17:00 (Skalden WT1)				20:15						21:49	15	21:18 (GC&T WT2)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		2154			569			157			340			59			692	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,70			0,70			0,63			0,57			0,56			0,56	
Total reduction		0,16			0,20			0,23			0,25			0,25			0,24	
Total, real		345			112			36			86			15			167	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: U - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:07 (GC&T WT2)	06:09			06:57		19:50 (GC&T WT1)	07:44		18:46 (GC&T WT3)	07:36		16:28 (Skalden WT2)	08:26		10:25 (Skalden WTB4)
	22:04	24	21:31 (GC&T WT2)	21:33			20:33	17	20:07 (GC&T WT1)	19:25	12	18:58 (GC&T WT3)	17:21	20	16:48 (Skalden WT2)	16:42	91	15:50 (Skalden WT4)
2	05:35		21:07 (GC&T WT2)	06:11			06:59		19:50 (GC&T WT1)	07:46		18:46 (GC&T WT3)	07:38		16:28 (Skalden WT2)	08:27		10:24 (Skalden WTB4)
	22:04	23	21:30 (GC&T WT2)	21:32			20:31	14	20:04 (GC&T WT1)	19:23	11	18:57 (GC&T WT3)	17:19	20	16:48 (Skalden WT2)	16:42	94	15:50 (Skalden WT4)
3	05:35		21:07 (GC&T WT2)	06:12			07:00		19:52 (GC&T WT1)	07:48		18:46 (GC&T WT3)	07:40		16:29 (Skalden WT2)	08:29		10:25 (Skalden WTB4)
	22:03	24	21:31 (GC&T WT2)	21:30			20:29	11	20:03 (GC&T WT1)	19:21	8	18:54 (GC&T WT3)	17:17	18	16:47 (Skalden WT2)	16:41	94	15:50 (Skalden WT4)
4	05:36		21:08 (GC&T WT2)	06:14			07:02		19:52 (GC&T WT1)	07:49		18:47 (GC&T WT3)	07:42		16:30 (Skalden WT2)	08:30		10:24 (Skalden WTB4)
	22:03	23	21:31 (GC&T WT2)	21:28			20:26	8	20:00 (GC&T WT1)	19:19	5	18:52 (GC&T WT3)	17:16	16	16:46 (Skalden WT2)	16:40	97	15:50 (Skalden WT4)
5	05:37		21:08 (GC&T WT2)	06:15			07:03		19:55 (GC&T WT1)	07:51		18:49 (GC&T WT3)	07:43		15:28 (Skalden WT4)	08:31		10:25 (Skalden WTB4)
	22:02	23	21:31 (GC&T WT2)	21:27			20:24	3	19:58 (GC&T WT1)	19:16	1	18:50 (GC&T WT3)	17:14	24	16:44 (Skalden WT2)	16:40	96	15:50 (Skalden WT4)
6	05:38		21:08 (GC&T WT2)	06:17			07:05			07:52			07:45		15:24 (Skalden WT4)	08:32		10:24 (Skalden WTB4)
	22:02	21	21:29 (GC&T WT2)	21:25			20:22			19:14			17:12	34	16:43 (Skalden WT2)	16:40	97	15:50 (Skalden WT4)
7	05:38		21:09 (GC&T WT2)	06:18			07:06			07:54			07:47		15:21 (Skalden WT4)	08:34		10:24 (Skalden WTB4)
	22:01	20	21:29 (GC&T WT2)	21:23			20:20			19:12			17:11	38	16:41 (Skalden WT2)	16:39	99	15:50 (Skalden WT4)
8	05:39		21:09 (GC&T WT2)	06:20			07:08			07:56			07:49		15:20 (Skalden WT4)	08:35		10:24 (Skalden WTB4)
	22:01	20	21:29 (GC&T WT2)	21:22			20:18			19:10			17:09	37	16:30 (Skalden WT1)	16:39	98	15:49 (Skalden WT4)
9	05:40		21:10 (GC&T WT2)	06:21			07:10			07:57			07:50		15:18 (Skalden WT4)	08:36		10:25 (Skalden WTB4)
	22:00	18	21:28 (GC&T WT2)	21:20			20:15			19:08			17:07	41	16:31 (Skalden WT1)	16:39	99	15:50 (Skalden WT4)
10	05:41		21:10 (GC&T WT2)	06:23			07:11			07:59			07:52		15:16 (Skalden WT4)	08:37		10:25 (Skalden WTB4)
	21:59	18	21:28 (GC&T WT2)	21:18			20:13			19:05			17:06	45	16:30 (Skalden WT1)	16:38	100	15:50 (Skalden WT4)
11	05:42		21:11 (GC&T WT2)	06:24			07:13			08:01			07:54		15:16 (Skalden WT4)	08:38		10:25 (Skalden WTB4)
	21:59	16	21:27 (GC&T WT2)	21:16			20:11			19:03			17:04	47	16:31 (Skalden WT1)	16:38	102	15:50 (Skalden WT4)
12	05:43		21:12 (GC&T WT2)	06:26			07:14			08:02			07:55		15:15 (Skalden WT4)	08:39		10:25 (Skalden WTB4)
	21:58	14	21:26 (GC&T WT2)	21:14			20:09			19:01			17:03	49	16:31 (Skalden WT1)	16:38	99	15:49 (Skalden WT4)
13	05:44		21:12 (GC&T WT2)	06:27			07:16			08:04			07:57		15:15 (Skalden WT4)	08:40		10:26 (Skalden WTB4)
	21:57	14	21:26 (GC&T WT2)	21:12			20:06			18:59			17:01	48	16:31 (Skalden WT1)	16:38	101	15:50 (Skalden WT3)
14	05:45		21:13 (GC&T WT2)	06:29			07:17			08:06			07:59		15:14 (Skalden WT4)	08:41		10:26 (Skalden WTB4)
	21:56	12	21:25 (GC&T WT2)	21:10			20:04			18:57			17:00	49	16:30 (Skalden WT1)	16:38	101	15:50 (Skalden WT3)
15	05:47		21:14 (GC&T WT2)	06:30			07:19			08:07			08:01		15:14 (Skalden WT4)	08:42		10:26 (Skalden WTB4)
	21:55	10	21:24 (GC&T WT2)	21:08			20:02			18:55			16:59	47	16:28 (Skalden WT1)	16:38	102	15:51 (Skalden WT3)
16	05:48		21:15 (GC&T WT2)	06:32		20:19 (WT-ATS)	07:21			08:09			08:02		15:14 (Skalden WT4)	08:43		10:27 (Skalden WTB4)
	21:54	8	21:23 (GC&T WT2)	21:07	8	20:27 (WT-ATS)	19:59			18:52			16:57	46	16:27 (Skalden WT1)	16:38	103	15:51 (Skalden WT3)
17	05:49		21:17 (GC&T WT2)	06:34		20:17 (WT-ATS)	07:22			08:11			08:04		15:13 (Skalden WT4)	08:44		10:26 (Skalden WTB4)
	21:53	5	21:22 (GC&T WT2)	21:05	11	20:28 (WT-ATS)	19:57			18:50			16:56	44	16:25 (Skalden WT1)	16:39	103	15:51 (Skalden WT3)
18	05:50			06:35		20:16 (WT-ATS)	07:24			08:12			08:06		15:14 (Skalden WT4)	08:44		10:27 (Skalden WTB4)
	21:52			21:03	13	20:29 (WT-ATS)	19:55			18:48			16:55	42	16:24 (Skalden WT1)	16:39	102	15:52 (Skalden WT3)
19	05:51			06:37		20:14 (WT-ATS)	07:25			08:14		17:57 (WT-MER)	08:07		15:14 (Skalden WT4)	08:45		10:28 (Skalden WTB4)
	21:51			21:01	15	20:29 (WT-ATS)	19:53			18:46	5	18:02 (WT-MER)	16:53	38	16:22 (Skalden WT1)	16:39	103	15:53 (Skalden WT3)
20	05:53			06:38		20:14 (WT-ATS)	07:27			08:16		17:53 (WT-MER)	08:09		15:14 (Skalden WT4)	08:46		10:28 (Skalden WTB4)
	21:50			20:59	16	20:30 (WT-ATS)	19:50			18:44	11	18:04 (WT-MER)	16:52	36	15:50 (Skalden WT4)	16:39	103	15:53 (Skalden WT3)
21	05:54			06:40		20:13 (WT-ATS)	07:28			08:17		17:52 (WT-MER)	08:11		15:15 (Skalden WT4)	08:46		10:29 (Skalden WTB4)
	21:49			20:56	16	20:29 (WT-ATS)	19:48			18:42	13	18:05 (WT-MER)	16:51	35	15:50 (Skalden WT4)	16:40	103	15:53 (Skalden WT3)
22	05:55			06:41		20:02 (GC&T WT1)	07:30			08:19		17:51 (WT-MER)	08:12		14:01 (Skalden WTB3)	08:47		10:29 (Skalden WTB4)
	21:48			20:54	18	20:28 (WT-ATS)	19:46			18:40	15	18:06 (WT-MER)	16:50	45	15:50 (Skalden WT4)	16:40	103	15:53 (Skalden WT3)
23	05:56			06:43		19:57 (GC&T WT1)	07:32		19:04 (WT01-VLS)	08:21		17:38 (Skalden WT2)	08:14		13:58 (Skalden WTB3)	08:47		10:30 (Skalden WTB4)
	21:46			20:52	23	20:25 (WT-ATS)	19:43	6	19:10 (WT01-VLS)	18:38	20	18:07 (WT-MER)	16:49	51	15:50 (Skalden WT4)	16:41	102	15:54 (Skalden WT3)
24	05:58			06:44		19:56 (GC&T WT1)	07:33		19:02 (WT01-VLS)	08:22		17:34 (Skalden WT2)	08:15		13:56 (Skalden WTB3)	08:48		10:30 (Skalden WTB4)
	21:45			20:50	25	20:24 (WT-ATS)	19:41	11	19:13 (WT01-VLS)	18:36	28	18:07 (WT-MER)	16:48	55	15:51 (Skalden WT4)	16:41	103	15:55 (Skalden WT3)
25	05:59			06:46		19:54 (GC&T WT1)	07:35		18:59 (WT01-VLS)	07:24		16:31 (Skalden WT2)	08:17		13:54 (Skalden WTB3)	08:48		10:30 (Skalden WTB4)
	21:44			20:48	24	20:21 (WT-ATS)	19:39	13	19:12 (WT01-VLS)	17:34	32	17:05 (WT-MER)	16:47	57	15:50 (Skalden WT4)	16:42	102	15:55 (Skalden WT3)
26	06:01			06:48		19:53 (GC&T WT1)	07:36		18:51 (GC&T WT3)	07:26		16:30 (Skalden WT2)	08:18		10:31 (Skalden WTB4)	08:48		10:31 (Skalden WTB4)
	21:42			20:46	23	20:20 (WT-ATS)	19:37	19	19:10 (WT01-VLS)	17:32	31	17:03 (WT-MER)	16:46	69	15:50 (Skalden WT4)	16:43	103	15:56 (Skalden WT3)
27	06:02			06:49		19:51 (GC&T WT1)	07:38		18:50 (GC&T WT3)	07:28		16:29 (Skalden WT2)	08:20		10:29 (Skalden WTB4)	08:49		10:32 (Skalden WTB4)
	21:41			20:44	21	20:17 (WT-ATS)	19:34	18	19:08 (WT01-VLS)	17:30	31	17:01 (WT-MER)	16:45	77	15:51 (Skalden WT4)	16:43	103	15:56 (Skalden WT3)
28	06:03			06:51		19:51 (GC&T WT1)	07:40		18:48 (GC&T WT3)	07:29		16:29 (Skalden WT2)	08:21		10:27 (Skalden WTB4)	08:49		10:32 (Skalden WTB4)
	21:39			20:42	21	20:12 (GC&T WT1)	19:32	17	19:05 (WT01-VLS)	17:28	30	17:00 (WT-MER)	16:44	82	15:50 (Skalden WT4)	16:44	102	15:57 (Skalden WT3)
29	06:05			06:52		19:50 (GC&T WT1)	07:41		18:47 (GC&T WT3)	07:31		16:28 (Skalden WT2)	08:23		10:27 (Skalden WTB4)	08:49		10:33 (Skalden WTB4)
	21:38			20:40	21	20:11 (GC&T WT1)	19:30	16	19:03 (WT01-VLS)	17:26	28	16:58 (WT-MER)	16:44	86	15:51 (Skalden WT4)	16:45	101	15:57 (Skalden WT3)
30	06:06			06:54		19:50 (GC&T WT1)	07:43		18:46 (GC&T WT3)	07:33		16:28 (Skalden WT2)	08:24		10:25 (Skalden WTB4)	08:49		10:33 (Skalden WTB4)
	21:36			20:37	21	20:11 (GC&T WT1)	19:28	14	19:00 (WT01-VLS)	17:25	25	16:56 (WT-MER)	16:43	89	15:50 (Skalden WT4)	16:46	101	15:57 (Skalden WT4)
31	06:08			06:55		19:50 (GC&T WT1)				07:35		16:28 (Skalden WT2)				08:49		10:34 (Skalden WTB4)
	21:35			20:35	18	20:08 (GC&T WT1)				17:23	21	16:49 (Skalden WT2)				16:47	101	15:58 (Skalden WT4)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		293			294			167			327			1385			3108	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,95			0,95			0,95			0,95			0,95			0,95	
Wind dir. red.		0,56			0,57			0,61			0,68			0,70			0,68	
Total reduction		0,24			0,26			0,26			0,24			0,18			0,14	
Total, real		71			76			43			79			244			441	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: V - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		09:28 (Skalden WTB4)	08:24		09:34 (Skalden WTB4)	07:32		17:47 (GC&T WT3)	07:23			06:20		19:43 (GC&T WT1)	05:37		
	16:48	92	16:11 (Skalden WT1)	17:35	47	17:05 (WT-MER)	18:25	12	17:59 (GC&T WT3)	20:17			21:06	45	20:29 (WT-ATS)	21:50		
2	08:49		09:28 (Skalden WTB4)	08:22		09:37 (Skalden WTB4)	07:30		17:45 (GC&T WT3)	07:21			06:18		19:44 (GC&T WT1)	05:36		
	16:49	92	16:12 (Skalden WT1)	17:36	41	17:07 (WT-MER)	18:26	16	18:01 (GC&T WT3)	20:19			21:08	41	20:28 (WT-ATS)	21:51		
3	08:49		09:27 (Skalden WTB4)	08:21		16:14 (Skalden WT2)	07:28		17:44 (GC&T WT3)	07:19			06:16		19:46 (GC&T WT1)	05:35		
	16:50	90	16:11 (Skalden WT1)	17:38	30	17:09 (WT-MER)	18:28	19	18:03 (GC&T WT3)	20:20			21:09	36	20:27 (WT-ATS)	21:52		
4	08:49		09:27 (Skalden WTB4)	08:19		16:16 (Skalden WT2)	07:26		17:43 (GC&T WT3)	07:17			06:15		19:47 (GC&T WT1)	05:34		
	16:51	88	16:12 (Skalden WT1)	17:40	29	17:11 (WT-MER)	18:30	22	18:05 (GC&T WT3)	20:22			21:11	32	20:26 (WT-ATS)	21:53		
5	08:49		09:27 (Skalden WTB4)	08:18		16:21 (Skalden WT2)	07:24		17:42 (GC&T WT3)	07:14			06:13		19:49 (GC&T WT1)	05:34		
	16:53	88	16:13 (Skalden WT1)	17:42	22	17:13 (WT-MER)	18:32	23	18:05 (GC&T WT3)	20:23			21:12	23	20:24 (WT-ATS)	21:54		
6	08:48		09:26 (Skalden WTB4)	08:16		16:54 (WT-MER)	07:21		17:42 (GC&T WT3)	07:12		19:58 (WT07_Sadaci)	06:11		19:53 (GC&T WT1)	05:33		
	16:54	86	16:13 (Skalden WT1)	17:44	21	17:15 (WT-MER)	18:33	23	18:05 (GC&T WT3)	20:25	1	19:59 (WT07_Sadaci)	21:14	9	20:21 (WT-ATS)	21:55		
7	08:48		09:26 (Skalden WTB4)	08:14		16:53 (WT-MER)	07:19		17:42 (GC&T WT3)	07:10		19:56 (WT07_Sadaci)	06:09			05:32		
	16:55	83	16:14 (Skalden WT1)	17:45	22	17:15 (WT-MER)	18:35	25	18:10 (WT01-VLS)	20:27	5	20:01 (WT07_Sadaci)	21:16			21:56		
8	08:48		09:25 (Skalden WTB4)	08:13		16:53 (WT-MER)	07:17		17:42 (GC&T WT3)	07:08		19:56 (WT07_Sadaci)	06:08			05:32		
	16:56	82	16:17 (Skalden WT2)	17:47	22	17:15 (WT-MER)	18:37	29	18:12 (WT01-VLS)	20:28	7	20:03 (WT07_Sadaci)	21:17			21:57		
9	08:47		09:25 (Skalden WTB4)	08:11		16:54 (WT-MER)	07:15		17:41 (GC&T WT3)	07:05		19:55 (WT07_Sadaci)	06:06			05:31		
	16:58	76	16:19 (Skalden WT2)	17:49	22	17:16 (WT-MER)	18:39	31	18:13 (WT01-VLS)	20:30	9	20:04 (WT07_Sadaci)	21:19			21:58		
10	08:47		09:25 (Skalden WTB4)	08:09		16:55 (WT-MER)	07:13		17:42 (GC&T WT3)	07:03		19:55 (WT07_Sadaci)	06:04			05:31		
	16:59	65	16:21 (Skalden WT2)	17:51	20	17:15 (WT-MER)	18:40	33	18:15 (WT01-VLS)	20:32	11	20:06 (WT07_Sadaci)	21:20			21:59		
11	08:46		09:25 (Skalden WTB4)	08:07		16:55 (WT-MER)	07:10		17:43 (GC&T WT3)	07:01		19:55 (WT07_Sadaci)	06:03			05:31		
	17:00	52	16:22 (Skalden WT2)	17:53	20	17:15 (WT-MER)	18:42	33	18:17 (WT01-VLS)	20:33	13	20:08 (WT07_Sadaci)	21:22			21:59		
12	08:46		09:25 (Skalden WTB4)	08:06		16:56 (WT-MER)	07:08		17:45 (GC&T WT3)	06:59		19:55 (WT07_Sadaci)	06:01			05:30		
	17:02	54	16:24 (Skalden WT2)	17:54	18	17:14 (WT-MER)	18:44	31	18:19 (WT01-VLS)	20:35	12	20:07 (WT07_Sadaci)	21:23			22:00		
13	08:45		09:24 (Skalden WTB4)	08:04		16:57 (WT-MER)	07:06		17:46 (GC&T WT3)	06:57		19:52 (GC&T WT1)	06:00			05:30		
	17:03	57	16:25 (Skalden WT2)	17:56	16	17:13 (WT-MER)	18:45	29	18:20 (WT01-VLS)	20:37	14	20:06 (GC&T WT1)	21:25			22:01		
14	08:44		09:25 (Skalden WTB4)	08:02		16:58 (WT-MER)	07:04		18:02 (WT01-VLS)	06:55		19:49 (GC&T WT1)	05:58			05:30		
	17:05	58	16:27 (Skalden WT2)	17:58	13	17:11 (WT-MER)	18:47	20	18:22 (WT01-VLS)	20:38	19	20:08 (GC&T WT1)	21:26			22:01		
15	08:43		09:25 (Skalden WTB4)	08:00		17:01 (WT-MER)	07:01		18:03 (WT01-VLS)	06:52		19:47 (GC&T WT1)	05:56			05:30		
	17:06	58	16:28 (Skalden WT2)	18:00	8	17:09 (WT-MER)	18:49	18	18:21 (WT01-VLS)	20:40	22	20:09 (GC&T WT1)	21:28			22:02		
16	08:43		09:25 (Skalden WTB4)	07:58			06:59		18:04 (WT01-VLS)	06:50		19:46 (GC&T WT1)	05:55			05:30		
	17:08	60	16:29 (Skalden WT2)	18:02			18:50	16	18:20 (WT01-VLS)	20:42	25	20:11 (GC&T WT1)	21:29			22:02		
17	08:42		09:25 (Skalden WTB4)	07:56			06:57		18:05 (WT01-VLS)	06:48		19:45 (GC&T WT1)	05:54			05:30		
	17:09	60	16:30 (Skalden WT2)	18:03			18:52	13	18:18 (WT01-VLS)	20:43	27	20:12 (GC&T WT1)	21:31			22:03		
18	08:41		09:26 (Skalden WTB4)	07:54			06:55		18:07 (WT01-VLS)	06:46		19:43 (GC&T WT1)	05:52			05:30		
	17:11	59	16:31 (Skalden WT2)	18:05			18:54	8	18:15 (WT01-VLS)	20:45	30	20:13 (GC&T WT1)	21:32			22:03		
19	08:40		09:25 (Skalden WTB4)	07:52			06:53			06:44		19:43 (GC&T WT1)	05:51			05:30		
	17:12	59	16:30 (Skalden WT2)	18:07			18:55			20:47	30	20:13 (GC&T WT1)	21:34			22:04		
20	08:39		09:25 (Skalden WTB4)	07:51			06:50			06:42		19:42 (GC&T WT1)	05:49			05:30		
	17:14	58	16:31 (Skalden WT2)	18:09			18:57			20:48	34	20:22 (WT-ATS)	21:35			22:04		
21	08:38		09:26 (Skalden WTB4)	07:49			06:48			06:40		19:41 (GC&T WT1)	05:48			05:30		
	17:16	56	16:32 (Skalden WT2)	18:11			18:59			20:50	40	20:23 (WT-ATS)	21:37			22:04		
22	08:37		09:26 (Skalden WTB4)	07:47			06:46			06:38		19:41 (GC&T WT1)	05:47			05:30		
	17:17	56	16:33 (Skalden WT2)	18:12			19:00			20:51	44	20:25 (WT-ATS)	21:38			22:04		
23	08:36		09:27 (Skalden WTB4)	07:44			06:43			06:36		19:41 (GC&T WT1)	05:46			05:30		
	17:19	56	16:33 (Skalden WT2)	18:14			19:02			20:53	45	20:26 (WT-ATS)	21:39			22:04		
24	08:35		09:27 (Skalden WTB4)	07:42			06:41			06:34		19:40 (GC&T WT1)	05:44			05:31		
	17:21	56	16:33 (Skalden WT2)	18:16			19:04			20:55	48	20:28 (WT-ATS)	21:41			22:05		
25	08:33		09:28 (Skalden WTB4)	07:40			06:39			06:32		19:40 (GC&T WT1)	05:43			05:31		
	17:22	55	16:34 (Skalden WT2)	18:18			19:05			20:56	49	20:29 (WT-ATS)	21:42			22:05		
26	08:32		09:29 (Skalden WTB4)	07:38			06:37			06:30		19:40 (GC&T WT1)	05:42			05:31		
	17:24	53	16:34 (Skalden WT2)	18:19			19:07			20:58	50	20:30 (WT-ATS)	21:43			22:05		
27	08:31		09:29 (Skalden WTB4)	07:36			06:34			06:28		19:40 (GC&T WT1)	05:41			05:32		
	17:26	53	16:34 (Skalden WT2)	18:21			19:09			21:00	50	20:30 (WT-ATS)	21:44			22:05		
28	08:29		09:30 (Skalden WTB4)	07:34		17:49 (GC&T WT3)	06:32			06:26		19:41 (GC&T WT1)	05:40			05:32		
	17:28	51	16:34 (Skalden WT2)	18:23	8	17:57 (GC&T WT3)	19:10			21:01	49	20:30 (WT-ATS)	21:46			22:05		
29	08:28		09:30 (Skalden WTB4)				07:30			06:24		19:42 (GC&T WT1)	05:39			05:33		
	17:29	49	16:33 (Skalden WT2)				20:12			21:03	48	20:30 (WT-ATS)	21:47			22:04		
30	08:27		09:32 (Skalden WTB4)				07:28			06:22		19:43 (GC&T WT1)	05:38			05:33		
	17:31	47	17:02 (WT-MER)				20:14			21:04	47	20:30 (WT-ATS)	21:48			22:04		
31	08:25		09:33 (Skalden WTB4)				07:25						05:37					
	17:33	47	17:03 (WT-MER)				20:15						21:49					
Potential sun hours	262			279			367			414			482			494		
Total, worst case		1996			359			401			729			186				
Sun reduction		0,24			0,29			0,37			0,46			0,46				
Oper. time red.		0,95			0,95			0,95			0,95			0,95				
Wind dir. red.		0,64			0,69			0,64			0,57			0,56				
Total reduction		0,15			0,19			0,23			0,25			0,25				
Total, real		293			69			92			183			46				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: V - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:34	06:09			06:57	19:54 (WT07_Sadaci)	07:44	18:25 (GC&T WT3)	07:36	16:24 (WT-MER)	08:26	09:07 (Skalden WTB4)
	22:04	21:33			20:33 13	20:07 (WT07_Sadaci)	19:25 30	18:58 (WT01-VLS)	17:21 21	16:45 (WT-MER)	16:42 53	16:05 (Skalden WT2)
2	05:35	06:11			06:59	19:53 (WT07_Sadaci)	07:46	18:23 (GC&T WT3)	07:38	16:23 (WT-MER)	08:27	09:07 (Skalden WTB4)
	22:04	21:32			20:31 11	20:04 (WT07_Sadaci)	19:23 32	18:57 (WT01-VLS)	17:19 21	16:44 (WT-MER)	16:42 62	16:03 (Skalden WT2)
3	05:35	06:12			07:00	19:53 (WT07_Sadaci)	07:48	18:21 (GC&T WT3)	07:40	16:23 (WT-MER)	08:29	09:09 (Skalden WTB4)
	22:03	21:30			20:29 10	20:03 (WT07_Sadaci)	19:21 32	18:54 (WT01-VLS)	17:17 22	16:45 (WT-MER)	16:41 75	16:03 (Skalden WT2)
4	05:36	06:14			07:02	19:53 (WT07_Sadaci)	07:49	18:20 (GC&T WT3)	07:42	16:23 (WT-MER)	08:30	09:09 (Skalden WTB4)
	22:03	21:28			20:26 7	20:00 (WT07_Sadaci)	19:19 31	18:52 (WT01-VLS)	17:16 22	16:45 (WT-MER)	16:40 81	16:01 (Skalden WT2)
5	05:37	06:15			07:03	19:53 (WT07_Sadaci)	07:51	18:19 (GC&T WT3)	07:43	16:23 (WT-MER)	08:31	09:11 (Skalden WTB4)
	22:02	21:27			20:24 5	19:58 (WT07_Sadaci)	19:16 31	18:50 (WT01-VLS)	17:14 21	16:44 (WT-MER)	16:40 82	15:59 (Skalden WT1)
6	05:38	06:17			07:05	19:54 (WT07_Sadaci)	07:52	18:18 (GC&T WT3)	07:45	15:50 (Skalden WT2)	08:32	09:12 (Skalden WTB4)
	22:02	21:25			20:22 1	19:55 (WT07_Sadaci)	19:14 27	18:47 (WT01-VLS)	17:12 24	16:43 (WT-MER)	16:40 85	15:59 (Skalden WT1)
7	05:38	06:18		20:01 (GC&T WT1)	07:06		07:54	18:18 (GC&T WT3)	07:47	15:47 (Skalden WT2)	08:34	09:13 (Skalden WTB4)
	22:01	21:23	15	20:32 (WT-ATS)	20:20		19:12 23	18:41 (GC&T WT3)	17:11 28	16:41 (WT-MER)	16:39 88	15:59 (Skalden WT1)
8	05:39	06:20		19:58 (GC&T WT1)	07:08		07:56	18:18 (GC&T WT3)	07:49	15:45 (Skalden WT2)	08:35	09:15 (Skalden WTB4)
	22:01	21:22	25	20:34 (WT-ATS)	20:18		19:10 23	18:41 (GC&T WT3)	17:09 31	16:40 (WT-MER)	16:39 88	16:00 (Skalden WT1)
9	05:40	06:21		19:56 (GC&T WT1)	07:10		07:57	18:17 (GC&T WT3)	07:50	09:08 (Skalden WTB4)	08:36	09:16 (Skalden WTB4)
	22:00	21:20	33	20:36 (WT-ATS)	20:15		19:08 23	18:40 (GC&T WT3)	17:07 41	16:38 (WT-MER)	16:39 90	16:00 (Skalden WT1)
10	05:41	06:23		19:54 (GC&T WT1)	07:11		07:59	18:18 (GC&T WT3)	07:52	09:05 (Skalden WTB4)	08:37	09:17 (Skalden WTB4)
	21:59	21:18	37	20:36 (WT-ATS)	20:13		19:05 20	18:38 (GC&T WT3)	17:06 46	16:35 (WT-MER)	16:38 92	16:01 (Skalden WT1)
11	05:42	06:24		19:52 (GC&T WT1)	07:13		08:01	18:19 (GC&T WT3)	07:54	09:04 (Skalden WTB4)	08:38	09:18 (Skalden WTB4)
	21:59	21:16	42	20:36 (WT-ATS)	20:11		19:03 17	18:36 (GC&T WT3)	17:04 47	16:34 (WT-MER)	16:38 92	16:01 (Skalden WT1)
12	05:43	06:26		19:51 (GC&T WT1)	07:14		08:02	18:19 (GC&T WT3)	07:55	09:03 (Skalden WTB4)	08:39	09:19 (Skalden WTB4)
	21:58	21:14	45	20:37 (WT-ATS)	20:09		19:01 14	18:33 (GC&T WT3)	17:03 46	16:05 (Skalden WT2)	16:38 91	16:01 (Skalden WT1)
13	05:44	06:27		19:50 (GC&T WT1)	07:16		08:04	18:21 (GC&T WT3)	07:57	09:02 (Skalden WTB4)	08:40	09:21 (Skalden WTB4)
	21:57	21:12	47	20:37 (WT-ATS)	20:06		18:59 10	18:31 (GC&T WT3)	17:01 48	16:05 (Skalden WT2)	16:38 89	16:01 (Skalden WT1)
14	05:45	06:29		19:49 (GC&T WT1)	07:17		08:06	18:23 (GC&T WT3)	07:59	09:02 (Skalden WTB4)	08:41	09:22 (Skalden WTB4)
	21:56	21:10	49	20:38 (WT-ATS)	20:04		18:57 6	18:29 (GC&T WT3)	17:00 51	16:06 (Skalden WT2)	16:38 89	16:02 (Skalden WT1)
15	05:47	06:30		19:48 (GC&T WT1)	07:19		08:07		08:01	09:02 (Skalden WTB4)	08:42	11:25 (Skalden WTB3)
	21:55	21:08	49	20:37 (WT-ATS)	20:02		18:55		16:59 53	16:07 (Skalden WT2)	16:38 85	16:02 (Skalden WT1)
16	05:48	06:32		19:48 (GC&T WT1)	07:21		08:09		08:02	09:02 (Skalden WTB4)	08:43	11:26 (Skalden WTB3)
	21:54	21:07	49	20:37 (WT-ATS)	19:59		18:52		16:57 53	16:07 (Skalden WT2)	16:38 86	16:03 (Skalden WT1)
17	05:49	06:34		19:47 (GC&T WT1)	07:22		08:11		08:04	09:01 (Skalden WTB4)	08:44	11:25 (Skalden WTB3)
	21:53	21:05	50	20:37 (WT-ATS)	19:57		18:50		16:56 55	16:07 (Skalden WT2)	16:39 85	16:02 (Skalden WT1)
18	05:50	06:35		19:47 (GC&T WT1)	07:24		08:12		08:06	09:01 (Skalden WTB4)	08:44	11:26 (Skalden WTB3)
	21:52	21:03	48	20:35 (WT-ATS)	19:55		18:48		16:55 56	16:07 (Skalden WT2)	16:39 87	16:03 (Skalden WT1)
19	05:51	06:37		19:46 (GC&T WT1)	07:25		08:14		08:07	09:01 (Skalden WTB4)	08:45	11:26 (Skalden WTB3)
	21:51	21:01	47	20:33 (WT-ATS)	19:53		18:46		16:53 56	16:07 (Skalden WT2)	16:39 88	16:04 (Skalden WT1)
20	05:53	06:38		19:46 (GC&T WT1)	07:27		08:16		08:09	09:01 (Skalden WTB4)	08:46	11:26 (Skalden WTB3)
	21:50	20:59	46	20:32 (WT-ATS)	19:50		18:44		16:52 56	16:08 (Skalden WT2)	16:39 88	16:04 (Skalden WT1)
21	05:54	06:40		19:46 (GC&T WT1)	07:28		08:17		08:11	09:02 (Skalden WTB4)	08:46	11:27 (Skalden WTB3)
	21:49	20:57	43	20:29 (WT-ATS)	19:48		18:42		16:51 56	16:08 (Skalden WT2)	16:40 88	16:05 (Skalden WT1)
22	05:55	06:41		19:46 (GC&T WT1)	07:30		08:19		08:12	09:01 (Skalden WTB4)	08:47	11:27 (Skalden WTB3)
	21:48	20:54	40	20:28 (WT-ATS)	19:46		18:40		16:50 58	16:07 (Skalden WT2)	16:40 88	16:05 (Skalden WT1)
23	05:56	06:43		19:46 (GC&T WT1)	07:32		08:21		08:14	09:02 (Skalden WTB4)	08:47	11:28 (Skalden WTB3)
	21:46	20:52	31	20:17 (GC&T WT1)	19:43		18:38		16:49 59	16:07 (Skalden WT2)	16:41 88	16:06 (Skalden WT1)
24	05:58	06:45		19:46 (GC&T WT1)	07:33		08:23		08:15	09:03 (Skalden WTB4)	08:48	11:28 (Skalden WTB3)
	21:45	20:50	31	20:17 (GC&T WT1)	19:41		18:36		16:48 59	16:08 (Skalden WT2)	16:41 88	16:06 (Skalden WT1)
25	05:59	06:46		19:46 (GC&T WT1)	07:35	18:51 (WT01-VLS)	07:24		08:17	09:02 (Skalden WTB4)	08:48	11:29 (Skalden WTB3)
	21:44	20:48	29	20:15 (GC&T WT1)	19:39 6	18:57 (WT01-VLS)	17:34		16:47 59	16:07 (Skalden WT2)	16:42 87	16:06 (Skalden WT1)
26	06:01	06:48		19:47 (GC&T WT1)	07:36	18:48 (WT01-VLS)	07:26		08:18	09:03 (Skalden WTB4)	08:48	11:30 (Skalden WTB3)
	21:42	20:46	27	20:14 (GC&T WT1)	19:37 12	19:00 (WT01-VLS)	17:32		16:46 59	16:07 (Skalden WT2)	16:43 85	16:07 (Skalden WT1)
27	06:02	06:49		19:48 (GC&T WT1)	07:38	18:46 (WT01-VLS)	07:28	16:30 (WT-MER)	08:20	09:04 (Skalden WTB4)	08:49	11:30 (Skalden WTB3)
	21:41	20:44	25	20:13 (GC&T WT1)	19:34 16	19:02 (WT01-VLS)	17:30 9	16:39 (WT-MER)	16:45 58	16:07 (Skalden WT2)	16:43 87	16:08 (Skalden WT1)
28	06:03	06:51		19:49 (GC&T WT1)	07:40	18:44 (WT01-VLS)	07:29	16:28 (WT-MER)	08:21	09:04 (Skalden WTB4)	08:49	11:31 (Skalden WTB3)
	21:39	20:42	22	20:11 (GC&T WT1)	19:32 18	19:02 (WT01-VLS)	17:28 13	16:41 (WT-MER)	16:44 58	16:06 (Skalden WT2)	16:44 85	16:08 (Skalden WT1)
29	06:05	06:52		19:50 (GC&T WT1)	07:41	18:43 (WT01-VLS)	07:31	16:26 (WT-MER)	08:23	09:06 (Skalden WTB4)	08:49	09:30 (Skalden WTB4)
	21:38	20:40	19	20:09 (GC&T WT1)	19:30 20	19:03 (WT01-VLS)	17:26 17	16:43 (WT-MER)	16:44 56	16:06 (Skalden WT2)	16:45 88	16:09 (Skalden WT1)
30	06:06	06:54		19:53 (GC&T WT1)	07:43	18:27 (GC&T WT3)	07:33	16:25 (WT-MER)	08:24	09:06 (Skalden WTB4)	08:49	09:29 (Skalden WTB4)
	21:36	20:37	14	20:07 (WT07_Sadaci)	19:28 27	19:00 (WT01-VLS)	17:25 19	16:44 (WT-MER)	16:43 54	16:05 (Skalden WT2)	16:46 89	16:09 (Skalden WT1)
31	06:08	06:56		19:55 (WT07_Sadaci)			07:35	16:25 (WT-MER)			08:49	09:28 (Skalden WTB4)
	21:35	20:35	12	20:07 (WT07_Sadaci)			17:23 19	16:44 (WT-MER)			16:47 92	16:10 (Skalden WT1)
Potential sun hours	498	451			380		333		269		248	
Total, worst case			875			146		396		1374		2641
Sun reduction			0,47			0,43		0,36		0,26		0,21
Oper. time red.			0,95			0,95		0,95		0,95		0,95
Wind dir. red.			0,56			0,62		0,65		0,64		0,66
Total reduction			0,26			0,26		0,23		0,16		0,14
Total, real			224			38		91		219		362

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: W - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		14:16 (Skalden WTB4)	08:24		14:37 (Skalden WTB4)	07:32		17:02 (Skalden WTB3)	07:23			06:20			05:36		
	16:48	73	16:06 (Skalden WTB2)	17:35	51	16:50 (Skalden WTB1)	18:25	51	17:59 (Skalden WT2)	20:17			21:06			21:50		
2	08:49		14:16 (Skalden WTB4)	08:22		14:41 (Skalden WTB4)	07:30		17:04 (Skalden WTB3)	07:21			06:18			05:36		
	16:49	73	16:06 (Skalden WTB2)	17:36	46	16:51 (Skalden WTB1)	18:26	49	18:01 (Skalden WT2)	20:18			21:08			21:51		
3	08:49		14:17 (Skalden WTB4)	08:21		14:43 (Skalden WTB4)	07:28		17:07 (Skalden WTB3)	07:19			06:16			05:35		
	16:50	74	16:08 (Skalden WTB2)	17:38	39	16:50 (Skalden WTB1)	18:28	45	18:03 (Skalden WT2)	20:20			21:09			21:52		
4	08:49		14:17 (Skalden WTB4)	08:19		14:47 (Skalden WTB4)	07:26		17:28 (Skalden WT4)	07:16			06:15			05:34		
	16:51	76	16:09 (Skalden WTB2)	17:40	33	17:11 (Skalden WT3)	18:30	35	18:04 (Skalden WT2)	20:22			21:11			21:53		
5	08:49		14:17 (Skalden WTB4)	08:18		16:35 (Skalden WTB1)	07:23		17:29 (Skalden WT4)	07:14			06:13			05:34		
	16:53	76	16:09 (Skalden WTB2)	17:42	19	17:13 (Skalden WT3)	18:32	32	18:04 (Skalden WT2)	20:23			21:12			21:54		
6	08:48		14:18 (Skalden WTB4)	08:16		16:37 (Skalden WTB1)	07:21		17:31 (Skalden WT4)	07:12			06:11			05:33		
	16:54	77	16:10 (Skalden WTB2)	17:44	18	17:15 (Skalden WT3)	18:33	27	18:04 (Skalden WT2)	20:25			21:14			21:55		
7	08:48		14:19 (Skalden WTB4)	08:14		17:05 (Skalden WT3)	07:19		17:33 (Skalden WT4)	07:10			06:09			05:32		
	16:55	77	16:11 (Skalden WTB2)	17:45	12	17:17 (Skalden WT3)	18:35	20	18:02 (Skalden WT2)	20:27			21:16			21:56		
8	08:48		14:19 (Skalden WTB4)	08:13		17:04 (Skalden WT3)	07:17		17:54 (Skalden WT2)	07:08			06:08			05:32		
	16:56	78	16:11 (Skalden WTB2)	17:47	15	17:19 (Skalden WT3)	18:37	6	18:00 (Skalden WT2)	20:28			21:17			21:57		
9	08:47		14:19 (Skalden WTB4)	08:11		17:05 (Skalden WT3)	07:15			07:05			06:06			05:31		
	16:58	79	16:12 (Skalden WTB2)	17:49	16	17:21 (Skalden WT3)	18:38			20:30			21:19			21:58		
10	08:47		14:20 (Skalden WTB4)	08:09		17:05 (Skalden WT3)	07:13			07:03			06:04			05:31		
	16:59	79	16:13 (Skalden WTB2)	17:51	17	17:22 (Skalden WT3)	18:40			20:32			21:20			21:59		
11	08:46		14:20 (Skalden WTB4)	08:07		17:05 (Skalden WT3)	07:10			07:01			06:03		20:50 (GC&T WT2)	05:31		
	17:00	79	16:13 (Skalden WTB2)	17:53	17	17:22 (Skalden WT3)	18:42			20:33			21:22	3	20:53 (GC&T WT2)	21:59		
12	08:46		14:20 (Skalden WTB4)	08:06		17:05 (Skalden WT3)	07:08			06:59			06:01		20:49 (GC&T WT2)	05:30		
	17:02	80	16:14 (Skalden WTB2)	17:54	16	17:21 (Skalden WT3)	18:44			20:35			21:23	5	20:54 (GC&T WT2)	22:00		
13	08:45		14:20 (Skalden WTB4)	08:04		17:05 (Skalden WTB3)	07:06			06:57		20:08 (GC&T WT1)	05:59		20:49 (GC&T WT2)	05:30		
	17:03	80	16:14 (Skalden WTB2)	17:56	16	17:21 (Skalden WT3)	18:45			20:37	2	20:10 (GC&T WT1)	21:25	7	20:56 (GC&T WT2)	22:01		
14	08:44		14:21 (Skalden WTB4)	08:02		17:03 (Skalden WTB3)	07:04			06:55		20:07 (GC&T WT1)	05:58		20:48 (GC&T WT2)	05:30		
	17:05	81	16:15 (Skalden WTB2)	17:58	19	17:22 (Skalden WTB3)	18:47			20:38	5	20:12 (GC&T WT1)	21:26	9	20:57 (GC&T WT2)	22:01		
15	08:43		14:22 (Skalden WTB4)	08:00		17:02 (Skalden WTB3)	07:01			06:52		20:07 (GC&T WT1)	05:56		20:49 (GC&T WT2)	05:30		
	17:06	81	16:16 (Skalden WTB2)	18:00	22	17:24 (Skalden WTB3)	18:49			20:40	7	20:14 (GC&T WT1)	21:28	9	20:58 (GC&T WT2)	22:02		
16	08:43		14:22 (Skalden WTB4)	07:58		17:01 (Skalden WTB3)	06:59			06:50		20:07 (GC&T WT1)	05:55		20:49 (GC&T WT2)	05:30		
	17:08	80	16:16 (Skalden WTB2)	18:02	24	17:25 (Skalden WTB3)	18:50			20:42	8	20:15 (GC&T WT1)	21:29	11	21:00 (GC&T WT2)	22:02		
17	08:42		14:23 (Skalden WTB4)	07:56		17:00 (Skalden WTB3)	06:57			06:48		20:07 (GC&T WT1)	05:53		20:49 (GC&T WT2)	05:30		
	17:09	80	16:17 (Skalden WTB2)	18:03	26	17:26 (Skalden WTB3)	18:52			20:43	10	20:17 (GC&T WT1)	21:31	12	21:01 (GC&T WT2)	22:03		
18	08:41		14:23 (Skalden WTB4)	07:54		16:59 (Skalden WTB3)	06:55			06:46		20:08 (GC&T WT1)	05:52		20:50 (GC&T WT2)	05:30		
	17:11	83	16:38 (Skalden WTB1)	18:05	31	17:38 (Skalden WT1)	18:54			20:45	10	20:18 (GC&T WT1)	21:32	12	21:02 (GC&T WT2)	22:03		
19	08:40		14:23 (Skalden WTB4)	07:52		16:59 (Skalden WTB3)	06:52			06:44		20:09 (GC&T WT1)	05:51		20:50 (GC&T WT2)	05:30		
	17:12	87	16:40 (Skalden WTB1)	18:07	34	17:40 (Skalden WT1)	18:55			20:46	8	20:17 (GC&T WT1)	21:34	13	21:03 (GC&T WT2)	22:03		
20	08:39		14:24 (Skalden WTB4)	07:50		16:58 (Skalden WTB3)	06:50			06:42			05:49		20:51 (GC&T WT2)	05:30		
	17:14	89	16:42 (Skalden WTB1)	18:09	38	17:42 (Skalden WT1)	18:57			20:48			21:35	11	21:02 (GC&T WT2)	22:04		
21	08:38		14:25 (Skalden WTB4)	07:48		16:58 (Skalden WTB3)	06:48			06:40			05:48		20:52 (GC&T WT2)	05:30		
	17:16	91	16:44 (Skalden WTB1)	18:11	40	17:44 (Skalden WT1)	18:59			20:50			21:36	9	21:01 (GC&T WT2)	22:04		
22	08:37		14:26 (Skalden WTB4)	07:46		16:58 (Skalden WTB3)	06:46			06:38			05:47		20:53 (GC&T WT2)	05:30		
	17:17	91	16:46 (Skalden WTB1)	18:12	42	17:46 (Skalden WT1)	19:00			20:51			21:38	7	21:00 (GC&T WT2)	22:04		
23	08:36		14:27 (Skalden WTB4)	07:44		16:58 (Skalden WTB3)	06:43		18:35 (GC&T WT3)	06:36			05:46			05:30		
	17:19	91	16:48 (Skalden WTB1)	18:14	45	17:47 (Skalden WT4)	19:02	2	18:37 (GC&T WT3)	20:53			21:39			22:04		
24	08:34		14:27 (Skalden WTB4)	07:42		16:58 (Skalden WTB3)	06:41		18:34 (GC&T WT3)	06:34			05:44			05:31		
	17:21	91	16:48 (Skalden WTB1)	18:16	48	17:49 (Skalden WT4)	19:04	4	18:38 (GC&T WT3)	20:55			21:41			22:05		
25	08:33		14:28 (Skalden WTB4)	07:40		16:59 (Skalden WTB3)	06:39		18:34 (GC&T WT3)	06:32			05:43			05:31		
	17:22	89	16:49 (Skalden WTB1)	18:18	48	17:50 (Skalden WT4)	19:05	6	18:40 (GC&T WT3)	20:56			21:42			22:05		
26	08:32		14:29 (Skalden WTB4)	07:38		16:58 (Skalden WTB3)	06:37		18:35 (GC&T WT3)	06:30			05:42			05:31		
	17:24	87	16:49 (Skalden WTB1)	18:19	49	17:49 (Skalden WT4)	19:07	7	18:42 (GC&T WT3)	20:58			21:43			22:05		
27	08:31		14:30 (Skalden WTB4)	07:36		16:59 (Skalden WTB3)	06:34		18:37 (GC&T WT3)	06:28			05:41			05:32		
	17:26	85	16:50 (Skalden WTB1)	18:21	48	17:50 (Skalden WT4)	19:09	6	18:43 (GC&T WT3)	21:00			21:44			22:05		
28	08:29		14:32 (Skalden WTB4)	07:34		17:01 (Skalden WTB3)	06:32			06:26			05:40			05:32		
	17:28	80	16:51 (Skalden WTB1)	18:23	50	17:57 (Skalden WT2)	19:10			21:01			21:46			22:04		
29	08:28		14:33 (Skalden WTB4)				07:30			06:24			05:39			05:33		
	17:29	73	16:51 (Skalden WTB1)				20:12			21:03			21:47			22:04		
30	08:27		14:35 (Skalden WTB4)				07:28			06:22			05:38			05:33		
	17:31	66	16:51 (Skalden WTB1)				20:14			21:04			21:48			22:04		
31	08:25		14:36 (Skalden WTB4)				07:25						05:37					
	17:33	56	16:51 (Skalden WTB1)				20:15						21:49					
Potential sun hours	262			279			367			414			482			494		
Total, worst case		2482			879			290			50			108				
Sun reduction		0,24			0,29			0,37			0,46			0,46				
Oper. time red.		0,95			0,95			0,95			0,95			0,95				
Wind dir. red.		0,72			0,69			0,66			0,57			0,56				
Total reduction		0,16			0,19			0,23			0,25			0,25				
Total, real		406			170			68			12			27				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Gepland Shadow receptor: W - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:34		06:09		06:57		07:44		07:36		08:26	
	22:04		21:33	4	21:04 (GC&T WT2)		20:33		19:25		17:21	18
2	05:34		06:11		21:01 (GC&T WT2)		06:59		07:46		07:38	
	22:04		21:32	2	21:03 (GC&T WT2)		20:31		19:23		17:19	16
3	05:35		06:12				07:00		07:48		07:40	
	22:03		21:30				20:29		19:21		17:17	14
4	05:36		06:14				07:02		07:49		07:42	
	22:03		21:28				20:26		19:19		17:16	11
5	05:37		06:15				07:03		07:51		07:43	
	22:02		21:27				20:24		19:16		17:14	19
6	05:38		06:17				07:05		07:52		07:45	
	22:02		21:25				20:22		19:14	14	18:37 (Skalden WT2)	
7	05:38		06:18				07:06		07:54		18:08 (Skalden WT4)	
	22:01		21:23				20:20		19:12	24	18:39 (Skalden WT2)	
8	05:39		06:20				07:08		07:56		18:05 (Skalden WT4)	
	22:01		21:21				20:18		19:10	30	18:39 (Skalden WT2)	
9	05:40		06:21				07:10		07:57		18:04 (Skalden WT4)	
	22:00		21:20				20:15		19:07	32	18:39 (Skalden WT2)	
10	05:41		06:23				07:11		07:59		17:44 (Skalden WT3)	
	21:59		21:18				20:13		19:05	39	18:38 (Skalden WT2)	
11	05:42		06:24				07:13		08:01		17:40 (Skalden WT3)	
	21:59		21:16				20:11		19:03	46	18:36 (Skalden WT2)	
12	05:43		06:26				07:14		08:02		17:36 (Skalden WT3)	
	21:58		21:14				20:08		19:01	50	18:33 (Skalden WT2)	
13	05:44		06:27				07:16		08:04		17:35 (Skalden WT3)	
	21:57		21:12				20:06		18:59	49	18:31 (Skalden WT2)	
14	05:45		06:29				07:17		08:06		17:33 (Skalden WT3)	
	21:56		21:10				20:04		18:57	49	18:29 (Skalden WT2)	
15	05:46		06:30				07:19		08:07		17:32 (Skalden WT3)	
	21:55		21:08				20:02		18:55	48	18:23 (Skalden WT4)	
16	05:48		06:32				07:21		08:09		17:30 (Skalden WT3)	
	21:54		21:06				19:59	5	19:31 (GC&T WT3)		18:52	49
17	05:49		06:33				07:22		19:24 (GC&T WT3)		08:11	
	21:53		21:05				19:57	7	19:31 (GC&T WT3)		18:50	49
18	05:50		06:35				07:24		19:22 (GC&T WT3)		08:12	
	21:52		21:03				19:55	6	19:28 (GC&T WT3)		18:48	47
19	05:51		06:37				07:25		19:22 (GC&T WT3)		08:14	
	21:51		21:01				19:53	4	19:26 (GC&T WT3)		18:46	44
20	05:53		06:38				07:27		19:21 (GC&T WT3)		08:16	
	21:50		20:58				19:50	2	19:23 (GC&T WT3)		18:44	42
21	05:54		06:40				07:28				08:17	
	21:49	4	21:09 (GC&T WT2)		20:56		19:48				18:42	40
22	05:55		21:03 (GC&T WT2)		06:41		07:30				08:19	
	21:48	8	21:11 (GC&T WT2)		20:54		19:46				18:40	37
23	05:56		21:02 (GC&T WT2)		06:43		07:32				08:21	
	21:46	10	21:12 (GC&T WT2)		20:52		19:43				18:38	34
24	05:58		21:00 (GC&T WT2)		06:44		07:33				08:22	
	21:45	12	21:12 (GC&T WT2)		20:50	8	20:21 (GC&T WT1)		19:41		18:36	29
25	05:59		21:01 (GC&T WT2)		06:46		20:11 (GC&T WT1)		07:35		07:24	
	21:44	13	21:14 (GC&T WT2)		20:48	10	20:21 (GC&T WT1)		19:39		17:34	25
26	06:00		21:00 (GC&T WT2)		06:48		20:10 (GC&T WT1)		07:36		07:26	
	21:42	12	21:12 (GC&T WT2)		20:46	9	20:19 (GC&T WT1)		19:37		17:32	23
27	06:02		20:59 (GC&T WT2)		06:49		20:09 (GC&T WT1)		07:38		07:28	
	21:41	12	21:11 (GC&T WT2)		20:44	8	20:17 (GC&T WT1)		19:34		17:30	21
28	06:03		21:00 (GC&T WT2)		06:51		20:09 (GC&T WT1)		07:39		07:29	
	21:39	10	21:10 (GC&T WT2)		20:42	6	20:15 (GC&T WT1)		19:32		17:28	19
29	06:05		20:59 (GC&T WT2)		06:52		20:08 (GC&T WT1)		07:41		07:31	
	21:38	9	21:08 (GC&T WT2)		20:40	5	20:13 (GC&T WT1)		19:30		17:26	15
30	06:06		20:59 (GC&T WT2)		06:54		20:09 (GC&T WT1)		07:43		07:33	
	21:36	7	21:06 (GC&T WT2)		20:37	2	20:11 (GC&T WT1)		19:28		17:25	16
31	06:08		21:00 (GC&T WT2)		06:55						07:35	
	21:35	6	21:06 (GC&T WT2)		20:35						17:23	18
Potential sun hours	498		451		380		333		269		248	
Total, worst case		103		54		24		889		1914		2237
Sun reduction		0,45		0,47		0,43		0,36		0,26		0,21
Oper. time red.		0,95		0,95		0,95		0,95		0,95		0,95
Wind dir. red.		0,56		0,56		0,62		0,67		0,72		0,72
Total reduction		0,24		0,25		0,26		0,24		0,18		0,15
Total, real		25		14		6		210		339		331

Table layout: For each day in each month the following matrix apply

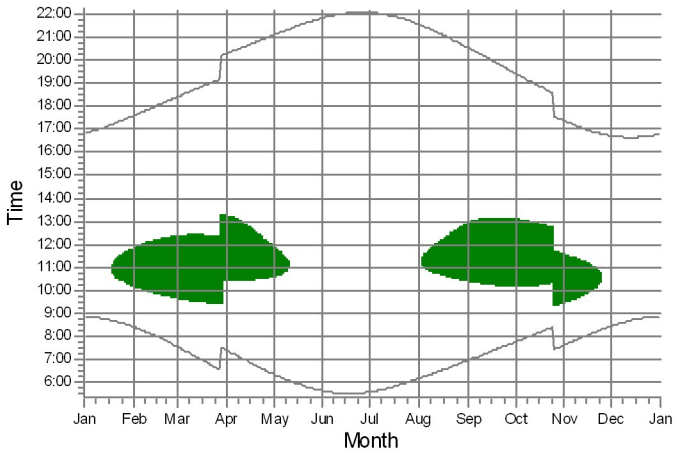
Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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20/10/2023 11:13/3.6.355

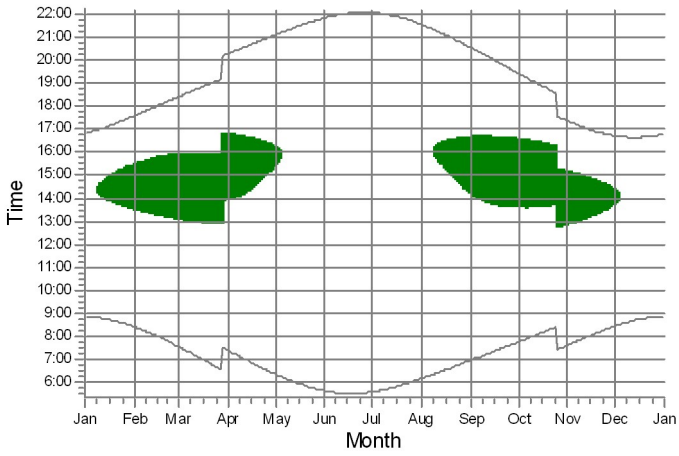
SHADOW - Calendar, graphical

Calculation: SS OVA - EIGEN

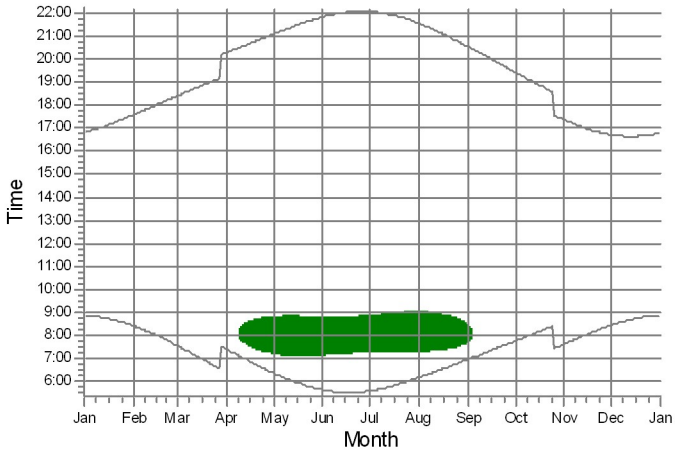
A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)



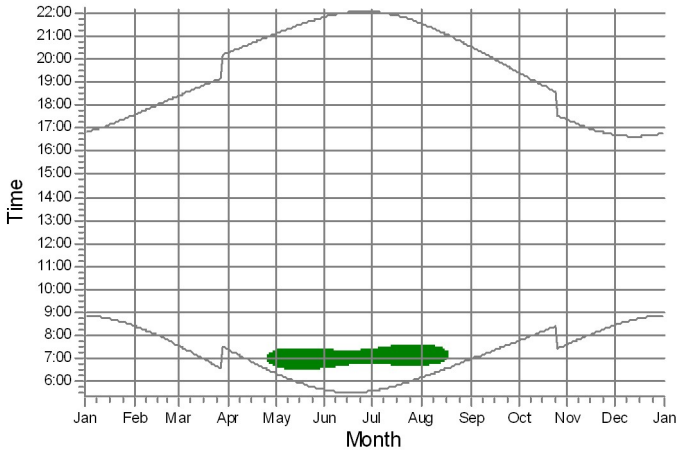
B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)



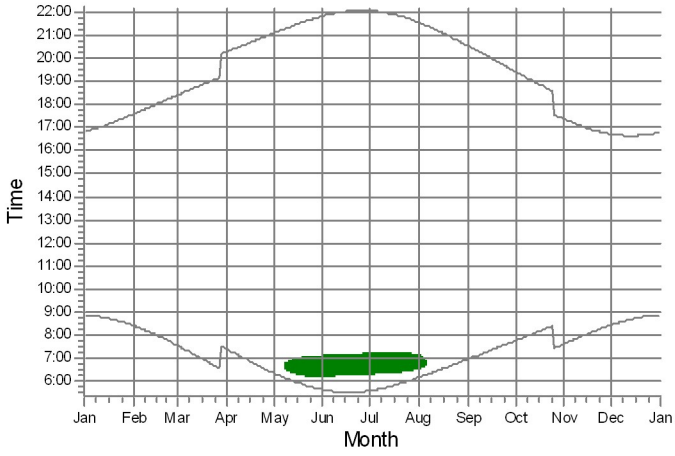
C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)



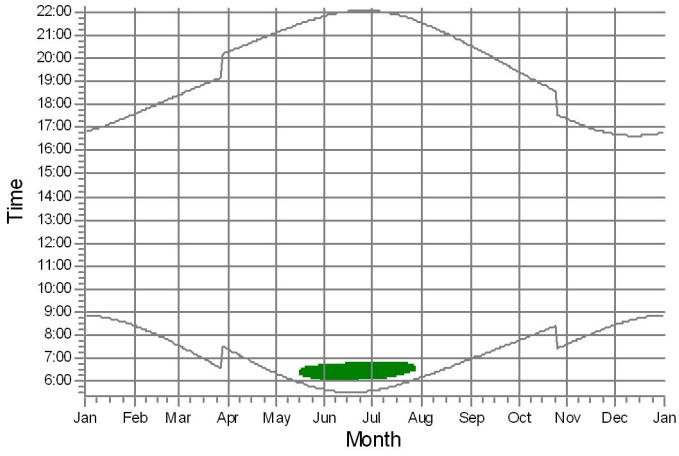
D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)



E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)



F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)



WTGs

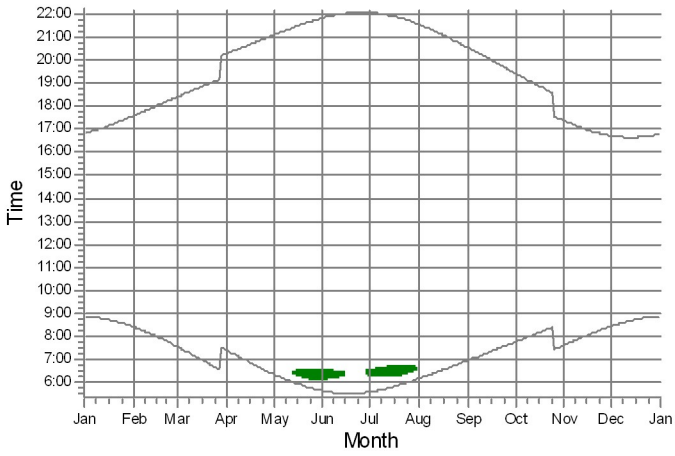
1: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)

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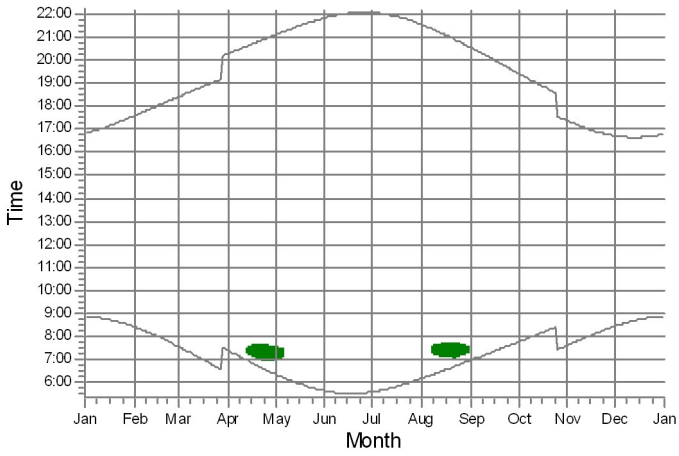
SHADOW - Calendar, graphical

Calculation: SS OVA - EIGEN

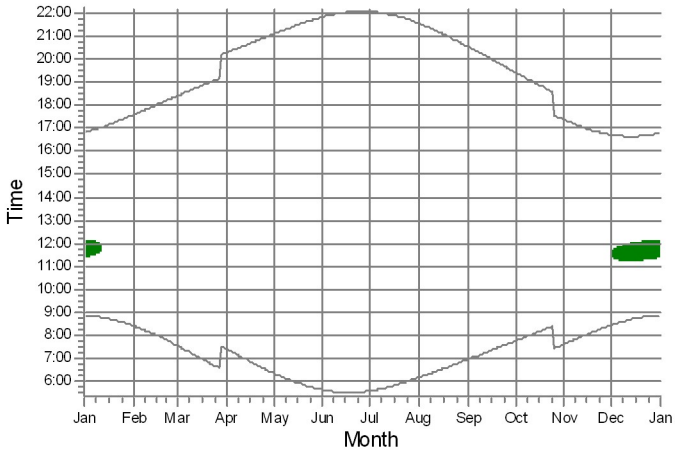
G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)



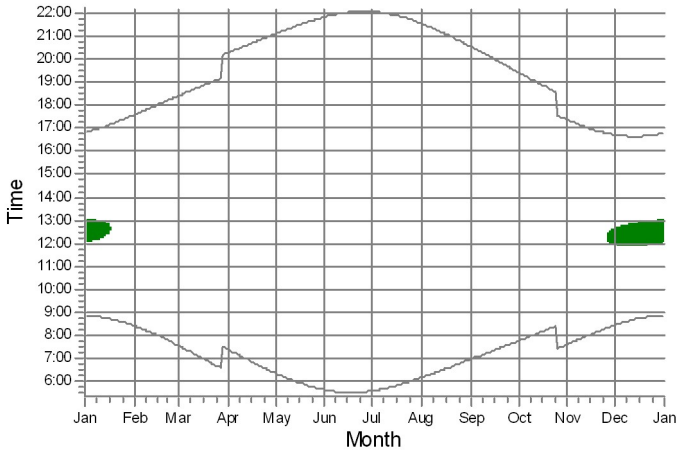
H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)



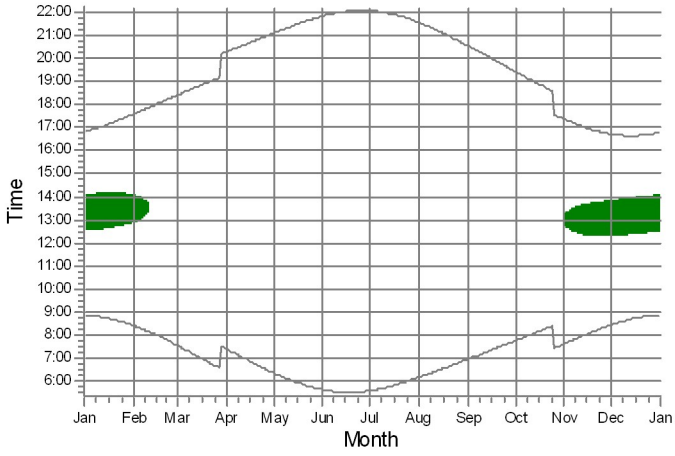
I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)



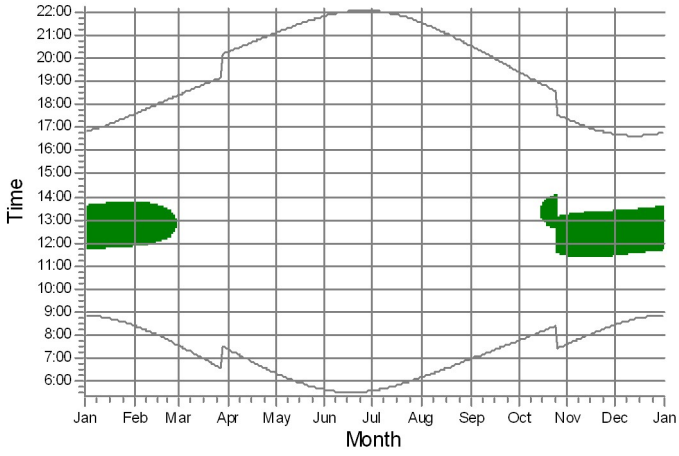
J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)



K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)



L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)



WTGs

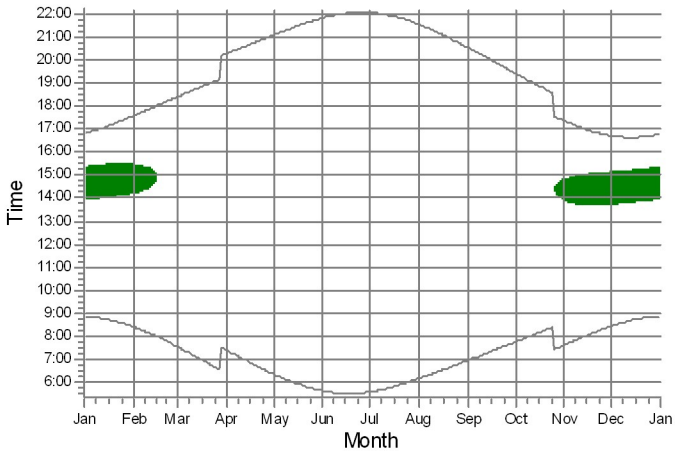
1: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)

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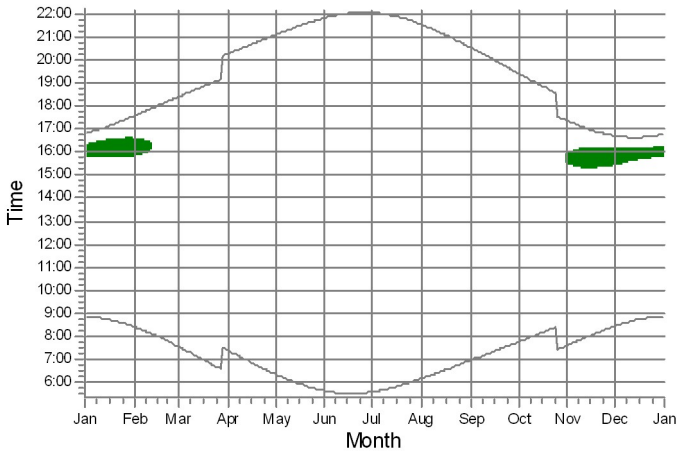
SHADOW - Calendar, graphical

Calculation: SS OVA - EIGEN

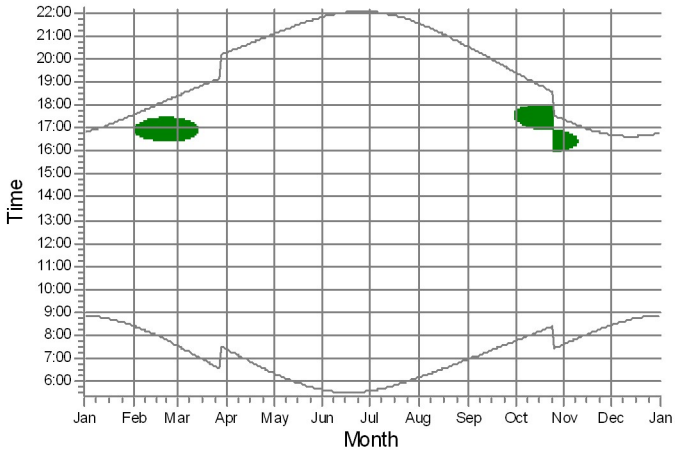
M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)



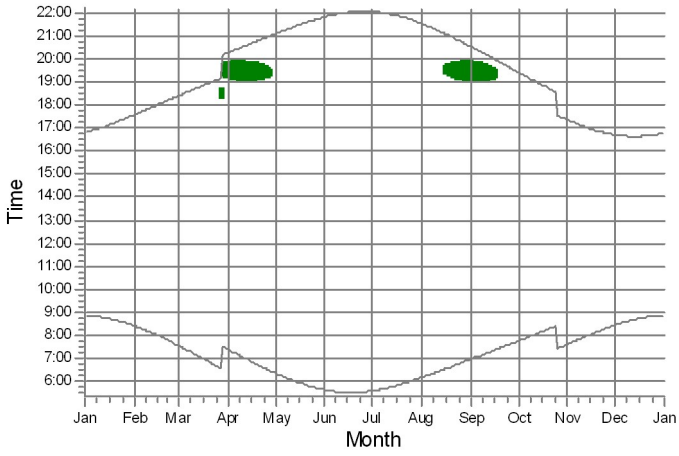
N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)



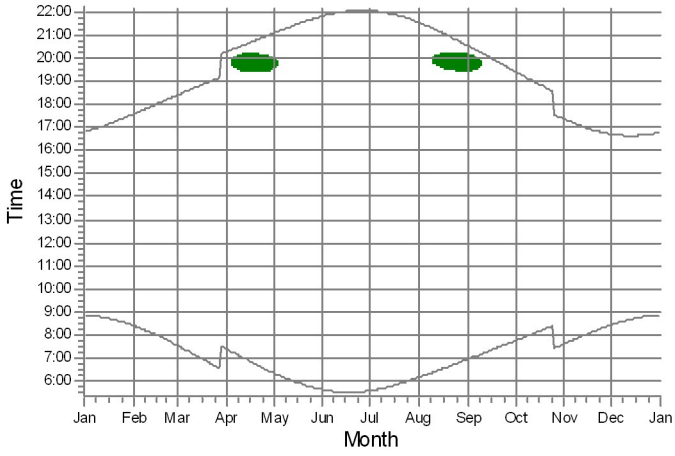
O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)



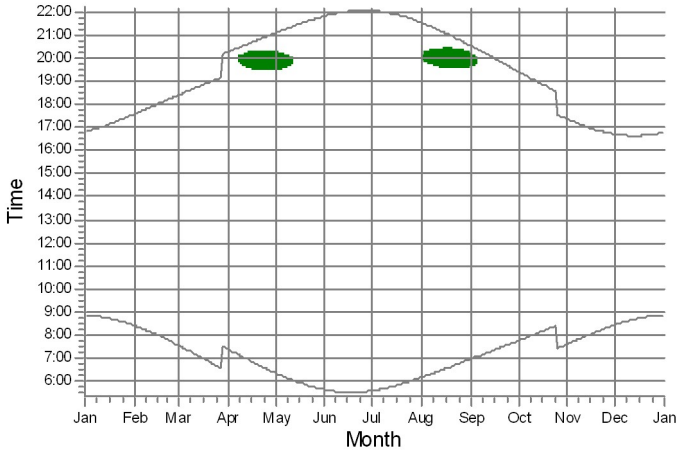
P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)



Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)



R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)



WTGs

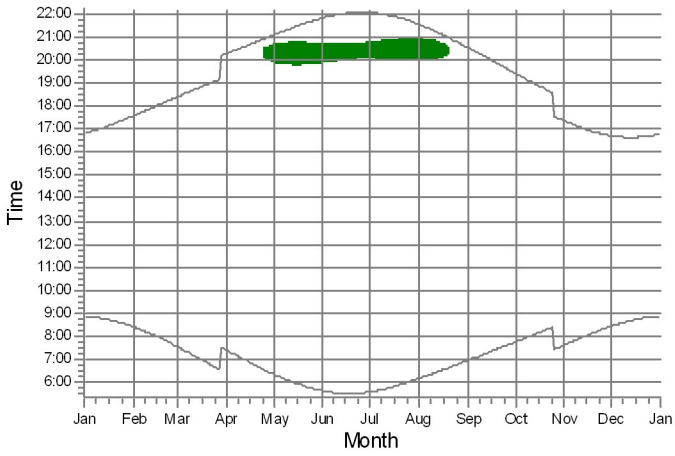
1: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)

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Calculated:
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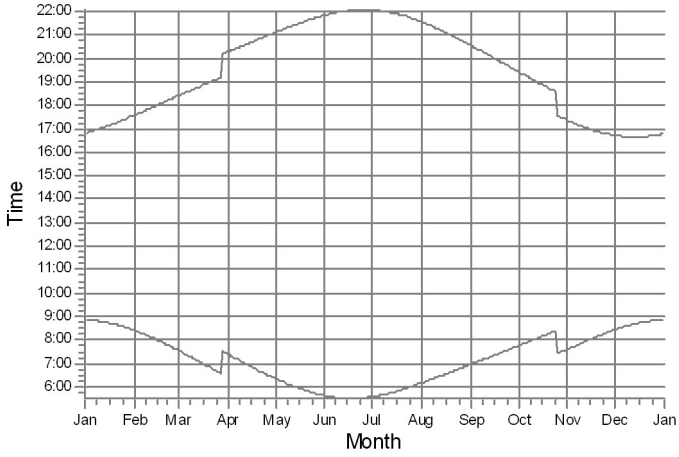
SHADOW - Calendar, graphical

Calculation: SS OVA - EIGEN

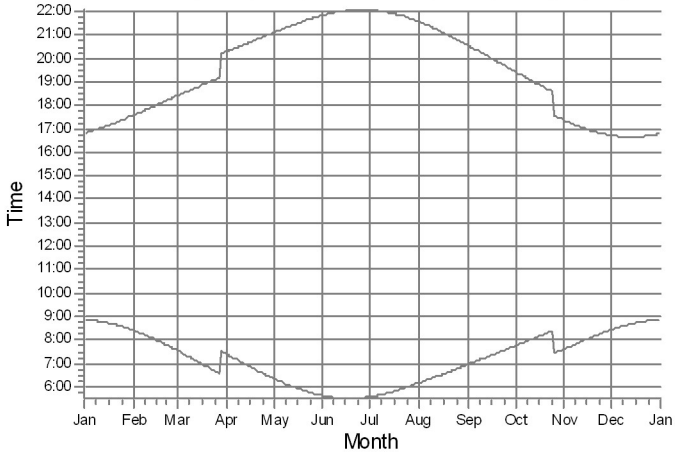
S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)



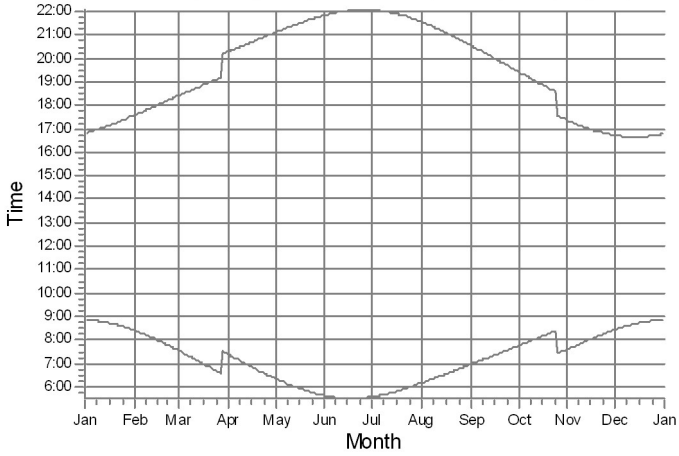
T: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)



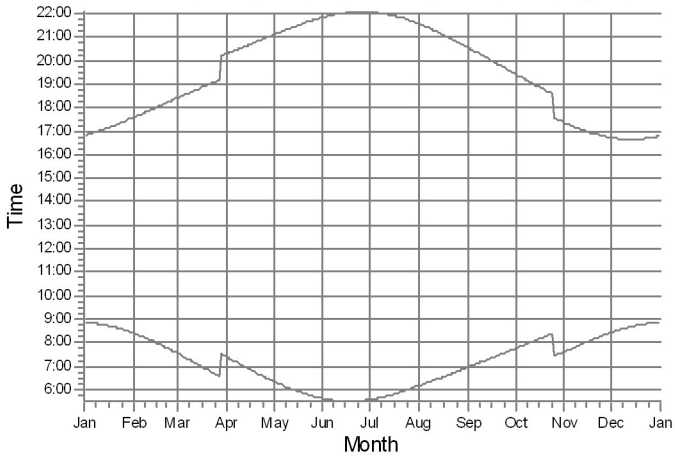
U: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)



V: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)



W: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)



WTGs

1: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: A - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49			08:24		10:13 (1)	07:32		09:41 (1)	07:23		10:27 (1)	06:20		10:40 (1)	05:36		
	16:48			17:35	92	11:45 (1)	18:25	157	12:18 (1)	20:17	162	13:09 (1)	21:06	67	11:47 (1)	21:50		
2	08:49			08:22		10:12 (1)	07:30		09:40 (1)	07:21		10:27 (1)	06:18		10:41 (1)	05:36		
	16:49			17:36	96	11:48 (1)	18:26	159	12:19 (1)	20:19	161	13:08 (1)	21:08	62	11:43 (1)	21:51		
3	08:49			08:21		10:10 (1)	07:28		09:40 (1)	07:19		10:27 (1)	06:16		10:44 (1)	05:35		
	16:50			17:38	99	11:49 (1)	18:28	159	12:19 (1)	20:20	160	13:07 (1)	21:09	56	11:40 (1)	21:52		
4	08:49			08:19		10:08 (1)	07:26		09:39 (1)	07:16		10:27 (1)	06:15		10:45 (1)	05:34		
	16:51			17:40	103	11:51 (1)	18:30	161	12:20 (1)	20:22	159	13:06 (1)	21:11	51	11:36 (1)	21:53		
5	08:49			08:18		10:07 (1)	07:23		09:38 (1)	07:14		10:27 (1)	06:13		10:47 (1)	05:34		
	16:53			17:42	106	11:53 (1)	18:32	161	12:19 (1)	20:23	157	13:04 (1)	21:12	45	11:32 (1)	21:54		
6	08:48			08:16		10:06 (1)	07:21		09:37 (1)	07:12		10:27 (1)	06:11		10:48 (1)	05:33		
	16:54			17:44	108	11:54 (1)	18:33	163	12:20 (1)	20:25	155	13:02 (1)	21:14	40	11:28 (1)	21:55		
7	08:48			08:14		10:04 (1)	07:19		09:37 (1)	07:10		10:27 (1)	06:09		10:52 (1)	05:32		
	16:55			17:45	112	11:56 (1)	18:35	163	12:20 (1)	20:27	153	13:00 (1)	21:16	32	11:24 (1)	21:56		
8	08:48			08:13		10:03 (1)	07:17		09:37 (1)	07:08		10:27 (1)	06:08		10:55 (1)	05:32		
	16:56			17:47	114	11:57 (1)	18:37	164	12:21 (1)	20:28	151	12:58 (1)	21:17	24	11:19 (1)	21:57		
9	08:47			08:11		10:02 (1)	07:15		09:35 (1)	07:05		10:27 (1)	06:06		11:02 (1)	05:31		
	16:58			17:49	117	11:59 (1)	18:38	165	12:20 (1)	20:30	149	12:56 (1)	21:19	9	11:11 (1)	21:58		
10	08:47			08:09		10:01 (1)	07:13		09:35 (1)	07:03		10:28 (1)	06:04			05:31		
	16:59			17:51	120	12:01 (1)	18:40	165	12:20 (1)	20:32	146	12:54 (1)	21:20			21:59		
11	08:46			08:07		09:59 (1)	07:10		09:34 (1)	07:01		10:27 (1)	06:03			05:31		
	17:00			17:53	123	12:02 (1)	18:42	167	12:21 (1)	20:33	144	12:51 (1)	21:22			21:59		
12	08:46			08:06		09:58 (1)	07:08		09:34 (1)	06:59		10:27 (1)	06:01			05:30		
	17:02			17:54	125	12:03 (1)	18:44	167	12:21 (1)	20:35	141	12:48 (1)	21:23			22:00		
13	08:45			08:04		09:57 (1)	07:06		09:33 (1)	06:57		10:28 (1)	05:59			05:30		
	17:03			17:56	127	12:04 (1)	18:45	167	12:20 (1)	20:37	138	12:46 (1)	21:25			22:01		
14	08:44			08:02		09:55 (1)	07:04		09:32 (1)	06:55		10:28 (1)	05:58			05:30		
	17:05			17:58	130	12:05 (1)	18:47	168	12:20 (1)	20:38	135	12:43 (1)	21:26			22:01		
15	08:43			08:00		09:54 (1)	07:01		09:32 (1)	06:52		10:29 (1)	05:56			05:30		
	17:06			18:00	133	12:07 (1)	18:49	169	12:21 (1)	20:40	131	12:40 (1)	21:28			22:02		
16	08:43			07:58		09:53 (1)	06:59		09:32 (1)	06:50		10:29 (1)	05:55			05:30		
	17:08			18:02	135	12:08 (1)	18:50	169	12:21 (1)	20:42	128	12:37 (1)	21:29			22:02		
17	08:42			07:56		09:52 (1)	06:57		09:31 (1)	06:48		10:30 (1)	05:53			05:30		
	17:09			18:03	137	12:09 (1)	18:52	169	12:20 (1)	20:43	124	12:34 (1)	21:31			22:03		
18	08:41			07:54		09:51 (1)	06:55		09:31 (1)	06:46		10:30 (1)	05:52			05:30		
	17:11			18:05	139	12:10 (1)	18:54	169	12:20 (1)	20:45	121	12:31 (1)	21:32			22:03		
19	08:40		10:47 (1)	07:52		09:50 (1)	06:52		09:31 (1)	06:44		10:31 (1)	05:51			05:30		
	17:12	18	11:05 (1)	18:07	141	12:11 (1)	18:55	169	12:20 (1)	20:46	116	12:27 (1)	21:34			22:04		
20	08:39		10:42 (1)	07:50		09:49 (1)	06:50		09:30 (1)	06:42		10:31 (1)	05:49			05:30		
	17:14	30	11:12 (1)	18:09	143	12:12 (1)	18:57	170	12:20 (1)	20:48	113	12:24 (1)	21:35			22:04		
21	08:38		10:38 (1)	07:49		09:48 (1)	06:48		09:29 (1)	06:40		10:32 (1)	05:48			05:30		
	17:16	38	11:16 (1)	18:11	145	12:13 (1)	18:59	170	12:19 (1)	20:50	109	12:21 (1)	21:37			22:04		
22	08:37		10:35 (1)	07:46		09:47 (1)	06:46		09:29 (1)	06:38		10:32 (1)	05:47			05:30		
	17:17	45	11:20 (1)	18:12	146	12:13 (1)	19:00	169	12:18 (1)	20:51	105	12:17 (1)	21:38			22:04		
23	08:36		10:33 (1)	07:44		09:46 (1)	06:43		09:29 (1)	06:36		10:33 (1)	05:46			05:30		
	17:19	51	11:24 (1)	18:14	148	12:14 (1)	19:02	169	12:18 (1)	20:53	101	12:14 (1)	21:39			22:04		
24	08:35		10:30 (1)	07:42		09:46 (1)	06:41		09:28 (1)	06:34		10:34 (1)	05:44			05:31		
	17:21	56	11:26 (1)	18:16	149	12:15 (1)	19:04	169	12:17 (1)	20:55	96	12:10 (1)	21:41			22:05		
25	08:33		10:28 (1)	07:40		09:45 (1)	06:39		09:28 (1)	06:32		10:34 (1)	05:43			05:31		
	17:22	62	11:30 (1)	18:18	151	12:16 (1)	19:05	168	12:16 (1)	20:56	93	12:07 (1)	21:42			22:05		
26	08:32		10:26 (1)	07:38		09:44 (1)	06:37		09:28 (1)	06:30		10:35 (1)	05:42			05:31		
	17:24	67	11:33 (1)	18:19	153	12:17 (1)	19:07	168	12:16 (1)	20:58	88	12:03 (1)	21:43			22:05		
27	08:31		10:23 (1)	07:36		09:42 (1)	06:34		09:28 (1)	06:28		10:36 (1)	05:41			05:32		
	17:26	72	11:35 (1)	18:21	155	12:17 (1)	19:09	167	12:15 (1)	21:00	84	12:00 (1)	21:44			22:05		
28	08:29		10:21 (1)	07:34		09:42 (1)	06:32		09:27 (1)	06:26		10:37 (1)	05:40			05:32		
	17:28	76	11:37 (1)	18:23	155	12:17 (1)	19:10	167	12:14 (1)	21:01	79	11:56 (1)	21:46			22:05		
29	08:28		10:19 (1)				07:30		10:27 (1)	06:24		10:38 (1)	05:39			05:33		
	17:29	80	11:39 (1)				20:12	166	13:13 (1)	21:03	76	11:54 (1)	21:47			22:04		
30	08:27		10:17 (1)				07:28		10:27 (1)	06:22		10:39 (1)	05:38			05:33		
	17:31	85	11:42 (1)				20:14	165	13:12 (1)	21:04	71	11:50 (1)	21:48			22:04		
31	08:25		10:15 (1)				07:25		10:27 (1)				05:37					
	17:33	89	11:44 (1)				20:15	164	13:11 (1)				21:49					
Potential sun hours	262			279			367			414			482			494		
Total, worst case		769			3602			5143			3746			386				
Sun reduction		0,24			0,29			0,37			0,46			0,46				
Oper. time red.		0,95			0,95			0,95			0,95			0,95				
Wind dir. red.		0,57			0,57			0,57			0,57			0,57				
Total reduction		0,13			0,16			0,20			0,25			0,25				
Total, real		99			568			1036			927			96				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: A - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	July		August			September			October			November			December	
1	05:34		06:09			06:57			10:27 (1)	07:44		10:13 (1)	07:36		09:31 (1)	08:26
	22:04		21:33			20:33	144		12:51 (1)	19:25	167	13:00 (1)	17:21	119	11:30 (1)	16:42
2	05:34		06:11			06:59			10:26 (1)	07:46		10:13 (1)	07:38		09:31 (1)	08:27
	22:04		21:32			20:31	146		12:52 (1)	19:23	167	13:00 (1)	17:19	117	11:28 (1)	16:41
3	05:35		06:12			07:00			10:25 (1)	07:48		10:12 (1)	07:40		09:32 (1)	08:29
	22:03		21:30			20:29	149		12:54 (1)	19:21	166	12:58 (1)	17:17	115	11:27 (1)	16:41
4	05:36		06:14		11:08 (1)	07:02			10:24 (1)	07:49		10:13 (1)	07:42		09:34 (1)	08:30
	22:03		21:28	16	11:24 (1)	20:26	151		12:55 (1)	19:19	165	12:58 (1)	17:16	111	11:25 (1)	16:40
5	05:37		06:15		11:04 (1)	07:03			10:24 (1)	07:51		10:13 (1)	07:43		09:36 (1)	08:31
	22:02		21:27	27	11:31 (1)	20:24	153		12:57 (1)	19:16	165	12:58 (1)	17:14	108	11:24 (1)	16:40
6	05:38		06:17		11:00 (1)	07:05			10:23 (1)	07:52		10:13 (1)	07:45		09:37 (1)	08:32
	22:02		21:25	35	11:35 (1)	20:22	155		12:58 (1)	19:14	163	12:56 (1)	17:12	106	11:23 (1)	16:39
7	05:38		06:18		10:58 (1)	07:06			10:22 (1)	07:54		10:13 (1)	07:47		09:39 (1)	08:34
	22:01		21:23	42	11:40 (1)	20:20	157		12:59 (1)	19:12	163	12:56 (1)	17:11	102	11:21 (1)	16:39
8	05:39		06:20		10:55 (1)	07:08			10:21 (1)	07:56		10:14 (1)	07:49		09:41 (1)	08:35
	22:01		21:22	48	11:43 (1)	20:18	159		13:00 (1)	19:10	162	12:56 (1)	17:09	99	11:20 (1)	16:39
9	05:40		06:21		10:54 (1)	07:10			10:21 (1)	07:57		10:13 (1)	07:50		09:43 (1)	08:36
	22:00		21:20	53	11:47 (1)	20:15	160		13:01 (1)	19:08	161	12:54 (1)	17:07	95	11:18 (1)	16:39
10	05:41		06:23		10:52 (1)	07:11			10:20 (1)	07:59		10:14 (1)	07:52		09:44 (1)	08:37
	21:59		21:18	58	11:50 (1)	20:13	161		13:01 (1)	19:05	160	12:54 (1)	17:06	92	11:16 (1)	16:38
11	05:42		06:24		10:50 (1)	07:13			10:20 (1)	08:01		10:14 (1)	07:54		09:46 (1)	08:38
	21:59		21:16	62	11:52 (1)	20:11	163		13:03 (1)	19:03	159	12:53 (1)	17:04	88	11:14 (1)	16:38
12	05:43		06:26		10:49 (1)	07:14			10:19 (1)	08:02		10:14 (1)	07:55		09:48 (1)	08:39
	21:58		21:14	67	11:56 (1)	20:09	164		13:03 (1)	19:01	157	12:51 (1)	17:03	85	11:13 (1)	16:38
13	05:44		06:27		10:47 (1)	07:16			10:19 (1)	08:04		10:15 (1)	07:57		09:51 (1)	08:40
	21:57		21:12	72	11:59 (1)	20:06	164		13:03 (1)	18:59	156	12:51 (1)	17:01	80	11:11 (1)	16:38
14	05:45		06:29		10:46 (1)	07:17			10:18 (1)	08:06		10:15 (1)	07:59		09:53 (1)	08:41
	21:56		21:10	76	12:02 (1)	20:04	165		13:03 (1)	18:57	155	12:50 (1)	17:00	76	11:09 (1)	16:38
15	05:46		06:30		10:44 (1)	07:19			10:18 (1)	08:07		10:16 (1)	08:01		09:56 (1)	08:42
	21:55		21:08	81	12:05 (1)	20:02	166		13:04 (1)	18:55	153	12:49 (1)	16:59	71	11:07 (1)	16:38
16	05:48		06:32		10:43 (1)	07:21			10:17 (1)	08:09		10:16 (1)	08:02		09:59 (1)	08:43
	21:54		21:07	85	12:08 (1)	19:59	167		13:04 (1)	18:52	152	12:48 (1)	16:57	67	11:06 (1)	16:38
17	05:49		06:34		10:41 (1)	07:22			10:17 (1)	08:11		10:16 (1)	08:04		10:01 (1)	08:44
	21:53		21:05	89	12:10 (1)	19:57	167		13:04 (1)	18:50	151	12:47 (1)	16:56	62	11:03 (1)	16:39
18	05:50		06:35		10:41 (1)	07:24			10:16 (1)	08:12		10:17 (1)	08:06		10:04 (1)	08:44
	21:52		21:03	93	12:14 (1)	19:55	168		13:04 (1)	18:48	149	12:46 (1)	16:55	56	11:00 (1)	16:39
19	05:51		06:37		10:39 (1)	07:25			10:16 (1)	08:14		10:18 (1)	08:07		10:07 (1)	08:45
	21:51		21:01	98	12:17 (1)	19:53	168		13:04 (1)	18:46	147	12:45 (1)	16:53	51	10:58 (1)	16:39
20	05:53		06:38		10:39 (1)	07:27			10:15 (1)	08:16		10:18 (1)	08:09		10:10 (1)	08:46
	21:50		20:59	101	12:20 (1)	19:50	169		13:04 (1)	18:44	146	12:44 (1)	16:52	45	10:55 (1)	16:39
21	05:54		06:40		10:37 (1)	07:28			10:15 (1)	08:17		10:19 (1)	08:11		10:14 (1)	08:46
	21:49		20:56	106	12:23 (1)	19:48	169		13:04 (1)	18:42	144	12:43 (1)	16:51	38	10:52 (1)	16:40
22	05:55		06:41		10:36 (1)	07:30			10:15 (1)	08:19		10:20 (1)	08:12		10:18 (1)	08:47
	21:48		20:54	110	12:26 (1)	19:46	169		13:04 (1)	18:40	142	12:42 (1)	16:50	30	10:48 (1)	16:40
23	05:56		06:43		10:35 (1)	07:32			10:14 (1)	08:21		10:21 (1)	08:14		10:24 (1)	08:47
	21:46		20:52	113	12:28 (1)	19:43	169		13:03 (1)	18:38	140	12:41 (1)	16:49	18	10:42 (1)	16:41
24	05:58		06:44		10:34 (1)	07:33			10:14 (1)	08:22		10:22 (1)	08:15			08:48
	21:45		20:50	118	12:32 (1)	19:41	169		13:03 (1)	18:36	138	12:40 (1)	16:48			16:41
25	05:59		06:46		10:33 (1)	07:35			10:13 (1)	07:24		09:23 (1)	08:17			08:48
	21:44		20:48	121	12:34 (1)	19:39	170		13:03 (1)	17:34	136	11:39 (1)	16:47			16:42
26	06:00		06:48		10:32 (1)	07:36			10:13 (1)	07:26		09:23 (1)	08:18			08:48
	21:42		20:46	125	12:37 (1)	19:37	170		13:03 (1)	17:32	134	11:37 (1)	16:46			16:43
27	06:02		06:49		10:31 (1)	07:38			10:14 (1)	07:28		09:24 (1)	08:20			08:49
	21:41		20:44	128	12:39 (1)	19:34	168		13:02 (1)	17:30	132	11:36 (1)	16:45			16:43
28	06:03		06:51		10:30 (1)	07:40			10:13 (1)	07:29		09:25 (1)	08:21			08:49
	21:39		20:42	132	12:42 (1)	19:32	168		13:01 (1)	17:28	130	11:35 (1)	16:44			16:44
29	06:05		06:52		10:29 (1)	07:41			10:13 (1)	07:31		09:26 (1)	08:23			08:49
	21:38		20:40	135	12:44 (1)	19:30	168		13:01 (1)	17:26	128	11:34 (1)	16:44			16:45
30	06:06		06:54		10:29 (1)	07:43			10:12 (1)	07:33		09:28 (1)	08:24			08:49
	21:36		20:37	138	12:47 (1)	19:28	168		13:00 (1)	17:25	124	11:32 (1)	16:43			16:46
31	06:08		06:55		10:27 (1)					07:35		09:29 (1)				08:49
	21:35		20:35	141	12:48 (1)					17:23	122	11:31 (1)				16:47
Potential sun hours	498		451			380				333			269			248
Total, worst case				2470			4884				4634			1831		
Sun reduction				0,47			0,43				0,36			0,26		
Oper. time red.				0,95			0,95				0,95			0,95		
Wind dir. red.				0,57			0,57				0,57			0,57		
Total reduction				0,25			0,24				0,20			0,14		
Total, real				626			1149				914			255		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: B - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49			08:24		13:34 (1)	07:32		13:07 (1)	07:23		14:00 (1)	06:20		15:32 (1)	05:36		
	16:48			17:35	111	15:25 (1)	18:25	164	15:51 (1)	20:17	166	16:46 (1)	21:06	38	16:10 (1)	21:50		
2	08:49			08:22		13:34 (1)	07:30		13:07 (1)	07:21		14:01 (1)	06:18		15:37 (1)	05:36		
	16:49			17:36	114	15:28 (1)	18:26	165	15:52 (1)	20:19	164	16:45 (1)	21:08	29	16:06 (1)	21:51		
3	08:49			08:21		13:32 (1)	07:28		13:06 (1)	07:19		14:02 (1)	06:16		15:44 (1)	05:35		
	16:50			17:38	117	15:29 (1)	18:28	166	15:52 (1)	20:20	163	16:45 (1)	21:09	17	16:01 (1)	21:52		
4	08:49			08:19		13:31 (1)	07:26		13:05 (1)	07:16		14:04 (1)	06:15			05:34		
	16:51			17:40	119	15:30 (1)	18:30	167	15:52 (1)	20:22	160	16:44 (1)	21:11			21:53		
5	08:49			08:18		13:30 (1)	07:23		13:04 (1)	07:14		14:04 (1)	06:13			05:34		
	16:53			17:42	122	15:32 (1)	18:32	168	15:52 (1)	20:23	159	16:43 (1)	21:12			21:54		
6	08:48			08:16		13:29 (1)	07:21		13:04 (1)	07:12		14:06 (1)	06:11			05:33		
	16:54			17:44	124	15:33 (1)	18:33	169	15:53 (1)	20:25	156	16:42 (1)	21:14			21:55		
7	08:48			08:14		13:28 (1)	07:19		13:04 (1)	07:10		14:07 (1)	06:09			05:32		
	16:55			17:45	126	15:34 (1)	18:35	169	15:53 (1)	20:27	155	16:42 (1)	21:16			21:56		
8	08:48			08:13		13:26 (1)	07:17		13:03 (1)	07:08		14:09 (1)	06:08			05:32		
	16:56			17:47	129	15:35 (1)	18:37	170	15:53 (1)	20:28	152	16:41 (1)	21:17			21:57		
9	08:47			08:11		13:26 (1)	07:15		13:02 (1)	07:05		14:11 (1)	06:06			05:31		
	16:58			17:49	131	15:37 (1)	18:38	171	15:53 (1)	20:30	150	16:41 (1)	21:19			21:58		
10	08:47		14:17 (1)	08:09		13:25 (1)	07:13		13:02 (1)	07:03		14:14 (1)	06:04			05:31		
	16:59	12	14:29 (1)	17:51	133	15:38 (1)	18:40	171	15:53 (1)	20:32	146	16:40 (1)	21:20			21:59		
11	08:46		14:12 (1)	08:07		13:24 (1)	07:10		13:01 (1)	07:01		14:15 (1)	06:03			05:31		
	17:00	23	14:35 (1)	17:53	135	15:39 (1)	18:42	172	15:53 (1)	20:33	143	16:38 (1)	21:22			21:59		
12	08:46		14:08 (1)	08:06		13:23 (1)	07:08		13:01 (1)	06:59		14:18 (1)	06:01			05:30		
	17:02	31	14:39 (1)	17:54	137	15:40 (1)	18:44	172	15:53 (1)	20:35	139	16:37 (1)	21:23			22:00		
13	08:45		14:05 (1)	08:04		13:21 (1)	07:06		13:00 (1)	06:57		14:21 (1)	05:59			05:30		
	17:03	37	14:42 (1)	17:56	140	15:41 (1)	18:45	172	15:52 (1)	20:37	135	16:36 (1)	21:25			22:01		
14	08:44		14:03 (1)	08:02		13:20 (1)	07:04		13:00 (1)	06:55		14:24 (1)	05:58			05:30		
	17:05	44	14:47 (1)	17:58	142	15:42 (1)	18:47	173	15:53 (1)	20:38	132	16:36 (1)	21:26			22:01		
15	08:43		14:01 (1)	08:00		13:19 (1)	07:01		13:00 (1)	06:52		14:27 (1)	05:56			05:30		
	17:06	48	14:49 (1)	18:00	144	15:43 (1)	18:49	173	15:53 (1)	20:40	128	16:35 (1)	21:28			22:02		
16	08:43		13:59 (1)	07:58		13:18 (1)	06:59		13:00 (1)	06:50		14:31 (1)	05:55			05:30		
	17:08	53	14:52 (1)	18:02	146	15:44 (1)	18:50	173	15:53 (1)	20:42	123	16:34 (1)	21:29			22:02		
17	08:42		13:57 (1)	07:56		13:17 (1)	06:57		12:59 (1)	06:48		14:35 (1)	05:53			05:30		
	17:09	58	14:55 (1)	18:03	147	15:44 (1)	18:52	173	15:52 (1)	20:43	118	16:33 (1)	21:31			22:03		
18	08:41		13:55 (1)	07:54		13:16 (1)	06:55		12:59 (1)	06:46		14:39 (1)	05:52			05:30		
	17:11	63	14:58 (1)	18:05	149	15:45 (1)	18:54	173	15:52 (1)	20:45	113	16:32 (1)	21:32			22:03		
19	08:40		13:53 (1)	07:52		13:16 (1)	06:52		12:59 (1)	06:44		14:42 (1)	05:51			05:30		
	17:12	67	15:00 (1)	18:07	150	15:46 (1)	18:55	173	15:52 (1)	20:46	109	16:31 (1)	21:34			22:04		
20	08:39		13:51 (1)	07:50		13:15 (1)	06:50		12:59 (1)	06:42		14:46 (1)	05:49			05:30		
	17:14	71	15:02 (1)	18:09	152	15:47 (1)	18:57	173	15:52 (1)	20:48	103	16:29 (1)	21:35			22:04		
21	08:38		13:50 (1)	07:48		13:14 (1)	06:48		12:58 (1)	06:40		14:51 (1)	05:48			05:30		
	17:16	75	15:05 (1)	18:11	153	15:47 (1)	18:59	173	15:51 (1)	20:50	97	16:28 (1)	21:37			22:04		
22	08:37		13:48 (1)	07:46		13:13 (1)	06:46		12:58 (1)	06:38		14:55 (1)	05:47			05:30		
	17:17	79	15:07 (1)	18:12	155	15:48 (1)	19:00	173	15:51 (1)	20:51	92	16:27 (1)	21:38			22:04		
23	08:36		13:47 (1)	07:44		13:12 (1)	06:43		12:58 (1)	06:36		14:59 (1)	05:46			05:30		
	17:19	83	15:10 (1)	18:14	157	15:49 (1)	19:02	173	15:51 (1)	20:53	87	16:26 (1)	21:39			22:04		
24	08:35		13:45 (1)	07:42		13:12 (1)	06:41		12:58 (1)	06:34		15:03 (1)	05:44			05:30		
	17:21	86	15:11 (1)	18:16	157	15:49 (1)	19:04	172	15:50 (1)	20:55	81	16:24 (1)	21:41			22:05		
25	08:33		13:44 (1)	07:40		13:11 (1)	06:39		12:58 (1)	06:32		15:06 (1)	05:43			05:31		
	17:22	90	15:14 (1)	18:18	159	15:50 (1)	19:05	172	15:50 (1)	20:56	76	16:22 (1)	21:42			22:05		
26	08:32		13:43 (1)	07:38		13:10 (1)	06:37		12:58 (1)	06:30		15:10 (1)	05:42			05:31		
	17:24	93	15:16 (1)	18:19	161	15:51 (1)	19:07	171	15:49 (1)	20:58	71	16:21 (1)	21:43			22:05		
27	08:31		13:41 (1)	07:36		13:09 (1)	06:34		12:59 (1)	06:28		15:14 (1)	05:41			05:32		
	17:26	96	15:17 (1)	18:21	161	15:50 (1)	19:09	170	15:49 (1)	21:00	65	16:19 (1)	21:44			22:05		
28	08:29		13:40 (1)	07:34		13:08 (1)	06:32		12:58 (1)	06:26		15:18 (1)	05:40			05:32		
	17:28	100	15:20 (1)	18:23	163	15:51 (1)	19:10	170	15:48 (1)	21:01	59	16:17 (1)	21:46			22:04		
29	08:28		13:38 (1)				07:30		13:59 (1)	06:24		15:23 (1)	05:39			05:33		
	17:29	103	15:21 (1)				20:12	169	16:48 (1)	21:03	53	16:16 (1)	21:47			22:04		
30	08:27		13:38 (1)				07:28		14:00 (1)	06:22		15:27 (1)	05:38			05:33		
	17:31	105	15:23 (1)				20:14	167	16:47 (1)	21:04	46	16:13 (1)	21:48			22:04		
31	08:25		13:36 (1)				07:25		14:00 (1)				05:37					
	17:33	108	15:24 (1)				20:15	167	16:47 (1)				21:49					
Potential sun hours	262			279			367			414			482			494		
Total, worst case		1525			3934			5284			3541			84				
Sun reduction		0,24			0,29			0,37			0,46			0,46				
Oper. time red.		0,95			0,95			0,95			0,95			0,95				
Wind dir. red.		0,73			0,73			0,73			0,73			0,73				
Total reduction		0,16			0,20			0,26			0,32			0,32				
Total, real		250			793			1360			1119			27				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: B - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	July		August			September			October			November			December		
1	05:34		06:09			06:57		14:15 (1)	07:44		13:40 (1)	07:36		12:55 (1)	08:26		13:53 (1)
	22:04		21:33			20:33	143	16:38 (1)	19:25	172	16:32 (1)	17:21	133	15:08 (1)	16:42	24	14:17 (1)
2	05:34		06:11			06:59		14:12 (1)	07:46		13:40 (1)	07:38		12:55 (1)	08:27		13:59 (1)
	22:04		21:32			20:31	146	16:38 (1)	19:23	172	16:32 (1)	17:19	131	15:06 (1)	16:41	13	14:12 (1)
3	05:35		06:12			07:00		14:09 (1)	07:48		13:40 (1)	07:40		12:56 (1)	08:29		
	22:03		21:30			20:29	150	16:39 (1)	19:21	171	16:31 (1)	17:17	129	15:05 (1)	16:41		
4	05:36		06:14			07:02		14:06 (1)	07:49		13:40 (1)	07:42		12:58 (1)	08:30		
	22:03		21:28			20:26	152	16:38 (1)	19:19	171	16:31 (1)	17:16	126	15:04 (1)	16:40		
5	05:37		06:15			07:03		14:04 (1)	07:51		13:40 (1)	07:43		12:59 (1)	08:31		
	22:02		21:27			20:24	155	16:39 (1)	19:16	170	16:30 (1)	17:14	124	15:03 (1)	16:40		
6	05:38		06:17			07:05		14:02 (1)	07:52		13:39 (1)	07:45		13:00 (1)	08:32		
	22:02		21:25			20:22	156	16:38 (1)	19:14	170	16:29 (1)	17:12	122	15:02 (1)	16:39		
7	05:38		06:18			07:06		14:00 (1)	07:54		13:40 (1)	07:47		13:02 (1)	08:34		
	22:01		21:23			20:20	159	16:39 (1)	19:12	169	16:29 (1)	17:11	119	15:01 (1)	16:39		
8	05:39		06:20			07:08		13:58 (1)	07:56		13:40 (1)	07:49		13:03 (1)	08:35		
	22:01		21:22			20:18	161	16:39 (1)	19:10	168	16:28 (1)	17:09	116	14:59 (1)	16:39		
9	05:40		06:21			07:10		13:57 (1)	07:57		13:40 (1)	07:50		13:05 (1)	08:36		
	22:00		21:20			20:15	162	16:39 (1)	19:07	167	16:27 (1)	17:07	113	14:58 (1)	16:39		
10	05:41		06:23		15:51 (1)	07:11		13:55 (1)	07:59		13:40 (1)	07:52		13:05 (1)	08:37		
	21:59		21:18	21	16:12 (1)	20:13	163	16:38 (1)	19:05	167	16:27 (1)	17:06	111	14:56 (1)	16:38		
11	05:42		06:24		15:44 (1)	07:13		13:54 (1)	08:01		13:41 (1)	07:54		13:07 (1)	08:38		
	21:59		21:16	32	16:16 (1)	20:11	165	16:39 (1)	19:03	165	16:26 (1)	17:04	108	14:55 (1)	16:38		
12	05:43		06:26		15:39 (1)	07:14		13:52 (1)	08:02		13:40 (1)	07:55		13:09 (1)	08:39		
	21:58		21:14	40	16:19 (1)	20:08	166	16:38 (1)	19:01	165	16:25 (1)	17:03	105	14:54 (1)	16:38		
13	05:44		06:27		15:34 (1)	07:16		13:51 (1)	08:04		13:41 (1)	07:57		13:10 (1)	08:40		
	21:57		21:12	47	16:21 (1)	20:06	168	16:39 (1)	18:59	163	16:24 (1)	17:01	103	14:53 (1)	16:38		
14	05:45		06:29		15:30 (1)	07:17		13:49 (1)	08:06		13:41 (1)	07:59		13:12 (1)	08:41		
	21:56		21:10	54	16:24 (1)	20:04	169	16:38 (1)	18:57	163	16:24 (1)	17:00	99	14:51 (1)	16:38		
15	05:46		06:30		15:25 (1)	07:19		13:49 (1)	08:07		13:42 (1)	08:01		13:14 (1)	08:42		
	21:55		21:08	60	16:25 (1)	20:02	169	16:38 (1)	18:55	161	16:23 (1)	16:59	96	14:50 (1)	16:38		
16	05:48		06:32		15:21 (1)	07:21		13:47 (1)	08:09		13:42 (1)	08:02		13:16 (1)	08:43		
	21:54		21:07	66	16:27 (1)	19:59	171	16:38 (1)	18:52	160	16:22 (1)	16:57	93	14:49 (1)	16:38		
17	05:49		06:33		15:16 (1)	07:22		13:47 (1)	08:11		13:42 (1)	08:04		13:17 (1)	08:44		
	21:53		21:05	72	16:28 (1)	19:57	171	16:38 (1)	18:50	159	16:21 (1)	16:56	90	14:47 (1)	16:38		
18	05:50		06:35		15:12 (1)	07:24		13:45 (1)	08:12		13:43 (1)	08:06		13:19 (1)	08:44		
	21:52		21:03	77	16:29 (1)	19:55	172	16:37 (1)	18:48	158	16:21 (1)	16:55	86	14:45 (1)	16:39		
19	05:51		06:37		15:07 (1)	07:25		13:45 (1)	08:14		13:44 (1)	08:07		13:21 (1)	08:45		
	21:51		21:01	83	16:30 (1)	19:53	172	16:37 (1)	18:46	156	16:20 (1)	16:53	83	14:44 (1)	16:39		
20	05:52		06:38		15:04 (1)	07:27		13:44 (1)	08:16		13:44 (1)	08:09		13:23 (1)	08:46		
	21:50		20:59	87	16:31 (1)	19:50	172	16:36 (1)	18:44	154	16:18 (1)	16:52	79	14:42 (1)	16:39		
21	05:54		06:40		14:59 (1)	07:28		13:44 (1)	08:17		13:45 (1)	08:11		13:26 (1)	08:46		
	21:49		20:56	93	16:32 (1)	19:48	172	16:36 (1)	18:42	153	16:18 (1)	16:51	75	14:41 (1)	16:40		
22	05:55		06:41		14:55 (1)	07:30		13:44 (1)	08:19		13:45 (1)	08:12		13:27 (1)	08:47		
	21:48		20:54	98	16:33 (1)	19:46	173	16:37 (1)	18:40	152	16:17 (1)	16:50	71	14:38 (1)	16:40		
23	05:56		06:43		14:50 (1)	07:32		13:42 (1)	08:21		13:46 (1)	08:14		13:30 (1)	08:47		
	21:46		20:52	103	16:33 (1)	19:43	174	16:36 (1)	18:38	150	16:16 (1)	16:49	67	14:37 (1)	16:41		
24	05:58		06:44		14:46 (1)	07:33		13:42 (1)	08:22		13:47 (1)	08:15		13:32 (1)	08:48		
	21:45		20:50	108	16:34 (1)	19:41	174	16:36 (1)	18:36	148	16:15 (1)	16:48	63	14:35 (1)	16:41		
25	05:59		06:46		14:41 (1)	07:35		13:41 (1)	07:24		12:47 (1)	08:17		13:34 (1)	08:48		
	21:44		20:48	114	16:35 (1)	19:39	174	16:35 (1)	17:34	147	15:14 (1)	16:47	58	14:32 (1)	16:42		
26	06:00		06:48		14:37 (1)	07:36		13:41 (1)	07:26		12:48 (1)	08:18		13:37 (1)	08:48		
	21:42		20:46	119	16:36 (1)	19:37	174	16:35 (1)	17:32	145	15:13 (1)	16:46	53	14:30 (1)	16:43		
27	06:02		06:49		14:32 (1)	07:38		13:40 (1)	07:28		12:49 (1)	08:20		13:40 (1)	08:49		
	21:41		20:44	124	16:36 (1)	19:34	174	16:34 (1)	17:30	143	15:12 (1)	16:45	49	14:29 (1)	16:43		
28	06:03		06:51		14:29 (1)	07:40		13:41 (1)	07:29		12:50 (1)	08:21		13:42 (1)	08:49		
	21:39		20:42	128	16:37 (1)	19:32	173	16:34 (1)	17:28	141	15:11 (1)	16:44	44	14:26 (1)	16:44		
29	06:05		06:52		14:25 (1)	07:41		13:41 (1)	07:31		12:51 (1)	08:23		13:46 (1)	08:49		
	21:38		20:40	132	16:37 (1)	19:30	172	16:33 (1)	17:26	139	15:10 (1)	16:44	38	14:24 (1)	16:45		
30	06:06		06:54		14:22 (1)	07:43		13:40 (1)	07:33		12:52 (1)	08:24		13:49 (1)	08:49		
	21:36		20:37	135	16:37 (1)	19:28	172	16:32 (1)	17:25	137	15:09 (1)	16:43	31	14:20 (1)	16:46		
31	06:08		06:55		14:18 (1)				07:35		12:54 (1)				08:49		
	21:35		20:35	139	16:37 (1)				17:23	135	15:09 (1)				16:47		
Potential sun hours	498		451			380			333			269			248		
Total, worst case				1932			4974			4891			2715			37	
Sun reduction				0,47			0,43			0,36			0,26			0,21	
Oper. time red.				0,95			0,95			0,95			0,95			0,95	
Wind dir. red.				0,73			0,73			0,73			0,73			0,73	
Total reduction				0,32			0,30			0,25			0,18			0,15	
Total, real				625			1496			1232			483			5	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: C - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April			May			June		
1	08:49	08:24	07:32	07:23			06:20		07:15 (1)	05:36		07:11 (1)
	16:48	17:35	18:25	20:17			21:06	90	08:45 (1)	21:50	93	08:44 (1)
2	08:49	08:22	07:30	07:21			06:18		07:14 (1)	05:36		07:12 (1)
	16:49	17:36	18:26	20:19			21:08	91	08:45 (1)	21:51	93	08:45 (1)
3	08:49	08:21	07:28	07:19			06:16		07:14 (1)	05:35		07:12 (1)
	16:50	17:38	18:28	20:20			21:09	92	08:46 (1)	21:52	93	08:45 (1)
4	08:49	08:19	07:26	07:16			06:15		07:13 (1)	05:34		07:12 (1)
	16:51	17:40	18:30	20:22			21:11	93	08:46 (1)	21:53	92	08:44 (1)
5	08:49	08:18	07:23	07:14			06:13		07:12 (1)	05:34		07:13 (1)
	16:53	17:42	18:32	20:23			21:12	94	08:46 (1)	21:54	92	08:45 (1)
6	08:48	08:16	07:21	07:12			06:11		07:11 (1)	05:33		07:13 (1)
	16:54	17:44	18:33	20:25			21:14	95	08:46 (1)	21:55	91	08:44 (1)
7	08:48	08:14	07:19	07:10			06:09		07:12 (1)	05:32		07:13 (1)
	16:55	17:45	18:35	20:27			21:16	95	08:47 (1)	21:56	91	08:44 (1)
8	08:48	08:13	07:17	07:08			06:08		07:11 (1)	05:32		07:14 (1)
	16:56	17:47	18:37	20:28			21:17	95	08:46 (1)	21:57	91	08:45 (1)
9	08:47	08:11	07:15	07:05			06:06		07:11 (1)	05:31		07:14 (1)
	16:58	17:49	18:38	20:30			21:19	96	08:47 (1)	21:58	90	08:44 (1)
10	08:47	08:09	07:13	07:03		07:56 (1)	06:04		07:10 (1)	05:31		07:14 (1)
	16:59	17:51	18:40	20:32	20	08:16 (1)	21:20	96	08:46 (1)	21:59	90	08:44 (1)
11	08:46	08:07	07:10	07:01		07:49 (1)	06:03		07:11 (1)	05:31		07:15 (1)
	17:00	17:53	18:42	20:33	31	08:20 (1)	21:22	96	08:47 (1)	21:59	90	08:45 (1)
12	08:46	08:06	07:08	06:59		07:45 (1)	06:01		07:10 (1)	05:30		07:14 (1)
	17:02	17:54	18:44	20:35	39	08:24 (1)	21:23	96	08:46 (1)	22:00	90	08:44 (1)
13	08:45	08:04	07:06	06:57		07:42 (1)	05:59		07:10 (1)	05:30		07:15 (1)
	17:03	17:56	18:45	20:37	45	08:27 (1)	21:25	97	08:47 (1)	22:01	89	08:44 (1)
14	08:44	08:02	07:04	06:55		07:39 (1)	05:58		07:09 (1)	05:30		07:15 (1)
	17:05	17:58	18:47	20:38	50	08:29 (1)	21:26	97	08:46 (1)	22:01	90	08:45 (1)
15	08:43	08:00	07:01	06:52		07:37 (1)	05:56		07:10 (1)	05:30		07:16 (1)
	17:06	18:00	18:49	20:40	54	08:31 (1)	21:28	97	08:47 (1)	22:02	89	08:45 (1)
16	08:43	07:58	06:59	06:50		07:35 (1)	05:55		07:10 (1)	05:30		07:16 (1)
	17:08	18:02	18:50	20:42	58	08:33 (1)	21:29	97	08:47 (1)	22:02	89	08:45 (1)
17	08:42	07:56	06:57	06:48		07:33 (1)	05:54		07:09 (1)	05:30		07:16 (1)
	17:09	18:03	18:52	20:43	62	08:35 (1)	21:31	97	08:46 (1)	22:03	89	08:45 (1)
18	08:41	07:54	06:55	06:46		07:31 (1)	05:52		07:10 (1)	05:30		07:16 (1)
	17:11	18:05	18:54	20:45	65	08:36 (1)	21:32	96	08:46 (1)	22:03	89	08:45 (1)
19	08:40	07:52	06:52	06:44		07:29 (1)	05:51		07:10 (1)	05:30		07:17 (1)
	17:12	18:07	18:55	20:47	68	08:37 (1)	21:34	96	08:46 (1)	22:04	88	08:45 (1)
20	08:39	07:50	06:50	06:42		07:27 (1)	05:49		07:10 (1)	05:30		07:17 (1)
	17:14	18:09	18:57	20:48	71	08:38 (1)	21:35	96	08:46 (1)	22:04	88	08:45 (1)
21	08:38	07:49	06:48	06:40		07:25 (1)	05:48		07:09 (1)	05:30		07:17 (1)
	17:16	18:11	18:59	20:50	74	08:39 (1)	21:37	96	08:45 (1)	22:04	88	08:45 (1)
22	08:37	07:47	06:46	06:38		07:24 (1)	05:47		07:09 (1)	05:30		07:18 (1)
	17:17	18:12	19:00	20:51	76	08:40 (1)	21:38	96	08:45 (1)	22:04	88	08:46 (1)
23	08:36	07:44	06:43	06:36		07:23 (1)	05:46		07:10 (1)	05:30		07:18 (1)
	17:19	18:14	19:02	20:53	78	08:41 (1)	21:39	95	08:45 (1)	22:04	88	08:46 (1)
24	08:35	07:42	06:41	06:34		07:21 (1)	05:44		07:10 (1)	05:31		07:17 (1)
	17:21	18:16	19:04	20:55	81	08:42 (1)	21:41	95	08:45 (1)	22:05	89	08:46 (1)
25	08:33	07:40	06:39	06:32		07:20 (1)	05:43		07:10 (1)	05:31		07:18 (1)
	17:22	18:18	19:05	20:56	82	08:42 (1)	21:42	95	08:45 (1)	22:05	89	08:47 (1)
26	08:32	07:38	06:37	06:30		07:19 (1)	05:42		07:10 (1)	05:31		07:18 (1)
	17:24	18:19	19:07	20:58	84	08:43 (1)	21:43	95	08:45 (1)	22:05	89	08:47 (1)
27	08:31	07:36	06:34	06:28		07:18 (1)	05:41		07:10 (1)	05:32		07:18 (1)
	17:26	18:21	19:09	21:00	85	08:43 (1)	21:44	95	08:45 (1)	22:05	89	08:47 (1)
28	08:29	07:34	06:32	06:26		07:17 (1)	05:40		07:10 (1)	05:32		07:18 (1)
	17:28	18:23	19:10	21:01	87	08:44 (1)	21:46	95	08:45 (1)	22:05	90	08:48 (1)
29	08:28		07:30	06:24		07:17 (1)	05:39		07:11 (1)	05:33		07:19 (1)
	17:29		20:12	21:03	88	08:45 (1)	21:47	94	08:45 (1)	22:04	89	08:48 (1)
30	08:27		07:28	06:22		07:16 (1)	05:38		07:11 (1)	05:33		07:19 (1)
	17:31		20:14	21:04	89	08:45 (1)	21:48	94	08:45 (1)	22:04	89	08:48 (1)
31	08:25		07:25				05:37		07:11 (1)			
	17:33		20:15				21:49	94	08:45 (1)			
Potential sun hours	262	279	367	414			482			494		
Total, worst case					1387			2946			2695	
Sun reduction					0,46			0,46			0,44	
Oper. time red.					0,95			0,95			0,95	
Wind dir. red.					0,63			0,63			0,63	
Total reduction					0,28			0,28			0,27	
Total, real					382			813			721	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: C - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October	November	December
1	05:34		07:19 (1)	06:09		07:20 (1)	06:57		07:49 (1)	07:44	07:36	08:26
	22:04	90	08:49 (1)	21:33	97	08:57 (1)	20:33	31	08:20 (1)	19:25	17:21	16:42
2	05:35		07:19 (1)	06:11		07:21 (1)	06:59		07:54 (1)	07:46	07:38	08:27
	22:04	90	08:49 (1)	21:32	96	08:57 (1)	20:31	19	08:13 (1)	19:23	17:19	16:42
3	05:35		07:19 (1)	06:12		07:21 (1)	07:00			07:48	07:40	08:29
	22:03	90	08:49 (1)	21:30	96	08:57 (1)	20:29			19:21	17:17	16:41
4	05:36		07:19 (1)	06:14		07:21 (1)	07:02			07:49	07:42	08:30
	22:03	91	08:50 (1)	21:28	95	08:56 (1)	20:26			19:19	17:16	16:40
5	05:37		07:19 (1)	06:15		07:21 (1)	07:03			07:51	07:43	08:31
	22:02	91	08:50 (1)	21:27	96	08:57 (1)	20:24			19:16	17:14	16:40
6	05:38		07:19 (1)	06:17		07:21 (1)	07:05			07:52	07:45	08:32
	22:02	91	08:50 (1)	21:25	95	08:56 (1)	20:22			19:14	17:12	16:40
7	05:38		07:19 (1)	06:18		07:22 (1)	07:06			07:54	07:47	08:34
	22:01	92	08:51 (1)	21:23	94	08:56 (1)	20:20			19:12	17:11	16:39
8	05:39		07:19 (1)	06:20		07:22 (1)	07:08			07:56	07:49	08:35
	22:01	92	08:51 (1)	21:22	93	08:55 (1)	20:18			19:10	17:09	16:39
9	05:40		07:20 (1)	06:21		07:23 (1)	07:10			07:57	07:50	08:36
	22:00	92	08:52 (1)	21:20	93	08:56 (1)	20:15			19:08	17:07	16:39
10	05:41		07:20 (1)	06:23		07:23 (1)	07:11			07:59	07:52	08:37
	21:59	92	08:52 (1)	21:18	92	08:55 (1)	20:13			19:05	17:06	16:38
11	05:42		07:20 (1)	06:24		07:22 (1)	07:13			08:01	07:54	08:38
	21:59	93	08:53 (1)	21:16	92	08:54 (1)	20:11			19:03	17:04	16:38
12	05:43		07:20 (1)	06:26		07:23 (1)	07:14			08:02	07:55	08:39
	21:58	93	08:53 (1)	21:14	91	08:54 (1)	20:09			19:01	17:03	16:38
13	05:44		07:20 (1)	06:27		07:23 (1)	07:16			08:04	07:57	08:40
	21:57	93	08:53 (1)	21:12	90	08:53 (1)	20:06			18:59	17:01	16:38
14	05:45		07:20 (1)	06:29		07:24 (1)	07:17			08:06	07:59	08:41
	21:56	94	08:54 (1)	21:10	88	08:52 (1)	20:04			18:57	17:00	16:38
15	05:47		07:20 (1)	06:30		07:24 (1)	07:19			08:07	08:01	08:42
	21:55	94	08:54 (1)	21:08	87	08:51 (1)	20:02			18:55	16:59	16:38
16	05:48		07:20 (1)	06:32		07:26 (1)	07:21			08:09	08:02	08:43
	21:54	94	08:54 (1)	21:07	85	08:51 (1)	19:59			18:52	16:57	16:38
17	05:49		07:20 (1)	06:34		07:26 (1)	07:22			08:11	08:04	08:44
	21:53	94	08:54 (1)	21:05	83	08:49 (1)	19:57			18:50	16:56	16:39
18	05:50		07:20 (1)	06:35		07:27 (1)	07:24			08:12	08:06	08:44
	21:52	95	08:55 (1)	21:03	82	08:49 (1)	19:55			18:48	16:55	16:39
19	05:51		07:19 (1)	06:37		07:27 (1)	07:25			08:14	08:07	08:45
	21:51	96	08:55 (1)	21:01	80	08:47 (1)	19:53			18:46	16:53	16:39
20	05:53		07:20 (1)	06:38		07:28 (1)	07:27			08:16	08:09	08:46
	21:50	96	08:56 (1)	20:59	79	08:47 (1)	19:50			18:44	16:52	16:39
21	05:54		07:20 (1)	06:40		07:29 (1)	07:28			08:17	08:11	08:46
	21:49	96	08:56 (1)	20:57	76	08:45 (1)	19:48			18:42	16:51	16:40
22	05:55		07:20 (1)	06:41		07:30 (1)	07:30			08:19	08:12	08:47
	21:48	96	08:56 (1)	20:54	74	08:44 (1)	19:46			18:40	16:50	16:40
23	05:56		07:20 (1)	06:43		07:31 (1)	07:32			08:21	08:14	08:47
	21:46	96	08:56 (1)	20:52	71	08:42 (1)	19:43			18:38	16:49	16:41
24	05:58		07:20 (1)	06:44		07:33 (1)	07:33			08:23	08:15	08:48
	21:45	97	08:57 (1)	20:50	68	08:41 (1)	19:41			18:36	16:48	16:41
25	05:59		07:20 (1)	06:46		07:34 (1)	07:35			07:24	08:17	08:48
	21:44	97	08:57 (1)	20:48	65	08:39 (1)	19:39			17:34	16:47	16:42
26	06:01		07:20 (1)	06:48		07:36 (1)	07:36			07:26	08:18	08:48
	21:42	97	08:57 (1)	20:46	61	08:37 (1)	19:37			17:32	16:46	16:43
27	06:02		07:20 (1)	06:49		07:37 (1)	07:38			07:28	08:20	08:49
	21:41	97	08:57 (1)	20:44	58	08:35 (1)	19:34			17:30	16:45	16:43
28	06:03		07:20 (1)	06:51		07:39 (1)	07:40			07:29	08:21	08:49
	21:39	97	08:57 (1)	20:42	54	08:33 (1)	19:32			17:28	16:44	16:44
29	06:05		07:20 (1)	06:52		07:40 (1)	07:41			07:31	08:23	08:49
	21:38	97	08:57 (1)	20:40	50	08:30 (1)	19:30			17:26	16:44	16:45
30	06:06		07:20 (1)	06:54		07:43 (1)	07:43			07:33	08:24	08:49
	21:36	97	08:57 (1)	20:37	44	08:27 (1)	19:28			17:25	16:43	16:46
31	06:08		07:21 (1)	06:55		07:45 (1)				07:35		08:49
	21:35	96	08:57 (1)	20:35	38	08:23 (1)				17:23		16:47
Potential sun hours	498			451			380			333	269	248
Total, worst case		2916			2463			50				
Sun reduction		0,45			0,47			0,43				
Oper. time red.		0,95			0,95			0,95				
Wind dir. red.		0,63			0,63			0,63				
Total reduction		0,27			0,28			0,26				
Total, real		790			695			13				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: D - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May		June		July		August		September	October	November	December
1	08:49	08:24	07:32	07:23		06:20		06:44 (1)	05:37		06:39 (1)	05:34		06:49 (1)	06:09		06:45 (1)	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17		21:06	30	07:14 (1)	21:50	38	07:17 (1)	22:04	30	07:19 (1)	21:33	45	07:30 (1)	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21		06:18		06:42 (1)	05:36		06:40 (1)	05:35		06:48 (1)	06:11		06:46 (1)	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:19		21:08	33	07:15 (1)	21:51	38	07:18 (1)	22:04	31	07:19 (1)	21:32	45	07:31 (1)	20:31	19:23	17:19	16:42
3	08:49	08:21	07:28	07:19		06:16		06:41 (1)	05:35		06:40 (1)	05:35		06:48 (1)	06:12		06:46 (1)	07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20		21:09	36	07:17 (1)	21:52	37	07:17 (1)	22:03	32	07:20 (1)	21:30	44	07:30 (1)	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:17		06:15		06:39 (1)	05:34		06:40 (1)	05:36		06:48 (1)	06:14		06:46 (1)	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22		21:11	38	07:17 (1)	21:53	36	07:16 (1)	22:03	33	07:21 (1)	21:29	43	07:29 (1)	20:27	19:19	17:16	16:40
5	08:49	08:18	07:24	07:14		06:13		06:38 (1)	05:34		06:41 (1)	05:37		06:49 (1)	06:15		06:47 (1)	07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:24		21:13	39	07:17 (1)	21:54	36	07:17 (1)	22:02	33	07:22 (1)	21:27	42	07:29 (1)	20:24	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12		06:11		06:38 (1)	05:33		06:41 (1)	05:38		06:48 (1)	06:17		06:47 (1)	07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25		21:14	41	07:19 (1)	21:55	35	07:16 (1)	22:02	34	07:22 (1)	21:25	41	07:28 (1)	20:22	19:14	17:12	16:40
7	08:48	08:14	07:19	07:10		06:09		06:37 (1)	05:32		06:42 (1)	05:38		06:48 (1)	06:18		06:48 (1)	07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27		21:16	42	07:19 (1)	21:56	34	07:16 (1)	22:01	35	07:23 (1)	21:23	40	07:28 (1)	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08		06:08		06:36 (1)	05:32		06:43 (1)	05:39		06:48 (1)	06:20		06:48 (1)	07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28		21:17	43	07:19 (1)	21:57	33	07:16 (1)	22:01	35	07:23 (1)	21:22	39	07:27 (1)	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05		06:06		06:36 (1)	05:31		06:43 (1)	05:40		06:47 (1)	06:21		06:49 (1)	07:10	07:57	07:50	08:36
	16:58	17:49	18:39	20:30		21:19	44	07:20 (1)	21:58	32	07:15 (1)	22:00	37	07:24 (1)	21:20	37	07:26 (1)	20:15	19:08	17:07	16:39
10	08:47	08:09	07:13	07:03		06:04		06:35 (1)	05:31		06:44 (1)	05:41		06:47 (1)	06:23		06:50 (1)	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32		21:20	45	07:20 (1)	21:59	31	07:15 (1)	21:59	38	07:25 (1)	21:18	35	07:25 (1)	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01		06:03		06:35 (1)	05:31		06:45 (1)	05:42		06:47 (1)	06:24		06:51 (1)	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33		21:22	45	07:20 (1)	21:59	30	07:15 (1)	21:59	38	07:25 (1)	21:16	32	07:23 (1)	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59		06:01		06:34 (1)	05:30		06:44 (1)	05:43		06:47 (1)	06:26		06:53 (1)	07:14	08:02	07:55	08:39
	17:02	17:54	18:44	20:35		21:23	46	07:20 (1)	22:00	31	07:15 (1)	21:58	39	07:26 (1)	21:14	29	07:22 (1)	20:09	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57		06:00		06:35 (1)	05:30		06:45 (1)	05:44		06:47 (1)	06:27		06:54 (1)	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37		21:25	46	07:21 (1)	22:01	30	07:15 (1)	21:57	39	07:26 (1)	21:12	26	07:20 (1)	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55		05:58		06:34 (1)	05:30		06:46 (1)	05:45		06:46 (1)	06:29		06:56 (1)	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38		21:26	46	07:20 (1)	22:01	29	07:15 (1)	21:56	41	07:27 (1)	21:10	22	07:18 (1)	20:04	18:57	17:00	16:38
15	08:44	08:00	07:01	06:52		05:56		06:34 (1)	05:30		06:46 (1)	05:47		06:46 (1)	06:30		06:57 (1)	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40		21:28	46	07:20 (1)	22:02	29	07:15 (1)	21:55	41	07:27 (1)	21:09	18	07:15 (1)	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50		05:55		06:34 (1)	05:30		06:47 (1)	05:48		06:46 (1)	06:32		07:02 (1)	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42		21:29	47	07:21 (1)	22:02	28	07:15 (1)	21:54	42	07:28 (1)	21:07	10	07:12 (1)	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48		05:54		06:34 (1)	05:30		06:47 (1)	05:49		06:46 (1)	06:34			07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43		21:31	46	07:20 (1)	22:03	28	07:15 (1)	21:53	42	07:28 (1)	21:05			19:57	18:50	16:56	16:39
18	08:41	07:54	06:55	06:46		05:52		06:34 (1)	05:30		06:47 (1)	05:50		06:45 (1)	06:35			07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45		21:32	46	07:20 (1)	22:03	28	07:15 (1)	21:52	43	07:28 (1)	21:03			19:55	18:48	16:55	16:39
19	08:40	07:52	06:53	06:44		05:51		06:34 (1)	05:30		06:47 (1)	05:51		06:45 (1)	06:37			07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:47		21:34	46	07:20 (1)	22:04	28	07:15 (1)	21:51	44	07:29 (1)	21:01			19:53	18:46	16:53	16:39
20	08:39	07:51	06:50	06:42		05:49		06:35 (1)	05:30		06:48 (1)	05:53		06:46 (1)	06:38			07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48		21:35	46	07:21 (1)	22:04	27	07:15 (1)	21:50	44	07:30 (1)	20:59			19:50	18:44	16:52	16:39
21	08:38	07:49	06:48	06:40		05:48		06:35 (1)	05:30		06:48 (1)	05:54		06:45 (1)	06:40			07:28	08:17	08:11	08:46
	17:16	18:11	18:59	20:50		21:37	46	07:21 (1)	22:04	27	07:15 (1)	21:49	45	07:30 (1)	20:57			19:48	18:42	16:51	16:40
22	08:37	07:47	06:46	06:38		05:47		06:35 (1)	05:30		06:49 (1)	05:55		06:45 (1)	06:41			07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51		21:38	45	07:20 (1)	22:04	27	07:16 (1)	21:48	45	07:30 (1)	20:54			19:46	18:40	16:50	16:40
23	08:36	07:45	06:44	06:36		05:46		06:35 (1)	05:30		06:49 (1)	05:56		06:45 (1)	06:43			07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53		21:39	44	07:19 (1)	22:04	27	07:16 (1)	21:46	45	07:30 (1)	20:52			19:43	18:38	16:49	16:41
24	08:35	07:42	06:41	06:34		05:44		06:35 (1)	05:31		06:48 (1)	05:58		06:45 (1)	06:45			07:33	08:23	08:15	08:48
	17:21	18:16	19:04	20:55		21:41	44	07:19 (1)	22:05	28	07:16 (1)	21:45	46	07:31 (1)	20:50			19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32		05:43		06:36 (1)	05:31		06:49 (1)	05:59		06:45 (1)	06:46			07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56		21:42	43	07:19 (1)	22:05	28	07:17 (1)	21:44	46	07:31 (1)	20:48			19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30		05:42		06:36 (1)	05:31		06:49 (1)	06:01		06:45 (1)	06:48			07:36	07:26	08:18	08:49
	17:24	18:19	19:07	20:58		21:43	43	07:19 (1)	22:05	28	07:17 (1)	21:42	46	07:31 (1)	20:46			19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28		06:53 (1)	05:41	06:36 (1)	05:32		06:49 (1)	06:02		06:44 (1)	06:49			07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	12	07:05 (1)	21:44	42	07:18 (1)	22:05	29	07:18 (1)	21:41	47	07:31 (1)	20:44			19:34	17:30	16:45	16:44
28	08:30	07:34	06:32	06:26		06:49 (1)	05:40	06:37 (1)	05:32		06:49 (1)	06:03		06:45 (1)	06:51			07:40	07:29	08:21	08:49
	17:28	18:23	19:10	21:01	19	07:08 (1)	21:46	41	07:18 (1)	22:05	29	07:18 (1)	21:39	46	07:31 (1)	20:42			19:32	17:28	16:44	16:44
29	08:28		07:30	06:24		06:48 (1)	05:39	06:38 (1)	05:33		06:49 (1)	06:05		06:45 (1)	06:52			07:41	07:31	08:23	08:49
	17:29		20:12	21:03	23	07:11 (1)	21:47	41	07:19 (1)	22:04	30	07:19 (1)	21:38	46	07:31 (1)	20:40			19:30	17:26	16:44	16:45
30	08:27		07:28	06:22		06:46 (1)	05:38	06:38 (1)	05:33		06:49 (1)	06:06		06:44 (1)	06:54			07:43	07:33	08:24	08:49
	17:31		20:14	21:04	27	07:13 (1)	21:48	40	07:18 (1)	22:04	30	07:19 (1)	21:37	46	07:30 (1)	20:37			19:28	17:25	16:43	16:46
31	08:25		07:25				05:37	06:38 (1)					06:08		06:45 (1)	06:56				07:35		08:49
	17:33		20:15				21:49	40	07:18 (1)				21:35	46	07:31 (1)	20:35				17:23		16:47
Potential sun hours	262	279	367	414			482			494			498			451			380	333	269	248
Total, worst case					81			1320			921			1255			548					
Sun reduction					0,46			0,46			0,44			0,45			0,47					
Oper. time red.					0,95			0,95			0,95			0,95			0,95					
Wind dir. red.					0,67			0,67			0,67			0,67			0,67					
Total reduction					0,29			0,29			0,28			0,28			0,30					
Total, real					23			383			259			357			163					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

Total_Ertvelde-RE-20-64-WE-REV-20200701_v2

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu

Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: E - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May		June		July		August		September	October	November	December
1	08:49	08:24	07:32	07:23	06:20		05:37		06:15 (1)		05:34		06:22 (1)	06:09		06:37 (1)	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06		21:50	46	07:01 (1)		22:04	46	07:08 (1)	21:33	23	07:00 (1)	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18		05:36		06:16 (1)		05:35		06:21 (1)	06:11		06:39 (1)	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:19	21:08		21:51	46	07:02 (1)		22:04	46	07:07 (1)	21:32	20	06:59 (1)	20:31	19:23	17:19	16:42
3	08:49	08:21	07:28	07:19	06:16		05:35		06:16 (1)		05:35		06:22 (1)	06:12		06:40 (1)	07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20	21:09		21:52	46	07:02 (1)		22:03	46	07:08 (1)	21:30	16	06:56 (1)	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:17	06:15		05:34		06:15 (1)		05:36		06:22 (1)	06:14		06:44 (1)	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11		21:53	47	07:02 (1)		22:03	46	07:08 (1)	21:28	7	06:51 (1)	20:27	19:19	17:16	16:40
5	08:49	08:18	07:24	07:14	06:13		05:34		06:16 (1)		05:37		06:23 (1)	06:15			07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:24	21:13		21:54	46	07:02 (1)		22:02	46	07:09 (1)	21:27			20:24	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12	06:11		05:33		06:16 (1)		05:38		06:22 (1)	06:17			07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25	21:14		21:55	46	07:02 (1)		22:02	46	07:08 (1)	21:25			20:22	19:14	17:12	16:40
7	08:48	08:14	07:19	07:10	06:09		05:32		06:16 (1)		05:38		06:22 (1)	06:18			07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16		21:56	47	07:03 (1)		22:01	47	07:09 (1)	21:23			20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08		05:32		06:17 (1)		05:39		06:23 (1)	06:20			07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28	21:17		21:57	46	07:03 (1)		22:01	46	07:09 (1)	21:22			20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	06:06		06:33 (1)		05:31		06:17 (1)		05:40	06:23 (1)		06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:39	20:30	21:19	11	06:44 (1)		21:58	46	07:03 (1)		22:00	46	07:09 (1)	21:20	20:15	19:08	17:07	16:39
10	08:47	08:09	07:13	07:03	06:04		06:29 (1)		05:31		06:17 (1)		05:41	06:23 (1)		06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20	17	06:46 (1)		21:59	46	07:03 (1)		21:59	47	07:10 (1)	21:18	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01	06:03		06:28 (1)		05:31		06:18 (1)		05:42	06:24 (1)		06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22	21	06:49 (1)		21:59	46	07:04 (1)		21:59	46	07:10 (1)	21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01		06:26 (1)		05:30		06:17 (1)		05:43	06:24 (1)		06:26	07:14	08:02	07:55	08:39
	17:02	17:54	18:44	20:35	21:23	24	06:50 (1)		22:00	46	07:03 (1)		21:58	46	07:10 (1)	21:14	20:09	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	06:00		06:25 (1)		05:30		06:17 (1)		05:44	06:24 (1)		06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25	27	06:52 (1)		22:01	46	07:03 (1)		21:57	46	07:10 (1)	21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58		06:23 (1)		05:30		06:18 (1)		05:45	06:24 (1)		06:29	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:26	30	06:53 (1)		22:01	46	07:04 (1)		21:56	46	07:10 (1)	21:10	20:04	18:57	17:00	16:38
15	08:43	08:00	07:01	06:52	05:56		06:22 (1)		05:30		06:18 (1)		05:47	06:24 (1)		06:30	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	21:28	32	06:54 (1)		22:02	46	07:04 (1)		21:55	46	07:10 (1)	21:09	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55		06:21 (1)		05:30		06:18 (1)		05:48	06:25 (1)		06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:29	34	06:55 (1)		22:02	46	07:04 (1)		21:54	45	07:10 (1)	21:07	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	05:54		06:19 (1)		05:30		06:19 (1)		05:49	06:25 (1)		06:34	07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43	21:31	36	06:55 (1)		22:03	45	07:04 (1)		21:53	45	07:10 (1)	21:05	19:57	18:50	16:56	16:39
18	08:41	07:54	06:55	06:46	05:52		06:18 (1)		05:30		06:19 (1)		05:50	06:25 (1)		06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32	38	06:56 (1)		22:03	46	07:05 (1)		21:52	44	07:09 (1)	21:03	19:55	18:48	16:55	16:39
19	08:40	07:52	06:53	06:44	05:51		06:18 (1)		05:30		06:19 (1)		05:51	06:25 (1)		06:37	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:47	21:34	39	06:57 (1)		22:04	46	07:05 (1)		21:51	44	07:09 (1)	21:01	19:53	18:46	16:53	16:39
20	08:39	07:51	06:50	06:42	05:49		06:18 (1)		05:30		06:19 (1)		05:53	06:26 (1)		06:38	07:27	08:16	08:09	08:46
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21	08:38	07:49	06:48	06:40	05:48		06:17 (1)		05:30		06:19 (1)		05:54	06:27 (1)		06:40	07:28	08:17	08:11	08:46
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22	08:37	07:47	06:46	06:38	05:47		06:16 (1)		05:30		06:20 (1)		05:55	06:27 (1)		06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38	42	06:58 (1)		22:04	46	07:06 (1)		21:48	42	07:09 (1)	20:54	19:46	18:40	16:50	16:40
23	08:36	07:45	06:44	06:36	05:46		06:16 (1)		05:30		06:20 (1)		05:56	06:27 (1)		06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39	43	06:59 (1)		22:04	46	07:06 (1)		21:46	41	07:08 (1)	20:52	19:43	18:38	16:49	16:41
24	08:35	07:42	06:41	06:34	05:44		06:16 (1)		05:31		06:20 (1)		05:58	06:28 (1)		06:45	07:33	08:23	08:15	08:48
	17:21	18:16	19:04	20:55	21:41	43	06:59 (1)		22:05	46	07:06 (1)		21:45	40	07:08 (1)	20:50	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	05:43		06:16 (1)		05:31		06:21 (1)		05:59	06:29 (1)		06:46	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	21:42	44	07:00 (1)		22:05	45	07:06 (1)		21:44	38	07:07 (1)	20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42		06:15 (1)		05:31		06:20 (1)		06:01	06:29 (1)		06:48	07:36	07:26	08:18	08:49
	17:24	18:19	19:07	20:58	21:43	45	07:00 (1)		22:05	46	07:06 (1)		21:42	38	07:07 (1)	20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	05:41		06:15 (1)		05:32		06:21 (1)		06:02	06:30 (1)		06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:44	45	07:00 (1)		22:05	46	07:07 (1)		21:41	35	07:05 (1)	20:44	19:34	17:30	16:45	16:44
28	08:30	07:34	06:32	06:26	05:40		06:15 (1)		05:32		06:21 (1)		06:03	06:32 (1)		06:51	07:40	07:29	08:21	08:49
	17:28	18:23	19:10	21:01	21:46	45	07:00 (1)		22:05	46	07:07 (1)		21:39	33	07:05 (1)	20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39		06:16 (1)		05:33		06:22 (1)		06:05	06:33 (1)		06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47	45	07:01 (1)		22:04	46	07:08 (1)		21:38	31	07:04 (1)	20:40	19:30	17:26	16:44	16:45
30	08:27		07:28	06:22	05:38		06:16 (1)		05:33		06:21 (1)		06:06	06:34 (1)		06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:04	21:48	45	07:01 (1)		22:04	46	07:07 (1)		21:37	29	07:03 (1)	20:37	19:28	17:25	16:43	16:46
31	08:25		07:25		05:37		06:15 (1)						06:08	06:36 (1)		06:56		07:35		08:49
	17:33		20:15		21:49	46	07:01 (1)						21:35	26	07:02 (1)	20:35		17:23		16:47
Potential sun hours	262	279	367	414	482			494				498			451		380	333	269	248
Total, worst case						834			1380				1309			66				
Sun reduction						0,46			0,44				0,45			0,47				
Oper. time red.						0,95			0,95				0,95			0,95				
Wind dir. red.						0,69			0,69				0,69			0,69				
Total reduction						0,30			0,29				0,29			0,31				
Total, real						250			401				385			20				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: F - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May		June		July		August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20		05:37	06:04 (1)	05:34	06:09 (1)	06:09	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06		21:50	34 06:38 (1)	22:04	36 06:45 (1)	21:33	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18		05:36	06:04 (1)	05:35	06:09 (1)	06:11	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:19	21:08		21:51	35 06:39 (1)	22:04	36 06:45 (1)	21:32	20:31	19:23	17:19	16:42
3	08:49	08:21	07:28	07:19	06:16		05:35	06:04 (1)	05:35	06:09 (1)	06:12	07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20	21:09		21:52	35 06:39 (1)	22:03	36 06:45 (1)	21:30	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:17	06:15		05:34	06:03 (1)	05:36	06:10 (1)	06:14	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11		21:53	36 06:39 (1)	22:03	36 06:46 (1)	21:29	20:27	19:19	17:16	16:40
5	08:49	08:18	07:24	07:14	06:13		05:34	06:04 (1)	05:37	06:10 (1)	06:15	07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:24	21:13		21:54	36 06:40 (1)	22:02	36 06:46 (1)	21:27	20:24	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12	06:11		05:33	06:04 (1)	05:38	06:10 (1)	06:17	07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25	21:14		21:55	35 06:39 (1)	22:02	36 06:46 (1)	21:25	20:22	19:14	17:12	16:40
7	08:48	08:14	07:19	07:10	06:09		05:32	06:04 (1)	05:38	06:10 (1)	06:18	07:07	07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16		21:56	36 06:40 (1)	22:01	36 06:46 (1)	21:23	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08		05:32	06:05 (1)	05:39	06:11 (1)	06:20	07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28	21:17		21:57	36 06:41 (1)	22:01	35 06:46 (1)	21:22	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	06:06		05:32	06:04 (1)	05:40	06:11 (1)	06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:39	20:30	21:19		21:58	36 06:40 (1)	22:00	35 06:46 (1)	21:20	20:15	19:08	17:07	16:39
10	08:47	08:09	07:13	07:03	06:04		05:31	06:05 (1)	05:41	06:12 (1)	06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20		21:59	36 06:41 (1)	21:59	34 06:46 (1)	21:18	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01	06:03		05:31	06:05 (1)	05:42	06:12 (1)	06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22		21:59	36 06:41 (1)	21:59	34 06:46 (1)	21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01		05:30	06:05 (1)	05:43	06:13 (1)	06:26	07:14	08:02	07:55	08:39
	17:02	17:55	18:44	20:35	21:23		22:00	36 06:41 (1)	21:58	33 06:46 (1)	21:14	20:09	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	06:00		05:30	06:05 (1)	05:44	06:14 (1)	06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25		22:01	36 06:41 (1)	21:57	32 06:46 (1)	21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58		05:30	06:05 (1)	05:45	06:15 (1)	06:29	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:26		22:01	36 06:41 (1)	21:56	31 06:46 (1)	21:10	20:04	18:57	17:00	16:38
15	08:44	08:00	07:02	06:52	05:56		05:30	06:06 (1)	05:47	06:16 (1)	06:30	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	21:28		22:02	36 06:42 (1)	21:55	30 06:46 (1)	21:09	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55		05:30	06:06 (1)	05:48	06:17 (1)	06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:29		22:02	36 06:42 (1)	21:54	29 06:46 (1)	21:07	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	05:54	06:19 (1)	05:30	06:06 (1)	05:49	06:18 (1)	06:34	07:22	08:11	08:04	08:44
	17:09	18:04	18:52	20:43	21:31	6 06:25 (1)	22:03	36 06:42 (1)	21:53	27 06:45 (1)	21:05	19:57	18:50	16:56	16:39
18	08:41	07:54	06:55	06:46	05:52	06:18 (1)	05:30	06:06 (1)	05:50	06:19 (1)	06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32	10 06:28 (1)	22:03	36 06:42 (1)	21:52	26 06:45 (1)	21:03	19:55	18:48	16:55	16:39
19	08:40	07:52	06:53	06:44	05:51	06:17 (1)	05:30	06:06 (1)	05:51	06:20 (1)	06:37	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:47	21:34	13 06:30 (1)	22:04	36 06:42 (1)	21:51	24 06:44 (1)	21:01	19:53	18:46	16:53	16:39
20	08:39	07:51	06:50	06:42	05:49	06:16 (1)	05:30	06:06 (1)	05:53	06:22 (1)	06:38	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	21:35	15 06:31 (1)	22:04	37 06:43 (1)	21:50	22 06:44 (1)	20:59	19:50	18:44	16:52	16:39
21	08:38	07:49	06:48	06:40	05:48	06:15 (1)	05:30	06:07 (1)	05:54	06:23 (1)	06:40	07:28	08:17	08:11	08:46
	17:16	18:11	18:59	20:50	21:37	17 06:32 (1)	22:04	37 06:44 (1)	21:49	21 06:44 (1)	20:57	19:48	18:42	16:51	16:40
22	08:37	07:47	06:46	06:38	05:47	06:13 (1)	05:30	06:07 (1)	05:55	06:24 (1)	06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38	20 06:33 (1)	22:04	37 06:44 (1)	21:48	19 06:43 (1)	20:54	19:46	18:40	16:50	16:40
23	08:36	07:45	06:44	06:36	05:46	06:12 (1)	05:30	06:07 (1)	05:56	06:25 (1)	06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39	21 06:33 (1)	22:04	36 06:43 (1)	21:46	16 06:41 (1)	20:52	19:43	18:38	16:49	16:41
24	08:35	07:42	06:41	06:34	05:44	06:11 (1)	05:31	06:07 (1)	05:58	06:27 (1)	06:45	07:33	08:23	08:15	08:48
	17:21	18:16	19:04	20:55	21:41	23 06:34 (1)	22:05	36 06:43 (1)	21:45	14 06:41 (1)	20:50	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	05:43	06:10 (1)	05:31	06:08 (1)	05:59	06:28 (1)	06:46	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	21:42	25 06:35 (1)	22:05	36 06:44 (1)	21:44	11 06:39 (1)	20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42	06:09 (1)	05:31	06:08 (1)	06:01	06:29 (1)	06:48	07:36	07:26	08:18	08:49
	17:24	18:19	19:07	20:58	21:43	26 06:35 (1)	22:05	36 06:44 (1)	21:42	8 06:37 (1)	20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	05:41	06:08 (1)	05:32	06:09 (1)	06:02	06:30 (1)	06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:44	28 06:36 (1)	22:05	36 06:45 (1)	21:41	4 06:34 (1)	20:44	19:34	17:30	16:45	16:44
28	08:30	07:34	06:32	06:26	05:40	06:07 (1)	05:32	06:08 (1)	06:03		06:51	07:40	07:29	08:21	08:49
	17:28	18:23	19:10	21:01	21:46	29 06:36 (1)	22:05	37 06:45 (1)	21:39		20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39	06:07 (1)	05:33	06:09 (1)	06:05		06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47	31 06:38 (1)	22:04	36 06:45 (1)	21:38		20:40	19:30	17:27	16:44	16:45
30	08:27		07:28	06:22	05:38	06:06 (1)	05:33	06:09 (1)	06:06		06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:04	21:48	32 06:38 (1)	22:04	36 06:45 (1)	21:37		20:37	19:28	17:25	16:43	16:46
31	08:25		07:25		05:37	06:05 (1)			06:08		06:56		07:35		08:49
	17:33		20:15		21:49	33 06:38 (1)			21:35		20:35		17:23		16:47
Potential sun hours	262	279	367	414	482		494		498		451	380	333	269	248
Total, worst case						329		1079		737					
Sun reduction						0,46		0,44		0,45					
Oper. time red.						0,95		0,95		0,95					
Wind dir. red.						0,70		0,70		0,70					
Total reduction						0,30		0,29		0,30					
Total, real						100		318		220					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: G - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	05:37	06:09 (1) 05:34	06:21 (1) 06:09	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06	21:50 19	06:28 (1) 22:04 7	06:28 (1) 21:33	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	05:36	06:10 (1) 05:35	06:20 (1) 06:11	06:59	07:46	07:38	08:27
	16:49	17:37	18:27	20:19	21:08	21:51 18	06:28 (1) 22:04 9	06:29 (1) 21:32	20:31	19:23	17:19	16:42
3	08:49	08:21	07:28	07:19	06:17	05:35	06:10 (1) 05:35	06:20 (1) 06:12	07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20	21:09	21:52 17	06:27 (1) 22:03 10	06:30 (1) 21:30	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:17	06:15	05:34	06:12 (1) 05:36	06:20 (1) 06:14	07:02	07:49	07:42	08:30
	16:52	17:40	18:30	20:22	21:11	21:53 16	06:28 (1) 22:03 11	06:31 (1) 21:29	20:27	19:19	17:16	16:41
5	08:49	08:18	07:24	07:14	06:13	05:34	06:12 (1) 05:37	06:20 (1) 06:15	07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:24	21:13	21:54 15	06:27 (1) 22:02 12	06:32 (1) 21:27	20:24	19:16	17:14	16:40
6	08:49	08:16	07:21	07:12	06:11	05:33	06:13 (1) 05:38	06:18 (1) 06:17	07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25	21:14	21:55 14	06:27 (1) 22:02 14	06:32 (1) 21:25	20:22	19:14	17:12	16:40
7	08:48	08:14	07:19	07:10	06:09	05:33	06:13 (1) 05:39	06:18 (1) 06:18	07:07	07:54	07:47	08:34
	16:55	17:46	18:35	20:27	21:16	21:56 13	06:26 (1) 22:01 15	06:33 (1) 21:23	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08	05:32	06:14 (1) 05:39	06:18 (1) 06:20	07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28	21:17	21:57 12	06:26 (1) 22:01 16	06:34 (1) 21:22	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:06	06:06	05:32	06:14 (1) 05:40	06:18 (1) 06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:39	20:30	21:19	21:58 11	06:25 (1) 22:00 17	06:35 (1) 21:20	20:15	19:08	17:08	16:39
10	08:47	08:09	07:13	07:03	06:04	05:31	06:16 (1) 05:41	06:18 (1) 06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20	21:59 9	06:25 (1) 21:59 17	06:35 (1) 21:18	20:13	19:05	17:06	16:38
11	08:46	08:08	07:10	07:01	06:03	05:31	06:17 (1) 05:42	06:18 (1) 06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22	21:59 8	06:25 (1) 21:59 18	06:36 (1) 21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01	05:30	06:17 (1) 05:43	06:17 (1) 06:26	07:14	08:02	07:55	08:39
	17:02	17:55	18:44	20:35	21:23	22:00 6	06:23 (1) 21:58 19	06:36 (1) 21:14	20:09	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	06:00	05:30	06:19 (1) 05:44	06:17 (1) 06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25	22:01 3	06:22 (1) 21:57 20	06:37 (1) 21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58 06:23 (1)	05:30	05:45	06:17 (1) 06:29	07:18	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:27 1 06:24 (1)	22:01	21:56 20	06:37 (1) 21:10	20:04	18:57	17:00	16:38
15	08:44	08:00	07:02	06:53	05:57 06:22 (1)	05:30	05:47	06:17 (1) 06:31	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	21:28 3 06:25 (1)	22:02	21:55 21	06:38 (1) 21:09	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55 06:21 (1)	05:30	05:48	06:17 (1) 06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:29 6 06:27 (1)	22:02	21:54 21	06:38 (1) 21:07	19:59	18:53	16:57	16:38
17	08:42	07:56	06:57	06:48	05:54 06:19 (1)	05:30	05:49	06:18 (1) 06:34	07:22	08:11	08:04	08:44
	17:09	18:04	18:52	20:43	21:31 8 06:27 (1)	22:03	21:53 20	06:38 (1) 21:05	19:57	18:50	16:56	16:39
18	08:41	07:54	06:55	06:46	05:52 06:18 (1)	05:30	05:50	06:19 (1) 06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32 9 06:27 (1)	22:03	21:52 19	06:38 (1) 21:03	19:55	18:48	16:55	16:39
19	08:40	07:53	06:53	06:44	05:51 06:17 (1)	05:30	05:51	06:20 (1) 06:37	07:25	08:14	08:07	08:45
	17:13	18:07	18:55	20:47	21:34 11 06:28 (1)	22:04	21:51 18	06:38 (1) 21:01	19:53	18:46	16:54	16:39
20	08:39	07:51	06:50	06:42	05:50 06:16 (1)	05:30	05:53	06:22 (1) 06:38	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	21:35 13 06:29 (1)	22:04	21:50 17	06:39 (1) 20:59	19:50	18:44	16:52	16:40
21	08:38	07:49	06:48	06:40	05:48 06:15 (1)	05:30	05:54	06:23 (1) 06:40	07:28	08:17	08:11	08:46
	17:16	18:11	18:59	20:50	21:37 14 06:29 (1)	22:04	21:49 16	06:39 (1) 20:57	19:48	18:42	16:51	16:40
22	08:37	07:47	06:46	06:38	05:47 06:13 (1)	05:30	05:55	06:24 (1) 06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38 15 06:28 (1)	22:04	21:48 15	06:39 (1) 20:54	19:46	18:40	16:50	16:40
23	08:36	07:45	06:44	06:36	05:46 06:12 (1)	05:30	05:57	06:25 (1) 06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39 17 06:29 (1)	22:05	21:46 13	06:38 (1) 20:52	19:44	18:38	16:49	16:41
24	08:35	07:43	06:41	06:34	05:45 06:11 (1)	05:31	05:58	06:27 (1) 06:45	07:33	08:23	08:15	08:48
	17:21	18:16	19:04	20:55	21:41 18 06:29 (1)	22:05	21:45 12	06:39 (1) 20:50	19:41	18:36	16:48	16:42
25	08:33	07:40	06:39	06:32	05:43 06:10 (1)	05:31	05:59	06:28 (1) 06:46	07:35	07:24	08:17	08:48
	17:23	18:18	19:05	20:56	21:42 19 06:29 (1)	22:05	21:44 10	06:38 (1) 20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42 06:09 (1)	05:31	06:01	06:29 (1) 06:48	07:36	07:26	08:18	08:49
	17:24	18:20	19:07	20:58	21:43 20 06:29 (1)	22:05	21:42 9	06:38 (1) 20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:35	06:28	05:41 06:08 (1)	05:32	06:02	06:30 (1) 06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:44 21 06:29 (1)	22:05	21:41 7	06:37 (1) 20:44	19:34	17:30	16:45	16:44
28	08:30	07:34	06:32	06:26	05:40 06:08 (1)	05:32	06:03	06:32 (1) 06:51	07:40	07:29	08:22	08:49
	17:28	18:23	19:10	21:01	21:46 21 06:29 (1)	22:05	21:40 5	06:37 (1) 20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39 06:08 (1)	05:33	06:23 (1) 06:05	06:33 (1) 06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47 21 06:29 (1)	22:04 3	06:26 (1) 21:38 2	06:35 (1) 20:40	19:30	17:27	16:44	16:45
30	08:27		07:28	06:22	05:38 06:09 (1)	05:33	06:22 (1) 06:06	06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:05	21:48 20 06:29 (1)	22:04 5	06:27 (1) 21:37	20:38	19:28	17:25	16:43	16:46
31	08:25		07:26		05:37 06:09 (1)		06:08	06:56		07:35		08:49
	17:33		20:15		21:49 19 06:28 (1)		21:35	20:35		17:23		16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Total, worst case					256	169	410					
Sun reduction					0,46	0,44	0,45					
Oper. time red.					0,95	0,95	0,95					
Wind dir. red.					0,69	0,69	0,69					
Total reduction					0,30	0,29	0,30					
Total, real					77	50	122					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: H - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May		June	July	August		September	October	November	December
1	08:49	08:24	07:32	07:23		06:20	07:03 (1)	05:37	05:34	06:09		06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17		21:06	24 07:27 (1)	21:50	22:04	21:33		20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21		06:18	07:04 (1)	05:36	05:35	06:11		06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:19		21:08	21 07:25 (1)	21:51	22:04	21:32		20:31	19:23	17:19	16:42
3	08:49	08:21	07:28	07:19		06:17	07:06 (1)	05:35	05:35	06:12		07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20		21:09	19 07:25 (1)	21:52	22:03	21:30		20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:17		06:15	07:08 (1)	05:34	05:36	06:14		07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22		21:11	14 07:22 (1)	21:53	22:03	21:29		20:27	19:19	17:16	16:40
5	08:49	08:18	07:24	07:14		06:13	07:10 (1)	05:34	05:37	06:15		07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:24		21:13	9 07:19 (1)	21:54	22:02	21:27		20:24	19:16	17:14	16:40
6	08:49	08:16	07:21	07:12		06:11		05:33	05:38	06:17		07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25		21:14		21:55	22:02	21:25		20:22	19:14	17:12	16:40
7	08:48	08:14	07:19	07:10		06:09		05:32	05:38	06:18		07:07	07:54	07:47	08:34
	16:55	17:45	18:35	20:27		21:16		21:56	22:01	21:23		20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08		06:08		05:32	05:39	06:20	07:18 (1)	07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28		21:17		21:57	22:01	21:22	12 07:30 (1)	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05		06:06		05:32	05:40	06:21	07:17 (1)	07:10	07:57	07:50	08:36
	16:58	17:49	18:39	20:30		21:19		21:58	22:00	21:20	15 07:32 (1)	20:15	19:08	17:07	16:39
10	08:47	08:09	07:13	07:03		06:04		05:31	05:41	06:23	07:14 (1)	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32		21:20		21:59	21:59	21:18	20 07:34 (1)	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01		06:03		05:31	05:42	06:24	07:12 (1)	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33		21:22		21:59	21:59	21:16	22 07:34 (1)	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59		06:01		05:30	05:43	06:26	07:12 (1)	07:14	08:02	07:55	08:39
	17:02	17:55	18:44	20:35		21:23		22:00	21:58	21:14	24 07:36 (1)	20:09	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	07:19 (1)	06:00		05:30	05:44	06:27	07:10 (1)	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	6 07:25 (1)	21:25		22:01	21:57	21:12	26 07:36 (1)	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	07:17 (1)	05:58		05:30	05:45	06:29	07:10 (1)	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	11 07:28 (1)	21:27		22:01	21:56	21:10	28 07:38 (1)	20:04	18:57	17:00	16:38
15	08:44	08:00	07:02	06:52	07:15 (1)	05:56		05:30	05:47	06:30	07:09 (1)	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	14 07:29 (1)	21:28		22:02	21:55	21:09	29 07:38 (1)	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	07:13 (1)	05:55		05:30	05:48	06:32	07:08 (1)	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	18 07:31 (1)	21:29		22:02	21:54	21:07	30 07:38 (1)	19:59	18:53	16:57	16:38
17	08:42	07:56	06:57	06:48	07:11 (1)	05:54		05:30	05:49	06:34	07:07 (1)	07:22	08:11	08:04	08:44
	17:09	18:04	18:52	20:43	21 07:32 (1)	21:31		22:03	21:53	21:05	31 07:38 (1)	19:57	18:50	16:56	16:39
18	08:41	07:54	06:55	06:46	07:09 (1)	05:52		05:30	05:50	06:35	07:07 (1)	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	23 07:32 (1)	21:32		22:03	21:52	21:03	32 07:39 (1)	19:55	18:48	16:55	16:39
19	08:40	07:53	06:53	06:44	07:07 (1)	05:51		05:30	05:51	06:37	07:07 (1)	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:47	26 07:33 (1)	21:34		22:04	21:51	21:01	31 07:38 (1)	19:53	18:46	16:53	16:39
20	08:39	07:51	06:50	06:42	07:05 (1)	05:49		05:30	05:53	06:38	07:07 (1)	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	28 07:33 (1)	21:35		22:04	21:50	20:59	31 07:38 (1)	19:50	18:44	16:52	16:39
21	08:38	07:49	06:48	06:40	07:03 (1)	05:48		05:30	05:54	06:40	07:06 (1)	07:28	08:17	08:11	08:46
	17:16	18:11	18:59	20:50	30 07:33 (1)	21:37		22:04	21:49	20:57	32 07:38 (1)	19:48	18:42	16:51	16:40
22	08:37	07:47	06:46	06:38	07:02 (1)	05:47		05:30	05:55	06:41	07:08 (1)	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	31 07:33 (1)	21:38		22:04	21:48	20:54	30 07:38 (1)	19:46	18:40	16:50	16:40
23	08:36	07:45	06:44	06:36	07:01 (1)	05:46		05:30	05:56	06:43	07:09 (1)	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	32 07:33 (1)	21:39		22:05	21:46	20:52	28 07:37 (1)	19:44	18:38	16:49	16:41
24	08:35	07:42	06:41	06:34	07:01 (1)	05:44		05:31	05:58	06:45	07:11 (1)	07:33	08:23	08:15	08:48
	17:21	18:16	19:04	20:55	31 07:32 (1)	21:41		22:05	21:45	20:50	25 07:36 (1)	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	07:01 (1)	05:43		05:31	05:59	06:46	07:12 (1)	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	31 07:32 (1)	21:42		22:05	21:44	20:48	23 07:35 (1)	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	07:01 (1)	05:42		05:31	06:01	06:48	07:14 (1)	07:36	07:26	08:18	08:49
	17:24	18:19	19:07	20:58	30 07:31 (1)	21:43		22:05	21:42	20:46	20 07:34 (1)	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	07:01 (1)	05:41		05:32	06:02	06:49	07:15 (1)	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	30 07:31 (1)	21:44		22:05	21:41	20:44	17 07:32 (1)	19:34	17:30	16:45	16:44
28	08:30	07:34	06:32	06:26	07:01 (1)	05:40		05:32	06:03	06:51	07:17 (1)	07:40	07:29	08:22	08:49
	17:28	18:23	19:10	21:01	29 07:30 (1)	21:46		22:05	21:40	20:42	14 07:31 (1)	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	07:02 (1)	05:39		05:33	06:05	06:52	07:18 (1)	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	28 07:30 (1)	21:47		22:04	21:38	20:40	11 07:29 (1)	19:30	17:27	16:44	16:45
30	08:27		07:28	06:22	07:03 (1)	05:38		05:33	06:06	06:54	07:20 (1)	07:43	07:33	08:24	08:49
	17:31		20:14	21:04	26 07:29 (1)	21:48		22:04	21:37	20:38	6 07:26 (1)	19:28	17:25	16:43	16:46
31	08:25		07:25			05:37			06:08	06:56			07:35		08:49
	17:33		20:15			21:49			21:35	20:35			17:23		16:47
Potential sun hours	262	279	367	414		482		494	498	451		380	333	269	248
Total, worst case					445		87				537				
Sun reduction					0,46		0,46				0,47				
Oper. time red.					0,95		0,95				0,95				
Wind dir. red.					0,64		0,64				0,64				
Total reduction					0,28		0,28				0,28				
Total, real					123		24				152				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: I - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January			February	March	April	May	June	July	August	September	October	November	December		
1	08:49		11:29 (1)	08:24	07:32	07:23	06:20	05:36	05:34	06:09	06:57	07:44	07:36	08:26		
	16:48	34	12:03 (1)	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42		
2	08:49		11:30 (1)	08:22	07:30	07:21	06:18	05:36	05:34	06:11	06:59	07:46	07:38	08:27		11:27 (1)
	16:49	33	12:03 (1)	17:36	18:26	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:41	10	11:37 (1)
3	08:49		11:30 (1)	08:21	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48	07:40	08:29		11:24 (1)
	16:50	32	12:02 (1)	17:38	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:17	16:41	17	11:41 (1)
4	08:49		11:32 (1)	08:19	07:26	07:16	06:15	05:34	05:36	06:14	07:02	07:49	07:42	08:30		11:22 (1)
	16:51	30	12:02 (1)	17:40	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19	17:16	16:40	21	11:43 (1)
5	08:49		11:34 (1)	08:18	07:23	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43	08:31		11:22 (1)
	16:53	28	12:02 (1)	17:42	18:32	20:23	21:13	21:54	22:02	21:27	20:24	19:16	17:14	16:40	24	11:46 (1)
6	08:48		11:34 (1)	08:16	07:21	07:12	06:11	05:33	05:37	06:17	07:05	07:52	07:45	08:32		11:21 (1)
	16:54	27	12:01 (1)	17:44	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:39	26	11:47 (1)
7	08:48		11:37 (1)	08:14	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54	07:47	08:34		11:20 (1)
	16:55	24	12:01 (1)	17:45	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11	16:39	28	11:48 (1)
8	08:48		11:38 (1)	08:13	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56	07:49	08:35		11:20 (1)
	16:56	21	11:59 (1)	17:47	18:37	20:28	21:17	21:57	22:01	21:22	20:18	19:10	17:09	16:39	30	11:50 (1)
9	08:47		11:40 (1)	08:11	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57	07:50	08:36		11:20 (1)
	16:58	17	11:57 (1)	17:49	18:38	20:30	21:19	21:58	22:00	21:20	20:15	19:08	17:07	16:39	31	11:51 (1)
10	08:47		11:44 (1)	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52	08:37		11:19 (1)
	16:59	11	11:55 (1)	17:51	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06	16:38	33	11:52 (1)
11	08:46			08:07	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54	08:38		11:19 (1)
	17:00			17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:04	16:38	34	11:53 (1)
12	08:46			08:06	07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02	07:55	08:39		11:19 (1)
	17:02			17:54	18:44	20:35	21:23	22:00	21:58	21:14	20:09	19:01	17:03	16:38	35	11:54 (1)
13	08:45			08:04	07:06	06:57	05:59	05:30	05:44	06:27	07:16	08:04	07:57	08:40		11:19 (1)
	17:03			17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:01	16:38	36	11:55 (1)
14	08:44			08:02	07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06	07:59	08:41		11:19 (1)
	17:05			17:58	18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57	17:00	16:38	37	11:56 (1)
15	08:44			08:00	07:01	06:52	05:56	05:30	05:46	06:30	07:19	08:07	08:01	08:42		11:19 (1)
	17:06			18:00	18:49	20:40	21:28	22:02	21:55	21:09	20:02	18:55	16:59	16:38	38	11:57 (1)
16	08:43			07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02	08:43		11:20 (1)
	17:08			18:02	18:50	20:42	21:29	22:02	21:54	21:07	19:59	18:52	16:57	16:38	38	11:58 (1)
17	08:42			07:56	06:57	06:48	05:53	05:30	05:49	06:34	07:22	08:11	08:04	08:44		11:19 (1)
	17:09			18:03	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50	16:56	16:38	39	11:58 (1)
18	08:41			07:54	06:55	06:46	05:52	05:29	05:50	06:35	07:24	08:12	08:06	08:44		11:20 (1)
	17:11			18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39	39	11:59 (1)
19	08:40			07:52	06:52	06:44	05:51	05:30	05:51	06:37	07:25	08:14	08:07	08:45		11:20 (1)
	17:12			18:07	18:55	20:47	21:34	22:04	21:51	21:01	19:53	18:46	16:53	16:39	40	12:00 (1)
20	08:39			07:50	06:50	06:42	05:49	05:30	05:52	06:38	07:27	08:16	08:09	08:46		11:20 (1)
	17:14			18:09	18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52	16:39	40	12:00 (1)
21	08:38			07:49	06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17	08:11	08:46		11:21 (1)
	17:16			18:11	18:59	20:50	21:37	22:04	21:49	20:57	19:48	18:42	16:51	16:40	40	12:01 (1)
22	08:37			07:47	06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19	08:12	08:47		11:21 (1)
	17:17			18:12	19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40	16:50	16:40	40	12:01 (1)
23	08:36			07:44	06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21	08:14	08:47		11:22 (1)
	17:19			18:14	19:02	20:53	21:39	22:05	21:46	20:52	19:43	18:38	16:49	16:41	40	12:02 (1)
24	08:35			07:42	06:41	06:34	05:44	05:30	05:58	06:44	07:33	08:23	08:15	08:48		11:22 (1)
	17:21			18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:41	40	12:02 (1)
25	08:33			07:40	06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24	08:17	08:48		11:23 (1)
	17:22			18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42	39	12:02 (1)
26	08:32			07:38	06:37	06:30	05:42	05:31	06:00	06:48	07:36	07:26	08:18	08:49		11:24 (1)
	17:24			18:19	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43	39	12:03 (1)
27	08:31			07:36	06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20	08:49		11:25 (1)
	17:26			18:21	19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30	16:45	16:43	38	12:03 (1)
28	08:30			07:34	06:32	06:26	05:40	05:32	06:03	06:51	07:40	07:29	08:21	08:49		11:25 (1)
	17:28			18:23	19:10	21:01	21:46	22:05	21:39	20:42	19:32	17:28	16:44	16:44	38	12:03 (1)
29	08:28				07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31	08:23	08:49		11:26 (1)
	17:29				20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26	16:44	16:45	37	12:03 (1)
30	08:27				07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24	08:49		11:27 (1)
	17:31				20:14	21:04	21:48	22:04	21:37	20:37	19:28	17:25	16:43	16:46	36	12:03 (1)
31	08:25				07:25		05:37		06:08	06:55		07:35		08:49		11:28 (1)
	17:33				20:15		21:49		21:35	20:35		17:23		16:47	35	12:03 (1)
Potential sun hours	262			279	367	414	482	494	498	451	380	333	269	248		
Total, worst case		257													1018	
Sun reduction		0,24													0,21	
Oper. time red.		0,95													0,95	
Wind dir. red.		0,62													0,62	
Total reduction		0,14													0,13	
Total, real		36													128	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: J - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January			February	March	April	May	June	July	August	September	October	November			December		
1	08:49		12:08 (1)	08:24	07:32	07:23	06:20	05:36	05:34	06:09	06:57	07:44	07:36			08:26		12:01 (1)
	16:48	48	12:56 (1)	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21			16:42	33	12:34 (1)
2	08:49		12:09 (1)	08:22	07:30	07:21	06:18	05:36	05:34	06:11	06:59	07:46	07:38			08:27		12:01 (1)
	16:49	47	12:56 (1)	17:36	18:26	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19			16:41	35	12:36 (1)
3	08:49		12:09 (1)	08:21	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48	07:40			08:29		12:00 (1)
	16:50	46	12:55 (1)	17:38	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:17			16:41	37	12:37 (1)
4	08:49		12:10 (1)	08:19	07:26	07:16	06:15	05:34	05:36	06:14	07:02	07:49	07:42			08:30		11:59 (1)
	16:51	45	12:55 (1)	17:40	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19	17:16			16:40	39	12:38 (1)
5	08:49		12:12 (1)	08:18	07:23	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43			08:31		11:59 (1)
	16:53	44	12:56 (1)	17:42	18:32	20:23	21:12	21:54	22:02	21:27	20:24	19:16	17:14			16:40	41	12:40 (1)
6	08:48		12:12 (1)	08:16	07:21	07:12	06:11	05:33	05:37	06:17	07:05	07:52	07:45			08:32		11:58 (1)
	16:54	43	12:55 (1)	17:44	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12			16:39	43	12:41 (1)
7	08:48		12:14 (1)	08:14	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54	07:47			08:34		11:58 (1)
	16:55	41	12:55 (1)	17:45	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11			16:39	44	12:42 (1)
8	08:48		12:14 (1)	08:13	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56	07:49			08:35		11:58 (1)
	16:56	40	12:54 (1)	17:47	18:37	20:28	21:17	21:57	22:01	21:22	20:18	19:10	17:09			16:39	45	12:43 (1)
9	08:47		12:15 (1)	08:11	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57	07:50			08:36		11:58 (1)
	16:58	38	12:53 (1)	17:49	18:38	20:30	21:19	21:58	22:00	21:20	20:15	19:08	17:07			16:39	46	12:44 (1)
10	08:47		12:18 (1)	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52			08:37		11:58 (1)
	16:59	35	12:53 (1)	17:51	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06			16:38	47	12:45 (1)
11	08:46		12:19 (1)	08:07	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54			08:38		11:58 (1)
	17:00	33	12:52 (1)	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:04			16:38	48	12:46 (1)
12	08:46		12:20 (1)	08:06	07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02	07:55			08:39		11:58 (1)
	17:02	31	12:51 (1)	17:54	18:44	20:35	21:23	22:00	21:58	21:14	20:09	19:01	17:03			16:38	48	12:46 (1)
13	08:45		12:22 (1)	08:04	07:06	06:57	05:59	05:30	05:44	06:27	07:16	08:04	07:57			08:40		11:58 (1)
	17:03	27	12:49 (1)	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:01			16:38	49	12:47 (1)
14	08:44		12:26 (1)	08:02	07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06	07:59			08:41		11:58 (1)
	17:05	22	12:48 (1)	17:58	18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57	17:00			16:38	50	12:48 (1)
15	08:43		12:29 (1)	08:00	07:01	06:52	05:56	05:30	05:46	06:30	07:19	08:07	08:01			08:42		11:59 (1)
	17:06	17	12:46 (1)	18:00	18:49	20:40	21:28	22:02	21:55	21:08	20:02	18:55	16:59			16:38	50	12:49 (1)
16	08:43		12:35 (1)	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02			08:43		11:59 (1)
	17:08	3	12:38 (1)	18:02	18:50	20:42	21:29	22:02	21:54	21:07	19:59	18:52	16:57			16:38	51	12:50 (1)
17	08:42			07:56	06:57	06:48	05:53	05:30	05:49	06:33	07:22	08:11	08:04			08:44		11:59 (1)
	17:09			18:03	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50	16:56			16:38	50	12:49 (1)
18	08:41			07:54	06:55	06:46	05:52	05:29	05:50	06:35	07:24	08:12	08:06			08:44		11:59 (1)
	17:11			18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55			16:39	51	12:50 (1)
19	08:40			07:52	06:52	06:44	05:51	05:30	05:51	06:37	07:25	08:14	08:07			08:45		12:00 (1)
	17:12			18:07	18:55	20:46	21:34	22:04	21:51	21:01	19:53	18:46	16:53			16:39	51	12:51 (1)
20	08:39			07:50	06:50	06:42	05:49	05:30	05:52	06:38	07:27	08:16	08:09			08:46		12:00 (1)
	17:14			18:09	18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52			16:39	51	12:51 (1)
21	08:38			07:49	06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17	08:11			08:46		12:01 (1)
	17:16			18:11	18:59	20:50	21:37	22:04	21:49	20:56	19:48	18:42	16:51			16:40	51	12:52 (1)
22	08:37			07:47	06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19	08:12			08:47		12:01 (1)
	17:17			18:12	19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40	16:50			16:40	51	12:52 (1)
23	08:36			07:44	06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21	08:14			08:47		12:02 (1)
	17:19			18:14	19:02	20:53	21:39	22:04	21:46	20:52	19:43	18:38	16:49			16:41	51	12:53 (1)
24	08:35			07:42	06:41	06:34	05:44	05:30	05:58	06:44	07:33	08:23	08:15			08:48		12:02 (1)
	17:21			18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48			16:41	51	12:53 (1)
25	08:33			07:40	06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24	08:17			08:48		12:02 (1)
	17:22			18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47			16:42	51	12:53 (1)
26	08:32			07:38	06:37	06:30	05:42	05:31	06:00	06:48	07:36	07:26	08:18			08:49		12:03 (1)
	17:24			18:19	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46			16:43	51	12:54 (1)
27	08:31			07:36	06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20		12:08 (1)	08:49		12:04 (1)
	17:26			18:21	19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30	16:45	16	12:24 (1)	16:43	50	12:54 (1)
28	08:30			07:34	06:32	06:26	05:40	05:32	06:03	06:51	07:40	07:29	08:21		12:05 (1)	08:49		12:04 (1)
	17:28			18:23	19:10	21:01	21:46	22:05	21:39	20:42	19:32	17:28	16:44	22	12:27 (1)	16:44	51	12:55 (1)
29	08:28				07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31	08:23		12:04 (1)	08:49		12:05 (1)
	17:29				20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26	16:43	26	12:30 (1)	16:45	50	12:55 (1)
30	08:27				07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24		12:03 (1)	08:49		12:06 (1)
	17:31				20:14	21:04	21:48	22:04	21:36	20:37	19:28	17:25	16:43	30	12:33 (1)	16:46	49	12:55 (1)
31	08:25				07:25		05:37		06:08	06:55		07:35				08:49		12:07 (1)
	17:33				20:15		21:49		21:35	20:35		17:23				16:47	48	12:55 (1)
Potential sun hours	262			279	367	414	482	494	498	451	380	333	269			248		
Total, worst case		560												94			1463	
Sun reduction		0,24												0,26			0,21	
Oper. time red.		0,95												0,95			0,95	
Wind dir. red.		0,67												0,67			0,67	
Total reduction		0,15												0,16			0,14	
Total, real		84												15			198	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: K - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January		February		March	April	May	June	July	August	September	October	November		December	
1	08:49	12:35 (1)	08:24	12:57 (1)	07:32	07:23	06:20	05:36	05:34	06:09	06:57	07:44	07:36		08:26	12:22 (1)
	16:48 87	14:02 (1)	17:35 63	14:00 (1)	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21		16:42 85	13:47 (1)
2	08:49	12:35 (1)	08:22	12:59 (1)	07:30	07:21	06:18	05:36	05:34	06:11	06:59	07:46	07:38	12:49 (1)	08:27	12:21 (1)
	16:49 87	14:02 (1)	17:36 60	13:59 (1)	18:26	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19 21	13:10 (1)	16:41 86	13:47 (1)
3	08:49	12:35 (1)	08:21	13:01 (1)	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48	07:40	12:44 (1)	08:29	12:22 (1)
	16:50 87	14:02 (1)	17:38 56	13:57 (1)	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:17 32	13:16 (1)	16:41 86	13:48 (1)
4	08:49	12:36 (1)	08:19	13:02 (1)	07:26	07:16	06:15	05:34	05:36	06:14	07:02	07:49	07:42	12:40 (1)	08:30	12:22 (1)
	16:51 87	14:03 (1)	17:40 54	13:56 (1)	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19	17:16 39	13:19 (1)	16:40 86	13:48 (1)
5	08:49	12:37 (1)	08:18	13:05 (1)	07:23	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43	12:37 (1)	08:31	12:23 (1)
	16:53 87	14:04 (1)	17:42 49	13:54 (1)	18:32	20:23	21:12	21:54	22:02	21:27	20:24	19:16	17:14 45	13:22 (1)	16:40 86	13:49 (1)
6	08:48	12:37 (1)	08:16	13:08 (1)	07:21	07:12	06:11	05:33	05:37	06:17	07:05	07:52	07:45	12:35 (1)	08:32	12:23 (1)
	16:54 86	14:03 (1)	17:44 44	13:52 (1)	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12 49	13:24 (1)	16:39 86	13:49 (1)
7	08:48	12:38 (1)	08:14	13:11 (1)	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54	07:47	12:33 (1)	08:34	12:23 (1)
	16:55 86	14:04 (1)	17:45 38	13:49 (1)	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11 54	13:27 (1)	16:39 87	13:50 (1)
8	08:48	12:38 (1)	08:13	13:15 (1)	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56	07:49	12:31 (1)	08:35	12:24 (1)
	16:56 86	14:04 (1)	17:47 30	13:45 (1)	18:37	20:28	21:17	21:57	22:01	21:22	20:18	19:10	17:09 57	13:28 (1)	16:39 87	13:51 (1)
9	08:47	12:38 (1)	08:11	13:22 (1)	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57	07:50	12:30 (1)	08:36	12:24 (1)
	16:58 86	14:04 (1)	17:49 19	13:41 (1)	18:38	20:30	21:19	21:58	22:00	21:20	20:15	19:07	17:07 60	13:30 (1)	16:39 87	13:51 (1)
10	08:47	12:39 (1)	08:09		07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52	12:28 (1)	08:37	12:24 (1)
	16:59 86	14:05 (1)	17:51		18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06 63	13:31 (1)	16:38 87	13:51 (1)
11	08:46	12:39 (1)	08:07		07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54	12:27 (1)	08:38	12:25 (1)
	17:00 86	14:05 (1)	17:53		18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:04 65	13:32 (1)	16:38 87	13:52 (1)
12	08:46	12:40 (1)	08:06		07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02	07:55	12:26 (1)	08:39	12:25 (1)
	17:02 85	14:05 (1)	17:54		18:44	20:35	21:23	22:00	21:58	21:14	20:09	19:01	17:03 67	13:33 (1)	16:38 87	13:52 (1)
13	08:45	12:40 (1)	08:04		07:06	06:57	05:59	05:30	05:44	06:27	07:16	08:04	07:57	12:25 (1)	08:40	12:26 (1)
	17:03 85	14:05 (1)	17:56		18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:01 70	13:35 (1)	16:38 87	13:53 (1)
14	08:44	12:42 (1)	08:02		07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06	07:59	12:24 (1)	08:41	12:26 (1)
	17:05 84	14:06 (1)	17:58		18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57	17:00 72	13:36 (1)	16:38 87	13:53 (1)
15	08:43	12:42 (1)	08:00		07:01	06:52	05:56	05:30	05:46	06:30	07:19	08:07	08:01	12:24 (1)	08:42	12:27 (1)
	17:06 84	14:06 (1)	18:00		18:49	20:40	21:28	22:02	21:55	21:08	20:02	18:55	16:59 73	13:37 (1)	16:38 87	13:54 (1)
16	08:43	12:43 (1)	07:58		06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02	12:23 (1)	08:43	12:27 (1)
	17:08 83	14:06 (1)	18:02		18:50	20:42	21:29	22:02	21:54	21:07	19:59	18:52	16:57 75	13:38 (1)	16:38 87	13:54 (1)
17	08:42	12:43 (1)	07:56		06:57	06:48	05:53	05:30	05:49	06:33	07:22	08:11	08:04	12:22 (1)	08:44	12:27 (1)
	17:09 83	14:06 (1)	18:03		18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50	16:56 76	13:38 (1)	16:38 87	13:54 (1)
18	08:41	12:44 (1)	07:54		06:55	06:46	05:52	05:29	05:50	06:35	07:24	08:12	08:06	12:22 (1)	08:44	12:28 (1)
	17:11 82	14:06 (1)	18:05		18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55 77	13:39 (1)	16:39 87	13:55 (1)
19	08:40	12:44 (1)	07:52		06:52	06:44	05:51	05:30	05:51	06:37	07:25	08:14	08:07	12:22 (1)	08:45	12:28 (1)
	17:12 82	14:06 (1)	18:07		18:55	20:46	21:34	22:04	21:51	21:01	19:53	18:46	16:53 78	13:40 (1)	16:39 88	13:56 (1)
20	08:39	12:45 (1)	07:50		06:50	06:42	05:49	05:30	05:52	06:38	07:27	08:16	08:09	12:22 (1)	08:46	12:28 (1)
	17:14 81	14:06 (1)	18:09		18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52 79	13:41 (1)	16:39 88	13:56 (1)
21	08:38	12:46 (1)	07:48		06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17	08:11	12:22 (1)	08:46	12:29 (1)
	17:16 80	14:06 (1)	18:11		18:59	20:50	21:37	22:04	21:49	20:56	19:48	18:42	16:51 80	13:42 (1)	16:40 88	13:57 (1)
22	08:37	12:47 (1)	07:46		06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19	08:12	12:21 (1)	08:47	12:29 (1)
	17:17 79	14:06 (1)	18:12		19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40	16:50 81	13:42 (1)	16:40 88	13:57 (1)
23	08:36	12:48 (1)	07:44		06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21	08:14	12:21 (1)	08:47	12:30 (1)
	17:19 78	14:06 (1)	18:14		19:02	20:53	21:39	22:04	21:46	20:52	19:43	18:38	16:49 82	13:43 (1)	16:41 88	13:58 (1)
24	08:35	12:48 (1)	07:42		06:41	06:34	05:44	05:30	05:58	06:44	07:33	08:22	08:15	12:21 (1)	08:48	12:30 (1)
	17:21 77	14:05 (1)	18:16		19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48 82	13:43 (1)	16:41 88	13:58 (1)
25	08:33	12:49 (1)	07:40		06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24	08:17	12:20 (1)	08:48	12:31 (1)
	17:22 76	14:05 (1)	18:18		19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47 83	13:43 (1)	16:42 87	13:58 (1)
26	08:32	12:51 (1)	07:38		06:37	06:30	05:42	05:31	06:00	06:48	07:36	07:26	08:18	12:21 (1)	08:48	12:32 (1)
	17:24 74	14:05 (1)	18:19		19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46 83	13:44 (1)	16:43 87	13:59 (1)
27	08:31	12:51 (1)	07:36		06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20	12:21 (1)	08:49	12:32 (1)
	17:26 73	14:04 (1)	18:21		19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30	16:45 84	13:45 (1)	16:43 87	13:59 (1)
28	08:29	12:53 (1)	07:34		06:32	06:26	05:40	05:32	06:03	06:51	07:40	07:29	08:21	12:21 (1)	08:49	12:32 (1)
	17:28 71	14:04 (1)	18:23		19:10	21:01	21:46	22:05	21:39	20:42	19:32	17:28	16:44 84	13:45 (1)	16:44 88	14:00 (1)
29	08:28	12:53 (1)			07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31	08:23	12:21 (1)	08:49	12:33 (1)
	17:29 70	14:03 (1)			20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26	16:43 85	13:46 (1)	16:45 87	14:00 (1)
30	08:27	12:55 (1)			07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24	12:22 (1)	08:49	12:33 (1)
	17:31 67	14:02 (1)			20:14	21:04	21:48	22:04	21:36	20:37	19:28	17:25	16:43 85	13:47 (1)	16:46 88	14:01 (1)
31	08:25	12:56 (1)			07:25		05:37		06:08	06:55		07:35			08:49	12:34 (1)
	17:33 65	14:01 (1)			20:15		21:49		21:35	20:35		17:23			16:47 87	14:01 (1)
Potential sun hours	262		279		367	414	482	494	498	451	380	333	269		248	
Total, worst case	2510		413										1981		2698	
Sun reduction	0,24		0,29										0,26		0,21	
Oper. time red.	0,95		0,95										0,95		0,95	
Wind dir. red.	0,69		0,69										0,69		0,69	
Total reduction	0,16		0,19										0,17		0,14	
Total, real	393		79										336		380	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: L - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January		February		March	April	May	June
1	08:49		11:47 (1)	08:24		11:56 (1)	07:32	07:23	06:20	05:36
	16:48	105	13:32 (1)	17:35	106	13:42 (1)	18:25	20:17	21:06	21:50
2	08:49		11:47 (1)	08:22		11:57 (1)	07:30	07:21	06:18	05:36
	16:49	106	13:33 (1)	17:36	106	13:43 (1)	18:26	20:19	21:08	21:51
3	08:49		11:47 (1)	08:21		11:57 (1)	07:28	07:19	06:16	05:35
	16:50	106	13:33 (1)	17:38	105	13:42 (1)	18:28	20:20	21:09	21:52
4	08:49		11:48 (1)	08:19		11:58 (1)	07:26	07:16	06:15	05:34
	16:51	106	13:34 (1)	17:40	104	13:42 (1)	18:30	20:22	21:11	21:53
5	08:49		11:48 (1)	08:18		11:59 (1)	07:23	07:14	06:13	05:34
	16:53	107	13:35 (1)	17:42	103	13:42 (1)	18:32	20:23	21:12	21:54
6	08:48		11:48 (1)	08:16		11:59 (1)	07:21	07:12	06:11	05:33
	16:54	107	13:35 (1)	17:44	102	13:41 (1)	18:33	20:25	21:14	21:55
7	08:48		11:49 (1)	08:14		12:00 (1)	07:19	07:10	06:09	05:32
	16:55	107	13:36 (1)	17:45	101	13:41 (1)	18:35	20:27	21:16	21:56
8	08:48		11:49 (1)	08:13		12:00 (1)	07:17	07:08	06:08	05:32
	16:56	107	13:36 (1)	17:47	100	13:40 (1)	18:37	20:28	21:17	21:57
9	08:47		11:49 (1)	08:11		12:02 (1)	07:15	07:05	06:06	05:31
	16:58	107	13:36 (1)	17:49	98	13:40 (1)	18:38	20:30	21:19	21:58
10	08:47		11:50 (1)	08:09		12:02 (1)	07:13	07:03	06:04	05:31
	16:59	107	13:37 (1)	17:51	97	13:39 (1)	18:40	20:32	21:20	21:59
11	08:46		11:50 (1)	08:07		12:03 (1)	07:10	07:01	06:03	05:31
	17:00	107	13:37 (1)	17:53	96	13:39 (1)	18:42	20:33	21:22	21:59
12	08:46		11:50 (1)	08:06		12:04 (1)	07:08	06:59	06:01	05:30
	17:02	108	13:38 (1)	17:54	94	13:38 (1)	18:44	20:35	21:23	22:00
13	08:45		11:50 (1)	08:04		12:05 (1)	07:06	06:57	05:59	05:30
	17:03	108	13:38 (1)	17:56	92	13:37 (1)	18:45	20:37	21:25	22:01
14	08:44		11:51 (1)	08:02		12:06 (1)	07:04	06:55	05:58	05:30
	17:05	108	13:39 (1)	17:58	89	13:35 (1)	18:47	20:38	21:26	22:01
15	08:43		11:51 (1)	08:00		12:07 (1)	07:01	06:52	05:56	05:30
	17:06	109	13:40 (1)	18:00	87	13:34 (1)	18:49	20:40	21:28	22:02
16	08:43		11:52 (1)	07:58		12:08 (1)	06:59	06:50	05:55	05:30
	17:08	108	13:40 (1)	18:02	85	13:33 (1)	18:50	20:42	21:29	22:02
17	08:42		11:52 (1)	07:56		12:09 (1)	06:57	06:48	05:53	05:30
	17:09	108	13:40 (1)	18:03	82	13:31 (1)	18:52	20:43	21:31	22:03
18	08:41		11:52 (1)	07:54		12:11 (1)	06:55	06:46	05:52	05:30
	17:11	109	13:41 (1)	18:05	79	13:30 (1)	18:54	20:45	21:32	22:03
19	08:40		11:52 (1)	07:52		12:13 (1)	06:52	06:44	05:51	05:30
	17:12	108	13:40 (1)	18:07	75	13:28 (1)	18:55	20:46	21:34	22:04
20	08:39		11:52 (1)	07:50		12:14 (1)	06:50	06:42	05:49	05:30
	17:14	109	13:41 (1)	18:09	72	13:26 (1)	18:57	20:48	21:35	22:04
21	08:38		11:53 (1)	07:48		12:17 (1)	06:48	06:40	05:48	05:30
	17:16	108	13:41 (1)	18:11	66	13:23 (1)	18:59	20:50	21:37	22:04
22	08:37		11:53 (1)	07:46		12:19 (1)	06:46	06:38	05:47	05:30
	17:17	109	13:42 (1)	18:12	61	13:20 (1)	19:00	20:51	21:38	22:04
23	08:36		11:54 (1)	07:44		12:23 (1)	06:43	06:36	05:46	05:30
	17:19	108	13:42 (1)	18:14	54	13:17 (1)	19:02	20:53	21:39	22:04
24	08:35		11:53 (1)	07:42		12:26 (1)	06:41	06:34	05:44	05:30
	17:21	109	13:42 (1)	18:16	47	13:13 (1)	19:04	20:55	21:41	22:05
25	08:33		11:54 (1)	07:40		12:32 (1)	06:39	06:32	05:43	05:31
	17:22	108	13:42 (1)	18:18	36	13:08 (1)	19:05	20:56	21:42	22:05
26	08:32		11:55 (1)	07:38		12:41 (1)	06:37	06:30	05:42	05:31
	17:24	108	13:43 (1)	18:19	17	12:58 (1)	19:07	20:58	21:43	22:05
27	08:31		11:55 (1)	07:36			06:34	06:28	05:41	05:32
	17:26	108	13:43 (1)	18:21			19:09	21:00	21:44	22:05
28	08:29		11:55 (1)	07:34			06:32	06:26	05:40	05:32
	17:28	108	13:43 (1)	18:23			19:10	21:01	21:46	22:05
29	08:28		11:55 (1)				07:30	06:24	05:39	05:33
	17:29	108	13:43 (1)				20:12	21:03	21:47	22:04
30	08:27		11:56 (1)				07:28	06:22	05:38	05:33
	17:31	107	13:43 (1)				20:14	21:04	21:48	22:04
31	08:25		11:56 (1)				07:25		05:37	
	17:33	107	13:43 (1)				20:15		21:49	
Potential sun hours	262			279			367	414	482	494
Total, worst case		3335			2154					
Sun reduction		0,24			0,29					
Oper. time red.		0,95			0,95					
Wind dir. red.		0,67			0,67					
Total reduction		0,15			0,19					
Total, real		505			401					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: L - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October			November			December		
1	05:34		06:09		06:57		07:44			07:36		11:32 (1)	08:26		11:32 (1)
	22:04		21:33		20:33		19:25			17:21	97	13:09 (1)	16:42	108	13:20 (1)
2	05:34		06:11		06:59		07:46			07:38		11:30 (1)	08:27		11:32 (1)
	22:04		21:32		20:31		19:23			17:19	99	13:09 (1)	16:41	107	13:19 (1)
3	05:35		06:12		07:00		07:48			07:40		11:30 (1)	08:29		11:33 (1)
	22:03		21:30		20:29		19:21			17:17	100	13:10 (1)	16:41	107	13:20 (1)
4	05:36		06:14		07:02		07:49			07:42		11:29 (1)	08:30		11:33 (1)
	22:03		21:28		20:26		19:19			17:16	102	13:11 (1)	16:40	107	13:20 (1)
5	05:37		06:15		07:03		07:51			07:43		11:29 (1)	08:31		11:34 (1)
	22:02		21:27		20:24		19:16			17:14	102	13:11 (1)	16:40	107	13:21 (1)
6	05:38		06:17		07:05		07:52			07:45		11:29 (1)	08:32		11:34 (1)
	22:02		21:25		20:22		19:14			17:12	103	13:12 (1)	16:39	107	13:21 (1)
7	05:38		06:18		07:06		07:54			07:47		11:28 (1)	08:34		11:35 (1)
	22:01		21:23		20:20		19:12			17:11	104	13:12 (1)	16:39	106	13:21 (1)
8	05:39		06:20		07:08		07:56			07:49		11:28 (1)	08:35		11:36 (1)
	22:01		21:22		20:18		19:10			17:09	105	13:13 (1)	16:39	106	13:22 (1)
9	05:40		06:21		07:10		07:57			07:50		11:28 (1)	08:36		11:36 (1)
	22:00		21:20		20:15		19:08			17:07	106	13:14 (1)	16:39	106	13:22 (1)
10	05:41		06:23		07:11		07:59			07:52		11:27 (1)	08:37		11:37 (1)
	21:59		21:18		20:13		19:05			17:06	106	13:13 (1)	16:38	105	13:22 (1)
11	05:42		06:24		07:13		08:01			07:54		11:27 (1)	08:38		11:37 (1)
	21:59		21:16		20:11		19:03			17:04	107	13:14 (1)	16:38	106	13:23 (1)
12	05:43		06:26		07:14		08:02			07:55		11:27 (1)	08:39		11:37 (1)
	21:58		21:14		20:09		19:01			17:03	107	13:14 (1)	16:38	106	13:23 (1)
13	05:44		06:27		07:16		08:04			07:57		11:27 (1)	08:40		11:38 (1)
	21:57		21:12		20:06		18:59			17:01	108	13:15 (1)	16:38	105	13:23 (1)
14	05:45		06:29		07:17		08:06			07:59		11:27 (1)	08:41		11:39 (1)
	21:56		21:10		20:04		18:57			17:00	108	13:15 (1)	16:38	105	13:24 (1)
15	05:46		06:30		07:19		08:07			08:01		11:27 (1)	08:42		11:39 (1)
	21:55		21:08		20:02		18:55			16:59	109	13:16 (1)	16:38	105	13:24 (1)
16	05:48		06:32		07:21		08:09		13:08 (1)	08:02		11:28 (1)	08:43		11:40 (1)
	21:54		21:07		19:59		18:52	26	13:34 (1)	16:57	108	13:16 (1)	16:38	105	13:25 (1)
17	05:49		06:34		07:22		08:11		13:01 (1)	08:04		11:27 (1)	08:44		11:40 (1)
	21:53		21:05		19:57		18:50	40	13:41 (1)	16:56	108	13:15 (1)	16:38	104	13:24 (1)
18	05:50		06:35		07:24		08:12		12:56 (1)	08:06		11:27 (1)	08:44		11:40 (1)
	21:52		21:03		19:55		18:48	50	13:46 (1)	16:55	109	13:16 (1)	16:39	105	13:25 (1)
19	05:51		06:37		07:25		08:14		12:53 (1)	08:07		11:28 (1)	08:45		11:41 (1)
	21:51		21:01		19:53		18:46	57	13:50 (1)	16:53	108	13:16 (1)	16:39	105	13:26 (1)
20	05:52		06:38		07:27		08:16		12:49 (1)	08:09		11:28 (1)	08:46		11:41 (1)
	21:50		20:59		19:50		18:44	63	13:52 (1)	16:52	109	13:17 (1)	16:39	105	13:26 (1)
21	05:54		06:40		07:28		08:17		12:46 (1)	08:11		11:29 (1)	08:46		11:42 (1)
	21:49		20:56		19:48		18:42	68	13:54 (1)	16:51	108	13:17 (1)	16:40	105	13:27 (1)
22	05:55		06:41		07:30		08:19		12:44 (1)	08:12		11:28 (1)	08:47		11:42 (1)
	21:48		20:54		19:46		18:40	73	13:57 (1)	16:50	109	13:17 (1)	16:40	105	13:27 (1)
23	05:56		06:43		07:32		08:21		12:42 (1)	08:14		11:29 (1)	08:47		11:43 (1)
	21:46		20:52		19:43		18:38	77	13:59 (1)	16:49	108	13:17 (1)	16:41	105	13:28 (1)
24	05:58		06:44		07:33		08:22		12:41 (1)	08:15		11:29 (1)	08:48		11:43 (1)
	21:45		20:50		19:41		18:36	80	14:01 (1)	16:48	109	13:18 (1)	16:41	105	13:28 (1)
25	05:59		06:46		07:35		07:24		11:39 (1)	08:17		11:29 (1)	08:48		11:43 (1)
	21:44		20:48		19:39		17:34	83	13:02 (1)	16:47	109	13:18 (1)	16:42	105	13:28 (1)
26	06:00		06:48		07:36		07:26		11:37 (1)	08:18		11:30 (1)	08:48		11:45 (1)
	21:42		20:46		19:37		17:32	86	13:03 (1)	16:46	108	13:18 (1)	16:43	104	13:29 (1)
27	06:02		06:49		07:38		07:28		11:36 (1)	08:20		11:30 (1)	08:49		11:45 (1)
	21:41		20:44		19:34		17:30	88	13:04 (1)	16:45	109	13:19 (1)	16:43	105	13:30 (1)
28	06:03		06:51		07:40		07:29		11:35 (1)	08:21		11:30 (1)	08:49		11:45 (1)
	21:39		20:42		19:32		17:28	90	13:05 (1)	16:44	108	13:18 (1)	16:44	105	13:30 (1)
29	06:05		06:52		07:41		07:31		11:34 (1)	08:23		11:31 (1)	08:49		11:45 (1)
	21:38		20:40		19:30		17:26	92	13:06 (1)	16:44	108	13:19 (1)	16:45	105	13:30 (1)
30	06:06		06:54		07:43		07:33		11:33 (1)	08:24		11:31 (1)	08:49		11:46 (1)
	21:36		20:37		19:28		17:25	94	13:07 (1)	16:43	108	13:19 (1)	16:46	105	13:31 (1)
31	06:08		06:55				07:35		11:32 (1)				08:49		11:46 (1)
	21:35		20:35				17:23	96	13:08 (1)				16:47	106	13:32 (1)
Potential sun hours	498		451		380		333			269			248		
Total, worst case								1163			3189			3272	
Sun reduction								0,36			0,26			0,21	
Oper. time red.								0,95			0,95			0,95	
Wind dir. red.								0,67			0,67			0,67	
Total reduction								0,23			0,16			0,14	
Total, real								271			524			446	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: M - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January		February		March	April	May	June	July	August	September	October		November		December	
1	08:49		14:02 (1)	08:24		14:17 (1)	07:32	07:23	06:20	05:36	05:34	06:09	06:57	07:44		07:36		14:00 (1)	08:26		13:48 (1)
	16:48	76	15:18 (1)	17:35	67	15:24 (1)	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25		17:21	46	14:46 (1)	16:42	77	15:05 (1)
2	08:49		14:03 (1)	08:22		14:18 (1)	07:30	07:21	06:18	05:36	05:34	06:11	06:59	07:46		07:38		13:57 (1)	08:27		13:48 (1)
	16:49	76	15:19 (1)	17:36	66	15:24 (1)	18:26	20:19	21:08	21:51	22:04	21:32	20:31	19:23		17:19	49	14:46 (1)	16:41	76	15:04 (1)
3	08:49		14:02 (1)	08:21		14:19 (1)	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48		07:40		13:55 (1)	08:29		13:48 (1)
	16:50	76	15:18 (1)	17:38	64	15:23 (1)	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21		17:17	53	14:48 (1)	16:41	77	15:05 (1)
4	08:49		14:03 (1)	08:19		14:20 (1)	07:26	07:16	06:15	05:34	05:36	06:13	07:02	07:49		07:42		13:54 (1)	08:30		13:49 (1)
	16:51	76	15:19 (1)	17:40	62	15:22 (1)	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19		17:16	55	14:49 (1)	16:40	76	15:05 (1)
5	08:49		14:04 (1)	08:18		14:22 (1)	07:23	07:14	06:13	05:34	05:37	06:15	07:03	07:51		07:43		13:53 (1)	08:31		13:50 (1)
	16:53	76	15:20 (1)	17:42	60	15:22 (1)	18:32	20:23	21:12	21:54	22:02	21:27	20:24	19:16		17:14	58	14:51 (1)	16:40	76	15:06 (1)
6	08:48		14:04 (1)	08:16		14:23 (1)	07:21	07:12	06:11	05:33	05:37	06:17	07:05	07:52		07:45		13:52 (1)	08:32		13:50 (1)
	16:54	76	15:20 (1)	17:44	58	15:21 (1)	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14		17:12	60	14:52 (1)	16:39	76	15:06 (1)
7	08:48		14:05 (1)	08:14		14:25 (1)	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54		07:47		13:51 (1)	08:34		13:50 (1)
	16:55	76	15:21 (1)	17:45	54	15:19 (1)	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12		17:11	62	14:53 (1)	16:39	76	15:06 (1)
8	08:48		14:04 (1)	08:13		14:26 (1)	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56		07:49		13:50 (1)	08:35		13:51 (1)
	16:56	77	15:21 (1)	17:47	52	15:18 (1)	18:37	20:28	21:17	21:57	22:01	21:22	20:18	19:10		17:09	64	14:54 (1)	16:39	76	15:07 (1)
9	08:47		14:04 (1)	08:11		14:29 (1)	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57		07:50		13:49 (1)	08:36		13:51 (1)
	16:58	77	15:21 (1)	17:49	48	15:17 (1)	18:38	20:30	21:19	21:58	22:00	21:20	20:15	19:07		17:07	66	14:55 (1)	16:39	77	15:08 (1)
10	08:47		14:05 (1)	08:09		14:31 (1)	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59		07:52		13:48 (1)	08:37		13:52 (1)
	16:59	77	15:22 (1)	17:51	45	15:16 (1)	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05		17:06	67	14:55 (1)	16:38	76	15:08 (1)
11	08:46		14:06 (1)	08:07		14:33 (1)	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01		07:54		13:47 (1)	08:38		13:52 (1)
	17:00	77	15:23 (1)	17:53	41	15:14 (1)	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03		17:04	68	14:54 (1)	16:38	76	15:08 (1)
12	08:46		14:06 (1)	08:06		14:36 (1)	07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02		07:55		13:47 (1)	08:39		13:53 (1)
	17:02	77	15:23 (1)	17:54	35	15:11 (1)	18:44	20:35	21:23	22:00	21:58	21:14	20:08	19:01		17:03	69	14:56 (1)	16:38	75	15:08 (1)
13	08:45		14:06 (1)	08:04		14:40 (1)	07:06	06:57	05:59	05:30	05:44	06:27	07:16	08:04		07:57		13:46 (1)	08:40		13:53 (1)
	17:03	77	15:23 (1)	17:56	28	15:08 (1)	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59		17:01	71	14:57 (1)	16:38	76	15:09 (1)
14	08:44		14:07 (1)	08:02		14:45 (1)	07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06		07:59		13:46 (1)	08:41		13:54 (1)
	17:05	77	15:24 (1)	17:58	19	15:04 (1)	18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57		17:00	72	14:58 (1)	16:38	75	15:09 (1)
15	08:43		14:07 (1)	08:00			07:01	06:52	05:56	05:30	05:46	06:30	07:19	08:07		08:01		13:46 (1)	08:42		13:54 (1)
	17:06	77	15:24 (1)	18:00			18:49	20:40	21:28	22:02	21:55	21:08	20:02	18:55		16:59	72	14:58 (1)	16:38	76	15:10 (1)
16	08:43		14:08 (1)	07:58			06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09		08:02		13:46 (1)	08:43		13:55 (1)
	17:08	77	15:25 (1)	18:02			18:50	20:42	21:29	22:02	21:54	21:07	19:59	18:52		16:57	73	14:59 (1)	16:38	75	15:10 (1)
17	08:42		14:08 (1)	07:56			06:57	06:48	05:53	05:29	05:49	06:33	07:22	08:11		08:04		13:45 (1)	08:44		13:55 (1)
	17:09	77	15:25 (1)	18:03			18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50		16:56	74	14:59 (1)	16:38	75	15:10 (1)
18	08:41		14:09 (1)	07:54			06:55	06:46	05:52	05:29	05:50	06:35	07:24	08:12		08:06		13:45 (1)	08:44		13:56 (1)
	17:11	76	15:25 (1)	18:05			18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48		16:55	75	15:00 (1)	16:39	75	15:11 (1)
19	08:40		14:08 (1)	07:52			06:52	06:44	05:51	05:30	05:51	06:37	07:25	08:14		08:07		13:45 (1)	08:45		13:56 (1)
	17:12	77	15:25 (1)	18:07			18:55	20:46	21:34	22:04	21:51	21:01	19:53	18:46		16:53	75	15:00 (1)	16:39	75	15:11 (1)
20	08:39		14:09 (1)	07:50			06:50	06:42	05:49	05:30	05:52	06:38	07:27	08:16		08:09		13:45 (1)	08:46		13:56 (1)
	17:14	76	15:25 (1)	18:09			18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44		16:52	76	15:01 (1)	16:39	75	15:11 (1)
21	08:38		14:10 (1)	07:48			06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17		08:11		13:46 (1)	08:46		13:57 (1)
	17:16	75	15:25 (1)	18:11			18:59	20:50	21:37	22:04	21:49	20:56	19:48	18:42		16:51	75	15:01 (1)	16:40	75	15:12 (1)
22	08:37		14:10 (1)	07:46			06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19		08:12		13:45 (1)	08:47		13:57 (1)
	17:17	76	15:26 (1)	18:12			19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40		16:50	76	15:01 (1)	16:40	75	15:12 (1)
23	08:36		14:11 (1)	07:44			06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21		08:14		13:45 (1)	08:47		13:58 (1)
	17:19	75	15:26 (1)	18:14			19:02	20:53	21:39	22:04	21:46	20:52	19:43	18:38		16:49	77	15:02 (1)	16:41	75	15:13 (1)
24	08:35		14:11 (1)	07:42			06:41	06:34	05:44	05:30	05:58	06:44	07:33	08:22		08:15		13:46 (1)	08:48		13:58 (1)
	17:21	75	15:26 (1)	18:16			19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36		16:48	76	15:02 (1)	16:41	75	15:13 (1)
25	08:33		14:12 (1)	07:40			06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24		08:17		13:45 (1)	08:48		13:59 (1)
	17:22	74	15:26 (1)	18:18			19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34		16:47	77	15:02 (1)	16:42	75	15:14 (1)
26	08:32		14:13 (1)	07:38			06:37	06:30	05:42	05:31	06:00	06:48	07:36	07:26		08:18		13:46 (1)	08:48		14:00 (1)
	17:24	73	15:26 (1)	18:19			19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32		16:46	77	15:03 (1)	16:43	75	15:15 (1)
27	08:31		14:13 (1)	07:36			06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28		14:22 (1)		08:20		13:46 (1)	08:49		14:00 (1)
	17:26	73	15:26 (1)	18:21			19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30	3	14:25 (1)		16:45	78	15:04 (1)	16:43	75	15:15 (1)
28	08:29		14:14 (1)	07:34			06:32	06:26	05:40	05:32	06:03	06:51	07:39	07:29		14:13 (1)		08:21		13:46 (1)	08:49		14:00 (1)
	17:28	72	15:26 (1)	18:23			19:10	21:01	21:46	22:05	21:39	20:42	19:32	17:28	21	14:34 (1)		16:44	77	15:03 (1)	16:44	76	15:16 (1)
29	08:28		14:15 (1)				07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31		14:09 (1)		08:23		13:47 (1)	08:49		14:01 (1)
	17:29	70	15:25 (1)				20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26	29	14:38 (1)		16:43	77	15:04 (1)	16:45	75	15:16 (1)
30	08:27		14:16 (1)				07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33		14:05 (1)		08:24		13:47 (1)	08:49		14:01 (1)
	17:31	69	15:25 (1)				20:14	21:04	21:48	22:04	21:36	20:37	19:28	17:25	36	14:41 (1)		16:43	77	15:04 (1)	16:46	76	15:17 (1)
31	08:25		14:16 (1)				07:25		05:37		06:08	06:55		07:35		14:02 (1)					08:49		14:02 (1)
	17:33	69	15:25 (1)				20:15		21:49		21:35	20:35		17:23	42	14:44 (1)					16:47	75	15:17 (1)
Potential sun hours	262			279		367	414	482	494	498	451	380	333			269			248			
Total, worst case		2332			699									131			2072			2343	
Sun reduction		0,24			0,29									0,36			0,26			0,21	
Oper. time red.		0,95			0,95									0,95			0,95			0,95	
Wind dir. red.		0,72			0,72									0,72			0,72			0,72	
Total reduction		0,16			0,20									0,25			0,18			0,15	
Total, real		381			141									33			367			345	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: N - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January		February		March	April	May	June	July	August	September	October		November		December	
1	08:49	15:50 (1)	08:24	15:54 (1)	07:32	07:23	06:20	05:36	05:34	06:09	06:57	07:44		07:36	15:37 (1)	08:26	15:31 (1)
	16:48 24	16:14 (1)	17:35 39	16:33 (1)	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25		17:21 15	15:52 (1)	16:42 36	16:07 (1)
2	08:49	15:49 (1)	08:22	15:55 (1)	07:30	07:21	06:18	05:36	05:34	06:10	06:59	07:46		07:38	15:34 (1)	08:27	15:32 (1)
	16:49 26	16:15 (1)	17:36 38	16:33 (1)	18:26	20:18	21:08	21:51	22:04	21:32	20:31	19:23		17:19 21	15:55 (1)	16:41 35	16:07 (1)
3	08:49	15:50 (1)	08:21	15:56 (1)	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48		07:40	15:32 (1)	08:29	15:33 (1)
	16:50 26	16:16 (1)	17:38 36	16:32 (1)	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21		17:17 25	15:57 (1)	16:41 34	16:07 (1)
4	08:49	15:50 (1)	08:19	15:56 (1)	07:26	07:16	06:15	05:34	05:36	06:13	07:02	07:49		07:42	15:30 (1)	08:30	15:34 (1)
	16:51 28	16:18 (1)	17:40 35	16:31 (1)	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19		17:16 28	15:58 (1)	16:40 33	16:07 (1)
5	08:49	15:50 (1)	08:18	15:58 (1)	07:23	07:14	06:13	05:33	05:37	06:15	07:03	07:51		07:43	15:29 (1)	08:31	15:35 (1)
	16:52 29	16:19 (1)	17:42 33	16:31 (1)	18:32	20:23	21:12	21:54	22:02	21:27	20:24	19:16		17:14 31	16:00 (1)	16:40 32	16:07 (1)
6	08:48	15:50 (1)	08:16	15:59 (1)	07:21	07:12	06:11	05:33	05:37	06:16	07:05	07:52		07:45	15:28 (1)	08:32	15:36 (1)
	16:54 30	16:20 (1)	17:44 31	16:30 (1)	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14		17:12 33	16:01 (1)	16:39 30	16:06 (1)
7	08:48	15:50 (1)	08:14	16:01 (1)	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54		07:47	15:27 (1)	08:34	15:36 (1)
	16:55 32	16:22 (1)	17:45 27	16:28 (1)	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12		17:11 35	16:02 (1)	16:39 30	16:06 (1)
8	08:48	15:50 (1)	08:13	16:03 (1)	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56		07:48	15:26 (1)	08:35	15:38 (1)
	16:56 32	16:22 (1)	17:47 24	16:27 (1)	18:37	20:28	21:17	21:57	22:01	21:22	20:18	19:10		17:09 37	16:03 (1)	16:39 28	16:06 (1)
9	08:47	15:49 (1)	08:11	16:06 (1)	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57		07:50	15:26 (1)	08:36	15:39 (1)
	16:58 34	16:23 (1)	17:49 20	16:26 (1)	18:38	20:30	21:19	21:58	22:00	21:20	20:15	19:07		17:07 38	16:04 (1)	16:38 26	16:05 (1)
10	08:47	15:50 (1)	08:09	16:09 (1)	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59		07:52	15:24 (1)	08:37	15:39 (1)
	16:59 35	16:25 (1)	17:51 13	16:22 (1)	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05		17:06 40	16:04 (1)	16:38 26	16:05 (1)
11	08:46	15:49 (1)	08:07		07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01		07:54	15:24 (1)	08:38	15:40 (1)
	17:00 36	16:25 (1)	17:53		18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03		17:04 40	16:04 (1)	16:38 25	16:05 (1)
12	08:46	15:49 (1)	08:06		07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02		07:55	15:24 (1)	08:39	15:41 (1)
	17:02 37	16:26 (1)	17:54		18:44	20:35	21:23	22:00	21:58	21:14	20:08	19:01		17:03 41	16:05 (1)	16:38 23	16:04 (1)
13	08:45	15:49 (1)	08:04		07:06	06:57	05:59	05:30	05:44	06:27	07:16	08:04		07:57	15:24 (1)	08:40	15:42 (1)
	17:03 37	16:26 (1)	17:56		18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59		17:01 42	16:06 (1)	16:38 22	16:04 (1)
14	08:44	15:50 (1)	08:02		07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06		07:59	15:24 (1)	08:41	15:43 (1)
	17:05 38	16:28 (1)	17:58		18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57		17:00 42	16:06 (1)	16:38 21	16:04 (1)
15	08:43	15:50 (1)	08:00		07:01	06:52	05:56	05:30	05:46	06:30	07:19	08:07		08:01	15:24 (1)	08:42	15:44 (1)
	17:06 39	16:29 (1)	18:00		18:49	20:40	21:28	22:02	21:55	21:08	20:02	18:55		16:59 43	16:07 (1)	16:38 20	16:04 (1)
16	08:43	15:50 (1)	07:58		06:59	06:50	05:55	05:30	05:48	06:32	07:20	08:09		08:02	15:24 (1)	08:43	15:45 (1)
	17:08 39	16:29 (1)	18:02		18:50	20:42	21:29	22:02	21:54	21:06	19:59	18:52		16:57 43	16:07 (1)	16:38 20	16:05 (1)
17	08:42	15:50 (1)	07:56		06:57	06:48	05:53	05:29	05:49	06:33	07:22	08:11		08:04	15:24 (1)	08:44	15:45 (1)
	17:09 40	16:30 (1)	18:03		18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50		16:56 42	16:06 (1)	16:38 19	16:04 (1)
18	08:41	15:50 (1)	07:54		06:55	06:46	05:52	05:29	05:50	06:35	07:24	08:12		08:06	15:24 (1)	08:44	15:46 (1)
	17:11 41	16:31 (1)	18:05		18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48		16:55 43	16:07 (1)	16:39 19	16:05 (1)
19	08:40	15:49 (1)	07:52		06:52	06:44	05:51	05:29	05:51	06:37	07:25	08:14		08:07	15:25 (1)	08:45	15:47 (1)
	17:12 41	16:30 (1)	18:07		18:55	20:46	21:34	22:04	21:51	21:01	19:53	18:46		16:53 42	16:07 (1)	16:39 18	16:05 (1)
20	08:39	15:49 (1)	07:50		06:50	06:42	05:49	05:30	05:52	06:38	07:27	08:16		08:09	15:25 (1)	08:46	15:47 (1)
	17:14 42	16:31 (1)	18:09		18:57	20:48	21:35	22:04	21:50	20:58	19:50	18:44		16:52 43	16:08 (1)	16:39 18	16:05 (1)
21	08:38	15:50 (1)	07:48		06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17		08:11	15:26 (1)	08:46	15:48 (1)
	17:16 42	16:32 (1)	18:11		18:59	20:50	21:37	22:04	21:49	20:56	19:48	18:42		16:51 42	16:08 (1)	16:40 18	16:06 (1)
22	08:37	15:50 (1)	07:46		06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19		08:12	15:25 (1)	08:47	15:48 (1)
	17:17 43	16:33 (1)	18:12		19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40		16:50 42	16:07 (1)	16:40 18	16:06 (1)
23	08:36	15:51 (1)	07:44		06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21		08:14	15:26 (1)	08:47	15:49 (1)
	17:19 42	16:33 (1)	18:14		19:02	20:53	21:39	22:04	21:46	20:52	19:43	18:38		16:49 42	16:08 (1)	16:41 18	16:07 (1)
24	08:35	15:50 (1)	07:42		06:41	06:34	05:44	05:30	05:58	06:44	07:33	08:22		08:15	15:27 (1)	08:48	15:49 (1)
	17:21 43	16:33 (1)	18:16		19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36		16:48 41	16:08 (1)	16:41 18	16:07 (1)
25	08:33	15:51 (1)	07:40		06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24		08:17	15:27 (1)	08:48	15:49 (1)
	17:22 42	16:33 (1)	18:18		19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34		16:47 40	16:07 (1)	16:42 18	16:07 (1)
26	08:32	15:50 (1)	07:38		06:37	06:30	05:42	05:31	06:00	06:48	07:36	07:26		08:18	15:28 (1)	08:48	15:50 (1)
	17:24 43	16:33 (1)	18:19		19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32		16:46 39	16:07 (1)	16:43 19	16:09 (1)
27	08:31	15:51 (1)	07:36		06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28		08:20	15:29 (1)	08:49	15:50 (1)
	17:26 43	16:34 (1)	18:21		19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30		16:45 39	16:08 (1)	16:43 19	16:09 (1)
28	08:29	15:52 (1)	07:34		06:32	06:26	05:40	05:32	06:03	06:51	07:39	07:29		08:21	15:29 (1)	08:49	15:50 (1)
	17:28 42	16:34 (1)	18:23		19:10	21:01	21:46	22:04	21:39	20:42	19:32	17:28		16:44 38	16:07 (1)	16:44 20	16:10 (1)
29	08:28	15:52 (1)			07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31		08:23	15:30 (1)	08:49	15:50 (1)
	17:29 42	16:34 (1)			20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26		16:43 37	16:07 (1)	16:45 21	16:11 (1)
30	08:27	15:53 (1)			07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33		08:24	15:30 (1)	08:49	15:50 (1)
	17:31 41	16:34 (1)			20:14	21:04	21:48	22:04	21:36	20:37	19:28	17:25		16:43 37	16:07 (1)	16:46 22	16:12 (1)
31	08:25	15:53 (1)			07:25		05:37		06:08	06:55		07:35	15:43 (1)			08:49	15:50 (1)
	17:33 40	16:33 (1)			20:15		21:49		21:35	20:35		17:23 4	15:47 (1)			16:47 23	16:13 (1)
Potential sun hours	262		279		367	414	482	494	498	451	380	333		269		248	
Total, worst case		1149		296								4			1121		729
Sun reduction		0,24		0,29								0,36			0,26		0,21
Oper. time red.		0,95		0,95								0,95			0,95		0,95
Wind dir. red.		0,71		0,71								0,71			0,71		0,71
Total reduction		0,16		0,20								0,25			0,17		0,14
Total, real		183		58								1			194		105

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: O - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	16:31 (1)	07:23	06:20	05:36	05:34	06:09	06:57	07:44	07:36	16:06 (1)	08:26
	16:48	17:35	18:25 51	17:22 (1)	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21 40	16:46 (1)	16:42
2	08:49	08:22	07:30	16:31 (1)	07:21	06:18	05:36	05:34	06:10	06:59	07:46 17:26 (1)	07:38	16:07 (1)	08:27
	16:49	17:36	18:26 50	17:21 (1)	20:18	21:08	21:51	22:04	21:32	20:31	19:23 17 17:43 (1)	17:19 38	16:45 (1)	16:41
3	08:49	08:21 16:53 (1)	07:28	16:32 (1)	07:19	06:16	05:35	05:35	06:12	07:00	07:48 17:21 (1)	07:40	16:09 (1)	08:29
	16:50	17:38 6 16:59 (1)	18:28 49	17:21 (1)	20:20	21:09	21:52	22:03	21:30	20:29	19:21 24 17:45 (1)	17:17 34	16:43 (1)	16:41
4	08:49	08:19 16:47 (1)	07:26	16:32 (1)	07:16	06:15	05:34	05:36	06:13	07:02	07:49 17:19 (1)	07:42	16:10 (1)	08:30
	16:51	17:40 17 17:04 (1)	18:30 47	17:19 (1)	20:22	21:11	21:53	22:03	21:28	20:26	19:19 29 17:48 (1)	17:16 32	16:42 (1)	16:40
5	08:49	08:18 16:45 (1)	07:23	16:34 (1)	07:14	06:13	05:34	05:37	06:15	07:03	07:51 17:15 (1)	07:43	16:13 (1)	08:31
	16:53	17:42 23 17:08 (1)	18:32 44	17:18 (1)	20:23	21:12	21:54	22:02	21:27	20:24	19:16 34 17:49 (1)	17:14 27	16:40 (1)	16:40
6	08:48	08:16 16:43 (1)	07:21	16:35 (1)	07:12	06:11	05:33	05:37	06:16	07:05	07:52 17:13 (1)	07:45	16:15 (1)	08:32
	16:54	17:44 27 17:10 (1)	18:33 42	17:17 (1)	20:25	21:14	21:55	22:02	21:25	20:22	19:14 38 17:51 (1)	17:12 23	16:38 (1)	16:39
7	08:48	08:14 16:40 (1)	07:19	16:36 (1)	07:10	06:09	05:32	05:38	06:18	07:06	07:54 17:12 (1)	07:47	16:18 (1)	08:34
	16:55	17:45 32 17:12 (1)	18:35 39	17:15 (1)	20:27	21:16	21:56	22:01	21:23	20:20	19:12 40 17:52 (1)	17:11 17	16:35 (1)	16:39
8	08:48	08:13 16:39 (1)	07:17	16:38 (1)	07:08	06:08	05:32	05:39	06:20	07:08	07:56 17:10 (1)	07:48	16:26 (1)	08:35
	16:56	17:47 35 17:14 (1)	18:37 36	17:14 (1)	20:28	21:17	21:57	22:01	21:22	20:18	19:10 43 17:53 (1)	17:09 2	16:28 (1)	16:39
9	08:47	08:11 16:38 (1)	07:15	16:40 (1)	07:05	06:06	05:31	05:40	06:21	07:10	07:57 17:08 (1)	07:50		08:36
	16:58	17:49 38 17:16 (1)	18:38 31	17:11 (1)	20:30	21:19	21:58	22:00	21:20	20:15	19:07 45 17:53 (1)	17:07		16:39
10	08:47	08:09 16:37 (1)	07:13	16:42 (1)	07:03	06:04	05:31	05:41	06:23	07:11	07:59 17:07 (1)	07:52		08:37
	16:59	17:51 41 17:18 (1)	18:40 27	17:09 (1)	20:32	21:20	21:59	21:59	21:18	20:13	19:05 47 17:54 (1)	17:06		16:38
11	08:46	08:07 16:36 (1)	07:10	16:45 (1)	07:01	06:03	05:31	05:42	06:24	07:13	08:01 17:06 (1)	07:54		08:38
	17:00	17:53 43 17:19 (1)	18:42 21	17:06 (1)	20:33	21:22	21:59	21:59	21:16	20:11	19:03 49 17:55 (1)	17:04		16:38
12	08:46	08:06 16:35 (1)	07:08	16:51 (1)	06:59	06:01	05:30	05:43	06:26	07:14	08:02 17:04 (1)	07:55		08:39
	17:02	17:54 45 17:20 (1)	18:44 9	17:00 (1)	20:35	21:23	22:00	21:58	21:14	20:08	19:01 51 17:55 (1)	17:03		16:38
13	08:45	08:04 16:34 (1)	07:06		06:57	05:59	05:30	05:44	06:27	07:16	08:04 17:04 (1)	07:57		08:40
	17:03	17:56 47 17:21 (1)	18:45		20:37	21:25	22:01	21:57	21:12	20:06	18:59 51 17:55 (1)	17:01		16:38
14	08:44	08:02 16:33 (1)	07:04		06:55	05:58	05:30	05:45	06:29	07:17	08:06 17:03 (1)	07:59		08:41
	17:05	17:58 48 17:21 (1)	18:47		20:38	21:26	22:01	21:56	21:10	20:04	18:57 53 17:56 (1)	17:00		16:38
15	08:43	08:00 16:32 (1)	07:01		06:52	05:56	05:30	05:46	06:30	07:19	08:07 17:03 (1)	08:01		08:42
	17:06	18:00 50 17:22 (1)	18:49		20:40	21:28	22:02	21:55	21:08	20:02	18:55 53 17:56 (1)	16:59		16:38
16	08:43	07:58 16:31 (1)	06:59		06:50	05:55	05:30	05:48	06:32	07:20	08:09 17:01 (1)	08:02		08:43
	17:08	18:02 52 17:23 (1)	18:50		20:42	21:29	22:02	21:54	21:06	19:59	18:52 54 17:55 (1)	16:57		16:38
17	08:42	07:56 16:31 (1)	06:57		06:48	05:53	05:29	05:49	06:33	07:22	08:11 17:01 (1)	08:04		08:44
	17:09	18:03 52 17:23 (1)	18:52		20:43	21:31	22:03	21:53	21:05	19:57	18:50 55 17:56 (1)	16:56		16:38
18	08:41	07:54 16:30 (1)	06:55		06:46	05:52	05:29	05:50	06:35	07:24	08:12 17:01 (1)	08:06		08:44
	17:11	18:05 54 17:24 (1)	18:54		20:45	21:32	22:03	21:52	21:03	19:55	18:48 55 17:56 (1)	16:55		16:39
19	08:40	07:52 16:30 (1)	06:52		06:44	05:51	05:30	05:51	06:37	07:25	08:14 17:01 (1)	08:07		08:45
	17:12	18:07 54 17:24 (1)	18:55		20:46	21:34	22:04	21:51	21:01	19:53	18:46 55 17:56 (1)	16:53		16:39
20	08:39	07:50 16:30 (1)	06:50		06:42	05:49	05:30	05:52	06:38	07:27	08:16 17:00 (1)	08:09		08:46
	17:14	18:09 54 17:24 (1)	18:57		20:48	21:35	22:04	21:50	20:58	19:50	18:44 55 17:55 (1)	16:52		16:39
21	08:38	07:48 16:30 (1)	06:48		06:40	05:48	05:30	05:54	06:40	07:28	08:17 17:00 (1)	08:10		08:46
	17:16	18:11 54 17:24 (1)	18:59		20:50	21:37	22:04	21:49	20:56	19:48	18:42 55 17:55 (1)	16:51		16:40
22	08:37	07:46 16:30 (1)	06:46		06:38	05:47	05:30	05:55	06:41	07:30	08:19 17:00 (1)	08:12		08:47
	17:17	18:12 54 17:24 (1)	19:00		20:51	21:38	22:04	21:48	20:54	19:46	18:40 54 17:54 (1)	16:50		16:40
23	08:36	07:44 16:30 (1)	06:43		06:36	05:46	05:30	05:56	06:43	07:32	08:21 17:01 (1)	08:14		08:47
	17:19	18:14 54 17:24 (1)	19:02		20:53	21:39	22:04	21:46	20:52	19:43	18:38 53 17:54 (1)	16:49		16:41
24	08:35	07:42 16:30 (1)	06:41		06:34	05:44	05:30	05:58	06:44	07:33	08:22 17:01 (1)	08:15		08:48
	17:21	18:16 54 17:24 (1)	19:04		20:55	21:41	22:05	21:45	20:50	19:41	18:36 53 17:54 (1)	16:48		16:41
25	08:33	07:40 16:30 (1)	06:39		06:32	05:43	05:31	05:59	06:46	07:35	07:24 16:00 (1)	08:17		08:48
	17:22	18:18 54 17:24 (1)	19:05		20:56	21:42	22:05	21:44	20:48	19:39	17:34 52 16:52 (1)	16:47		16:42
26	08:32	07:38 16:29 (1)	06:37		06:30	05:42	05:31	06:00	06:48	07:36	07:26 16:01 (1)	08:18		08:48
	17:24	18:19 54 17:23 (1)	19:07		20:58	21:43	22:05	21:42	20:46	19:37	17:32 51 16:52 (1)	16:46		16:43
27	08:31	07:36 16:30 (1)	06:34		06:28	05:41	05:32	06:02	06:49	07:38	07:28 16:02 (1)	08:20		08:49
	17:26	18:21 53 17:23 (1)	19:09		21:00	21:44	22:05	21:41	20:44	19:34	17:30 49 16:51 (1)	16:45		16:43
28	08:29	07:34 16:30 (1)	06:32		06:26	05:40	05:32	06:03	06:51	07:39	07:29 16:03 (1)	08:21		08:49
	17:28	18:23 52 17:22 (1)	19:10		21:01	21:46	22:04	21:39	20:42	19:32	17:28 48 16:51 (1)	16:44		16:44
29	08:28		07:30		06:24	05:39	05:33	06:05	06:52	07:41	07:31 16:03 (1)	08:23		08:49
	17:29		20:12		21:03	21:47	22:04	21:38	20:40	19:30	17:26 47 16:50 (1)	16:43		16:45
30	08:27		07:28		06:22	05:38	05:33	06:06	06:54	07:43	07:33 16:04 (1)	08:24		08:49
	17:31		20:14		21:04	21:48	22:04	21:36	20:37	19:28	17:25 45 16:49 (1)	16:43		16:46
31	08:25		07:25			05:37		06:08	06:55		07:35 16:05 (1)			08:49
	17:33		20:15			21:49		21:35	20:35		17:23 43 16:48 (1)			16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Total, worst case		1147	446							1398	213	
Sun reduction		0,29	0,37							0,36	0,26	
Oper. time red.		0,95	0,95							0,95	0,95	
Wind dir. red.		0,70	0,70							0,70	0,70	
Total reduction		0,19	0,25							0,24	0,17	
Total, real		222	110							338	36	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: P - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	07:23	19:13 (1)	06:20	05:36	05:34	06:09	06:57	19:05 (1)	07:44	07:36	08:26
	16:48	17:35	18:25	20:17 37	19:50 (1)	21:06	21:50	22:04	21:33	20:33 48	19:53 (1)	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	19:12 (1)	06:18	05:36	05:34	06:10	06:59	19:04 (1)	07:46	07:38	08:27
	16:49	17:36	18:26	20:18 39	19:51 (1)	21:08	21:51	22:04	21:32	20:31 48	19:52 (1)	19:23	17:19	16:41
3	08:49	08:21	07:28	07:19	19:11 (1)	06:16	05:35	05:35	06:12	07:00	19:04 (1)	07:47	07:40	08:28
	16:50	17:38	18:28	20:20 41	19:52 (1)	21:09	21:52	22:03	21:30	20:29 48	19:52 (1)	19:21	17:17	16:41
4	08:49	08:19	07:26	07:16	19:10 (1)	06:15	05:34	05:36	06:13	07:02	19:04 (1)	07:49	07:42	08:30
	16:51	17:40	18:30	20:22 43	19:53 (1)	21:11	21:53	22:03	21:28	20:26 47	19:51 (1)	19:19	17:16	16:40
5	08:49	08:18	07:23	07:14	19:08 (1)	06:13	05:34	05:37	06:15	07:03	19:04 (1)	07:51	07:43	08:31
	16:53	17:42	18:32	20:23 44	19:52 (1)	21:12	21:54	22:02	21:27	20:24 46	19:50 (1)	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12	19:08 (1)	06:11	05:33	05:37	06:16	07:05	19:04 (1)	07:52	07:45	08:32
	16:54	17:44	18:33	20:25 45	19:53 (1)	21:14	21:55	22:02	21:25	20:22 45	19:49 (1)	19:14	17:12	16:39
7	08:48	08:14	07:19	07:10	19:07 (1)	06:09	05:32	05:38	06:18	07:06	19:04 (1)	07:54	07:47	08:34
	16:55	17:45	18:35	20:27 46	19:53 (1)	21:16	21:56	22:01	21:23	20:20 45	19:49 (1)	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	19:07 (1)	06:08	05:32	05:39	06:20	07:08	19:04 (1)	07:56	07:48	08:35
	16:56	17:47	18:37	20:28 47	19:54 (1)	21:17	21:57	22:01	21:21	20:17 43	19:47 (1)	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	19:06 (1)	06:06	05:31	05:40	06:21	07:10	19:05 (1)	07:57	07:50	08:36
	16:58	17:49	18:38	20:30 48	19:54 (1)	21:19	21:58	22:00	21:20	20:15 41	19:46 (1)	19:07	17:07	16:39
10	08:47	08:09	07:13	07:03	19:06 (1)	06:04	05:31	05:41	06:23	07:11	19:05 (1)	07:59	07:52	08:37
	16:59	17:51	18:40	20:32 48	19:54 (1)	21:20	21:59	21:59	21:18	20:13 39	19:44 (1)	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01	19:05 (1)	06:03	05:31	05:42	06:24	07:13	19:06 (1)	08:01	07:54	08:38
	17:00	17:53	18:42	20:33 48	19:53 (1)	21:22	21:59	21:59	21:16	20:11 37	19:43 (1)	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	19:05 (1)	06:01	05:30	05:43	06:26	07:14	19:07 (1)	08:02	07:55	08:39
	17:02	17:54	18:44	20:35 47	19:52 (1)	21:23	22:00	21:58	21:14	20:08 34	19:41 (1)	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	19:05 (1)	05:59	05:30	05:44	06:27	07:16	19:08 (1)	08:04	07:57	08:40
	17:03	17:56	18:45	20:37 47	19:52 (1)	21:25	22:01	21:57	21:12	20:06 31	19:39 (1)	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	19:05 (1)	05:58	05:30	05:45	06:29	07:17	19:09 (1)	08:06	07:59	08:41
	17:05	17:58	18:47	20:38 47	19:52 (1)	21:26	22:01	21:56	21:10	20:04 28	19:37 (1)	18:57	17:00	16:38
15	08:43	08:00	07:01	06:52	19:06 (1)	05:56	05:30	05:46	06:30	07:19	19:12 (1)	08:07	08:00	08:42
	17:06	18:00	18:49	20:40 45	19:51 (1)	21:28	22:02	21:55	21:08	20:02 22	19:34 (1)	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	19:06 (1)	05:55	05:30	05:48	06:32 19:27 (1)	07:20	19:14 (1)	08:09	08:02	08:43
	17:08	18:02	18:50	20:42 45	19:51 (1)	21:29	22:02	21:54	21:06 14 19:41 (1)	19:59 16	19:30 (1)	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	19:06 (1)	05:53	05:29	05:49	06:33 19:23 (1)	07:22		08:11	08:04	08:44
	17:09	18:03	18:52	20:43 44	19:50 (1)	21:31	22:03	21:53	21:05 20 19:43 (1)	19:57		18:50	16:56	16:38
18	08:41	07:54	06:55	06:46	19:07 (1)	05:52	05:29	05:50	06:35 19:21 (1)	07:24		08:12	08:06	08:44
	17:11	18:05	18:54	20:45 42	19:49 (1)	21:32	22:03	21:52	21:03 25 19:46 (1)	19:55		18:48	16:55	16:39
19	08:40	07:52	06:52	06:44	19:08 (1)	05:51	05:30	05:51	06:37 19:18 (1)	07:25		08:14	08:07	08:45
	17:12	18:07	18:55	20:46 40	19:48 (1)	21:34	22:03	21:51	21:01 29 19:47 (1)	19:53		18:46	16:53	16:39
20	08:39	07:50	06:50	06:42	19:08 (1)	05:49	05:30	05:52	06:38 19:17 (1)	07:27		08:16	08:09	08:46
	17:14	18:09	18:57	20:48 39	19:47 (1)	21:35	22:04	21:50	20:58 32 19:49 (1)	19:50		18:44	16:52	16:39
21	08:38	07:48	06:48	06:40	19:09 (1)	05:48	05:30	05:54	06:40 19:15 (1)	07:28		08:17	08:10	08:46
	17:16	18:11	18:59	20:50 37	19:46 (1)	21:36	22:04	21:49	20:56 34 19:49 (1)	19:48		18:42	16:51	16:40
22	08:37	07:46	06:46	06:38	19:10 (1)	05:47	05:30	05:55	06:41 19:14 (1)	07:30		08:19	08:12	08:47
	17:17	18:12	19:00	20:51 34	19:44 (1)	21:38	22:04	21:48	20:54 37 19:51 (1)	19:46		18:40	16:50	16:40
23	08:36	07:44	06:43	06:36	19:12 (1)	05:46	05:30	05:56	06:43 19:12 (1)	07:32		08:21	08:14	08:47
	17:19	18:14	19:02	20:53 31	19:43 (1)	21:39	22:04	21:46	20:52 39 19:51 (1)	19:43		18:38	16:49	16:41
24	08:34	07:42	06:41	06:34	19:13 (1)	05:44	05:30	05:58	06:44 19:11 (1)	07:33		08:22	08:15	08:48
	17:21	18:16	19:04	20:55 28	19:41 (1)	21:41	22:05	21:45	20:50 41 19:52 (1)	19:41		18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	19:15 (1)	05:43	05:31	05:59	06:46 19:10 (1)	07:35		07:24	08:17	08:48
	17:22	18:18	19:05	20:56 24	19:39 (1)	21:42	22:05	21:44	20:48 42 19:52 (1)	19:39		17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	19:17 (1)	05:42	05:31	06:00	06:48 19:09 (1)	07:36		07:26	08:18	08:48
	17:24	18:19	19:07	20:58 19	19:36 (1)	21:43	22:05	21:42	20:46 44 19:53 (1)	19:37		17:32	16:46	16:43
27	08:31	07:36	06:34 18:27 (1)	06:28	19:20 (1)	05:41	05:32	06:02	06:49 19:08 (1)	07:38		07:28	08:20	08:49
	17:26	18:21	19:09 14 18:41 (1)	21:00 12	19:32 (1)	21:44	22:05	21:41	20:44 44 19:52 (1)	19:34		17:30	16:45	16:43
28	08:29	07:34	06:32 18:22 (1)	06:26		05:40	05:32	06:03	06:51 19:07 (1)	07:39		07:29	08:21	08:49
	17:28	18:23	19:10 21 18:43 (1)	21:01		21:46	22:04	21:39	20:42 46 19:53 (1)	19:32		17:28	16:44	16:44
29	08:28		07:30 19:19 (1)	06:24		05:39	05:33	06:05	06:52 19:06 (1)	07:41		07:31	08:23	08:49
	17:29		20:12 27 19:46 (1)	21:03		21:47	22:04	21:38	20:40 47 19:53 (1)	19:30		17:26	16:43	16:45
30	08:27		07:28 19:17 (1)	06:22		05:38	05:33	06:06	06:54 19:06 (1)	07:43		07:33	08:24	08:49
	17:31		20:14 31 19:48 (1)	21:04		21:48	22:04	21:36	20:37 47 19:53 (1)	19:28		17:25	16:43	16:46
31	08:25		07:25 19:16 (1)			05:37		06:08	06:55 19:05 (1)			07:35		08:49
	17:33		20:15 34 19:50 (1)			21:49		21:35	20:35 47 19:52 (1)			17:23		16:47
Potential sun hours	262	279	367	414		482	494	498	451	380		333	269	248
Total, worst case			127	1067					588	618				
Sun reduction			0,37	0,46					0,47	0,43				
Oper. time red.			0,95	0,95					0,95	0,95				
Wind dir. red.			0,61	0,61					0,61	0,61				
Total reduction			0,22	0,26					0,27	0,25				
Total, real			27	282					159	156				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: Q - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	19:40 (1)	05:36	05:34	06:09	06:57	19:32 (1)	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06 14	19:54 (1)	21:50	22:04	21:33	20:33 35	20:07 (1)	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	19:45 (1)	05:36	05:34	06:10	06:59	19:32 (1)	07:46	07:38	08:27
	16:49	17:36	18:26	20:18	21:08 3	19:48 (1)	21:51	22:04	21:32	20:31 32	20:04 (1)	19:23	17:19	16:41
3	08:49	08:21	07:28	07:19	06:16		05:35	05:35	06:12	07:00	19:33 (1)	07:47	07:40	08:28
	16:50	17:38	18:28	20:20	21:09		21:52	22:03	21:30	20:29 30	20:03 (1)	19:21	17:17	16:41
4	08:49	08:19	07:26	07:16	06:15		05:34	05:36	06:13	07:02	19:34 (1)	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11		21:53	22:03	21:28	20:26 26	20:00 (1)	19:19	17:16	16:40
5	08:49	08:18	07:23	07:14 19:44 (1)	06:13		05:34	05:37	06:15	07:03	19:36 (1)	07:51	07:43	08:31
	16:53	17:42	18:32	20:23 13 19:57 (1)	21:12		21:54	22:02	21:27	20:24 22	19:58 (1)	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12 19:41 (1)	06:11		05:33	05:37	06:16	07:05	19:37 (1)	07:52	07:45	08:32
	16:54	17:44	18:33	20:25 18 19:59 (1)	21:14		21:55	22:02	21:25	20:22 18	19:55 (1)	19:14	17:12	16:39
7	08:48	08:14	07:19	07:10 19:39 (1)	06:09		05:32	05:38	06:18	07:06	19:40 (1)	07:54	07:47	08:34
	16:55	17:45	18:35	20:27 22 20:01 (1)	21:16		21:56	22:01	21:23	20:20 14	19:54 (1)	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08 19:37 (1)	06:08		05:32	05:39	06:20	07:08	19:45 (1)	07:56	07:48	08:35
	16:56	17:47	18:37	20:28 26 20:03 (1)	21:17		21:57	22:01	21:21	20:17 3	19:48 (1)	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05 19:35 (1)	06:06		05:31	05:40	06:21	07:10		07:57	07:50	08:36
	16:58	17:49	18:38	20:30 29 20:04 (1)	21:19		21:58	22:00	21:20	20:15		19:07	17:07	16:39
10	08:47	08:09	07:13	07:03 19:34 (1)	06:04		05:31	05:41	06:23	07:11		07:59	07:52	08:37
	16:59	17:51	18:40	20:32 32 20:06 (1)	21:20		21:59	21:59	21:18	20:13		19:05	17:06	16:38
11	08:46	08:07	07:10	07:01 19:32 (1)	06:03		05:31	05:42	06:24 19:51 (1)	07:13		08:01	07:54	08:38
	17:00	17:53	18:42	20:33 35 20:07 (1)	21:22		21:59	21:59	21:16 8 19:59 (1)	20:11		19:03	17:04	16:38
12	08:46	08:06	07:08	06:59 19:31 (1)	06:01		05:30	05:43	06:26 19:48 (1)	07:14		08:02	07:55	08:39
	17:02	17:54	18:44	20:35 37 20:08 (1)	21:23		22:00	21:58	21:14 15 20:03 (1)	20:08		19:01	17:03	16:38
13	08:45	08:04	07:06	06:57 19:31 (1)	05:59		05:30	05:44	06:27 19:45 (1)	07:16		08:04	07:57	08:40
	17:03	17:56	18:45	20:37 37 20:08 (1)	21:25		22:01	21:57	21:12 20 20:05 (1)	20:06		18:59	17:01	16:38
14	08:44	08:02	07:04	06:54 19:30 (1)	05:58		05:30	05:45	06:29 19:43 (1)	07:17		08:06	07:59	08:41
	17:05	17:58	18:47	20:38 39 20:09 (1)	21:26		22:01	21:56	21:10 24 20:07 (1)	20:04		18:57	17:00	16:38
15	08:43	08:00	07:01	06:52 19:30 (1)	05:56		05:30	05:46	06:30 19:41 (1)	07:19		08:07	08:00	08:42
	17:06	18:00	18:49	20:40 39 20:09 (1)	21:28		22:02	21:55	21:08 27 20:08 (1)	20:02		18:54	16:59	16:38
16	08:43	07:58	06:59	06:50 19:29 (1)	05:55		05:30	05:48	06:32 19:40 (1)	07:20		08:09	08:02	08:43
	17:08	18:02	18:50	20:42 40 20:09 (1)	21:29		22:02	21:54	21:06 29 20:09 (1)	19:59		18:52	16:57	16:38
17	08:42	07:56	06:57	06:48 19:29 (1)	05:53		05:29	05:49	06:33 19:38 (1)	07:22		08:11	08:04	08:44
	17:09	18:03	18:52	20:43 40 20:09 (1)	21:31		22:03	21:53	21:04 31 20:09 (1)	19:57		18:50	16:56	16:38
18	08:41	07:54	06:55	06:46 19:29 (1)	05:52		05:29	05:50	06:35 19:37 (1)	07:24		08:12	08:06	08:44
	17:11	18:05	18:54	20:45 39 20:08 (1)	21:32		22:03	21:52	21:02 34 20:11 (1)	19:55		18:48	16:55	16:39
19	08:40	07:52	06:52	06:44 19:29 (1)	05:51		05:30	05:51	06:37 19:36 (1)	07:25		08:14	08:07	08:45
	17:12	18:07	18:55	20:46 39 20:08 (1)	21:34		22:03	21:51	21:00 35 20:11 (1)	19:53		18:46	16:53	16:39
20	08:39	07:50	06:50	06:42 19:29 (1)	05:49		05:30	05:52	06:38 19:35 (1)	07:27		08:16	08:09	08:46
	17:14	18:09	18:57	20:48 39 20:08 (1)	21:35		22:04	21:50	20:58 37 20:12 (1)	19:50		18:44	16:52	16:39
21	08:38	07:48	06:48	06:40 19:29 (1)	05:48		05:30	05:54	06:40 19:34 (1)	07:28		08:17	08:10	08:46
	17:16	18:11	18:59	20:50 38 20:07 (1)	21:36		22:04	21:49	20:56 37 20:11 (1)	19:48		18:42	16:51	16:40
22	08:37	07:46	06:46	06:38 19:29 (1)	05:47		05:30	05:55	06:41 19:34 (1)	07:30		08:19	08:12	08:47
	17:17	18:12	19:00	20:51 38 20:07 (1)	21:38		22:04	21:48	20:54 38 20:12 (1)	19:46		18:40	16:50	16:40
23	08:36	07:44	06:43	06:36 19:30 (1)	05:46		05:30	05:56	06:43 19:33 (1)	07:32		08:21	08:14	08:47
	17:19	18:14	19:02	20:53 36 20:06 (1)	21:39		22:04	21:46	20:52 39 20:12 (1)	19:43		18:38	16:49	16:41
24	08:34	07:42	06:41	06:34 19:30 (1)	05:44		05:30	05:58	06:44 19:33 (1)	07:33		08:22	08:15	08:48
	17:21	18:16	19:04	20:55 35 20:05 (1)	21:41		22:05	21:45	20:50 39 20:12 (1)	19:41		18:36	16:48	16:41
25	08:33	07:40	06:39	06:32 19:31 (1)	05:43		05:31	05:59	06:46 19:32 (1)	07:35		07:24	08:17	08:48
	17:22	18:18	19:05	20:56 33 20:04 (1)	21:42		22:05	21:44	20:48 39 20:11 (1)	19:39		17:34	16:47	16:42
26	08:32	07:38	06:37	06:30 19:32 (1)	05:42		05:31	06:00	06:48 19:32 (1)	07:36		07:26	08:18	08:48
	17:24	18:19	19:07	20:58 31 20:03 (1)	21:43		22:05	21:42	20:46 39 20:11 (1)	19:37		17:32	16:46	16:43
27	08:31	07:36	06:34	06:28 19:32 (1)	05:41		05:32	06:02	06:49 19:31 (1)	07:38		07:28	08:20	08:49
	17:26	18:21	19:09	21:00 29 20:01 (1)	21:44		22:05	21:41	20:44 40 20:11 (1)	19:34		17:30	16:45	16:43
28	08:29	07:34	06:32	06:26 19:34 (1)	05:40		05:32	06:03	06:51 19:32 (1)	07:39		07:29	08:21	08:49
	17:28	18:23	19:10	21:01 26 20:00 (1)	21:46		22:04	21:39	20:42 39 20:11 (1)	19:32		17:28	16:44	16:44
29	08:28		07:30	06:24 19:36 (1)	05:39		05:33	06:05	06:52 19:31 (1)	07:41		07:31	08:23	08:49
	17:29		20:12	21:03 23 19:59 (1)	21:47		22:04	21:38	20:40 38 20:09 (1)	19:30		17:26	16:43	16:45
30	08:27		07:28	06:22 19:38 (1)	05:38		05:33	06:06	06:54 19:32 (1)	07:43		07:33	08:24	08:49
	17:31		20:14	21:04 19 19:57 (1)	21:48		22:04	21:36	20:37 37 20:09 (1)	19:27		17:25	16:43	16:46
31	08:25		07:25		05:37			06:08	06:55 19:31 (1)			07:35		08:49
	17:33		20:15		21:49			21:35	20:35 37 20:08 (1)			17:23		16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Total, worst case				832	17			682	180			
Sun reduction				0,46	0,46			0,47	0,43			
Oper. time red.				0,95	0,95			0,95	0,95			
Wind dir. red.				0,59	0,59			0,59	0,59			
Total reduction				0,26	0,26			0,26	0,24			
Total, real				212	4			178	44			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: R - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	19:35 (1)	05:36	05:34	06:09	06:57	19:45 (1)	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06 38	20:13 (1)	21:50	22:04	21:33	20:33 22	20:07 (1)	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	19:36 (1)	05:36	05:34	06:10	20:02 (1)	06:59	19:47 (1)	07:46	07:38	08:27
	16:49	17:36	18:26	20:18	21:08 36	20:12 (1)	21:51	22:04	21:32 2	20:04 (1)	20:31 17	20:04 (1)	19:23	17:19	16:41
3	08:49	08:21	07:28	07:19	06:16	19:36 (1)	05:35	05:35	06:12	19:57 (1)	07:00	19:51 (1)	07:47	07:40	08:28
	16:50	17:38	18:28	20:20	21:09 34	20:10 (1)	21:52	22:03	21:30 14	20:11 (1)	20:29 11	20:02 (1)	19:21	17:17	16:41
4	08:49	08:19	07:26	07:16	06:15	19:38 (1)	05:34	05:36	06:13	19:54 (1)	07:02		07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11 32	20:10 (1)	21:53	22:03	21:28 19	20:13 (1)	20:26		19:19	17:16	16:40
5	08:49	08:18	07:23	07:14	06:13	19:39 (1)	05:34	05:37	06:15	19:53 (1)	07:03		07:51	07:43	08:31
	16:53	17:42	18:32	20:23	21:12 30	20:09 (1)	21:54	22:02	21:27 22	20:15 (1)	20:24		19:16	17:14	16:40
6	08:48	08:16	07:21	07:12	06:11	19:40 (1)	05:33	05:37	06:16	19:50 (1)	07:05		07:52	07:45	08:32
	16:54	17:44	18:33	20:25	21:14 27	20:07 (1)	21:55	22:02	21:25 26	20:16 (1)	20:22		19:14	17:12	16:39
7	08:48	08:14	07:19	07:10	06:09	19:42 (1)	05:32	05:38	06:18	19:50 (1)	07:06		07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16 24	20:06 (1)	21:56	22:01	21:23 28	20:18 (1)	20:20		19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08	19:43 (1)	05:32	05:39	06:20	19:48 (1)	07:08		07:56	07:48	08:35
	16:56	17:47	18:37	20:28	21:17 21	20:04 (1)	21:57	22:01	21:21 30	20:18 (1)	20:17		19:10	17:09	16:39
9	08:47	08:11	07:15	07:05 19:53 (1)	06:06	19:46 (1)	05:31	05:40	06:21	19:46 (1)	07:10		07:57	07:50	08:36
	16:58	17:49	18:38	20:30 11 20:04 (1)	21:19 16	20:02 (1)	21:58	22:00	21:20 33	20:19 (1)	20:15		19:07	17:07	16:39
10	08:47	08:09	07:13	07:03 19:49 (1)	06:04	19:48 (1)	05:31	05:41	06:23	19:45 (1)	07:11		07:59	07:52	08:37
	16:59	17:51	18:40	20:32 17 20:06 (1)	21:20 11	19:59 (1)	21:59	21:59	21:18 35	20:20 (1)	20:13		19:05	17:06	16:38
11	08:46	08:07	07:10	07:01 19:45 (1)	06:03		05:31	05:42	06:24	19:44 (1)	07:13		08:01	07:54	08:38
	17:00	17:53	18:42	20:33 22 20:07 (1)	21:22		21:59	21:59	21:16 36	20:20 (1)	20:11		19:03	17:04	16:38
12	08:46	08:06	07:08	06:59 19:43 (1)	06:01		05:30	05:43	06:26	19:44 (1)	07:14		08:02	07:55	08:39
	17:02	17:54	18:44	20:35 26 20:09 (1)	21:23		22:00	21:58	21:14 37	20:21 (1)	20:08		19:01	17:03	16:38
13	08:45	08:04	07:06	06:57 19:42 (1)	05:59		05:30	05:44	06:27	19:42 (1)	07:16		08:04	07:57	08:40
	17:03	17:56	18:45	20:37 28 20:10 (1)	21:25		22:01	21:57	21:12 39	20:21 (1)	20:06		18:59	17:01	16:38
14	08:44	08:02	07:04	06:55 19:40 (1)	05:58		05:30	05:45	06:29	19:42 (1)	07:17		08:06	07:59	08:41
	17:05	17:58	18:47	20:38 32 20:12 (1)	21:26		22:01	21:56	21:10 40	20:22 (1)	20:04		18:57	17:00	16:38
15	08:43	08:00	07:01	06:52 19:39 (1)	05:56		05:30	05:46	06:30	19:41 (1)	07:19		08:07	08:00	08:42
	17:06	18:00	18:49	20:40 35 20:14 (1)	21:28		22:02	21:55	21:08 41	20:22 (1)	20:02		18:55	16:59	16:38
16	08:43	07:58	06:59	06:50 19:38 (1)	05:55		05:30	05:48	06:32	19:41 (1)	07:20		08:09	08:02	08:43
	17:08	18:02	18:50	20:42 37 20:15 (1)	21:29		22:02	21:54	21:06 42	20:23 (1)	19:59		18:52	16:57	16:38
17	08:42	07:56	06:57	06:48 19:37 (1)	05:53		05:29	05:49	06:33	19:40 (1)	07:22		08:11	08:04	08:44
	17:09	18:03	18:52	20:43 39 20:16 (1)	21:31		22:03	21:53	21:04 42	20:22 (1)	19:57		18:50	16:56	16:38
18	08:41	07:54	06:55	06:46 19:36 (1)	05:52		05:29	05:50	06:35	19:40 (1)	07:24		08:12	08:06	08:44
	17:11	18:05	18:54	20:45 40 20:16 (1)	21:32		22:03	21:52	21:03 43	20:23 (1)	19:55		18:48	16:55	16:39
19	08:40	07:52	06:52	06:44 19:35 (1)	05:51		05:30	05:51	06:37	19:39 (1)	07:25		08:14	08:07	08:45
	17:12	18:07	18:55	20:46 41 20:16 (1)	21:34		22:03	21:51	21:00 43	20:22 (1)	19:53		18:46	16:53	16:39
20	08:39	07:50	06:50	06:42 19:35 (1)	05:49		05:30	05:52	06:38	19:39 (1)	07:27		08:16	08:09	08:46
	17:14	18:09	18:57	20:48 42 20:17 (1)	21:35		22:04	21:50	20:58 43	20:22 (1)	19:50		18:44	16:52	16:39
21	08:38	07:48	06:48	06:40 19:34 (1)	05:48		05:30	05:54	06:40	19:39 (1)	07:28		08:17	08:10	08:46
	17:16	18:11	18:59	20:50 43 20:17 (1)	21:36		22:04	21:49	20:56 42	20:21 (1)	19:48		18:42	16:51	16:40
22	08:37	07:46	06:46	06:38 19:34 (1)	05:47		05:30	05:55	06:41	19:39 (1)	07:30		08:19	08:12	08:47
	17:17	18:12	19:00	20:51 43 20:17 (1)	21:38		22:04	21:48	20:54 42	20:21 (1)	19:46		18:40	16:50	16:40
23	08:36	07:44	06:43	06:36 19:34 (1)	05:46		05:30	05:56	06:43	19:39 (1)	07:32		08:21	08:14	08:47
	17:19	18:14	19:02	20:53 42 20:16 (1)	21:39		22:04	21:46	20:52 41	20:20 (1)	19:43		18:38	16:49	16:41
24	08:34	07:42	06:41	06:34 19:33 (1)	05:44		05:30	05:58	06:44	19:39 (1)	07:33		08:22	08:15	08:48
	17:21	18:16	19:04	20:55 43 20:16 (1)	21:41		22:05	21:45	20:50 41	20:20 (1)	19:41		18:36	16:48	16:41
25	08:33	07:40	06:39	06:32 19:33 (1)	05:43		05:31	05:59	06:46	19:39 (1)	07:35		07:24	08:17	08:48
	17:22	18:18	19:05	20:56 43 20:16 (1)	21:42		22:05	21:44	20:48 40	20:19 (1)	19:39		17:34	16:47	16:42
26	08:32	07:38	06:37	06:30 19:33 (1)	05:42		05:31	06:00	06:48	19:40 (1)	07:36		07:26	08:18	08:48
	17:24	18:19	19:07	20:58 42 20:15 (1)	21:43		22:05	21:42	20:46 38	20:18 (1)	19:37		17:32	16:46	16:43
27	08:31	07:36	06:34	06:28 19:33 (1)	05:41		05:32	06:02	06:49	19:40 (1)	07:38		07:28	08:20	08:49
	17:26	18:21	19:09	21:00 42 20:15 (1)	21:44		22:05	21:41	20:44 37	20:17 (1)	19:34		17:30	16:45	16:43
28	08:29	07:34	06:32	06:26 19:33 (1)	05:40		05:32	06:03	06:51	19:41 (1)	07:39		07:29	08:21	08:49
	17:28	18:23	19:10	21:01 41 20:14 (1)	21:46		22:04	21:39	20:42 34	20:15 (1)	19:32		17:28	16:44	16:44
29	08:28		07:30	06:24 19:35 (1)	05:39		05:33	06:05	06:52	19:41 (1)	07:41		07:31	08:23	08:49
	17:29		20:12	21:03 39 20:14 (1)	21:47		22:04	21:38	20:40 32	20:13 (1)	19:30		17:26	16:43	16:45
30	08:27		07:28	06:22 19:35 (1)	05:38		05:33	06:06	06:54	19:42 (1)	07:43		07:33	08:24	08:49
	17:31		20:14	21:04 39 20:14 (1)	21:48		22:04	21:36	20:37 29	20:11 (1)	19:28		17:25	16:43	16:46
31	08:25		07:25		05:37			06:08	06:55	19:43 (1)			07:35		08:49
	17:33		20:15		21:49			21:35	20:35 25	20:08 (1)			17:23		16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Total, worst case				787	269			1016	50			
Sun reduction				0,46	0,46			0,47	0,43			
Oper. time red.				0,95	0,95			0,95	0,95			
Wind dir. red.				0,57	0,57			0,57	0,57			
Total reduction				0,25	0,25			0,26	0,24			
Total, real				197	67			260	12			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: S - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May		June		July		August		September	October	November	December
1	08:49	08:24	07:32	07:23		06:20		20:00 (1)	05:36	19:58 (1)	05:34	20:09 (1)	06:09	20:03 (1)	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17		21:06	37	20:37 (1)	21:50	43	20:41 (1)	22:04	35	20:44 (1)	21:33	50	20:53 (1)	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21		06:18		19:58 (1)	05:36	19:59 (1)	05:34	20:08 (1)	06:11	20:04 (1)	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:18		21:08	40	20:38 (1)	21:51	42	20:41 (1)	22:04	36	20:44 (1)	21:32	49	20:53 (1)	20:31	19:23	17:19	16:41
3	08:49	08:21	07:28	07:19		06:16		19:57 (1)	05:35	19:59 (1)	05:35	20:08 (1)	06:12	20:04 (1)	07:00	07:47	07:40	08:28
	16:50	17:38	18:28	20:20		21:09	41	20:38 (1)	21:52	42	20:41 (1)	22:03	37	20:45 (1)	21:30	48	20:52 (1)	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:16		06:15		19:57 (1)	05:34	20:00 (1)	05:36	20:08 (1)	06:13	20:04 (1)	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22		21:11	43	20:40 (1)	21:53	40	20:40 (1)	22:03	37	20:45 (1)	21:28	48	20:52 (1)	20:26	19:19	17:16	16:40
5	08:49	08:18	07:23	07:14		06:13		19:56 (1)	05:34	20:01 (1)	05:37	20:07 (1)	06:15	20:04 (1)	07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:23		21:12	44	20:40 (1)	21:54	39	20:40 (1)	22:02	38	20:45 (1)	21:27	48	20:52 (1)	20:24	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12		06:11		19:55 (1)	05:33	20:01 (1)	05:37	20:07 (1)	06:17	20:04 (1)	07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25		21:14	45	20:40 (1)	21:55	39	20:40 (1)	22:02	39	20:46 (1)	21:25	47	20:51 (1)	20:22	19:14	17:12	16:39
7	08:48	08:14	07:19	07:10		06:09		19:55 (1)	05:32	20:02 (1)	05:38	20:07 (1)	06:18	20:05 (1)	07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27		21:16	46	20:41 (1)	21:56	38	20:40 (1)	22:01	39	20:46 (1)	21:23	46	20:51 (1)	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08		06:08		19:54 (1)	05:32	20:02 (1)	05:39	20:07 (1)	06:20	20:05 (1)	07:08	07:56	07:48	08:35
	16:56	17:47	18:37	20:28		21:17	47	20:41 (1)	21:57	37	20:39 (1)	22:01	40	20:47 (1)	21:21	44	20:49 (1)	20:17	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05		06:06		19:54 (1)	05:31	20:03 (1)	05:40	20:07 (1)	06:21	20:06 (1)	07:10	07:57	07:50	08:36
	16:58	17:49	18:38	20:30		21:19	48	20:42 (1)	21:58	36	20:39 (1)	22:00	41	20:48 (1)	21:20	42	20:48 (1)	20:15	19:07	17:07	16:39
10	08:47	08:09	07:13	07:03		06:04		19:53 (1)	05:31	20:04 (1)	05:41	20:07 (1)	06:23	20:07 (1)	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32		21:20	49	20:42 (1)	21:59	36	20:40 (1)	21:59	41	20:48 (1)	21:18	41	20:48 (1)	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01		06:03		19:53 (1)	05:31	20:04 (1)	05:42	20:07 (1)	06:24	20:07 (1)	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33		21:22	50	20:43 (1)	21:59	36	20:40 (1)	21:59	42	20:49 (1)	21:16	39	20:46 (1)	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59		06:01		19:53 (1)	05:30	20:04 (1)	05:43	20:06 (1)	06:26	20:09 (1)	07:14	08:02	07:55	08:39
	17:02	17:54	18:44	20:35		21:23	49	20:42 (1)	22:00	35	20:39 (1)	21:58	43	20:49 (1)	21:14	36	20:45 (1)	20:08	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57		05:59		19:53 (1)	05:30	20:05 (1)	05:44	20:06 (1)	06:27	20:09 (1)	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37		21:25	50	20:43 (1)	22:01	34	20:39 (1)	21:57	44	20:50 (1)	21:12	34	20:43 (1)	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55		05:58		19:52 (1)	05:30	20:05 (1)	05:45	20:06 (1)	06:29	20:11 (1)	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38		21:26	51	20:43 (1)	22:01	34	20:39 (1)	21:56	44	20:50 (1)	21:10	31	20:42 (1)	20:04	18:57	17:00	16:38
15	08:43	08:00	07:01	06:52		05:56		19:53 (1)	05:30	20:06 (1)	05:46	20:05 (1)	06:30	20:12 (1)	07:19	08:07	08:00	08:42
	17:06	18:00	18:49	20:40		21:28	50	20:43 (1)	22:02	33	20:39 (1)	21:55	46	20:51 (1)	21:08	28	20:40 (1)	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50		05:55		19:53 (1)	05:30	20:06 (1)	05:48	20:05 (1)	06:32	20:15 (1)	07:20	08:09	08:02	08:43
	17:08	18:02	18:50	20:42		21:29	50	20:43 (1)	22:02	33	20:39 (1)	21:54	46	20:51 (1)	21:06	23	20:38 (1)	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48		05:53		19:52 (1)	05:30	20:07 (1)	05:49	20:05 (1)	06:33	20:17 (1)	07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43		21:31	51	20:43 (1)	22:03	32	20:39 (1)	21:53	46	20:51 (1)	21:04	17	20:34 (1)	19:57	18:50	16:56	16:38
18	08:41	07:54	06:55	06:46		05:52		19:53 (1)	05:29	20:07 (1)	05:50	20:04 (1)	06:35	20:22 (1)	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45		21:32	50	20:43 (1)	22:03	33	20:40 (1)	21:52	47	20:51 (1)	21:03	8	20:30 (1)	19:55	18:48	16:55	16:39
19	08:40	07:52	06:52	06:44		05:51		19:53 (1)	05:30	20:07 (1)	05:51	20:04 (1)	06:37		07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:46		21:34	50	20:43 (1)	22:03	33	20:40 (1)	21:51	48	20:52 (1)	21:00			19:53	18:46	16:53	16:39
20	08:39	07:50	06:50	06:42		05:49		19:54 (1)	05:30	20:07 (1)	05:52	20:05 (1)	06:38		07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48		21:35	49	20:43 (1)	22:04	33	20:40 (1)	21:50	48	20:53 (1)	20:58			19:50	18:44	16:52	16:39
21	08:38	07:48	06:48	06:40		05:48		19:53 (1)	05:30	20:07 (1)	05:54	20:04 (1)	06:40		07:28	08:17	08:10	08:46
	17:16	18:11	18:59	20:50		21:36	49	20:42 (1)	22:04	33	20:40 (1)	21:49	49	20:53 (1)	20:56			19:48	18:42	16:51	16:40
22	08:37	07:46	06:46	06:38		05:47		19:54 (1)	05:30	20:08 (1)	05:55	20:04 (1)	06:41		07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51		21:38	48	20:42 (1)	22:04	33	20:41 (1)	21:48	49	20:53 (1)	20:54			19:46	18:40	16:50	16:40
23	08:36	07:44	06:43	06:36		05:46		19:54 (1)	05:30	20:08 (1)	05:56	20:03 (1)	06:43		07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53		21:39	48	20:42 (1)	22:04	33	20:41 (1)	21:46	50	20:53 (1)	20:52			19:43	18:38	16:49	16:41
24	08:34	07:42	06:41	06:34		05:44		19:54 (1)	05:30	20:08 (1)	05:58	20:03 (1)	06:44		07:33	08:22	08:15	08:48
	17:21	18:16	19:04	20:55		21:41	48	20:42 (1)	22:05	33	20:41 (1)	21:45	50	20:53 (1)	20:50			19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32		20:14 (1)	05:43	19:55 (1)	05:31	20:09 (1)	05:59	20:04 (1)	06:46		07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	10	20:24 (1)	21:42	47	20:42 (1)	22:05	32	20:41 (1)	21:44	50	20:54 (1)	20:48			19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30		20:09 (1)	05:42	19:55 (1)	05:31	20:09 (1)	06:00	20:03 (1)	06:48		07:36	07:26	08:18	08:48
	17:24	18:19	19:07	20:58	19	20:28 (1)	21:43	47	20:42 (1)	22:05	32	20:41 (1)	21:42	50	20:53 (1)	20:46			19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28		20:06 (1)	05:41	19:55 (1)	05:32	20:08 (1)	06:02	20:03 (1)	06:49		07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	25	20:31 (1)	21:44	47	20:42 (1)	22:05	33	20:41 (1)	21:41	50	20:53 (1)	20:44			19:34	17:30	16:45	16:43
28	08:29	07:34	06:32	06:26		20:04 (1)	05:40	19:56 (1)	05:32	20:09 (1)	06:03	20:04 (1)	06:51		07:39	07:29	08:21	08:49
	17:28	18:23	19:10	21:01	28	20:32 (1)	21:46	45	20:41 (1)	22:04	33	20:42 (1)	21:39	50	20:54 (1)	20:42			19:32	17:28	16:44	16:44
29	08:28		07:30	06:24		20:03 (1)	05:39	19:57 (1)	05:33	20:08 (1)	06:05	20:03 (1)	06:52		07:41	07:31	08:23	08:49
	17:29		20:12	21:03	32	20:35 (1)	21:47	45	20:42 (1)	22:04	34	20:42 (1)	21:38	50	20:53 (1)	20:40			19:30	17:26	16:43	16:45
30	08:27		07:28	06:22		20:01 (1)	05:38	19:57 (1)	05:33	20:08 (1)	06:06	20:03 (1)	06:54		07:43	07:33	08:24	08:49
	17:31		20:14	21:04	35	20:36 (1)	21:48	45	20:42 (1)	22:04	35	20:43 (1)	21:36	50	20:53 (1)	20:37			19:28	17:25	16:43	16:46
31	08:25		07:25				05:37	19:58 (1)					06:08		20:04 (1)	06:55				07:35		08:49
	17:33		20:15				21:49	43	20:41 (1)				21:35	49	20:53 (1)	20:35				17:23		16:47
Potential sun hours	262	279	367	414		482		494		498		451		380	333	269	248	
Total, worst case				149		1452		1059		1384		679						
Sun reduction				0,46		0,46		0,44		0,45		0,47						
Oper. time red.				0,95		0,95		0,95		0,95		0,95						
Wind dir. red.				0,55		0,55		0,55		0,55		0,55						
Total reduction				0,24		0,24		0,23		0,24		0,25						
Total, real				36		350		247		327		167						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: T - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	05:36	05:34	06:09	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	05:36	05:34	06:11	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:18	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:41
3	08:49	08:21	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48	07:40	08:28
	16:50	17:38	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:16	06:15	05:34	05:36	06:14	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19	17:16	16:40
5	08:49	08:18	07:23	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:23	21:12	21:54	22:02	21:27	20:24	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12	06:11	05:33	05:38	06:17	07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:39
7	08:48	08:14	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56	07:48	08:35
	16:56	17:47	18:37	20:28	21:17	21:57	22:01	21:22	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:38	20:30	21:19	21:58	22:00	21:20	20:15	19:07	17:07	16:39
10	08:47	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02	07:55	08:39
	17:02	17:54	18:44	20:35	21:23	22:00	21:58	21:14	20:08	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	05:59	05:30	05:44	06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57	17:00	16:38
15	08:43	08:00	07:01	06:52	05:56	05:30	05:46	06:30	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	21:28	22:02	21:55	21:08	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:29	22:02	21:54	21:06	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	05:53	05:30	05:49	06:33	07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50	16:56	16:38
18	08:41	07:54	06:55	06:46	05:52	05:30	05:50	06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39
19	08:40	07:52	06:52	06:44	05:51	05:30	05:51	06:37	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:46	21:34	22:03	21:51	21:01	19:53	18:46	16:53	16:39
20	08:39	07:50	06:50	06:42	05:49	05:30	05:52	06:38	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	21:35	22:04	21:50	20:58	19:50	18:44	16:52	16:39
21	08:38	07:48	06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17	08:10	08:46
	17:16	18:11	18:59	20:50	21:37	22:04	21:49	20:56	19:48	18:42	16:51	16:40
22	08:37	07:46	06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40	16:50	16:40
23	08:36	07:44	06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39	22:04	21:46	20:52	19:43	18:38	16:49	16:41
24	08:35	07:42	06:41	06:34	05:44	05:30	05:58	06:44	07:33	08:22	08:15	08:48
	17:21	18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42	05:31	06:00	06:48	07:36	07:26	08:18	08:48
	17:24	18:19	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30	16:45	16:43
28	08:29	07:34	06:32	06:26	05:40	05:32	06:03	06:51	07:39	07:29	08:21	08:49
	17:28	18:23	19:10	21:01	21:46	22:04	21:39	20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26	16:44	16:45
30	08:27		07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:04	21:48	22:04	21:36	20:37	19:28	17:25	16:43	16:46
31	08:25		07:25		05:37		06:08	06:55		07:35		08:49
	17:33		20:15		21:49		21:35	20:35		17:23		16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: U - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	05:36	05:34	06:09	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	05:36	05:35	06:11	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:42
3	08:49	08:21	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:16	06:15	05:34	05:36	06:14	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19	17:16	16:40
5	08:49	08:18	07:23	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:23	21:12	21:54	22:02	21:27	20:24	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12	06:11	05:33	05:38	06:17	07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:40
7	08:48	08:14	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28	21:17	21:57	22:01	21:22	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:38	20:30	21:19	21:58	22:00	21:20	20:15	19:08	17:07	16:39
10	08:47	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02	07:55	08:39
	17:02	17:54	18:44	20:35	21:23	22:00	21:58	21:14	20:09	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	05:59	05:30	05:44	06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57	17:00	16:38
15	08:43	08:00	07:01	06:52	05:56	05:30	05:47	06:30	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	21:28	22:02	21:55	21:08	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:29	22:02	21:54	21:07	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	05:54	05:30	05:49	06:34	07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50	16:56	16:39
18	08:41	07:54	06:55	06:46	05:52	05:30	05:50	06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39
19	08:40	07:52	06:52	06:44	05:51	05:30	05:51	06:37	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:46	21:34	22:04	21:51	21:01	19:53	18:46	16:53	16:39
20	08:39	07:50	06:50	06:42	05:49	05:30	05:53	06:38	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52	16:39
21	08:38	07:48	06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17	08:11	08:46
	17:16	18:11	18:59	20:50	21:37	22:04	21:49	20:56	19:48	18:42	16:51	16:40
22	08:37	07:46	06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40	16:50	16:40
23	08:36	07:44	06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39	22:04	21:46	20:52	19:43	18:38	16:49	16:41
24	08:35	07:42	06:41	06:34	05:44	05:31	05:58	06:44	07:33	08:22	08:15	08:48
	17:21	18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42	05:31	06:01	06:48	07:36	07:26	08:18	08:48
	17:24	18:19	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30	16:45	16:43
28	08:29	07:34	06:32	06:26	05:40	05:32	06:03	06:51	07:40	07:29	08:21	08:49
	17:28	18:23	19:10	21:01	21:46	22:04	21:39	20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26	16:44	16:45
30	08:27		07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:04	21:48	22:04	21:36	20:37	19:28	17:25	16:43	16:46
31	08:25		07:25		05:37		06:08	06:55		07:35		08:49
	17:33		20:15		21:49		21:35	20:35		17:23		16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: V - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	05:37	05:34	06:09	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	05:36	05:35	06:11	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:42
3	08:49	08:21	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:17	06:15	05:34	05:36	06:14	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19	17:16	16:40
5	08:49	08:18	07:24	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:23	21:12	21:54	22:02	21:27	20:24	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12	06:11	05:33	05:38	06:17	07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:40
7	08:48	08:14	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28	21:17	21:57	22:01	21:22	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:39	20:30	21:19	21:58	22:00	21:20	20:15	19:08	17:07	16:39
10	08:47	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02	07:55	08:39
	17:02	17:54	18:44	20:35	21:23	22:00	21:58	21:14	20:09	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	06:00	05:30	05:44	06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57	17:00	16:38
15	08:43	08:00	07:01	06:52	05:56	05:30	05:47	06:30	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	21:28	22:02	21:55	21:08	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:29	22:02	21:54	21:07	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	05:54	05:30	05:49	06:34	07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50	16:56	16:39
18	08:41	07:54	06:55	06:46	05:52	05:30	05:50	06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39
19	08:40	07:52	06:53	06:44	05:51	05:30	05:51	06:37	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:47	21:34	22:04	21:51	21:01	19:53	18:46	16:53	16:39
20	08:39	07:51	06:50	06:42	05:49	05:30	05:53	06:38	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52	16:39
21	08:38	07:49	06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17	08:11	08:46
	17:16	18:11	18:59	20:50	21:37	22:04	21:49	20:57	19:48	18:42	16:51	16:40
22	08:37	07:47	06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40	16:50	16:40
23	08:36	07:44	06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39	22:04	21:46	20:52	19:43	18:38	16:49	16:41
24	08:35	07:42	06:41	06:34	05:44	05:31	05:58	06:45	07:33	08:23	08:15	08:48
	17:21	18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42	05:31	06:01	06:48	07:36	07:26	08:18	08:48
	17:24	18:19	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30	16:45	16:43
28	08:29	07:34	06:32	06:26	05:40	05:32	06:03	06:51	07:40	07:29	08:21	08:49
	17:28	18:23	19:10	21:01	21:46	22:05	21:39	20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26	16:44	16:45
30	08:27		07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:04	21:48	22:04	21:36	20:37	19:28	17:25	16:43	16:46
31	08:25		07:25		05:37		06:08	06:56		07:35		08:49
	17:33		20:15		21:49		21:35	20:35		17:23		16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar

Calculation: SS OVA - EIGEN Shadow receptor: W - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	05:36	05:34	06:09	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	05:36	05:34	06:11	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:18	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:41
3	08:49	08:21	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48	07:40	08:28
	16:50	17:38	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:16	06:15	05:34	05:36	06:14	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19	17:16	16:40
5	08:49	08:18	07:23	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:23	21:12	21:54	22:02	21:27	20:24	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12	06:11	05:33	05:38	06:17	07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:39
7	08:48	08:14	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56	07:48	08:35
	16:56	17:47	18:37	20:28	21:17	21:57	22:01	21:21	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:38	20:30	21:19	21:58	22:00	21:20	20:15	19:07	17:07	16:39
10	08:47	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02	07:55	08:39
	17:02	17:54	18:44	20:35	21:23	22:00	21:58	21:14	20:08	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	05:59	05:30	05:44	06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57	17:00	16:38
15	08:43	08:00	07:01	06:52	05:56	05:30	05:46	06:30	07:19	08:07	08:00	08:42
	17:06	18:00	18:49	20:40	21:28	22:02	21:55	21:08	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:29	22:02	21:54	21:06	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	05:53	05:30	05:49	06:33	07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50	16:56	16:39
18	08:41	07:54	06:55	06:46	05:52	05:30	05:50	06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39
19	08:40	07:52	06:52	06:44	05:51	05:30	05:51	06:37	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:46	21:34	22:03	21:51	21:01	19:53	18:46	16:53	16:39
20	08:39	07:50	06:50	06:42	05:49	05:30	05:53	06:38	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	21:35	22:04	21:50	20:58	19:50	18:44	16:52	16:39
21	08:38	07:48	06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17	08:10	08:46
	17:16	18:11	18:59	20:50	21:36	22:04	21:49	20:56	19:48	18:42	16:51	16:40
22	08:37	07:46	06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40	16:50	16:40
23	08:36	07:44	06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39	22:04	21:46	20:52	19:43	18:38	16:49	16:41
24	08:34	07:42	06:41	06:34	05:44	05:31	05:58	06:44	07:33	08:22	08:15	08:48
	17:21	18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42	05:31	06:00	06:48	07:36	07:26	08:18	08:48
	17:24	18:19	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30	16:45	16:43
28	08:29	07:34	06:32	06:26	05:40	05:32	06:03	06:51	07:39	07:29	08:21	08:49
	17:28	18:23	19:10	21:01	21:46	22:04	21:39	20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26	16:44	16:45
30	08:27		07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:04	21:48	22:04	21:36	20:37	19:28	17:25	16:43	16:46
31	08:25		07:25		05:37		06:08	06:55		07:35		08:49
	17:33		20:15		21:49		21:35	20:35		17:23		16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

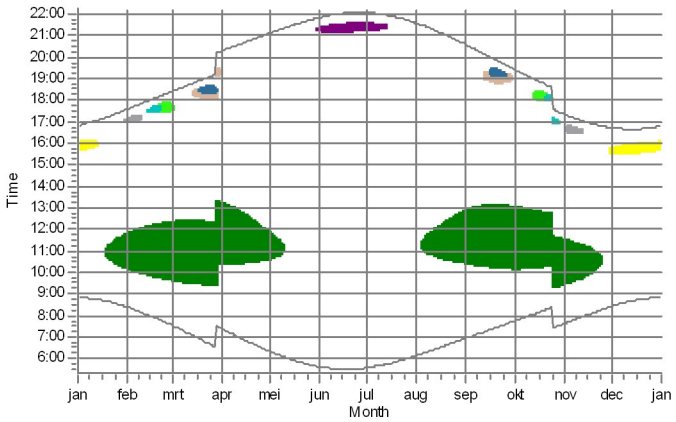
Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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13/11/2023 13:30/3.6.355

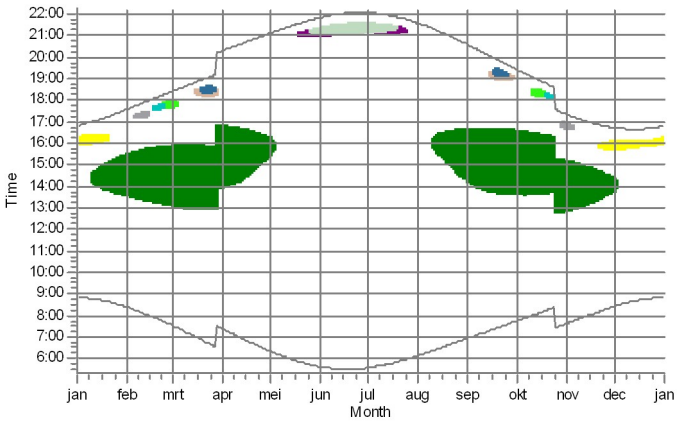
SHADOW - Calendar, graphical

Calculation: SS OVA - Ontwikkeling incl. Kronos

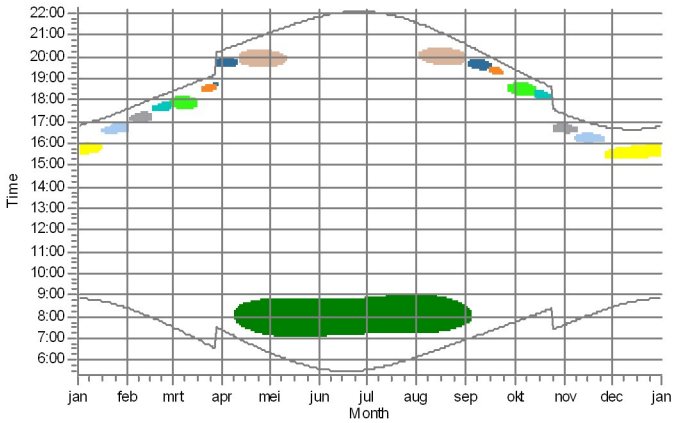
A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)



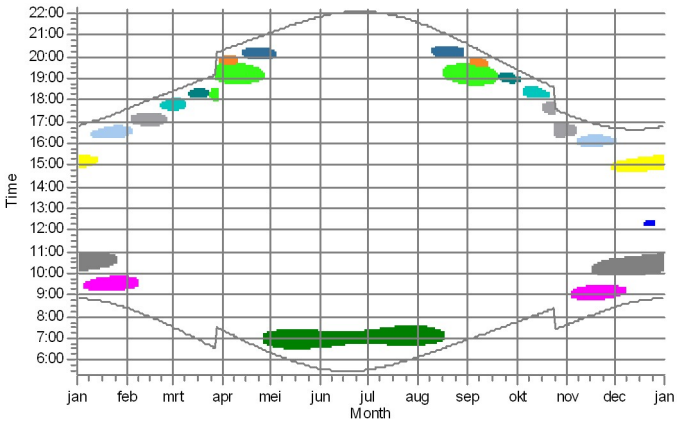
B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)



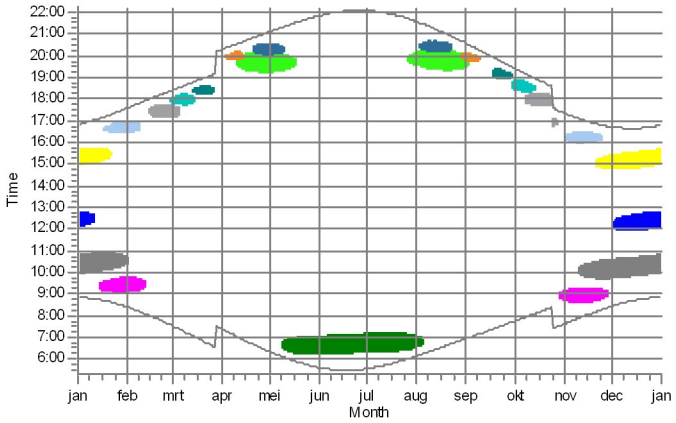
C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)



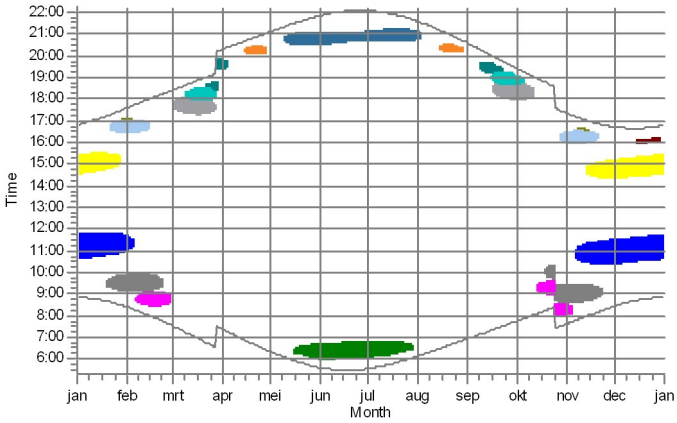
D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)



E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)



F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)



WTGs

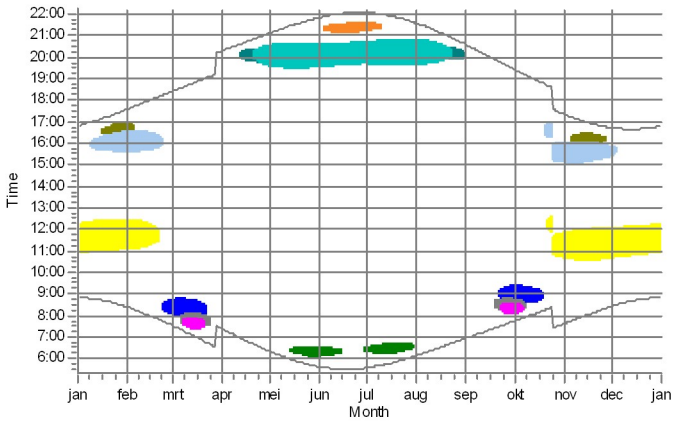
- 1: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)
- 2: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (357)
- 3: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (358)
- 4: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (359)
- 5: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (360)
- 6: ENERCON E-175 EP5 6000 175.0 !O! hub: 162,0 m (TOT: 249,5 m) (362)
- 8: SENVION MM92 2050 92.5 !O! hub: 100,0 m (TOT: 146,3 m) (122)
- 10: Siemens SWT-DD-142 4100 142.0 !O! hub: 129,0 m (TOT: 200,0 m) (145)
- 11: ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (227)
- 14: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)
- 15: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (239)
- 16: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)
- 17: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)
- 18: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)
- 21: ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (246)
- 22: NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)
- 23: NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (248)

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Calculated:
13/11/2023 13:30/3.6.355

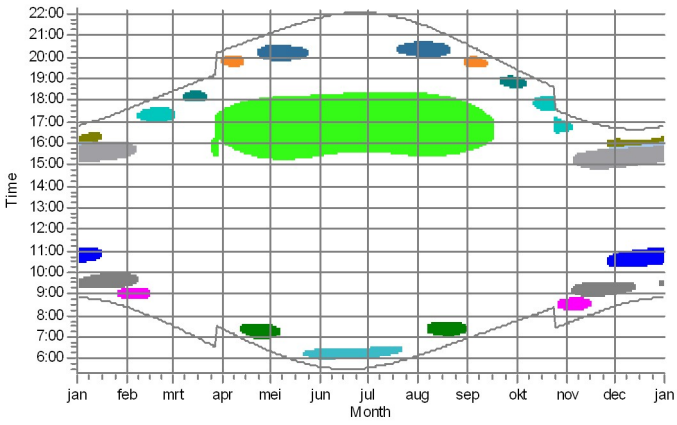
SHADOW - Calendar, graphical

Calculation: SS OVA - Ontwikkeling incl. Kronos

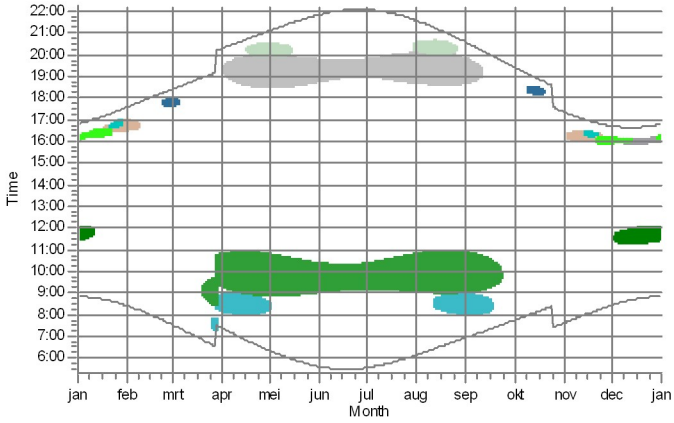
G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)



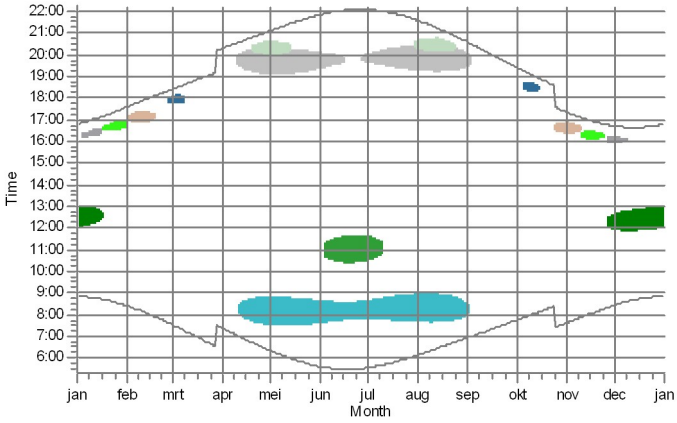
H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)



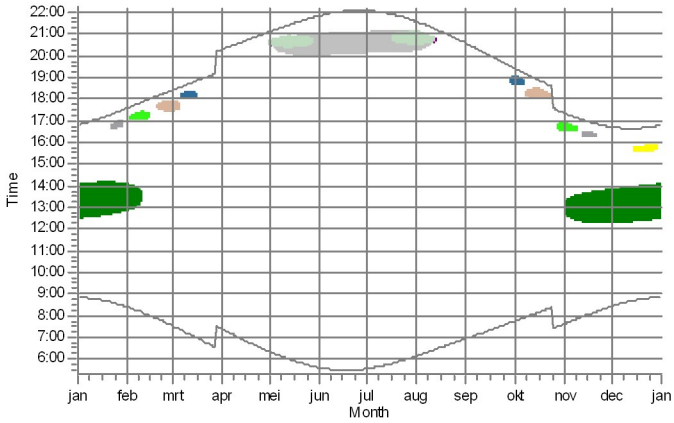
I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)



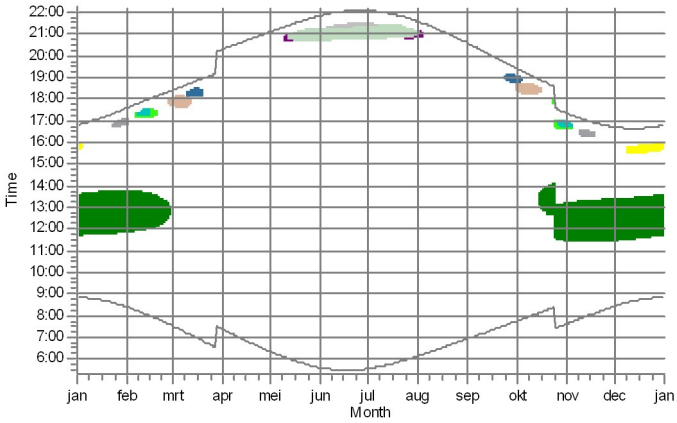
J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)



K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)



L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)



WTGs

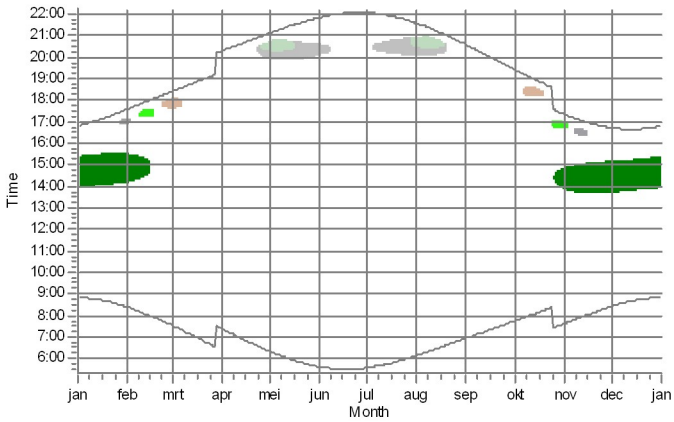
1: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)
2: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (357)
3: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (358)
4: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (359)
5: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (360)
6: ENERCON E-175 EP5 6000 175.0 !O! hub: 162,0 m (TOT: 249,5 m) (362)
10: Siemens SWT-DD-142 4100 142.0 !O! hub: 129,0 m (TOT: 200,0 m) (145)
11: ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (227)
12: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (236)
14: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)
15: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (239)
16: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)
17: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)
18: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)
19: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (243)
20: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (244)
21: ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (246)
22: NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)
23: NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (248)

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Calculated:
13/11/2023 13:30/3.6.355

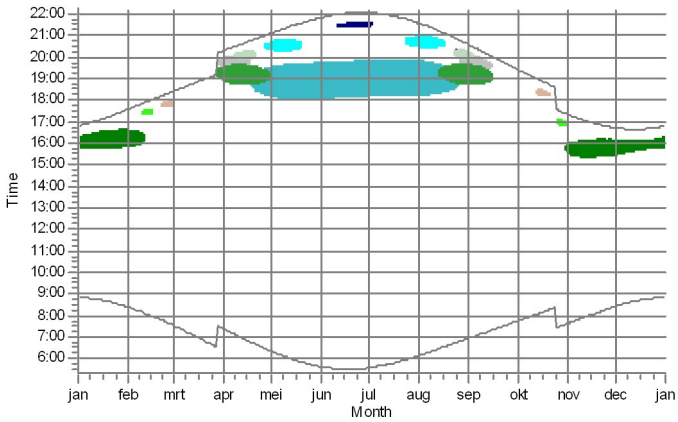
SHADOW - Calendar, graphical

Calculation: SS OVA - Ontwikkeling incl. Kronos

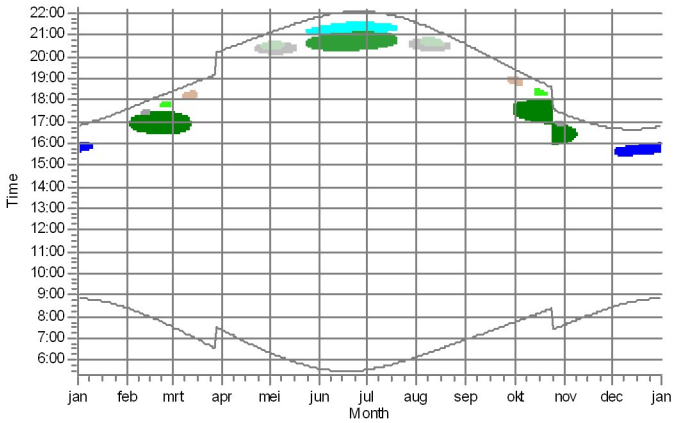
M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)



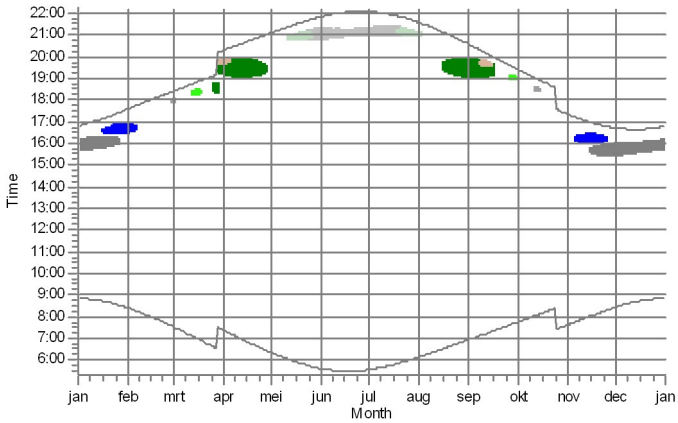
N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)



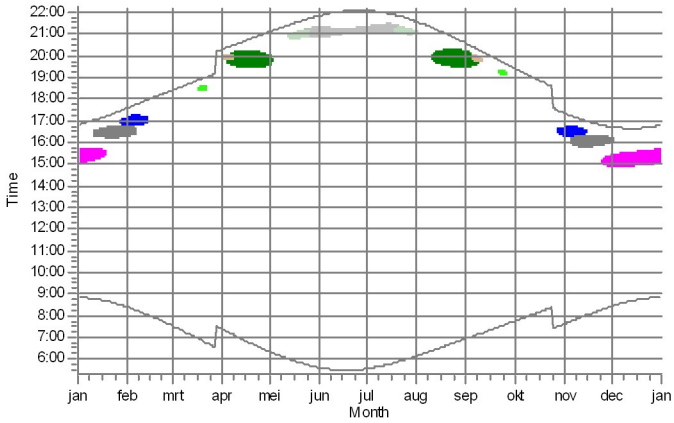
O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)



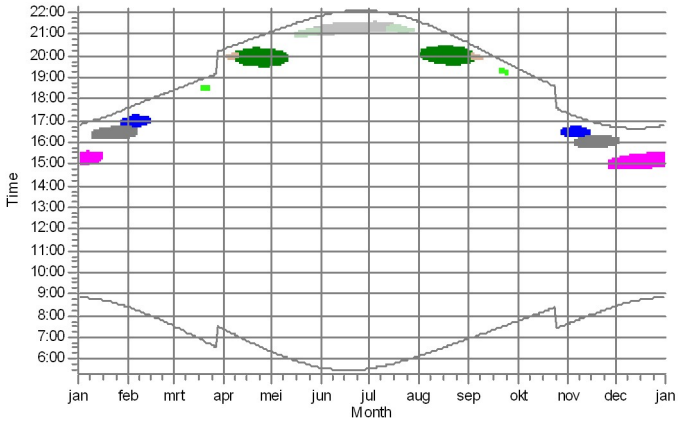
P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)



Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)



R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)



WTGs

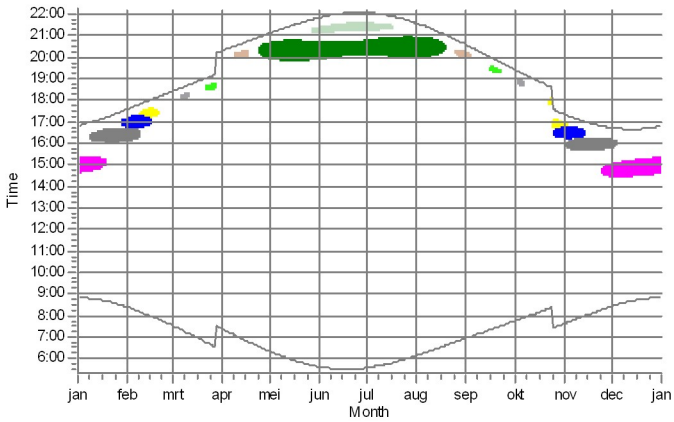
- 1: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)
- 3: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (358)
- 4: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (359)
- 5: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (360)
- 7: SENVION 3.4M104 3400 104.0 !O! hub: 100,0 m (TOT: 152,0 m) (91)
- 11: ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (227)
- 12: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (236)
- 13: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (237)
- 14: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)
- 16: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)
- 17: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)
- 18: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)
- 19: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (243)
- 20: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (244)

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Calculated:
13/11/2023 13:30/3.6.355

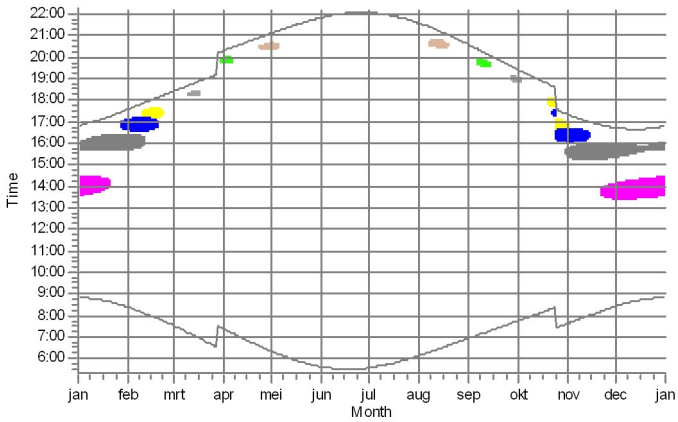
SHADOW - Calendar, graphical

Calculation: SS OVA - Ontwikkeling incl. Kronos

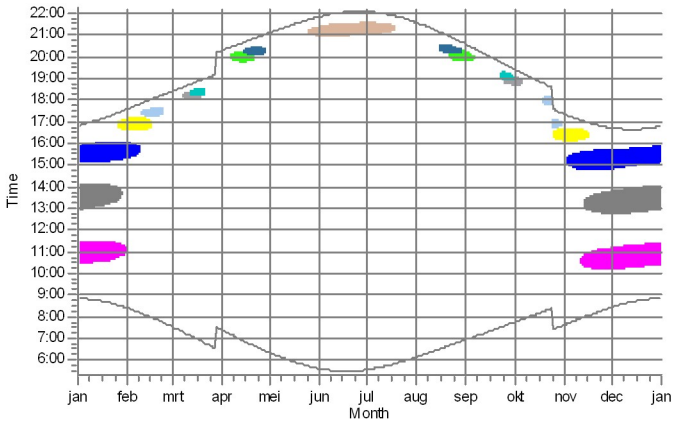
S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)



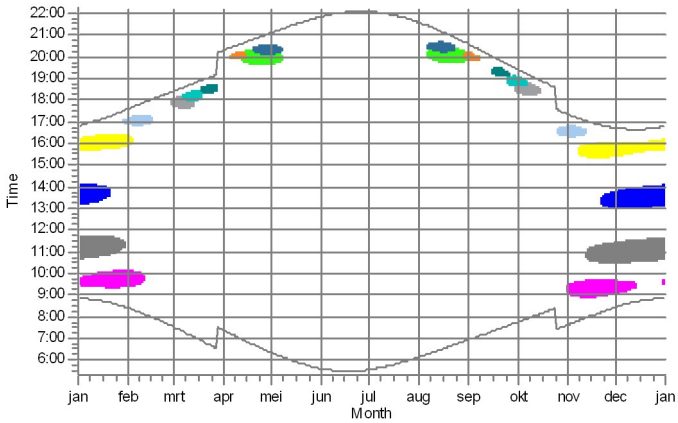
T: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)



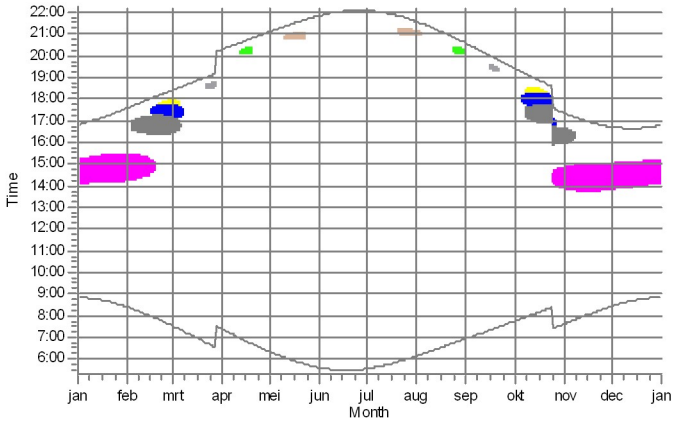
U: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)



V: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)



W: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)



WTGs

1: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)
2: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (357)
3: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (358)
4: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (359)
5: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (360)
6: ENERCON E-175 EP5 6000 175.0 !O! hub: 162,0 m (TOT: 249,5 m) (362)
12: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (236)
14: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)
15: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (239)
16: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)
17: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)
18: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)
21: ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (246)
22: NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)
23: NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (248)

Project:
Total_Ertvelde-RE-20-64-WE-REV-20200701_v2

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: A - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:43 (2)	08:24		10:13 (1)	07:32		09:41 (1)	07:23		10:27 (1)	06:20		10:40 (1)	05:36		21:15 (11)
	16:48	20	16:03 (2)	17:35	96	17:05 (16)	18:25	164	17:42 (18)	20:17	162	13:09 (1)	21:06	67	11:47 (1)	21:50	3	21:18 (11)
2	08:49		15:44 (2)	08:22		10:12 (1)	07:30		09:40 (1)	07:21		10:27 (1)	06:18		10:41 (1)	05:36		21:15 (11)
	16:49	20	16:04 (2)	17:36	101	17:07 (16)	18:26	159	12:19 (1)	20:19	161	13:08 (1)	21:08	62	11:43 (1)	21:51	5	21:20 (11)
3	08:49		15:44 (2)	08:21		10:10 (1)	07:28		09:40 (1)	07:19		10:27 (1)	06:16		10:44 (1)	05:35		21:14 (11)
	16:50	19	16:03 (2)	17:38	107	17:09 (16)	18:28	159	12:19 (1)	20:20	160	13:07 (1)	21:09	56	11:40 (1)	21:52	7	21:21 (11)
4	08:49		15:45 (2)	08:19		10:08 (1)	07:26		09:39 (1)	07:16		10:27 (1)	06:15		10:45 (1)	05:34		21:13 (11)
	16:51	19	16:04 (2)	17:40	113	17:11 (16)	18:30	161	12:20 (1)	20:22	159	13:06 (1)	21:11	51	11:36 (1)	21:53	8	21:21 (11)
5	08:49		15:46 (2)	08:18		10:07 (1)	07:23		09:38 (1)	07:14		10:27 (1)	06:13		10:47 (1)	05:34		21:13 (11)
	16:53	18	16:04 (2)	17:42	117	17:13 (16)	18:32	161	12:19 (1)	20:23	157	13:04 (1)	21:12	45	11:32 (1)	21:54	10	21:23 (11)
6	08:48		15:47 (2)	08:16		10:06 (1)	07:21		09:37 (1)	07:12		10:27 (1)	06:11		10:48 (1)	05:33		21:13 (11)
	16:54	17	16:04 (2)	17:44	121	17:15 (16)	18:33	163	12:20 (1)	20:25	155	13:02 (1)	21:14	40	11:28 (1)	21:55	10	21:23 (11)
7	08:48		15:48 (2)	08:14		10:04 (1)	07:19		09:37 (1)	07:10		10:27 (1)	06:09		10:52 (1)	05:32		21:13 (11)
	16:55	16	16:04 (2)	17:45	124	17:15 (16)	18:35	163	12:20 (1)	20:27	153	13:00 (1)	21:16	32	11:24 (1)	21:56	11	21:24 (11)
8	08:48		15:48 (2)	08:13		10:03 (1)	07:17		09:37 (1)	07:08		10:27 (1)	06:08		10:55 (1)	05:32		21:13 (11)
	16:56	16	16:04 (2)	17:47	124	17:14 (16)	18:37	164	12:21 (1)	20:28	151	12:58 (1)	21:17	24	11:19 (1)	21:57	12	21:25 (11)
9	08:47		15:49 (2)	08:11		10:02 (1)	07:15		09:35 (1)	07:05		10:27 (1)	06:06		11:02 (1)	05:31		21:13 (11)
	16:58	14	16:03 (2)	17:49	123	17:13 (16)	18:38	165	12:20 (1)	20:30	149	12:56 (1)	21:19	9	11:11 (1)	21:58	12	21:25 (11)
10	08:47		15:51 (2)	08:09		10:01 (1)	07:13		09:35 (1)	07:03		10:28 (1)	06:04			05:31		21:13 (11)
	16:59	13	16:04 (2)	17:51	120	12:01 (1)	18:40	165	12:20 (1)	20:32	146	12:54 (1)	21:20			21:59	13	21:26 (11)
11	08:46		15:52 (2)	08:07		09:59 (1)	07:10		09:34 (1)	07:01		10:27 (1)	06:03			05:31		21:13 (11)
	17:00	11	16:03 (2)	17:53	123	12:02 (1)	18:42	167	12:21 (1)	20:33	144	12:51 (1)	21:22			21:59	14	21:27 (11)
12	08:46		15:54 (2)	08:06		09:58 (1)	07:08		09:34 (1)	06:59		10:27 (1)	06:01			05:30		21:13 (11)
	17:02	7	16:01 (2)	17:54	125	12:03 (1)	18:44	167	12:21 (1)	20:35	141	12:48 (1)	21:23			22:00	14	21:27 (11)
13	08:45			08:04		09:57 (1)	07:06		09:33 (1)	06:57		10:28 (1)	05:59			05:30		21:13 (11)
	17:03			17:56	127	12:04 (1)	18:45	167	12:20 (1)	20:37	138	12:46 (1)	21:25			22:01	15	21:28 (11)
14	08:44			08:02		09:55 (1)	07:04		09:32 (1)	06:55		10:28 (1)	05:58			05:30		21:13 (11)
	17:05			17:58	131	17:30 (21)	18:47	168	12:20 (1)	20:38	135	12:43 (1)	21:26			22:01	16	21:29 (11)
15	08:43			08:00		09:54 (1)	07:01		09:32 (1)	06:52		10:29 (1)	05:56			05:30		21:13 (11)
	17:06			18:00	137	17:32 (21)	18:49	172	18:22 (17)	20:40	131	12:40 (1)	21:28			22:02	16	21:29 (11)
16	08:43			07:58		09:53 (1)	06:59		09:32 (1)	06:50		10:29 (1)	05:55			05:30		21:14 (11)
	17:08			18:02	141	17:34 (21)	18:50	181	18:26 (17)	20:42	128	12:37 (1)	21:29			22:02	16	21:30 (11)
17	08:42			07:56		09:52 (1)	06:57		09:31 (1)	06:48		10:30 (1)	05:53			05:30		21:14 (11)
	17:09			18:03	145	17:36 (21)	18:52	185	18:27 (17)	20:43	124	12:34 (1)	21:31			22:03	16	21:30 (11)
18	08:41			07:54		09:51 (1)	06:55		09:31 (1)	06:46		10:30 (1)	05:52			05:30		21:14 (11)
	17:11			18:05	148	17:38 (21)	18:54	188	18:29 (22)	20:45	121	12:31 (1)	21:32			22:03	16	21:30 (11)
19	08:40		10:47 (1)	07:52		09:50 (1)	06:52		09:31 (1)	06:44		10:31 (1)	05:51			05:30		21:14 (11)
	17:12	18	11:05 (1)	18:07	151	17:40 (21)	18:55	191	18:31 (22)	20:46	116	12:27 (1)	21:34			22:04	17	21:31 (11)
20	08:39		10:42 (1)	07:50		09:49 (1)	06:50		09:30 (1)	06:42		10:31 (1)	05:49			05:30		21:14 (11)
	17:14	30	11:12 (1)	18:09	154	17:42 (18)	18:57	195	18:33 (22)	20:48	113	12:24 (1)	21:35			22:04	17	21:31 (11)
21	08:38		10:38 (1)	07:49		09:48 (1)	06:48		09:29 (1)	06:40		10:32 (1)	05:48			05:30		21:14 (11)
	17:16	38	11:16 (1)	18:11	159	17:44 (18)	18:59	197	18:33 (22)	20:50	109	12:21 (1)	21:37			22:04	17	21:31 (11)
22	08:37		10:35 (1)	07:46		09:47 (1)	06:46		09:29 (1)	06:38		10:32 (1)	05:47			05:30		21:15 (11)
	17:17	45	11:20 (1)	18:12	162	17:46 (18)	19:00	198	18:35 (22)	20:51	105	12:17 (1)	21:38			22:04	17	21:32 (11)
23	08:36		10:33 (1)	07:44		09:46 (1)	06:43		09:29 (1)	06:36		10:33 (1)	05:46			05:30		21:15 (11)
	17:19	51	11:24 (1)	18:14	166	17:48 (18)	19:02	200	18:37 (22)	20:53	101	12:14 (1)	21:39			22:04	17	21:32 (11)
24	08:35		10:30 (1)	07:42		09:46 (1)	06:41		09:28 (1)	06:34		10:34 (1)	05:44			05:31		21:15 (11)
	17:21	56	11:26 (1)	18:16	168	17:49 (18)	19:04	201	18:37 (22)	20:55	96	12:10 (1)	21:41			22:05	17	21:32 (11)
25	08:33		10:28 (1)	07:40		09:45 (1)	06:39		09:28 (1)	06:32		10:34 (1)	05:43			05:31		21:16 (11)
	17:22	62	11:30 (1)	18:18	169	17:48 (18)	19:05	200	18:37 (22)	20:56	93	12:07 (1)	21:42			22:05	16	21:32 (11)
26	08:32		10:26 (1)	07:38		09:44 (1)	06:37		09:28 (1)	06:30		10:35 (1)	05:42			05:31		21:16 (11)
	17:24	67	11:33 (1)	18:19	170	17:48 (18)	19:07	198	18:36 (22)	20:58	88	12:03 (1)	21:43			22:05	16	21:32 (11)
27	08:31		10:23 (1)	07:36		09:42 (1)	06:34		09:28 (1)	06:28		10:36 (1)	05:41			05:32		21:16 (11)
	17:26	72	11:35 (1)	18:21	170	17:46 (18)	19:09	194	18:34 (22)	21:00	84	12:00 (1)	21:44			22:05	15	21:31 (11)
28	08:29		10:21 (1)	07:34		09:42 (1)	06:32		09:27 (1)	06:26		10:37 (1)	05:40			05:32		21:16 (11)
	17:28	76	11:37 (1)	18:23	167	17:45 (18)	19:10	190	18:30 (22)	21:01	79	11:56 (1)	21:46			22:05	16	21:32 (11)
29	08:28		10:19 (1)				07:30		10:27 (1)	06:24		10:38 (1)	05:39			05:33		21:16 (11)
	17:29	80	11:39 (1)				20:12	183	19:25 (17)	21:03	76	11:54 (1)	21:47			22:04	15	21:31 (11)
30	08:27		10:17 (1)				07:28		10:27 (1)	06:22		10:39 (1)	05:38			05:33		21:17 (11)
	17:31	85	11:42 (1)				20:14	178	19:23 (17)	21:04	71	11:50 (1)	21:48			22:04	15	21:32 (11)
31	08:25		10:15 (1)				07:25		10:27 (1)				05:37		21:16 (11)			
	17:33	90	17:03 (16)				20:15	169	19:19 (17)				21:49	2	21:18 (11)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		960			3859			5513			3746			388			409	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,60			0,58			0,57			0,57			0,57			0,56	
Total reduction		0,14			0,16			0,20			0,25			0,25			0,24	
Total, real		130			622			1129			935			97			97	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:
Total_Ertvelde-RE-20-64-WE-REV-20200701_v2

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: A - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:17 (11)	06:09			06:57		10:27 (1)	07:44		10:13 (1)	07:36		09:31 (1)	08:26		15:34 (2)
	22:04	15	21:32 (11)	21:33			20:33	144	12:51 (1)	19:25	167	13:00 (1)	17:21	119	11:30 (1)	16:42	11	15:45 (2)
2	05:34		21:17 (11)	06:11			06:59		10:26 (1)	07:46		10:13 (1)	07:38		09:31 (1)	08:27		15:33 (2)
	22:04	14	21:31 (11)	21:32			20:31	146	12:52 (1)	19:23	167	13:00 (1)	17:19	124	16:42 (16)	16:41	13	15:46 (2)
3	05:35		21:18 (11)	06:12			07:00		10:25 (1)	07:48		10:12 (1)	07:40		09:32 (1)	08:29		15:33 (2)
	22:03	13	21:31 (11)	21:30			20:29	149	12:54 (1)	19:21	166	12:58 (1)	17:17	125	16:44 (16)	16:41	14	15:47 (2)
4	05:36		21:18 (11)	06:14		11:08 (1)	07:02		10:24 (1)	07:49		10:13 (1)	07:42		09:34 (1)	08:30		15:33 (2)
	22:03	13	21:31 (11)	21:28	16	11:24 (1)	20:26	151	12:55 (1)	19:19	165	12:58 (1)	17:16	123	16:45 (16)	16:40	15	15:48 (2)
5	05:37		21:18 (11)	06:15		11:04 (1)	07:03		10:24 (1)	07:51		10:13 (1)	07:43		09:36 (1)	08:31		15:33 (2)
	22:02	12	21:30 (11)	21:27	27	11:31 (1)	20:24	153	12:57 (1)	19:16	165	12:58 (1)	17:14	120	16:44 (16)	16:40	16	15:49 (2)
6	05:38		21:19 (11)	06:17		11:00 (1)	07:05		10:23 (1)	07:52		10:13 (1)	07:45		09:37 (1)	08:32		15:33 (2)
	22:02	10	21:29 (11)	21:25	35	11:35 (1)	20:22	155	12:58 (1)	19:14	163	12:56 (1)	17:12	117	16:43 (16)	16:39	17	15:50 (2)
7	05:38		21:19 (11)	06:18		10:58 (1)	07:06		10:22 (1)	07:54		10:13 (1)	07:47		09:39 (1)	08:34		15:32 (2)
	22:01	10	21:29 (11)	21:23	42	11:40 (1)	20:20	157	12:59 (1)	19:12	163	12:56 (1)	17:11	111	16:41 (16)	16:39	18	15:50 (2)
8	05:39		21:20 (11)	06:20		10:55 (1)	07:08		10:21 (1)	07:56		10:14 (1)	07:49		09:41 (1)	08:35		15:33 (2)
	22:01	9	21:29 (11)	21:22	48	11:43 (1)	20:18	159	13:00 (1)	19:10	162	12:56 (1)	17:09	107	16:40 (16)	16:39	19	15:52 (2)
9	05:40		21:21 (11)	06:21		10:54 (1)	07:10		10:21 (1)	07:57		10:13 (1)	07:50		09:43 (1)	08:36		15:33 (2)
	22:00	7	21:28 (11)	21:20	53	11:47 (1)	20:15	160	13:01 (1)	19:08	161	12:54 (1)	17:07	100	16:38 (16)	16:39	19	15:52 (2)
10	05:41		21:22 (11)	06:23		10:52 (1)	07:11		10:20 (1)	07:59		10:14 (1)	07:52		09:44 (1)	08:37		15:33 (2)
	21:59	6	21:28 (11)	21:18	58	11:50 (1)	20:13	161	13:01 (1)	19:05	160	12:54 (1)	17:06	95	16:35 (16)	16:38	20	15:53 (2)
11	05:42		21:23 (11)	06:24		10:50 (1)	07:13		10:20 (1)	08:01		10:14 (1)	07:54		09:46 (1)	08:38		15:33 (2)
	21:59	4	21:27 (11)	21:16	62	11:52 (1)	20:11	163	13:03 (1)	19:03	159	12:53 (1)	17:04	89	16:34 (16)	16:38	20	15:53 (2)
12	05:43		21:24 (11)	06:26		10:49 (1)	07:14		10:19 (1)	08:02		10:14 (1)	07:55		09:48 (1)	08:39		15:34 (2)
	21:58	2	21:26 (11)	21:14	67	11:56 (1)	20:09	168	19:10 (17)	19:01	157	12:51 (1)	17:03	85	11:13 (1)	16:38	20	15:54 (2)
13	05:44			06:27		10:47 (1)	07:16		10:19 (1)	08:04		10:15 (1)	07:57		09:51 (1)	08:40		15:34 (2)
	21:57			21:12	72	11:59 (1)	20:06	176	19:14 (17)	18:59	165	18:16 (18)	17:01	80	11:11 (1)	16:38	20	15:54 (2)
14	05:45			06:29		10:46 (1)	07:17		10:18 (1)	08:06		10:15 (1)	07:59		09:53 (1)	08:41		15:34 (2)
	21:56			21:10	76	12:02 (1)	20:04	181	19:15 (17)	18:57	168	18:18 (18)	17:00	76	11:09 (1)	16:38	21	15:55 (2)
15	05:46			06:30		10:44 (1)	07:19		10:18 (1)	08:07		10:16 (1)	08:01		09:56 (1)	08:42		15:35 (2)
	21:55			21:08	81	12:05 (1)	20:02	186	19:17 (17)	18:55	169	18:20 (18)	16:59	71	11:07 (1)	16:38	21	15:56 (2)
16	05:48			06:32		10:43 (1)	07:21		10:17 (1)	08:09		10:16 (1)	08:02		09:59 (1)	08:43		15:36 (2)
	21:54			21:07	85	12:08 (1)	19:59	194	19:22 (22)	18:52	169	18:19 (18)	16:57	67	11:06 (1)	16:38	20	15:56 (2)
17	05:49			06:34		10:41 (1)	07:22		10:17 (1)	08:11		10:16 (1)	08:04		10:01 (1)	08:44		15:35 (2)
	21:53			21:05	89	12:10 (1)	19:57	197	19:24 (22)	18:50	170	18:20 (18)	16:56	62	11:03 (1)	16:39	21	15:56 (2)
18	05:50			06:35		10:41 (1)	07:24		10:16 (1)	08:12		10:17 (1)	08:06		10:04 (1)	08:44		15:36 (2)
	21:52			21:03	93	12:14 (1)	19:55	199	19:24 (22)	18:48	168	18:20 (18)	16:55	56	11:00 (1)	16:39	21	15:57 (2)
19	05:51			06:37		10:39 (1)	07:25		10:16 (1)	08:14		10:18 (1)	08:07		10:07 (1)	08:45		15:37 (2)
	21:51			21:01	98	12:17 (1)	19:53	200	19:25 (22)	18:46	165	18:19 (18)	16:53	51	10:58 (1)	16:39	21	15:58 (2)
20	05:53			06:38		10:39 (1)	07:27		10:15 (1)	08:16		10:18 (1)	08:09		10:10 (1)	08:46		15:37 (2)
	21:50			20:59	101	12:20 (1)	19:50	201	19:23 (22)	18:44	161	18:16 (18)	16:52	45	10:55 (1)	16:39	20	15:57 (2)
21	05:54			06:40		10:37 (1)	07:28		10:15 (1)	08:17		10:19 (1)	08:11		10:14 (1)	08:46		15:37 (2)
	21:49			20:56	106	12:23 (1)	19:48	199	19:21 (22)	18:42	157	18:14 (18)	16:51	38	10:52 (1)	16:40	21	15:58 (2)
22	05:55			06:41		10:36 (1)	07:30		10:15 (1)	08:19		10:20 (1)	08:12		10:18 (1)	08:47		15:37 (2)
	21:48			20:54	110	12:26 (1)	19:46	197	19:20 (22)	18:40	153	18:12 (18)	16:50	30	10:48 (1)	16:40	21	15:58 (2)
23	05:56			06:43		10:35 (1)	07:32		10:14 (1)	08:21		10:21 (1)	08:14		10:24 (1)	08:47		15:38 (2)
	21:46			20:52	113	12:28 (1)	19:43	195	19:17 (22)	18:38	150	18:10 (21)	16:49	18	10:42 (1)	16:41	21	15:59 (2)
24	05:58			06:44		10:34 (1)	07:33		10:14 (1)	08:22		10:22 (1)	08:15			08:48		15:39 (2)
	21:45			20:50	118	12:32 (1)	19:41	192	19:15 (22)	18:36	147	18:08 (21)	16:48			16:41	21	16:00 (2)
25	05:59			06:46		10:33 (1)	07:35		10:13 (1)	07:24		09:23 (1)	08:17			08:48		15:39 (2)
	21:44			20:48	121	12:34 (1)	19:39	190	19:12 (22)	17:34	143	17:06 (21)	16:47			16:42	21	16:00 (2)
26	06:00			06:48		10:32 (1)	07:36		10:13 (1)	07:26		09:23 (1)	08:18			08:48		15:40 (2)
	21:42			20:46	125	12:37 (1)	19:37	187	19:10 (17)	17:32	139	17:03 (21)	16:46			16:43	21	16:01 (2)
27	06:02			06:49		10:31 (1)	07:38		10:14 (1)	07:28		09:24 (1)	08:20			08:49		15:40 (2)
	21:41			20:44	128	12:39 (1)	19:34	181	19:08 (17)	17:30	135	17:01 (21)	16:45			16:43	21	16:01 (2)
28	06:03			06:51		10:30 (1)	07:40		10:13 (1)	07:29		09:25 (1)	08:21			08:49		15:41 (2)
	21:39			20:42	132	12:42 (1)	19:32	176	19:05 (17)	17:28	132	17:00 (21)	16:44			16:44	20	16:01 (2)
29	06:05			06:52		10:29 (1)	07:41		10:13 (1)	07:31		09:26 (1)	08:23			08:49		15:41 (2)
	21:38			20:40	135	12:44 (1)	19:30	168	13:01 (1)	17:26	128	11:34 (1)	16:44			16:45	21	16:02 (2)
30	06:06			06:54		10:29 (1)	07:43		10:12 (1)	07:33		09:28 (1)	08:24		15:35 (2)	08:49		15:42 (2)
	21:36			20:37	138	12:47 (1)	19:28	168	13:00 (1)	17:25	124	11:32 (1)	16:43	7	15:42 (2)	16:46	20	16:02 (2)
31	06:08			06:55		10:27 (1)				07:35		09:29 (1)				08:49		15:42 (2)
	21:35			20:35	141	12:48 (1)				17:23	122	11:31 (1)				16:47	21	16:03 (2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		115			2470			5253			4820			1916			596	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,56			0,57			0,57			0,57			0,58			0,72	
Total reduction		0,24			0,26			0,24			0,20			0,14			0,15	
Total, real		27			631			1257			966			272			87	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: B - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:59 (2)	08:24		13:34 (1)	07:32		13:07 (1)	07:23		14:00 (1)	06:20		15:32 (1)	05:36		21:00 (11)
	16:48	16	16:15 (2)	17:35	111	15:25 (1)	18:25	178	17:55 (18)	20:17	166	16:46 (1)	21:06	38	16:10 (1)	21:50	18	21:18 (14)
2	08:49		15:58 (2)	08:22		13:34 (1)	07:30		13:07 (1)	07:21		14:01 (1)	06:18		15:37 (1)	05:36		21:01 (11)
	16:49	17	16:15 (2)	17:36	114	15:28 (1)	18:26	176	17:54 (18)	20:19	164	16:45 (1)	21:08	29	16:06 (1)	21:51	19	21:20 (14)
3	08:49		15:59 (2)	08:21		13:32 (1)	07:28		13:06 (1)	07:19		14:02 (1)	06:16		15:44 (1)	05:35		21:01 (11)
	16:50	17	16:16 (2)	17:38	117	15:29 (1)	18:28	173	17:52 (18)	20:20	163	16:45 (1)	21:09	17	16:01 (1)	21:52	20	21:21 (14)
4	08:49		16:00 (2)	08:19		13:31 (1)	07:26		13:05 (1)	07:16		14:04 (1)	06:15			05:34		21:01 (11)
	16:51	18	16:18 (2)	17:40	119	15:30 (1)	18:30	167	15:52 (1)	20:22	160	16:44 (1)	21:11			21:53	20	21:21 (14)
5	08:49		16:01 (2)	08:18		13:30 (1)	07:23		13:04 (1)	07:14		14:04 (1)	06:13			05:34		21:02 (11)
	16:53	18	16:19 (2)	17:42	122	15:32 (1)	18:32	168	15:52 (1)	20:23	159	16:43 (1)	21:12			21:54	21	21:23 (14)
6	08:48		16:00 (2)	08:16		13:29 (1)	07:21		13:04 (1)	07:12		14:06 (1)	06:11			05:33		21:02 (11)
	16:54	20	16:20 (2)	17:44	125	17:15 (16)	18:33	169	15:53 (1)	20:25	156	16:42 (1)	21:14			21:55	21	21:23 (14)
7	08:48		16:01 (2)	08:14		13:28 (1)	07:19		13:04 (1)	07:10		14:07 (1)	06:09			05:32		21:03 (11)
	16:55	20	16:21 (2)	17:45	130	17:17 (16)	18:35	169	15:53 (1)	20:27	155	16:42 (1)	21:16			21:56	21	21:24 (14)
8	08:48		16:01 (2)	08:13		13:26 (1)	07:17		13:03 (1)	07:08		14:09 (1)	06:08			05:32		21:05 (11)
	16:56	20	16:21 (2)	17:47	134	17:18 (16)	18:37	170	15:53 (1)	20:28	152	16:41 (1)	21:17			21:57	20	21:25 (14)
9	08:47		16:01 (2)	08:11		13:26 (1)	07:15		13:02 (1)	07:05		14:11 (1)	06:06			05:31		21:05 (11)
	16:58	20	16:21 (2)	17:49	138	17:21 (16)	18:38	171	15:53 (1)	20:30	150	16:41 (1)	21:19			21:58	20	21:25 (14)
10	08:47		14:17 (1)	08:09		13:25 (1)	07:13		13:02 (1)	07:03		14:14 (1)	06:04			05:31		21:06 (14)
	16:59	31	16:22 (2)	17:51	142	17:23 (16)	18:40	171	15:53 (1)	20:32	146	16:40 (1)	21:20			21:59	20	21:26 (14)
11	08:46		14:12 (1)	08:07		13:24 (1)	07:10		13:01 (1)	07:01		14:15 (1)	06:03			05:31		21:07 (14)
	17:00	42	16:22 (2)	17:53	145	17:25 (16)	18:42	172	15:53 (1)	20:33	143	16:38 (1)	21:22			21:59	20	21:27 (14)
12	08:46		14:08 (1)	08:06		13:23 (1)	07:08		13:01 (1)	06:59		14:18 (1)	06:01			05:30		21:06 (14)
	17:02	50	16:22 (2)	17:54	146	17:25 (16)	18:44	172	15:53 (1)	20:35	139	16:37 (1)	21:23			22:00	21	21:27 (14)
13	08:45		14:05 (1)	08:04		13:21 (1)	07:06		13:00 (1)	06:57		14:21 (1)	05:59			05:30		21:06 (14)
	17:03	55	16:22 (2)	17:56	145	17:23 (16)	18:45	172	15:52 (1)	20:37	135	16:36 (1)	21:25			22:01	22	21:28 (14)
14	08:44		14:03 (1)	08:02		13:20 (1)	07:04		13:00 (1)	06:55		14:24 (1)	05:58			05:30		21:07 (14)
	17:05	62	16:23 (2)	17:58	142	15:42 (1)	18:47	173	15:53 (1)	20:38	132	16:36 (1)	21:26			22:01	22	21:29 (14)
15	08:43		14:01 (1)	08:00		13:19 (1)	07:01		13:00 (1)	06:52		14:27 (1)	05:56			05:30		21:07 (14)
	17:06	64	16:22 (2)	18:00	144	15:43 (1)	18:49	173	15:53 (1)	20:40	128	16:35 (1)	21:28			22:02	22	21:29 (14)
16	08:43		13:59 (1)	07:58		13:18 (1)	06:59		13:00 (1)	06:50		14:31 (1)	05:55			05:30		21:07 (14)
	17:08	68	16:22 (2)	18:02	146	15:44 (1)	18:50	178	18:26 (17)	20:42	123	16:34 (1)	21:29			22:02	23	21:30 (14)
17	08:42		13:57 (1)	07:56		13:17 (1)	06:57		12:59 (1)	06:48		14:35 (1)	05:53			05:30		21:07 (14)
	17:09	72	16:22 (2)	18:03	148	17:36 (21)	18:52	183	18:27 (17)	20:43	118	16:33 (1)	21:31			22:03	23	21:30 (14)
18	08:41		13:55 (1)	07:54		13:16 (1)	06:55		12:59 (1)	06:46		14:39 (1)	05:52			05:30		21:08 (14)
	17:11	74	16:21 (2)	18:05	152	17:38 (21)	18:54	186	18:29 (17)	20:45	113	16:32 (1)	21:32			22:03	22	21:30 (14)
19	08:40		13:53 (1)	07:52		13:16 (1)	06:52		12:59 (1)	06:44		14:42 (1)	05:51		21:03 (11)	05:30		21:08 (14)
	17:12	75	16:19 (2)	18:07	155	17:40 (21)	18:55	189	18:31 (22)	20:46	109	16:31 (1)	21:34	1	21:04 (11)	22:04	23	21:31 (14)
20	08:39		13:51 (1)	07:50		13:15 (1)	06:50		12:59 (1)	06:42		14:46 (1)	05:49		21:02 (11)	05:30		21:08 (14)
	17:14	74	16:17 (2)	18:09	159	17:42 (21)	18:57	192	18:33 (22)	20:48	103	16:29 (1)	21:35	3	21:05 (11)	22:04	23	21:31 (14)
21	08:38		13:50 (1)	07:48		13:14 (1)	06:48		12:58 (1)	06:40		14:51 (1)	05:48		21:00 (11)	05:30		21:08 (14)
	17:16	75	15:05 (1)	18:11	161	17:44 (21)	18:59	193	18:33 (22)	20:50	97	16:28 (1)	21:37	6	21:06 (11)	22:04	23	21:31 (14)
22	08:37		13:48 (1)	07:46		13:13 (1)	06:46		12:58 (1)	06:38		14:55 (1)	05:47		21:00 (11)	05:30		21:09 (14)
	17:17	79	15:07 (1)	18:12	163	17:46 (21)	19:00	195	18:35 (22)	20:51	92	16:27 (1)	21:38	7	21:07 (11)	22:04	23	21:32 (14)
23	08:36		13:47 (1)	07:44		13:12 (1)	06:43		12:58 (1)	06:36		14:59 (1)	05:46		20:59 (11)	05:30		21:09 (14)
	17:19	83	15:10 (1)	18:14	165	17:48 (18)	19:02	197	18:37 (22)	20:53	87	16:26 (1)	21:39	9	21:08 (11)	22:04	23	21:32 (14)
24	08:35		13:45 (1)	07:42		13:12 (1)	06:41		12:58 (1)	06:34		15:03 (1)	05:44		20:59 (11)	05:30		21:09 (14)
	17:21	86	15:11 (1)	18:16	166	17:50 (18)	19:04	198	18:38 (22)	20:55	81	16:24 (1)	21:41	11	21:10 (11)	22:05	23	21:32 (14)
25	08:33		13:44 (1)	07:40		13:11 (1)	06:39		12:58 (1)	06:32		15:06 (1)	05:43		20:59 (11)	05:31		21:10 (14)
	17:22	90	15:14 (1)	18:18	170	17:52 (18)	19:05	196	18:37 (22)	20:56	76	16:22 (1)	21:42	12	21:11 (11)	22:05	22	21:32 (14)
26	08:32		13:43 (1)	07:38		13:10 (1)	06:37		12:58 (1)	06:30		15:10 (1)	05:42		20:59 (11)	05:31		21:09 (14)
	17:24	93	15:16 (1)	18:19	174	17:54 (18)	19:07	192	18:35 (22)	20:58	71	16:21 (1)	21:43	13	21:12 (14)	22:05	23	21:32 (14)
27	08:31		13:41 (1)	07:36		13:09 (1)	06:34		12:59 (1)	06:28		15:14 (1)	05:41		20:59 (11)	05:32		21:09 (14)
	17:26	96	15:17 (1)	18:21	176	17:55 (18)	19:09	187	18:33 (22)	21:00	65	16:19 (1)	21:44	14	21:13 (14)	22:05	22	21:31 (14)
28	08:29		13:40 (1)	07:34		13:08 (1)	06:32		12:58 (1)	06:26		15:18 (1)	05:40		20:59 (11)	05:32		21:10 (14)
	17:28	100	15:20 (1)	18:23	179	17:56 (18)	19:10	179	18:26 (17)	21:01	59	16:17 (1)	21:46	15	21:14 (14)	22:04	22	21:32 (14)
29	08:28		13:38 (1)				07:30		13:59 (1)	06:24		15:23 (1)	05:39		21:00 (11)	05:33		21:10 (14)
	17:29	103	15:21 (1)				20:12	169	16:48 (1)	21:03	53	16:16 (1)	21:47	16	21:16 (14)	22:04	21	21:31 (14)
30	08:27		13:38 (1)				07:28		14:00 (1)	06:22		15:27 (1)	05:38		21:00 (11)	05:33		21:10 (14)
	17:31	105	15:23 (1)				20:14	167	16:47 (1)	21:04	46	16:13 (1)	21:48	17	21:17 (14)	22:04	22	21:32 (14)
31	08:25		13:36 (1)				07:25		14:00 (1)				05:37		21:00 (11)			
	17:33	108	15:24 (1)				20:15	167	16:47 (1)				21:49	18	21:18 (14)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		1851			4088			5542			3541			226			645	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,72			0,72			0,72			0,73			0,62			0,56	
Total reduction		0,16			0,20			0,26			0,32			0,27			0,24	
Total, real		303			824			1420			1123			61			152	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: B - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:11 (14)	06:09			06:57		14:15 (1)	07:44		13:40 (1)	07:36		12:55 (1)	08:26		13:53 (1)
	22:04	21	21:32 (14)	21:33			20:33	143	16:38 (1)	19:25	172	16:32 (1)	17:21	141	16:52 (16)	16:42	43	16:04 (2)
2	05:34		21:10 (11)	06:11			06:59		14:12 (1)	07:46		13:40 (1)	07:38		12:55 (1)	08:27		13:59 (1)
	22:04	21	21:31 (14)	21:32			20:31	146	16:38 (1)	19:23	172	16:32 (1)	17:19	138	16:50 (16)	16:41	32	16:04 (2)
3	05:35		21:10 (11)	06:12			07:00		14:09 (1)	07:48		13:40 (1)	07:40		12:56 (1)	08:29		15:45 (2)
	22:03	21	21:31 (14)	21:30			20:29	150	16:39 (1)	19:21	171	16:31 (1)	17:17	134	16:48 (16)	16:41	20	16:05 (2)
4	05:36		21:10 (11)	06:14			07:02		14:06 (1)	07:49		13:40 (1)	07:42		12:58 (1)	08:30		15:45 (2)
	22:03	21	21:31 (14)	21:28			20:26	152	16:38 (1)	19:19	171	16:31 (1)	17:16	129	16:46 (16)	16:40	20	16:05 (2)
5	05:37		21:09 (11)	06:15			07:03		14:04 (1)	07:51		13:40 (1)	07:43		12:59 (1)	08:31		15:46 (2)
	22:02	21	21:30 (14)	21:27			20:24	155	16:39 (1)	19:16	170	16:30 (1)	17:14	124	15:03 (1)	16:40	20	16:06 (2)
6	05:38		21:09 (11)	06:17			07:05		14:02 (1)	07:52		13:39 (1)	07:45		13:00 (1)	08:32		15:46 (2)
	22:02	20	21:29 (14)	21:25			20:22	156	16:38 (1)	19:14	170	16:29 (1)	17:12	122	15:02 (1)	16:39	20	16:06 (2)
7	05:38		21:09 (11)	06:18			07:06		14:00 (1)	07:54		13:40 (1)	07:47		13:02 (1)	08:34		15:47 (2)
	22:01	20	21:29 (14)	21:23			20:20	159	16:39 (1)	19:12	169	16:29 (1)	17:11	119	15:01 (1)	16:39	19	16:06 (2)
8	05:39		21:09 (11)	06:20			07:08		13:58 (1)	07:56		13:40 (1)	07:49		13:03 (1)	08:35		15:48 (2)
	22:01	20	21:29 (14)	21:22			20:18	161	16:39 (1)	19:10	168	16:28 (1)	17:09	116	14:59 (1)	16:39	18	16:06 (2)
9	05:40		21:09 (11)	06:21			07:10		13:57 (1)	07:57		13:40 (1)	07:50		13:05 (1)	08:36		15:48 (2)
	22:00	19	21:28 (14)	21:20			20:15	162	16:39 (1)	19:07	167	16:27 (1)	17:07	113	14:58 (1)	16:39	17	16:05 (2)
10	05:41		21:09 (11)	06:23		15:51 (1)	07:11		13:55 (1)	07:59		13:40 (1)	07:52		13:05 (1)	08:37		15:49 (2)
	21:59	19	21:28 (14)	21:18	21	16:12 (1)	20:13	163	16:38 (1)	19:05	167	16:27 (1)	17:06	111	14:56 (1)	16:38	16	16:05 (2)
11	05:42		21:08 (11)	06:24		15:44 (1)	07:13		13:54 (1)	08:01		13:41 (1)	07:54		13:07 (1)	08:38		15:49 (2)
	21:59	19	21:27 (14)	21:16	32	16:16 (1)	20:11	165	16:39 (1)	19:03	174	18:27 (18)	17:04	108	14:55 (1)	16:38	16	16:05 (2)
12	05:43		21:08 (11)	06:26		15:39 (1)	07:14		13:52 (1)	08:02		13:40 (1)	07:55		13:09 (1)	08:39		15:49 (2)
	21:58	18	21:26 (14)	21:14	40	16:19 (1)	20:08	166	16:38 (1)	19:01	178	18:28 (18)	17:03	105	14:54 (1)	16:38	15	16:04 (2)
13	05:44		21:08 (11)	06:27		15:34 (1)	07:16		13:51 (1)	08:04		13:41 (1)	07:57		13:10 (1)	08:40		15:50 (2)
	21:57	18	21:26 (14)	21:12	47	16:21 (1)	20:06	168	16:39 (1)	18:59	178	18:29 (18)	17:01	103	14:53 (1)	16:38	14	16:04 (2)
14	05:45		21:08 (11)	06:29		15:30 (1)	07:17		13:49 (1)	08:06		13:41 (1)	07:59		13:12 (1)	08:41		15:51 (2)
	21:56	17	21:25 (14)	21:10	54	16:24 (1)	20:04	169	16:38 (1)	18:57	179	18:29 (18)	17:00	99	14:51 (1)	16:38	13	16:04 (2)
15	05:46		21:08 (11)	06:30		15:25 (1)	07:19		13:49 (1)	08:07		13:42 (1)	08:01		13:14 (1)	08:42		15:51 (2)
	21:55	16	21:24 (14)	21:08	60	16:25 (1)	20:02	177	19:16 (17)	18:55	175	18:27 (18)	16:59	96	14:50 (1)	16:38	14	16:05 (2)
16	05:48		21:08 (11)	06:32		15:21 (1)	07:21		13:47 (1)	08:09		13:42 (1)	08:02		13:16 (1)	08:43		15:52 (2)
	21:54	15	21:23 (14)	21:07	66	16:27 (1)	19:59	184	19:17 (17)	18:52	172	18:24 (18)	16:57	93	14:49 (1)	16:38	13	16:05 (2)
17	05:49		21:08 (11)	06:33		15:16 (1)	07:22		13:47 (1)	08:11		13:42 (1)	08:04		13:17 (1)	08:44		15:52 (2)
	21:53	14	21:22 (14)	21:05	72	16:28 (1)	19:57	191	19:23 (22)	18:50	169	18:22 (18)	16:56	90	14:47 (1)	16:38	12	16:04 (2)
18	05:50		21:08 (11)	06:35		15:12 (1)	07:24		13:45 (1)	08:12		13:43 (1)	08:06		13:19 (1)	08:44		15:53 (2)
	21:52	13	21:21 (14)	21:03	77	16:29 (1)	19:55	196	19:24 (22)	18:48	166	18:21 (18)	16:55	86	14:45 (1)	16:39	12	16:05 (2)
19	05:51		21:09 (11)	06:37		15:07 (1)	07:25		13:45 (1)	08:14		13:44 (1)	08:07		13:21 (1)	08:45		15:53 (2)
	21:51	11	21:20 (11)	21:01	83	16:30 (1)	19:53	197	19:25 (22)	18:46	165	18:19 (18)	16:53	83	14:44 (1)	16:39	12	16:05 (2)
20	05:52		21:10 (11)	06:38		15:04 (1)	07:27		13:44 (1)	08:16		13:44 (1)	08:09		13:23 (1)	08:46		15:53 (2)
	21:50	10	21:20 (11)	20:59	87	16:31 (1)	19:50	197	19:23 (22)	18:44	163	18:16 (21)	16:52	79	14:42 (1)	16:39	12	16:05 (2)
21	05:54		21:10 (11)	06:40		14:59 (1)	07:28		13:44 (1)	08:17		13:45 (1)	08:11		13:26 (1)	08:46		15:54 (2)
	21:49	8	21:18 (11)	20:56	93	16:32 (1)	19:48	195	19:21 (22)	18:42	161	18:14 (21)	16:51	75	14:41 (1)	16:40	12	16:06 (2)
22	05:55		21:10 (11)	06:41		14:55 (1)	07:30		13:44 (1)	08:19		13:45 (1)	08:12		13:27 (1)	08:47		15:54 (2)
	21:48	7	21:17 (11)	20:54	98	16:33 (1)	19:46	195	19:20 (22)	18:40	158	18:12 (21)	16:50	74	15:53 (2)	16:40	12	16:06 (2)
23	05:56		21:11 (11)	06:43		14:50 (1)	07:32		13:42 (1)	08:21		13:46 (1)	08:14		13:30 (1)	08:47		15:55 (2)
	21:46	5	21:16 (11)	20:52	103	16:33 (1)	19:43	193	19:17 (22)	18:38	155	18:10 (21)	16:49	75	15:56 (2)	16:41	12	16:07 (2)
24	05:58		21:12 (11)	06:44		14:46 (1)	07:33		13:42 (1)	08:22		13:47 (1)	08:15		13:32 (1)	08:48		15:55 (2)
	21:45	2	21:14 (11)	20:50	108	16:34 (1)	19:41	191	19:15 (22)	18:36	150	18:08 (21)	16:48	74	15:58 (2)	16:41	12	16:07 (2)
25	05:59			06:46		14:41 (1)	07:35		13:41 (1)	07:24		12:47 (1)	08:17		13:34 (1)	08:48		15:56 (2)
	21:44			20:48	114	16:35 (1)	19:39	188	19:12 (22)	17:34	147	15:14 (1)	16:47	72	15:59 (2)	16:42	11	16:07 (2)
26	06:00			06:48		14:37 (1)	07:36		13:41 (1)	07:26		12:48 (1)	08:18		13:37 (1)	08:48		15:57 (2)
	21:42			20:46	119	16:36 (1)	19:37	185	19:10 (17)	17:32	145	15:13 (1)	16:46	68	16:00 (2)	16:43	12	16:09 (2)
27	06:02			06:49		14:32 (1)	07:38		13:40 (1)	07:28		12:49 (1)	08:20		13:40 (1)	08:49		15:57 (2)
	21:41			20:44	124	16:36 (1)	19:34	181	19:07 (17)	17:30	143	15:12 (1)	16:45	65	16:01 (2)	16:43	13	16:10 (2)
28	06:03			06:51		14:29 (1)	07:40		13:41 (1)	07:29		12:50 (1)	08:21		13:42 (1)	08:49		15:57 (2)
	21:39			20:42	128	16:37 (1)	19:32	174	19:05 (17)	17:28	141	15:11 (1)	16:44	62	16:02 (2)	16:44	13	16:10 (2)
29	06:05			06:52		14:25 (1)	07:41		13:41 (1)	07:31		12:51 (1)	08:23		13:46 (1)	08:49		15:57 (2)
	21:38			20:40	132	16:37 (1)	19:30	172	16:33 (1)	17:26	145	16:53 (16)	16:44	56	16:03 (2)	16:45	14	16:11 (2)
30	06:06			06:54		14:22 (1)	07:43		13:40 (1)	07:33		12:52 (1)	08:24		13:49 (1)	08:49		15:58 (2)
	21:36			20:37	135	16:37 (1)	19:28	172	16:32 (1)	17:25	147	16:55 (16)	16:43	50	16:03 (2)	16:46	14	16:12 (2)
31	06:08			06:55		14:18 (1)				07:35		12:54 (1)				08:49		15:58 (2)
	21:35			20:35	139	16:37 (1)				17:23	145	16:54 (16)				16:47	15	16:13 (2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		376			1932			5203			5053			2860			498	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,56			0,73			0,72			0,72			0,72			0,71	
Total reduction		0,24			0,32			0,30			0,25			0,18			0,14	
Total, real		90			627			1558			1274			509			72	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: C - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:31 (2)	08:24		16:40 (15)	07:32		17:47 (18)	07:23		19:35 (22)	06:20		07:15 (1)	05:36		07:11 (1)
	16:48	24	15:55 (2)	17:35	9	16:49 (15)	18:25	12	17:59 (18)	20:17	16	19:51 (22)	21:06	123	20:10 (17)	21:50	93	08:44 (1)
2	08:49		15:32 (2)	08:22			07:30		17:45 (18)	07:21		19:35 (22)	06:18		07:14 (1)	05:36		07:12 (1)
	16:49	24	15:56 (2)	17:36			18:26	16	18:01 (18)	20:19	18	19:53 (22)	21:08	123	20:09 (17)	21:51	93	08:45 (1)
3	08:49		15:32 (2)	08:21		17:08 (16)	07:28		17:44 (18)	07:19		19:35 (22)	06:16		07:14 (1)	05:35		07:12 (1)
	16:50	23	15:55 (2)	17:38	1	17:09 (16)	18:28	19	18:03 (18)	20:20	19	19:54 (22)	21:09	123	20:09 (17)	21:52	93	08:45 (1)
4	08:49		15:33 (2)	08:19		17:06 (16)	07:26		17:43 (18)	07:16		19:35 (22)	06:15		07:13 (1)	05:34		07:12 (1)
	16:51	23	15:56 (2)	17:40	5	17:11 (16)	18:30	22	18:05 (18)	20:22	19	19:54 (22)	21:11	122	20:08 (17)	21:53	92	08:44 (1)
5	08:49		15:34 (2)	08:18		17:06 (16)	07:23		17:41 (18)	07:14		19:35 (22)	06:13		07:12 (1)	05:34		07:13 (1)
	16:53	22	15:56 (2)	17:42	7	17:13 (16)	18:32	24	18:05 (18)	20:23	18	19:53 (22)	21:12	120	20:06 (17)	21:54	92	08:45 (1)
6	08:48		15:34 (2)	08:16		17:05 (16)	07:21		17:41 (18)	07:12		19:35 (22)	06:11		07:11 (1)	05:33		07:13 (1)
	16:54	22	15:56 (2)	17:44	10	17:15 (16)	18:33	24	18:05 (18)	20:25	16	19:51 (22)	21:14	119	20:05 (17)	21:55	91	08:44 (1)
7	08:48		15:36 (2)	08:14		17:04 (16)	07:19		17:40 (18)	07:10		19:36 (22)	06:09		07:12 (1)	05:32		07:13 (1)
	16:55	21	15:57 (2)	17:45	13	17:17 (16)	18:35	25	18:05 (18)	20:27	14	19:50 (22)	21:16	116	20:04 (17)	21:56	91	08:44 (1)
8	08:48		15:36 (2)	08:13		17:04 (16)	07:17		17:40 (18)	07:08		19:37 (22)	06:08		07:11 (1)	05:32		07:14 (1)
	16:56	20	15:56 (2)	17:47	14	17:18 (16)	18:37	25	18:05 (18)	20:28	12	19:49 (22)	21:17	113	20:02 (17)	21:57	91	08:45 (1)
9	08:47		15:37 (2)	08:11		17:04 (16)	07:15		17:39 (18)	07:05		19:40 (22)	06:06		07:11 (1)	05:31		07:14 (1)
	16:58	19	15:56 (2)	17:49	17	17:21 (16)	18:38	25	18:04 (18)	20:30	6	19:46 (22)	21:19	109	20:00 (17)	21:58	90	08:44 (1)
10	08:47		15:38 (2)	08:09		17:04 (16)	07:13		17:40 (18)	07:03		07:56 (1)	06:04		07:10 (1)	05:31		07:14 (1)
	16:59	18	15:56 (2)	17:51	19	17:23 (16)	18:40	24	18:04 (18)	20:32	20	08:16 (1)	21:20	100	19:55 (17)	21:59	90	08:44 (1)
11	08:46		15:39 (2)	08:07		17:05 (16)	07:10		17:40 (18)	07:01		07:49 (1)	06:03		07:11 (1)	05:31		07:15 (1)
	17:00	17	15:56 (2)	17:53	17	17:22 (16)	18:42	23	18:03 (18)	20:33	31	08:20 (1)	21:22	96	08:47 (1)	21:59	90	08:45 (1)
12	08:46		15:40 (2)	08:06		17:05 (16)	07:08		17:41 (18)	06:59		07:45 (1)	06:01		07:10 (1)	05:30		07:14 (1)
	17:02	15	15:55 (2)	17:54	17	17:22 (16)	18:44	22	18:03 (18)	20:35	39	08:24 (1)	21:23	96	08:46 (1)	22:00	90	08:44 (1)
13	08:45		15:42 (2)	08:04		17:06 (16)	07:06		17:42 (18)	06:57		07:42 (1)	05:59		07:10 (1)	05:30		07:15 (1)
	17:03	12	15:54 (2)	17:56	15	17:21 (16)	18:45	18	18:00 (18)	20:37	59	20:03 (17)	21:25	97	08:47 (1)	22:01	89	08:44 (1)
14	08:44		15:45 (2)	08:02		17:07 (16)	07:04		17:44 (18)	06:55		07:39 (1)	05:58		07:09 (1)	05:30		07:15 (1)
	17:05	9	15:54 (2)	17:58	13	17:20 (16)	18:47	15	17:59 (18)	20:38	69	20:05 (17)	21:26	97	08:46 (1)	22:01	90	08:45 (1)
15	08:43		15:48 (2)	08:00		17:09 (16)	07:01		17:46 (18)	06:52		07:37 (1)	05:56		07:10 (1)	05:30		07:16 (1)
	17:06	2	15:50 (2)	18:00	9	17:18 (16)	18:49	11	17:57 (18)	20:40	77	20:07 (17)	21:28	97	08:47 (1)	22:02	89	08:45 (1)
16	08:43			07:58			06:59			06:50		07:35 (1)	05:55		07:10 (1)	05:30		07:16 (1)
	17:08			18:02			18:50			20:42	85	20:09 (17)	21:29	97	08:47 (1)	22:02	89	08:45 (1)
17	08:42		16:35 (15)	07:56			06:57			06:48		07:33 (1)	05:54		07:09 (1)	05:30		07:16 (1)
	17:09	3	16:38 (15)	18:03			18:52			20:43	91	20:10 (17)	21:31	97	08:46 (1)	22:03	89	08:45 (1)
18	08:41		16:35 (15)	07:54		17:36 (21)	06:55			06:46		07:31 (1)	05:52		07:10 (1)	05:30		07:16 (1)
	17:11	4	16:39 (15)	18:05	2	17:38 (21)	18:54			20:45	96	20:11 (17)	21:32	96	08:46 (1)	22:03	89	08:45 (1)
19	08:40		16:33 (15)	07:52		17:35 (21)	06:52			06:44		07:29 (1)	05:51		07:10 (1)	05:30		07:17 (1)
	17:12	7	16:40 (15)	18:07	5	17:40 (21)	18:55			20:47	101	20:12 (17)	21:34	96	08:46 (1)	22:04	88	08:45 (1)
20	08:39		16:33 (15)	07:50		17:34 (21)	06:50			06:42		07:27 (1)	05:49		07:10 (1)	05:30		07:17 (1)
	17:14	9	16:42 (15)	18:09	8	17:42 (21)	18:57			20:48	105	20:12 (17)	21:35	96	08:46 (1)	22:04	88	08:45 (1)
21	08:38		16:33 (15)	07:49		17:34 (21)	06:48		18:30 (23)	06:40		07:25 (1)	05:48		07:09 (1)	05:30		07:17 (1)
	17:16	11	16:44 (15)	18:11	10	17:44 (21)	18:59	3	18:33 (23)	20:50	109	20:12 (17)	21:37	96	08:45 (1)	22:04	88	08:45 (1)
22	08:37		16:34 (15)	07:47		17:34 (21)	06:46		18:30 (23)	06:38		07:24 (1)	05:47		07:09 (1)	05:30		07:18 (1)
	17:17	12	16:46 (15)	18:12	12	17:46 (21)	19:00	5	18:35 (23)	20:51	112	20:13 (17)	21:38	96	08:45 (1)	22:04	88	08:46 (1)
23	08:36		16:34 (15)	07:44		17:34 (21)	06:43		18:30 (23)	06:36		07:23 (1)	05:46		07:10 (1)	05:30		07:18 (1)
	17:19	14	16:48 (15)	18:14	14	17:48 (21)	19:02	7	18:37 (23)	20:53	115	20:13 (17)	21:39	95	08:45 (1)	22:04	88	08:46 (1)
24	08:35		16:33 (15)	07:42		17:35 (21)	06:41		18:29 (23)	06:34		07:21 (1)	05:44		07:10 (1)	05:31		07:17 (1)
	17:21	17	16:50 (15)	18:16	15	17:50 (21)	19:04	9	18:38 (23)	20:55	118	20:13 (17)	21:41	95	08:45 (1)	22:05	89	08:46 (1)
25	08:33		16:34 (15)	07:40		17:36 (21)	06:39		18:29 (23)	06:32		07:20 (1)	05:43		07:10 (1)	05:31		07:18 (1)
	17:22	18	16:52 (15)	18:18	14	17:50 (21)	19:05	11	18:40 (23)	20:56	119	20:12 (17)	21:42	95	08:45 (1)	22:05	89	08:47 (1)
26	08:32		16:35 (15)	07:38		17:38 (21)	06:37		18:31 (23)	06:30		07:19 (1)	05:42		07:10 (1)	05:31		07:18 (1)
	17:24	18	16:53 (15)	18:19	11	17:49 (21)	19:07	9	18:40 (23)	20:58	121	20:12 (17)	21:43	95	08:45 (1)	22:05	89	08:47 (1)
27	08:31		16:35 (15)	07:36		17:39 (21)	06:34		18:33 (23)	06:28		07:18 (1)	05:41		07:10 (1)	05:32		07:18 (1)
	17:26	17	16:52 (15)	18:21	6	17:45 (21)	19:09	5	18:38 (23)	21:00	122	20:12 (17)	21:44	95	08:45 (1)	22:05	89	08:47 (1)
28	08:29		16:36 (15)	07:34		17:51 (18)	06:32		18:44 (22)	06:26		07:17 (1)	05:40		07:10 (1)	05:32		07:18 (1)
	17:28	17	16:53 (15)	18:23	5	17:56 (18)	19:10	1	18:45 (22)	21:01	123	20:11 (17)	21:46	95	08:45 (1)	22:05	90	08:48 (1)
29	08:28		16:36 (15)				07:30		19:40 (22)	06:24		07:17 (1)	05:39		07:11 (1)	05:33		07:19 (1)
	17:29	16	16:52 (15)				20:12	7	19:47 (22)	21:03	124	20:12 (17)	21:47	94	08:45 (1)	22:04	89	08:48 (1)
30	08:27		16:37 (15)				07:28		19:38 (22)	06:22		07:16 (1)	05:38		07:11 (1)	05:33		07:19 (1)
	17:31	15	16:52 (15)				20:14	10	19:48 (22)	21:04	124	20:11 (17)	21:48	94	08:45 (1)	22:04	89	08:48 (1)
31	08:25		16:38 (15)				07:25		19:37 (22)				05:37		07:11 (1)			
	17:33	13	16:51 (15)				20:15	13	19:50 (22)				21:49	94	08:45 (1)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		462			268			385			2098			3177			2695	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,71			0,68			0,63			0,61			0,63			0,63	
Total reduction		0,16			0,19			0,23			0,27			0,28			0,27	
Total, real		75			51			87			565			875			725	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: C - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:34		07:19 (1)	06:09		07:20 (1)	06:57		07:49 (1)	07:44		18:21 (18)	07:36		16:34 (16)	08:26		15:21 (2)
	22:04	90	08:49 (1)	21:33	97	08:57 (1)	20:33	31	08:20 (1)	19:25	20	18:41 (18)	17:21	18	16:52 (16)	16:42	17	15:38 (2)
2	05:35		07:19 (1)	06:11		07:21 (1)	06:59		07:54 (1)	07:46		18:20 (18)	07:38		16:33 (16)	08:27		15:20 (2)
	22:04	90	08:49 (1)	21:32	96	08:57 (1)	20:31	19	08:13 (1)	19:23	22	18:42 (18)	17:19	17	16:50 (16)	16:42	18	15:38 (2)
3	05:35		07:19 (1)	06:12		07:21 (1)	07:00		19:38 (22)	07:48		18:18 (18)	07:40		16:33 (16)	08:29		15:21 (2)
	22:03	90	08:49 (1)	21:30	105	20:08 (17)	20:29	6	19:44 (22)	19:21	24	18:42 (18)	17:17	15	16:48 (16)	16:41	19	15:40 (2)
4	05:36		07:19 (1)	06:14		07:21 (1)	07:02		19:34 (22)	07:49		18:17 (18)	07:42		16:34 (16)	08:30		15:20 (2)
	22:03	91	08:50 (1)	21:28	110	20:10 (17)	20:26	12	19:46 (22)	19:19	25	18:42 (18)	17:16	12	16:46 (16)	16:40	20	15:40 (2)
5	05:37		07:19 (1)	06:15		07:21 (1)	07:03		19:33 (22)	07:51		18:17 (18)	07:43		16:35 (16)	08:31		15:21 (2)
	22:02	91	08:50 (1)	21:27	115	20:13 (17)	20:24	14	19:47 (22)	19:16	25	18:42 (18)	17:14	9	16:44 (16)	16:40	21	15:42 (2)
6	05:38		07:19 (1)	06:17		07:21 (1)	07:05		19:31 (22)	07:52		18:16 (18)	07:45		16:36 (16)	08:32		15:20 (2)
	22:02	91	08:50 (1)	21:25	117	20:14 (17)	20:22	16	19:47 (22)	19:14	25	18:41 (18)	17:12	7	16:43 (16)	16:40	22	15:42 (2)
7	05:38		07:19 (1)	06:18		07:22 (1)	07:06		19:30 (22)	07:54		18:16 (18)	07:47		16:37 (16)	08:34		15:20 (2)
	22:01	92	08:51 (1)	21:23	118	20:15 (17)	20:20	18	19:48 (22)	19:12	25	18:41 (18)	17:11	4	16:41 (16)	16:39	22	15:42 (2)
8	05:39		07:19 (1)	06:20		07:22 (1)	07:08		19:29 (22)	07:56		18:17 (18)	07:49		16:39 (16)	08:35		15:21 (2)
	22:01	92	08:51 (1)	21:22	120	20:16 (17)	20:18	19	19:48 (22)	19:10	24	18:41 (18)	17:09	1	16:40 (16)	16:39	23	15:44 (2)
9	05:40		07:20 (1)	06:21		07:23 (1)	07:10		19:29 (22)	07:57		18:16 (18)	07:50		16:15 (15)	08:36		15:21 (2)
	22:00	92	08:52 (1)	21:20	122	20:17 (17)	20:15	19	19:48 (22)	19:08	23	18:39 (18)	17:07	2	16:17 (15)	16:39	23	15:44 (2)
10	05:41		07:20 (1)	06:23		07:23 (1)	07:11		19:28 (22)	07:59		18:17 (18)	07:52		16:11 (15)	08:37		15:21 (2)
	21:59	92	08:52 (1)	21:18	123	20:18 (17)	20:13	18	19:46 (22)	19:05	21	18:38 (18)	17:06	9	16:20 (15)	16:38	24	15:45 (2)
11	05:42		07:20 (1)	06:24		07:22 (1)	07:13		19:28 (22)	08:01		18:18 (18)	07:54		16:09 (15)	08:38		15:21 (2)
	21:59	93	08:53 (1)	21:16	125	20:18 (17)	20:11	17	19:45 (22)	19:03	18	18:36 (18)	17:04	13	16:22 (15)	16:38	24	15:45 (2)
12	05:43		07:20 (1)	06:26		07:23 (1)	07:14		19:28 (22)	08:02		18:19 (18)	07:55		16:08 (15)	08:39		15:22 (2)
	21:58	93	08:53 (1)	21:14	125	20:19 (17)	20:09	14	19:42 (22)	19:01	14	18:33 (18)	17:03	15	16:23 (15)	16:38	24	15:46 (2)
13	05:44		07:20 (1)	06:27		07:23 (1)	07:16		19:29 (22)	08:04		18:21 (18)	07:57		16:08 (15)	08:40		15:22 (2)
	21:57	93	08:53 (1)	21:12	124	20:18 (17)	20:06	11	19:40 (22)	18:59	10	18:31 (18)	17:01	16	16:24 (15)	16:38	24	15:46 (2)
14	05:45		07:20 (1)	06:29		07:24 (1)	07:17		19:30 (22)	08:06			07:59		16:08 (15)	08:41		15:22 (2)
	21:56	94	08:54 (1)	21:10	123	20:19 (17)	20:04	7	19:37 (22)	18:57			17:00	17	16:25 (15)	16:38	25	15:47 (2)
15	05:47		07:20 (1)	06:30		07:24 (1)	07:19		19:33 (22)	08:07		18:11 (21)	08:01		16:07 (15)	08:42		15:23 (2)
	21:55	94	08:54 (1)	21:08	123	20:19 (17)	20:02	2	19:35 (22)	18:55	9	18:20 (21)	16:59	18	16:25 (15)	16:38	25	15:48 (2)
16	05:48		07:20 (1)	06:32		07:26 (1)	07:21		19:23 (23)	08:09		18:08 (21)	08:02		16:08 (15)	08:43		15:23 (2)
	21:54	94	08:54 (1)	21:07	121	20:19 (17)	19:59	2	19:25 (23)	18:52	13	18:21 (21)	16:57	18	16:26 (15)	16:38	25	15:48 (2)
17	05:49		07:20 (1)	06:34		07:26 (1)	07:22		19:19 (23)	08:11		18:07 (21)	08:04		16:07 (15)	08:44		15:23 (2)
	21:53	94	08:54 (1)	21:05	120	20:19 (17)	19:57	9	19:28 (23)	18:50	15	18:22 (21)	16:56	18	16:25 (15)	16:39	25	15:48 (2)
18	05:50		07:20 (1)	06:35		07:27 (1)	07:24		19:17 (23)	08:12		18:06 (21)	08:06		16:07 (15)	08:44		15:24 (2)
	21:52	95	08:55 (1)	21:03	119	20:19 (17)	19:55	11	19:28 (23)	18:48	15	18:21 (21)	16:55	17	16:24 (15)	16:39	25	15:49 (2)
19	05:51		07:19 (1)	06:37		07:27 (1)	07:25		19:16 (23)	08:14		18:06 (21)	08:07		16:08 (15)	08:45		15:25 (2)
	21:51	96	08:55 (1)	21:01	117	20:18 (17)	19:53	10	19:26 (23)	18:46	13	18:19 (21)	16:53	14	16:22 (15)	16:39	25	15:50 (2)
20	05:53		07:20 (1)	06:38		07:28 (1)	07:27		19:16 (23)	08:16		18:05 (21)	08:09		16:09 (15)	08:46		15:24 (2)
	21:50	96	08:56 (1)	20:59	115	20:18 (17)	19:50	8	19:24 (23)	18:44	11	18:16 (21)	16:52	12	16:21 (15)	16:39	25	15:49 (2)
21	05:54		07:20 (1)	06:40		07:29 (1)	07:28		19:15 (23)	08:17		18:05 (21)	08:11		16:09 (15)	08:46		15:25 (2)
	21:49	96	08:56 (1)	20:57	112	20:17 (17)	19:48	6	19:21 (23)	18:42	9	18:14 (21)	16:51	11	16:20 (15)	16:40	25	15:50 (2)
22	05:55		07:20 (1)	06:41		07:30 (1)	07:30		19:16 (23)	08:19		18:05 (21)	08:12		16:09 (15)	08:47		15:25 (2)
	21:48	96	08:56 (1)	20:54	109	20:17 (17)	19:46	4	19:20 (23)	18:40	7	18:12 (21)	16:50	9	16:18 (15)	16:40	25	15:50 (2)
23	05:56		07:20 (1)	06:43		07:31 (1)	07:32		19:16 (23)	08:21		18:06 (21)	08:14		16:11 (15)	08:47		15:26 (2)
	21:46	96	08:56 (1)	20:52	105	20:16 (17)	19:43	1	19:17 (23)	18:38	4	18:10 (21)	16:49	6	16:17 (15)	16:41	25	15:51 (2)
24	05:58		07:20 (1)	06:44		07:33 (1)	07:33			08:23		18:07 (21)	08:15		16:12 (15)	08:48		15:26 (2)
	21:45	97	08:57 (1)	20:50	100	20:15 (17)	19:41			18:36	1	18:08 (21)	16:48	4	16:16 (15)	16:41	26	15:52 (2)
25	05:59		07:20 (1)	06:46		07:34 (1)	07:35			07:24			08:17		16:12 (15)	08:48		15:27 (2)
	21:44	97	08:57 (1)	20:48	96	20:14 (17)	19:39			17:34			16:47	3	16:15 (15)	16:42	25	15:52 (2)
26	06:01		07:20 (1)	06:48		07:36 (1)	07:36			07:26			08:18			08:48		15:28 (2)
	21:42	97	08:57 (1)	20:46	90	20:13 (17)	19:37			17:32			16:46			16:43	25	15:53 (2)
27	06:02		07:20 (1)	06:49		07:37 (1)	07:38			07:28		16:38 (16)	08:20			08:49		15:28 (2)
	21:41	97	08:57 (1)	20:44	84	20:10 (17)	19:34			17:30	10	16:48 (16)	16:45			16:43	25	15:53 (2)
28	06:03		07:20 (1)	06:51		07:39 (1)	07:40		18:28 (18)	07:29		16:37 (16)	08:21		15:24 (2)	08:49		15:29 (2)
	21:39	97	08:57 (1)	20:42	77	20:09 (17)	19:32	8	18:36 (18)	17:28	12	16:49 (16)	16:44	8	15:32 (2)	16:44	24	15:53 (2)
29	06:05		07:20 (1)	06:52		07:40 (1)	07:41		18:25 (18)	07:31		16:35 (16)	08:23		15:23 (2)	08:49		15:29 (2)
	21:38	97	08:57 (1)	20:40	69	20:06 (17)	19:30	14	18:39 (18)	17:26	16	16:51 (16)	16:44	12	15:35 (2)	16:45	25	15:54 (2)
30	06:06		07:20 (1)	06:54		07:43 (1)	07:43		18:22 (18)	07:33		16:35 (16)	08:24		15:22 (2)	08:49		15:30 (2)
	21:36	97	08:57 (1)	20:37	57	20:03 (17)	19:28	18	18:40 (18)	17:25	16	16:51 (16)	16:43	15	15:37 (2)	16:46	24	15:54 (2)
31	06:08		07:21 (1)	06:55		07:45 (1)				07:35		16:34 (16)				08:49		15:30 (2)
	21:35	96	08:57 (1)	20:35	38	08:23 (1)				17:23	18	16:52 (16)				16:47	25	15:55 (2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		2916			3272			314			445			320			730	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,63			0,62			0,62			0,65			0,70			0,72	
Total reduction		0,27			0,28			0,26			0,23			0,17			0,15	
Total, real		794			906			81			102			56			108	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: D - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April		May		June	
1	08:49		08:24		07:32		07:23		06:20		05:37	
	16:48	67	10:10 (4) | 15:21 (2)	09:20 (5) | 40	16:41 (15) | 18:25	17:37 (21) | 22	17:59 (21) | 20:17	18:54 (18) | 46	19:51 (23) | 21:06	06:44 (1) | 45	20:14 (22) | 21:50	06:39 (1) | 38
2	08:49		08:22		07:30		07:21		06:18		05:36	
	16:49	68	10:10 (4) | 15:22 (2)	09:22 (5) | 35	16:40 (15) | 18:26	17:37 (21) | 23	18:00 (21) | 20:19	18:53 (18) | 51	19:53 (23) | 21:08	06:42 (1) | 44	20:12 (22) | 21:51	07:17 (1) | 38
3	08:49		08:21		07:28		07:19		06:16		05:35	
	16:50	66	10:10 (4) | 15:21 (2)	09:23 (5) | 26	16:37 (15) | 18:28	17:37 (21) | 23	18:00 (21) | 20:20	18:52 (18) | 55	19:55 (23) | 21:09	06:41 (1) | 41	20:09 (22) | 21:52	07:18 (1) | 37
4	08:49		08:19		07:26		07:17		06:15		05:34	
	16:51	65	10:11 (4) | 15:21 (2)	08:19 | 17:40 | 19	09:24 (5) | 18:30	17:38 (21) | 21	17:59 (21) | 20:22	18:51 (18) | 59	19:57 (23) | 21:11	06:39 (1) | 38	20:07 (22) | 21:53	07:17 (1) | 36
5	08:49		08:18		07:24		07:14		06:13		05:34	
	16:53	65	10:12 (4) | 15:22 (2)	08:18 | 17:42 | 26	09:26 (5) | 18:32	17:38 (21) | 19	17:57 (21) | 20:24	18:51 (18) | 61	19:58 (23) | 21:13	06:38 (1) | 39	20:07 (22) | 21:54	07:16 (1) | 36
6	08:48		08:16		07:21		07:12		06:11		05:33	
	16:54	69	09:22 (5) | 15:21 (2)	08:16 | 17:44 | 25	09:29 (5) | 18:33	17:40 (21) | 16	17:56 (21) | 20:25	18:49 (18) | 62	19:58 (23) | 21:14	06:38 (1) | 41	20:07 (22) | 21:55	07:17 (1) | 35
7	08:48		08:14		07:19		07:10		06:09		05:32	
	16:55	72	09:21 (5) | 15:21 (2)	08:14 | 17:45 | 18	16:58 (16) | 18:35	17:42 (21) | 12	17:54 (21) | 20:27	18:49 (18) | 61	19:57 (23) | 21:16	06:37 (1) | 42	20:07 (22) | 21:56	07:16 (1) | 34
8	08:48		08:13		07:17		07:08		06:08		05:32	
	16:56	72	09:20 (5) | 15:20 (2)	08:13 | 17:47 | 21	16:56 (16) | 18:37	17:45 (21) | 5	17:50 (21) | 20:28	18:49 (18) | 59	19:56 (23) | 21:17	06:36 (1) | 43	20:07 (22) | 21:57	07:16 (1) | 33
9	08:47		08:11		07:15		07:05		06:06		05:31	
	16:58	72	09:19 (5) | 15:19 (2)	08:11 | 17:49 | 23	16:56 (16) | 18:39		20:30	18:48 (18) | 56	19:54 (23) | 21:19	06:36 (1) | 44	20:07 (22) | 21:58	07:16 (1) | 32
10	08:47		08:09		07:13		07:03		06:04		05:31	
	16:59	69	09:19 (5) | 15:19 (2)	08:09 | 17:51 | 25	16:55 (16) | 18:40		20:32	18:48 (18) | 48	19:36 (18) | 21:20	06:35 (1) | 45	20:07 (22) | 21:59	07:15 (1) | 31
11	08:46		08:07		07:10		07:01		06:03		05:31	
	17:00	71	09:18 (5) | 16:27 (15)	08:07 | 17:53 | 26	16:55 (16) | 18:42		20:33	18:48 (18) | 48	19:36 (18) | 21:22	06:35 (1) | 45	20:07 (22) | 21:59	07:15 (1) | 30
12	08:46		08:06		07:08	18:15 (6)	06:59		06:01		05:30	
	17:02	70	09:17 (5) | 16:29 (15)	08:06 | 17:54 | 27	16:54 (16) | 18:44	4	18:19 (6) | 20:35	18:48 (18) | 47	19:35 (18) | 21:23	06:34 (1) | 46	20:07 (22) | 22:00	07:15 (1) | 31
13	08:45		08:04		07:06	18:12 (6)	06:57		06:00		05:30	
	17:03	67	09:17 (5) | 16:30 (15)	08:04 | 17:56 | 27	16:54 (16) | 18:45	8	18:20 (6) | 20:37	18:48 (18) | 46	19:34 (18) | 21:25	06:35 (1) | 46	20:07 (22) | 22:01	07:15 (1) | 30
14	08:44		08:02		07:04	18:11 (6)	06:55		05:58		05:30	
	17:05	70	09:17 (5) | 16:33 (15)	08:02 | 17:58 | 28	16:53 (16) | 18:47	11	18:22 (6) | 20:38	18:48 (18) | 46	19:34 (18) | 21:26	06:34 (1) | 46	20:07 (22) | 22:01	07:15 (1) | 29
15	08:44		08:00		07:01	18:11 (6)	06:52		05:56		05:30	
	17:06	72	09:17 (5) | 16:34 (15)	08:00 | 18:00 | 28	16:53 (16) | 18:49	13	18:24 (6) | 20:40	18:49 (18) | 48	20:11 (22) | 21:28	06:34 (1) | 46	20:07 (22) | 22:02	07:15 (1) | 29
16	08:43		07:58		06:59	18:11 (6)	06:50		05:55		05:30	
	17:08	74	09:17 (5) | 16:36 (15)	07:58 | 18:02 | 27	16:54 (16) | 18:50	15	18:26 (6) | 20:42	18:49 (18) | 55	20:15 (22) | 21:29	06:34 (1) | 47	20:07 (22) | 22:02	07:15 (1) | 28
17	08:42		07:56		06:57	18:10 (6)	06:48		05:54		05:30	
	17:09	75	09:17 (5) | 16:38 (15)	07:56 | 18:03 | 27	16:54 (16) | 18:52	17	18:27 (6) | 20:43	18:50 (18) | 57	20:17 (22) | 21:31	06:34 (1) | 46	20:07 (22) | 22:03	07:15 (1) | 28
18	08:41		07:54		06:55	18:10 (6)	06:46		05:52		05:30	
	17:11	76	09:17 (5) | 16:39 (15)	07:54 | 18:05 | 27	16:54 (16) | 18:54	18	18:28 (6) | 20:45	18:51 (18) | 58	20:18 (22) | 21:32	06:34 (1) | 46	20:07 (22) | 22:03	07:15 (1) | 28
19	08:40		07:52		06:53	18:10 (6)	06:44		05:51		05:30	
	17:12	76	09:16 (5) | 16:40 (15)	07:52 | 18:07 | 25	16:55 (16) | 18:55	17	18:27 (6) | 20:47	18:52 (18) | 58	20:19 (22) | 21:34	06:34 (1) | 46	20:07 (22) | 22:04	07:15 (1) | 28
20	08:39		07:51		06:50	18:11 (6)	06:42		05:49		05:30	
	17:14	77	09:16 (5) | 16:42 (15)	07:51 | 18:09 | 23	16:56 (16) | 18:57	15	18:26 (6) | 20:48	18:53 (18) | 58	20:20 (22) | 21:35	06:35 (1) | 46	20:07 (22) | 22:04	07:15 (1) | 27
21	08:38		07:49		06:48	18:12 (6)	06:40		05:48		05:30	
	17:16	76	09:16 (5) | 16:43 (15)	07:49 | 18:11 | 21	16:57 (16) | 18:59	12	18:24 (6) | 20:50	18:54 (18) | 56	20:20 (22) | 21:37	06:34 (1) | 46	20:07 (22) | 22:04	07:15 (1) | 27
22	08:37		07:47		06:46	18:15 (6)	06:38		05:47		05:30	
	17:17	74	09:16 (5) | 16:44 (15)	07:47 | 18:12 | 20	16:59 (16) | 19:00	6	18:21 (6) | 20:51	18:55 (18) | 54	20:20 (22) | 21:38	06:35 (1) | 45	20:07 (22) | 22:04	07:16 (1) | 27
23	08:36		07:45		06:44		06:36	18:57 (18)	05:46		05:30	
	17:19	68	09:17 (5) | 16:44 (15)	07:45 | 18:14 | 20	17:01 (16) | 19:02		20:53	18:57 (18) | 51	20:20 (22) | 21:39	06:35 (1) | 44	20:07 (22) | 22:04	07:16 (1) | 27
24	08:35		07:42		06:41		06:34	18:59 (18)	05:44		05:31	
	17:21	64	09:16 (5) | 16:44 (15)	07:42 | 18:16 | 15	17:05 (16) | 19:04		20:55	18:59 (18) | 46	20:20 (22) | 21:41	06:34 (1) | 44	20:07 (22) | 22:05	07:16 (1) | 28
25	08:33		07:40		06:39	18:13 (18)	06:32		05:43		05:31	
	17:22	55	09:17 (5) | 16:45 (15)	07:40 | 18:18 | 13	17:39 (21) | 19:05	5	18:18 (18) | 20:56	19:02 (18) | 39	20:19 (22) | 21:42	06:36 (1) | 43	20:07 (22) | 22:05	07:16 (1) | 28
26	08:32		07:38		06:37	18:07 (18)	06:30		05:42		05:31	
	17:24	53	09:18 (5) | 16:45 (15)	07:38 | 18:19 | 16	17:38 (21) | 19:07	18	18:25 (18) | 20:58	19:07 (18) | 28	20:19 (22) | 21:43	06:36 (1) | 43	20:07 (22) | 22:05	07:17 (1) | 28
27	08:31		07:36		06:34	18:04 (18)	06:28		05:41		05:32	
	17:26	53	09:17 (5) | 16:44 (15)	07:36 | 18:21 | 18	17:37 (21) | 19:09	24	18:28 (18) | 21:00	06:53 (1) | 35	20:18 (22) | 21:44	06:36 (1) | 42	20:07 (22) | 22:05	07:17 (1) | 29
28	08:30		07:34		06:32	18:01 (18)	06:26		05:40		05:32	
	17:28	52	09:18 (5) | 16:45 (15)	07:34 | 18:23 | 20	17:37 (21) | 19:10	28	18:29 (18) | 21:01	06:49 (1) | 40	20:17 (22) | 21:46	06:37 (1) | 41	20:07 (22) | 22:05	07:18 (1) | 29
29	08:28		09:18 (5) |		07:30	18:59 (18)	06:24		06:48 (1)	05:39		06:38 (1)	05:33	06:49 (1)
	17:29	50	16:44 (15) |		20:12	32	19:31 (18)	21:03	43	20:17 (22)	21:47	41	07:19 (1)	22:04	30	07:19 (1)
30	08:27		09:20 (5) |		07:28		18:57 (18)	06:22		06:46 (1)	05:38		06:38 (1)	05:33		06:49 (1)
	17:31	47	16:44 (15) |		20:14	35	19:32 (18)	21:04	45	20:16 (22)	21:48	40	07:18 (1)	22:04	30	07:19 (1)
31	08:25		09:20 (5) |		07:25		18:56 (18) |				05:37		06:38 (1) |		
	17:33	45	16:43 (15) |		20:15	40	19:50 (23) |				21:49	40	07:18 (1) |		
Potential sun hours	262		279		367		414		482		494	
Total, worst case		2050		666		459		1516		1351		921
Sun reduction		0,24		0,29		0,37		0,46		0,46		0,44
Oper. time red.		0,96		0,96		0,96		0,96		0,96		0,96
Wind dir. red.		0,61		0,66		0,63		0,61		0,66		0,66
Total reduction		0,14		0,18		0,22		0,26		0,29		0,28
Total, real		282		122		103		400		389		258

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: D - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:34		06:49 (1)	06:09		06:45 (1)	06:57		18:47 (18)	07:44		18:53 (6)	07:36		16:25 (16)	08:26		09:00 (5)
	22:04	30	07:19 (1)	21:33	45	07:30 (1)	20:33	48	19:35 (18)	19:25	5	18:58 (6)	17:21	25	16:50 (16)	16:42	73	16:10 (15)
2	05:35		06:48 (1)	06:11		06:46 (1)	06:59		18:46 (18)	07:46		18:55 (6)	07:38		16:25 (16)	08:27		09:02 (5)
	22:04	31	07:19 (1)	21:32	45	07:31 (1)	20:31	48	19:34 (18)	19:23	2	18:57 (6)	17:19	23	16:48 (16)	16:42	70	15:02 (2)
3	05:35		06:48 (1)	06:12		06:46 (1)	07:00		18:46 (18)	07:48			07:40		16:26 (16)	08:29		09:03 (5)
	22:03	32	07:20 (1)	21:30	44	07:30 (1)	20:29	56	19:52 (23)	19:21			17:17	21	16:47 (16)	16:41	71	15:03 (2)
4	05:36		06:48 (1)	06:14		06:46 (1)	07:02		18:46 (18)	07:49			07:42		16:27 (16)	08:30		09:04 (5)
	22:03	33	07:21 (1)	21:29	43	07:29 (1)	20:27	59	19:53 (23)	19:19			17:16	18	16:45 (16)	16:40	73	15:04 (2)
5	05:37		06:49 (1)	06:15		06:47 (1)	07:03		18:46 (18)	07:51			07:43		08:58 (5)	08:31		09:06 (5)
	22:02	33	07:22 (1)	21:27	42	07:29 (1)	20:24	61	19:54 (23)	19:16			17:14	26	16:44 (16)	16:40	71	15:06 (2)
6	05:38		06:48 (1)	06:17		06:47 (1)	07:05		18:45 (18)	07:52		18:19 (21)	07:45		08:56 (5)	08:32		09:08 (5)
	22:02	34	07:22 (1)	21:25	41	07:28 (1)	20:22	62	19:54 (23)	19:14	10	18:29 (21)	17:12	25	16:41 (16)	16:40	70	15:07 (2)
7	05:38		06:48 (1)	06:18		06:48 (1)	07:06		18:46 (18)	07:54		18:17 (21)	07:47		08:54 (5)	08:34		09:58 (4)
	22:01	35	07:23 (1)	21:23	40	07:28 (1)	20:20	62	19:54 (23)	19:12	14	18:31 (21)	17:11	20	09:14 (5)	16:39	65	15:08 (2)
8	05:39		06:48 (1)	06:20		06:48 (1)	07:08		18:45 (18)	07:56		18:15 (21)	07:49		08:53 (5)	08:35		09:59 (4)
	22:01	35	07:23 (1)	21:22	39	07:27 (1)	20:18	59	19:51 (23)	19:10	18	18:33 (21)	17:09	27	16:08 (15)	16:39	65	15:09 (2)
9	05:40		06:47 (1)	06:21		06:49 (1)	07:10		18:46 (18)	07:57		18:13 (21)	07:50		08:53 (5)	08:36		09:59 (4)
	22:00	37	07:24 (1)	21:20	37	07:26 (1)	20:15	55	19:49 (23)	19:08	20	18:33 (21)	17:07	36	16:12 (15)	16:39	66	15:10 (2)
10	05:41		06:47 (1)	06:23		06:50 (1)	07:11		18:46 (18)	07:59		18:12 (21)	07:52		08:51 (5)	08:37		09:59 (4)
	21:59	38	07:25 (1)	21:18	42	20:19 (22)	20:13	51	19:46 (23)	19:05	22	18:34 (21)	17:06	41	16:12 (15)	16:38	68	15:11 (2)
11	05:42		06:47 (1)	06:24		06:51 (1)	07:13		18:47 (18)	08:01		18:11 (21)	07:54		08:51 (5)	08:38		10:00 (4)
	21:59	38	07:25 (1)	21:16	45	20:21 (22)	20:11	47	19:45 (23)	19:03	23	18:34 (21)	17:04	45	16:14 (15)	16:38	67	15:11 (2)
12	05:43		06:47 (1)	06:26		06:53 (1)	07:14		18:47 (18)	08:02		18:10 (21)	07:55		08:50 (5)	08:39		10:00 (4)
	21:58	39	07:26 (1)	21:14	45	20:23 (22)	20:09	41	19:42 (23)	19:01	23	18:33 (21)	17:03	48	16:15 (15)	16:38	69	15:12 (2)
13	05:44		06:47 (1)	06:27		06:54 (1)	07:16		18:48 (18)	08:04		18:10 (21)	07:57		08:50 (5)	08:40		10:00 (4)
	21:57	39	07:26 (1)	21:12	45	20:24 (22)	20:06	36	19:24 (18)	18:59	21	18:31 (21)	17:01	50	16:16 (15)	16:38	70	15:13 (2)
14	05:45		06:46 (1)	06:29		06:56 (1)	07:17		18:49 (18)	08:06		18:10 (21)	07:59		08:50 (5)	08:41		10:01 (4)
	21:56	41	07:27 (1)	21:10	43	20:25 (22)	20:04	32	19:21 (18)	18:57	19	18:29 (21)	17:00	52	16:17 (15)	16:38	70	15:13 (2)
15	05:47		06:46 (1)	06:30		06:57 (1)	07:19		18:51 (18)	08:07		18:10 (21)	08:01		08:50 (5)	08:42		10:01 (4)
	21:55	41	07:27 (1)	21:09	40	20:25 (22)	20:02	28	19:19 (18)	18:55	17	18:27 (21)	16:59	53	16:17 (15)	16:38	70	15:14 (2)
16	05:48		06:46 (1)	06:32		07:02 (1)	07:21		18:52 (18)	08:09		18:10 (21)	08:02		08:51 (5)	08:43		10:02 (4)
	21:54	42	07:28 (1)	21:07	33	20:26 (22)	19:59	24	19:16 (18)	18:52	14	18:24 (21)	16:57	53	16:18 (15)	16:38	71	15:15 (2)
17	05:49		06:46 (1)	06:34		19:12 (18)	07:22		18:55 (18)	08:11		18:11 (21)	08:04		08:50 (5)	08:44		10:02 (4)
	21:53	42	07:28 (1)	21:05	32	20:26 (22)	19:57	19	19:14 (18)	18:50	11	18:22 (21)	16:56	54	16:17 (15)	16:39	71	15:15 (2)
18	05:50		06:45 (1)	06:35		19:08 (18)	07:24		18:58 (18)	08:12		17:35 (16)	08:06		08:50 (5)	08:44		10:02 (4)
	21:52	43	07:28 (1)	21:03	41	20:26 (22)	19:55	10	19:08 (18)	18:48	18	18:21 (21)	16:55	64	16:18 (15)	16:39	72	15:16 (2)
19	05:51		06:45 (1)	06:37		19:04 (18)	07:25			08:14		17:32 (16)	08:07		08:51 (5)	08:45		10:03 (4)
	21:51	44	07:29 (1)	21:01	48	20:26 (22)	19:53			18:46	20	18:19 (21)	16:53	68	16:18 (15)	16:39	71	15:16 (2)
20	05:53		06:46 (1)	06:38		19:02 (18)	07:27			08:16		17:29 (16)	08:09		08:51 (5)	08:46		10:03 (4)
	21:50	44	07:30 (1)	20:59	52	20:26 (22)	19:50			18:44	20	18:16 (21)	16:52	74	16:19 (15)	16:39	75	15:16 (2)
21	05:54		06:45 (1)	06:40		19:00 (18)	07:28		19:03 (6)	08:17		17:27 (16)	08:11		08:52 (5)	08:46		10:04 (4)
	21:49	45	07:30 (1)	20:57	54	20:25 (22)	19:48	1	19:04 (6)	18:42	22	17:49 (16)	16:51	76	16:19 (15)	16:40	75	15:17 (2)
22	05:55		06:45 (1)	06:41		18:59 (18)	07:30		18:58 (6)	08:19		17:26 (16)	08:12		08:52 (5)	08:47		10:04 (4)
	21:48	45	07:30 (1)	20:54	56	20:25 (22)	19:46	10	19:08 (6)	18:40	24	17:50 (16)	16:50	77	16:18 (15)	16:40	75	15:17 (2)
23	05:56		06:45 (1)	06:43		18:56 (18)	07:32		18:55 (6)	08:21		17:25 (16)	08:14		08:53 (5)	08:47		10:05 (4)
	21:46	45	07:30 (1)	20:52	58	20:23 (22)	19:43	14	19:09 (6)	18:38	25	17:50 (16)	16:49	76	16:17 (15)	16:41	75	15:18 (2)
24	05:58		06:45 (1)	06:45		18:55 (18)	07:33		18:54 (6)	08:23		17:25 (16)	08:15		08:54 (5)	08:48		10:05 (4)
	21:45	46	07:31 (1)	20:50	59	20:23 (22)	19:41	16	19:10 (6)	18:36	26	17:51 (16)	16:48	76	16:16 (15)	16:41	73	15:18 (2)
25	05:59		06:45 (1)	06:46		18:53 (18)	07:35		18:53 (6)	07:24		16:24 (16)	08:17		08:54 (5)	08:48		10:05 (4)
	21:44	46	07:31 (1)	20:48	59	20:21 (22)	19:39	17	19:10 (6)	17:34	28	16:52 (16)	16:47	75	16:15 (15)	16:42	72	15:19 (2)
26	06:01		06:45 (1)	06:48		18:53 (18)	07:36		18:52 (6)	07:26		16:23 (16)	08:18		08:55 (5)	08:49		10:07 (4)
	21:42	46	07:31 (1)	20:46	57	20:20 (22)	19:37	18	19:10 (6)	17:32	28	16:51 (16)	16:46	74	16:14 (15)	16:43	72	15:20 (2)
27	06:02		06:44 (1)	06:49		18:51 (18)	07:38		18:52 (6)	07:28		16:23 (16)	08:20		08:56 (5)	08:49		10:07 (4)
	21:41	47	07:31 (1)	20:44	55	20:17 (22)	19:34	16	19:08 (6)	17:30	28	16:51 (16)	16:45	72	16:13 (15)	16:44	71	15:20 (2)
28	06:03		06:45 (1)	06:51		18:50 (18)	07:40		18:51 (6)	07:29		16:23 (16)	08:21		08:57 (5)	08:49		10:07 (4)
	21:39	46	07:31 (1)	20:42	48	20:13 (22)	19:32	14	19:05 (6)	17:28	28	16:51 (16)	16:44	70	16:12 (15)	16:44	71	15:20 (2)
29	06:05		06:45 (1)	06:52		18:49 (18)	07:41		18:52 (6)	07:31		16:23 (16)	08:23		08:58 (5)	08:49		10:08 (4)
	21:38	46	07:31 (1)	20:40	46	19:35 (18)	19:30	11	19:03 (6)	17:26	28	16:51 (16)	16:44	67	16:11 (15)	16:45	70	15:20 (2)
30	06:06		06:44 (1)	06:54		18:49 (18)	07:43		18:52 (6)	07:33		16:24 (16)	08:24		09:00 (5)	08:49		10:08 (4)
	21:37	46	07:30 (1)	20:37	46	19:35 (18)	19:28	8	19:00 (6)	17:25	27	16:51 (16)	16:43	69	16:11 (15)	16:46	70	15:21 (2)
31	06:08		06:45 (1)	06:56		18:47 (18)				07:35		16:24 (16)				08:49		10:09 (4)
	21:35	46	07:31 (1)	20:35	48	19:35 (18)				17:23	26	16:50 (16)				16:47	69	15:21 (2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		1255			1428			923			567			1555			2191	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,66			0,62			0,62			0,68			0,61			0,64	
Total reduction		0,28			0,28			0,26			0,23			0,15			0,13	
Total, real		356			395			236			133			231			284	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: E - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April		May		June	
1	08:49		08:24		07:32		07:23		06:20		05:37	
	16:48	114	17:35	56	16:55 (15)	32	17:13 (16)		19:17 (18)		06:15 (1)	
	10:01 (4)		15:37 (2)		18:25		17:59 (21)		21:06	70	20:29 (22)	46
2	08:49		08:22		07:30		07:21		06:18		05:36	
	16:49	112	17:36	54	16:55 (15)	33	17:14 (16)		19:17 (18)		06:16 (1)	
	10:02 (4)		15:37 (2)		18:26		18:01 (21)		21:08	69	20:29 (22)	46
3	08:49		08:21		07:28		07:19		06:16		05:35	
	16:50	112	17:38	52	16:54 (15)	33	17:16 (16)		19:19 (18)		06:16 (1)	
	10:01 (4)		15:37 (2)		18:28		18:03 (21)		21:09	66	20:29 (22)	46
4	08:49		08:19		07:26		07:17		06:15		05:34	
	16:51	111	17:40	51	16:53 (15)	32	17:18 (16)		19:19 (18)		06:15 (1)	
	10:02 (4)		15:38 (2)		18:30		18:05 (21)	1	19:57 (23)		21:11	64
5	08:49		08:18		07:24		07:14		06:13		05:34	
	16:53	107	17:42	47	16:53 (15)	28	17:20 (16)		19:19 (18)		06:16 (1)	
	10:03 (4)		15:38 (2)		18:32		18:06 (21)	4	19:58 (23)		21:13	61
6	08:48		08:16		07:21		07:12		06:11		05:33	
	16:54	105	17:44	43	16:52 (15)	20	17:48 (21)		19:20 (18)		06:16 (1)	
	10:03 (4)		15:38 (2)		18:33		18:08 (21)	7	19:59 (23)		21:14	58
7	08:48		08:14		07:19		07:10		06:09		05:32	
	16:55	102	17:45	38	16:50 (15)	22	17:48 (21)		19:21 (18)		06:16 (1)	
	10:04 (4)		15:39 (2)		18:35		18:10 (21)	10	20:01 (23)		21:16	54
8	08:48		08:13		07:17		07:08		06:08		05:32	
	16:56	99	17:47	29	16:47 (15)	23	17:48 (21)		19:21 (18)		06:17 (1)	
	10:04 (4)		15:38 (2)		18:37		18:11 (21)	13	20:03 (23)		21:17	50
9	08:47		08:11		07:15		07:05		06:06		05:31	
	16:58	94	17:49	21	09:37 (5)		17:47 (21)		19:23 (18)		06:17 (1)	
	10:05 (4)		15:38 (2)		18:39	23	18:10 (21)	14	20:04 (23)	53	21:19	53
10	08:47		08:09		07:13		07:03		06:04		05:31	
	16:59	88	17:51	17	09:35 (5)		17:48 (21)		19:23 (18)		06:17 (1)	
	10:05 (4)		15:39 (2)		18:40	21	18:09 (21)	16	20:06 (23)	49	21:20	49
11	08:46		08:07		07:10		07:01		06:03		05:31	
	17:00	75	17:53	13	09:33 (5)		17:49 (21)		19:36 (18)		06:18 (1)	
	10:05 (4)		15:38 (2)		18:42	19	18:08 (21)	30	20:06 (23)	51	21:22	51
12	08:46		08:06		07:08		06:59		19:32 (18)		06:01	
	17:02	75	17:54		18:44	16	18:07 (21)	31	20:03 (23)	52	21:23	52
	10:06 (4)		15:38 (2)		18:45		17:51 (21)		19:26 (18)		06:00	
13	08:45		08:04		07:06		06:57		19:29 (18)		06:25 (1)	
	17:03	73	17:56		18:45	12	18:04 (21)	33	20:02 (23)	52	21:25	52
	10:07 (4)		15:38 (2)		18:47		17:52 (21)		19:27 (18)		05:58	
14	08:44		08:02		07:04		06:55		19:53 (18)		05:30	
	17:05	72	17:58		18:47	4	17:56 (21)		19:58 (23)		06:23 (1)	
	10:07 (4)		15:39 (2)		18:47		18:00 (21)	31	21:26	51	05:30	
15	08:43		09:18 (5)		07:01		06:52		19:26 (18)		05:56	
	17:06	78	15:38 (2)		18:00	6	17:23 (16)		18:23 (6)		06:22 (1)	
	18:49	1	18:24 (6)		20:40	33	19:59 (18)		21:28	50	19:49 (18)	46
16	08:43		09:16 (5)		07:58		17:19 (16)		06:59		18:21 (6)	
	06:50		19:24 (18)		05:55		06:21 (1)		05:30		06:18 (1)	
	17:08	81	15:38 (2)		18:02	14	17:33 (16)		18:50	5	18:26 (6)	
	20:42	36	20:00 (18)		21:29	45	19:46 (18)		22:02	46	07:04 (1)	
17	08:42		09:14 (5)		07:56		17:17 (16)		06:57		18:18 (6)	
	06:48		19:23 (18)		05:54		06:19 (1)		05:30		06:19 (1)	
	17:09	81	15:37 (2)		18:03	18	17:35 (16)		18:52	9	18:27 (6)	
	20:43	38	20:01 (18)		21:31	36	06:55 (1)		22:03	45	07:04 (1)	
18	08:41		09:13 (5)		07:54		17:16 (16)		06:55		18:18 (6)	
	06:46		19:22 (18)		05:52		06:18 (1)		05:30		06:19 (1)	
	17:11	82	16:39 (15)		18:05	21	17:37 (16)		18:54	11	18:29 (6)	
	20:45	40	20:02 (18)		21:32	38	06:56 (1)		22:03	46	07:05 (1)	
19	08:40		09:12 (5)		07:52		17:15 (16)		06:53		18:17 (6)	
	06:44		19:21 (18)		05:51		06:18 (1)		05:30		06:19 (1)	
	17:12	84	16:40 (15)		18:07	23	17:38 (16)		18:55	14	18:31 (6)	
	20:47	42	20:03 (18)		21:34	39	06:57 (1)		22:04	46	07:05 (1)	
20	08:39		09:11 (5)		07:51		17:14 (16)		06:50		18:17 (6)	
	06:42		19:20 (18)		05:49		06:18 (1)		05:30		06:19 (1)	
	17:14	83	16:42 (15)		18:09	25	17:39 (16)		18:57	16	18:33 (6)	
	20:48	43	20:03 (18)		21:35	40	06:58 (1)		22:04	46	07:05 (1)	
21	08:38		09:11 (5)		07:49		17:13 (16)		06:48		18:16 (6)	
	06:40		19:19 (18)		05:48		06:17 (1)		05:30		06:19 (1)	
	17:16	77	16:44 (15)		18:11	27	17:40 (16)		18:59	17	18:33 (6)	
	20:50	53	20:23 (22)		21:37	42	06:59 (1)		22:04	46	07:05 (1)	
22	08:37		09:10 (5)		07:47		17:13 (16)		06:46		18:16 (6)	
	06:38		19:19 (18)		05:47		06:16 (1)		05:30		06:20 (1)	
	17:17	80	16:46 (15)		18:12	27	17:40 (16)		19:00	18	18:34 (6)	
	20:51	58	20:25 (22)		21:38	42	06:58 (1)		22:04	46	07:06 (1)	
23	08:36		09:10 (5)		07:45		17:12 (16)		06:44		18:17 (6)	
	06:36		19:18 (18)		05:46		06:16 (1)		05:30		06:20 (1)	
	17:19	81	16:48 (15)		18:14	28	17:40 (16)		19:02	16	18:33 (6)	
	20:53	62	20:26 (22)		21:39	43	06:59 (1)		22:04	46	07:06 (1)	
24	08:35		09:09 (5)		07:42		17:12 (16)		06:41		18:17 (6)	
	06:34		19:18 (18)		05:44		06:16 (1)		05:31		06:20 (1)	
	17:21	84	16:50 (15)		18:16	29	17:41 (16)		19:04	14	18:31 (6)	
	20:55	65	20:28 (22)		21:41	43	06:59 (1)		22:05	46	07:06 (1)	
25	08:33		09:09 (5)		07:40		17:12 (16)		06:39		18:19 (6)	
	06:32		19:17 (18)		05:43		06:16 (1)		05:31		06:21 (1)	
	17:22	85	16:52 (15)		18:18	29	17:41 (16)		19:05	10	18:29 (6)	
	20:56	68	20:28 (22)		21:42	44	07:00 (1)		22:05	45	07:06 (1)	
26	08:32		09:10 (5)		07:38		17:12 (16)		06:37		18:23 (6)	
	06:30		19:17 (18)		05:42		06:15 (1)		05:31		06:20 (1)	
	17:24	84	16:54 (15)		18:19	28	17:40 (16)		19:07	2	18:25 (6)	
	20:58	70	20:29 (22)		21:43	45	07:00 (1)		22:05	46	07:06 (1)	
27	08:31		09:09 (5)		07:36		17:12 (16)		06:34			
	06:28		19:17 (18)		05:41		06:15 (1)		05:32		06:21 (1)	
	17:26	84	16:54 (15)		18:21	27	17:39 (16)		19:09			
	21:00	69	20:29 (22)		21:44	45	07:00 (1)		22:05	46	07:07 (1)	
28	08:30		09:09 (5)		07:34		17:12 (16)		06:32			
	06:26		19:17 (18)		05:40		06:15 (1)		05:32		06:21 (1)	
	17:28	83	16:55 (15)		18:23	30	17:57 (21)		19:10			
	21:01	70	20:29 (22)		21:46	45	07:00 (1)		22:05	46	07:07 (1)	
29	08:28		09:09 (5)						07:30			
	06:24		19:17 (18)		05:39		06:16 (1)		05:33		06:22 (1)	
	17:29	79	16:55 (15)						20:12			
	21:03	71	20:30 (22)		21:47	45	07:01 (1)		22:04	46	07:08 (1)	
30	08:27		09:10 (5)						07:28			
	06:22		19:17 (18)		05:38		06:16 (1)		05:33		06:21 (1)	
	17:31	74	16:55 (15)						20:14			
	21:04	71	20:30 (22)		21:48	45	07:01 (1)		22:04	46	07:07 (1)	
31	08:25		09:09 (5)						07:25			
	05:37		06:15 (1)									
	17:33	67	16:55 (15)						20:15			
	21:49	46	07:01 (1)									
Potential sun hours	262		279		367		414		482		494	
Total, worst case	2706		753		451		1079		1533		1380	
Sun reduction	0,24		0,29		0,37		0,46		0,46		0,44	
Oper. time red.	0,96		0,96		0,96		0,96		0,96		0,96	
Wind dir. red.	0,63		0,63		0,64		0,58		0,63		0,68	
Total reduction	0,14		0,18		0,23		0,25		0,28		0,29	
Total, real	383		133		103		272		425		401	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: E - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		06:22 (1)	06:09		06:37 (1)	06:57		19:35 (18)	07:44		18:30 (21)	07:36		08:47 (5)	08:26		09:47 (4)
	22:04	46	07:08 (1)	21:33	52	20:05 (18)	20:33	29	20:04 (23)	19:25	15	18:45 (21)	17:21	18	09:05 (5)	16:42	76	15:21 (2)
2	05:35		06:21 (1)	06:11		06:39 (1)	06:59		19:48 (23)	07:46		18:29 (21)	07:38		08:44 (5)	08:27		09:47 (4)
	22:04	46	07:07 (1)	21:32	51	20:06 (18)	20:31	16	20:04 (23)	19:23	18	18:47 (21)	17:19	22	09:06 (5)	16:42	88	15:21 (2)
3	05:35		06:22 (1)	06:12		06:40 (1)	07:00		19:48 (23)	07:48		18:26 (21)	07:40		08:43 (5)	08:29		09:48 (4)
	22:03	46	07:08 (1)	21:30	53	20:29 (22)	20:29	15	20:03 (23)	19:21	21	18:47 (21)	17:17	32	16:17 (15)	16:41	94	15:22 (2)
4	05:36		06:22 (1)	06:14		06:44 (1)	07:02		19:47 (23)	07:49		18:26 (21)	07:42		08:43 (5)	08:30		09:48 (4)
	22:03	46	07:08 (1)	21:28	53	20:32 (22)	20:27	13	20:00 (23)	19:19	22	18:48 (21)	17:16	38	16:20 (15)	16:40	97	15:22 (2)
5	05:37		06:23 (1)	06:15		19:31 (18)	07:03		19:48 (23)	07:51		18:25 (21)	07:43		08:42 (5)	08:31		09:49 (4)
	22:02	46	07:09 (1)	21:27	52	20:34 (22)	20:24	10	19:58 (23)	19:16	23	18:48 (21)	17:14	44	16:22 (15)	16:40	102	15:24 (2)
6	05:38		06:22 (1)	06:17		19:30 (18)	07:05		19:48 (23)	07:52		18:24 (21)	07:45		08:41 (5)	08:32		09:49 (4)
	22:02	46	07:08 (1)	21:25	56	20:35 (22)	20:22	7	19:55 (23)	19:14	23	18:47 (21)	17:12	48	16:23 (15)	16:40	105	15:24 (2)
7	05:38		06:22 (1)	06:18		19:30 (18)	07:06		19:49 (23)	07:54		18:24 (21)	07:47		08:41 (5)	08:34		09:49 (4)
	22:01	47	07:09 (1)	21:23	59	20:36 (22)	20:20	5	19:54 (23)	19:12	21	18:45 (21)	17:11	50	16:24 (15)	16:39	108	15:24 (2)
8	05:39		06:23 (1)	06:20		19:28 (18)	07:08		19:50 (23)	07:56		17:58 (16)	07:49		08:41 (5)	08:35		09:50 (4)
	22:01	46	07:09 (1)	21:22	62	20:36 (22)	20:18	1	19:51 (23)	19:10	25	18:43 (21)	17:09	52	16:25 (15)	16:39	110	15:26 (2)
9	05:40		06:23 (1)	06:21		19:28 (18)	07:10			07:57		17:53 (16)	07:50		08:41 (5)	08:36		09:50 (4)
	22:00	46	07:09 (1)	21:20	65	20:38 (22)	20:15			19:08	31	18:40 (21)	17:07	55	16:26 (15)	16:39	112	15:26 (2)
10	05:41		06:23 (1)	06:23		19:27 (18)	07:11			07:59		17:51 (16)	07:52		08:40 (5)	08:37		09:51 (4)
	21:59	47	07:10 (1)	21:18	67	20:37 (22)	20:13			19:05	32	18:38 (21)	17:06	55	16:25 (15)	16:38	112	15:26 (2)
11	05:42		06:24 (1)	06:24		19:26 (18)	07:13			08:01		17:49 (16)	07:54		08:40 (5)	08:38		09:51 (4)
	21:59	46	07:10 (1)	21:16	69	20:37 (22)	20:11			19:03	32	18:36 (21)	17:04	68	16:26 (15)	16:38	112	15:27 (2)
12	05:43		06:24 (1)	06:26		19:26 (18)	07:14			08:02		17:47 (16)	07:55		08:41 (5)	08:39		09:52 (4)
	21:58	46	07:10 (1)	21:14	69	20:38 (22)	20:09			19:01	31	18:33 (21)	17:03	75	16:26 (15)	16:38	113	15:27 (2)
13	05:44		06:24 (1)	06:27		19:25 (18)	07:16			08:04		17:46 (16)	07:57		08:41 (5)	08:40		09:52 (4)
	21:57	46	07:10 (1)	21:12	70	20:37 (22)	20:06			18:59	30	18:31 (21)	17:01	79	16:27 (15)	16:38	115	15:28 (2)
14	05:45		06:24 (1)	06:29		19:25 (18)	07:17			08:06		17:45 (16)	07:59		08:41 (5)	08:41		09:53 (4)
	21:56	46	07:10 (1)	21:10	70	20:37 (22)	20:04			18:57	27	18:12 (16)	17:00	83	16:27 (15)	16:38	115	15:28 (2)
15	05:47		06:24 (1)	06:30		19:24 (18)	07:19			08:07		17:45 (16)	08:01		08:42 (5)	08:42		09:53 (4)
	21:55	46	07:10 (1)	21:09	71	20:37 (22)	20:02			18:55	27	18:12 (16)	16:59	84	16:27 (15)	16:38	117	15:29 (2)
16	05:48		06:25 (1)	06:32		19:24 (18)	07:21			08:09		17:43 (16)	08:02		08:43 (5)	08:43		09:54 (4)
	21:54	45	07:10 (1)	21:07	71	20:37 (22)	19:59			18:52	29	18:12 (16)	16:57	85	16:27 (15)	16:38	118	15:30 (2)
17	05:49		06:25 (1)	06:34		19:24 (18)	07:22			08:11		17:43 (16)	08:04		08:42 (5)	08:44		09:54 (4)
	21:53	45	07:10 (1)	21:05	68	20:35 (22)	19:57			18:50	29	18:12 (16)	16:56	85	16:25 (15)	16:39	117	15:29 (2)
18	05:50		06:25 (1)	06:35		19:24 (18)	07:24		19:07 (6)	08:12		17:43 (16)	08:06		08:43 (5)	08:44		09:54 (4)
	21:52	44	07:09 (1)	21:03	68	20:35 (22)	19:55	9	19:16 (6)	18:48	29	18:12 (16)	16:55	84	16:24 (15)	16:39	119	15:30 (2)
19	05:51		06:25 (1)	06:37		19:23 (18)	07:25		19:05 (6)	08:14		17:44 (16)	08:07		08:44 (5)	08:45		09:55 (4)
	21:51	44	07:09 (1)	21:01	66	20:33 (22)	19:53	13	19:18 (6)	18:46	28	18:12 (16)	16:53	81	16:22 (15)	16:39	119	15:31 (2)
20	05:53		06:26 (1)	06:38		19:24 (18)	07:27		19:04 (6)	08:16		17:43 (16)	08:09		08:45 (5)	08:46		09:55 (4)
	21:50	44	07:10 (1)	20:59	62	20:32 (22)	19:50	15	19:19 (6)	18:44	27	18:10 (16)	16:52	80	16:21 (15)	16:39	119	15:31 (2)
21	05:54		06:27 (1)	06:40		19:23 (18)	07:28		19:02 (6)	08:17		17:44 (16)	08:11		08:47 (5)	08:46		09:56 (4)
	21:49	42	07:09 (1)	20:57	57	20:29 (22)	19:48	17	19:19 (6)	18:42	26	18:10 (16)	16:51	77	16:20 (15)	16:40	119	15:32 (2)
22	05:55		06:27 (1)	06:41		19:24 (18)	07:30		19:02 (6)	08:19		17:44 (16)	08:12		08:47 (5)	08:47		09:56 (4)
	21:48	42	07:09 (1)	20:54	51	20:27 (22)	19:46	18	19:20 (6)	18:40	25	18:09 (16)	16:50	83	16:18 (15)	16:40	118	15:32 (2)
23	05:56		06:27 (1)	06:43		19:24 (18)	07:32		19:00 (6)	08:21		17:45 (16)	08:14		08:49 (5)	08:47		09:57 (4)
	21:46	41	07:08 (1)	20:52	43	20:07 (18)	19:43	17	19:17 (6)	18:38	23	18:08 (16)	16:49	84	16:17 (15)	16:41	119	15:33 (2)
24	05:58		06:28 (1)	06:45		19:25 (18)	07:33		19:01 (6)	08:23		17:47 (16)	08:15		08:50 (5)	08:48		09:57 (4)
	21:45	40	07:08 (1)	20:50	41	20:06 (18)	19:41	14	19:15 (6)	18:36	20	18:07 (16)	16:48	82	16:16 (15)	16:41	119	15:33 (2)
25	05:59		06:29 (1)	06:46		19:25 (18)	07:35		19:00 (6)	07:24		16:48 (16)	08:17		08:51 (5)	08:48		09:57 (4)
	21:44	38	07:07 (1)	20:48	40	20:05 (18)	19:39	12	19:12 (6)	17:34	17	17:05 (16)	16:47	82	15:14 (2)	16:42	119	15:33 (2)
26	06:01		06:29 (1)	06:48		19:26 (18)	07:36		19:01 (6)	07:26		16:50 (16)	08:18		08:54 (5)	08:49		09:59 (4)
	21:42	38	07:07 (1)	20:46	38	20:04 (18)	19:37	9	19:10 (6)	17:32	12	17:02 (16)	16:46	81	15:16 (2)	16:43	117	15:34 (2)
27	06:02		06:30 (1)	06:49		19:26 (18)	07:38		19:02 (6)	07:28		16:55 (16)	08:20		08:56 (5)	08:49		09:59 (4)
	21:41	42	19:54 (18)	20:44	36	20:02 (18)	19:34	6	19:08 (6)	17:30	1	16:56 (16)	16:45	79	15:17 (2)	16:44	118	15:35 (2)
28	06:03		06:32 (1)	06:51		19:28 (18)	07:40		19:03 (6)	07:29			08:21		09:46 (4)	08:49		09:59 (4)
	21:39	47	19:58 (18)	20:42	33	20:01 (18)	19:32	2	19:05 (6)	17:28			16:44	72	15:18 (2)	16:44	117	15:35 (2)
29	06:05		06:33 (1)	06:52		19:28 (18)	07:41			07:31			08:23		09:47 (4)	08:49		10:00 (4)
	21:38	50	20:00 (18)	20:40	31	19:59 (23)	19:30			17:26			16:44	73	15:19 (2)	16:45	116	15:35 (2)
30	06:06		06:34 (1)	06:54		19:30 (18)	07:43		18:33 (21)	07:33		08:53 (5)	08:24		09:47 (4)	08:49		10:00 (4)
	21:37	52	20:02 (18)	20:37	33	20:03 (23)	19:28	10	18:43 (21)	17:25	6	08:59 (5)	16:43	74	15:20 (2)	16:46	116	15:36 (2)
31	06:08		06:36 (1)	06:56		19:32 (18)				07:35		08:49 (5)				08:49		10:00 (4)
	21:35	52	20:04 (18)	20:35	31	20:03 (23)				17:23	14	09:03 (5)				16:47	115	15:36 (2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		1398			1688			238			664			2005			3461	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,68			0,58			0,61			0,66			0,61			0,65	
Total reduction		0,29			0,26			0,25			0,23			0,15			0,13	
Total, real		407			437			60			152			299			458	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: F - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		10:42 (3)	08:24		09:11 (4)	07:32			07:23		19:26 (6)	06:20			05:37		06:04 (1)
	16:48	106	15:23 (2)	17:35	107	17:04 (10)	18:25			20:17	17	19:43 (6)	21:06			21:50	60	21:01 (22)
2	08:49		10:42 (3)	08:22		09:11 (4)	07:30			07:21		19:28 (6)	06:18			05:36		06:04 (1)
	16:49	107	15:24 (2)	17:36	103	17:04 (10)	18:26			20:19	14	19:42 (6)	21:08			21:51	60	21:01 (22)
3	08:49		10:42 (3)	08:21		09:11 (4)	07:28		17:37 (16)	07:19		19:30 (6)	06:16			05:35		06:04 (1)
	16:50	107	15:23 (2)	17:38	97	17:03 (10)	18:28	14	17:51 (16)	20:20	10	19:40 (6)	21:09			21:52	60	21:01 (22)
4	08:49		10:43 (3)	08:19		09:10 (4)	07:26		17:34 (16)	07:17			06:15			05:34		06:03 (1)
	16:51	106	15:24 (2)	17:40	87	17:00 (10)	18:30	20	17:54 (16)	20:22			21:11			21:53	61	21:01 (22)
5	08:49		10:43 (3)	08:18		09:11 (4)	07:24		17:31 (16)	07:14			06:13			05:34		06:04 (1)
	16:53	107	15:25 (2)	17:42	71	16:59 (15)	18:32	25	17:56 (16)	20:24			21:13			21:54	60	21:01 (22)
6	08:48		10:43 (3)	08:16		09:11 (4)	07:21		17:29 (16)	07:12			06:11			05:33		06:04 (1)
	16:54	106	15:24 (2)	17:44	70	16:59 (15)	18:33	29	17:58 (16)	20:25			21:14			21:55	58	21:00 (22)
7	08:48		10:44 (3)	08:14		08:44 (5)	07:19		17:28 (16)	07:10			06:09			05:32		06:04 (1)
	16:55	106	15:25 (2)	17:45	74	16:58 (15)	18:35	31	17:59 (16)	20:27			21:16			21:56	59	21:01 (22)
8	08:48		10:44 (3)	08:13		08:40 (5)	07:17		17:27 (16)	07:08			06:08			05:32		06:05 (1)
	16:56	106	15:25 (2)	17:47	82	16:57 (15)	18:37	33	18:00 (16)	20:28			21:17			21:57	58	21:01 (22)
9	08:47		10:44 (3)	08:11		08:39 (5)	07:15		17:25 (16)	07:05			06:06			05:32		06:04 (1)
	16:58	106	15:25 (2)	17:49	85	16:58 (15)	18:39	35	18:00 (16)	20:30			21:19			21:58	57	21:00 (22)
10	08:47		10:46 (3)	08:09		08:37 (5)	07:13		17:24 (16)	07:03			06:04			05:31		06:05 (1)
	16:59	104	15:26 (2)	17:51	85	16:57 (15)	18:40	42	18:15 (21)	20:32			21:20			21:59	57	21:01 (22)
11	08:46		10:46 (3)	08:07		08:35 (5)	07:10		17:24 (16)	07:01			06:03		20:44 (22)	05:31		06:05 (1)
	17:00	104	15:26 (2)	17:53	85	16:55 (15)	18:42	48	18:17 (21)	20:33			21:22	6	20:50 (22)	21:59	57	21:01 (22)
12	08:46		10:46 (3)	08:06		08:34 (5)	07:08		17:23 (16)	06:59			06:01		20:40 (22)	05:30		06:05 (1)
	17:02	103	15:26 (2)	17:55	81	16:53 (15)	18:44	52	18:19 (21)	20:35			21:23	12	20:52 (22)	22:00	56	21:00 (22)
13	08:45		10:46 (3)	08:04		08:33 (5)	07:06		17:22 (16)	06:57			06:00		20:39 (22)	05:30		06:05 (1)
	17:03	103	15:26 (2)	17:56	78	16:51 (15)	18:45	56	18:20 (21)	20:37			21:25	16	20:55 (22)	22:01	55	21:00 (22)
14	08:44		10:48 (3)	08:02		08:33 (5)	07:04		17:22 (16)	06:55			05:58		20:37 (22)	05:30		06:05 (1)
	17:05	101	15:27 (2)	17:58	66	09:52 (4)	18:47	60	18:22 (21)	20:38			21:26	18	20:55 (22)	22:01	55	21:00 (22)
15	08:44		10:48 (3)	08:00		08:32 (5)	07:02		17:22 (16)	06:52			05:56		20:37 (22)	05:30		06:06 (1)
	17:06	101	15:27 (2)	18:00	67	09:51 (4)	18:49	62	18:24 (21)	20:40			21:28	20	20:57 (22)	22:02	54	21:00 (22)
16	08:43		10:49 (3)	07:58		08:32 (5)	06:59		17:22 (16)	06:50		20:11 (23)	05:55		20:36 (22)	05:30		06:06 (1)
	17:08	98	15:26 (2)	18:02	65	09:50 (4)	18:50	64	18:26 (21)	20:42	4	20:15 (23)	21:29	22	20:58 (22)	22:02	54	21:00 (22)
17	08:42		10:49 (3)	07:56		08:32 (5)	06:57		17:21 (16)	06:48		20:09 (23)	05:54		06:19 (1)	05:30		06:06 (1)
	17:09	97	15:26 (2)	18:04	63	09:49 (4)	18:52	66	18:27 (21)	20:43	8	20:17 (23)	21:31	29	20:58 (22)	22:03	53	21:00 (22)
18	08:41		10:50 (3)	07:54		08:31 (5)	06:55		17:22 (16)	06:46		20:08 (23)	05:52		06:18 (1)	05:30		06:06 (1)
	17:11	95	15:26 (2)	18:05	62	09:48 (4)	18:54	66	18:28 (21)	20:45	10	20:18 (23)	21:32	35	20:59 (22)	22:03	53	21:00 (22)
19	08:40		10:50 (3)	07:52		08:32 (5)	06:53		17:22 (16)	06:44		20:07 (23)	05:51		06:17 (1)	05:30		06:06 (1)
	17:12	93	15:25 (2)	18:07	58	09:46 (4)	18:55	65	18:28 (21)	20:47	13	20:20 (23)	21:34	39	21:00 (22)	22:04	53	21:00 (22)
20	08:39		09:23 (4)	07:51		08:32 (5)	06:50		17:23 (16)	06:42		20:07 (23)	05:49		06:16 (1)	05:30		06:06 (1)
	17:14	103	15:25 (2)	18:09	54	09:44 (4)	18:57	64	18:28 (21)	20:48	15	20:22 (23)	21:35	41	21:00 (22)	22:04	55	21:01 (22)
21	08:38		09:21 (4)	07:49		08:32 (5)	06:48		17:23 (16)	06:40		20:06 (23)	05:48		06:15 (1)	05:30		06:07 (1)
	17:16	105	15:24 (2)	18:11	48	09:41 (4)	18:59	61	18:26 (21)	20:50	17	20:23 (23)	21:37	44	21:01 (22)	22:04	55	21:02 (22)
22	08:37		09:20 (4)	07:47		08:33 (5)	06:46		17:24 (16)	06:38		20:06 (23)	05:47		06:13 (1)	05:30		06:07 (1)
	17:17	114	16:46 (15)	18:12	39	09:38 (4)	19:00	58	18:26 (21)	20:51	18	20:24 (23)	21:38	47	21:00 (22)	22:04	55	21:02 (22)
23	08:36		09:18 (4)	07:45		08:33 (5)	06:44		17:26 (16)	06:36		20:06 (23)	05:46		06:12 (1)	05:30		06:07 (1)
	17:19	119	16:48 (15)	18:14	26	08:59 (5)	19:02	58	18:37 (6)	20:53	18	20:24 (23)	21:39	48	21:00 (22)	22:04	54	21:02 (22)
24	08:35		09:17 (4)	07:42		08:35 (5)	06:41		17:27 (16)	06:34		20:07 (23)	05:44		06:11 (1)	05:31		06:07 (1)
	17:21	120	16:50 (15)	18:16	22	08:57 (5)	19:04	55	18:38 (6)	20:55	16	20:23 (23)	21:41	51	21:01 (22)	22:05	53	21:01 (22)
25	08:33		09:16 (4)	07:40		08:36 (5)	06:39		17:29 (16)	06:32		20:07 (23)	05:43		06:10 (1)	05:31		06:08 (1)
	17:22	120	16:52 (15)	18:18	20	08:56 (5)	19:05	51	18:40 (6)	20:56	15	20:22 (23)	21:42	53	21:01 (22)	22:05	53	21:02 (22)
26	08:32		09:15 (4)	07:38		08:38 (5)	06:37		17:32 (16)	06:30		20:08 (23)	05:42		06:09 (1)	05:31		06:08 (1)
	17:24	120	16:54 (15)	18:19	16	08:54 (5)	19:07	43	18:42 (6)	20:58	12	20:20 (23)	21:43	54	21:01 (22)	22:05	54	21:02 (22)
27	08:31		09:14 (4)	07:36		08:40 (5)	06:34		17:37 (16)	06:28		20:10 (23)	05:41		06:08 (1)	05:32		06:09 (1)
	17:26	115	16:55 (10)	18:21	10	08:50 (5)	19:09	28	18:44 (6)	21:00	8	20:18 (23)	21:44	55	21:01 (22)	22:05	54	21:03 (22)
28	08:30		09:14 (4)	07:34			06:32		18:26 (6)	06:26			05:40		06:07 (1)	05:32		06:08 (1)
	17:28	106	16:58 (10)	18:23			19:10	19	18:45 (6)	21:01			21:46	56	21:01 (22)	22:05	56	21:03 (22)
29	08:28		09:13 (4)				07:30		19:26 (6)	06:24			05:39		06:07 (1)	05:33		06:09 (1)
	17:29	107	16:59 (10)				20:12	20	19:46 (6)	21:03			21:47	58	21:02 (22)	22:04	55	21:04 (22)
30	08:27		09:13 (4)				07:28		19:26 (6)	06:22			05:38		06:06 (1)	05:33		06:09 (1)
	17:31	109	17:02 (10)				20:14	20	19:46 (6)	21:04			21:48	58	21:01 (22)	22:04	56	21:04 (22)
31	08:25		09:12 (4)				07:25		19:27 (6)				05:37		06:05 (1)			
	17:33	108	17:03 (10)				20:15	18	19:45 (6)				21:49	59	21:01 (22)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		3302			1721			1263			195			821			1680	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,65			0,58			0,63			0,57			0,61			0,65	
Total reduction		0,15			0,16			0,23			0,25			0,27			0,27	
Total, real		485			281			286			49			221			462	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: F - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November		December	
1	05:34	06:09 (1)	06:09	20:52 (22)	06:57		07:44	18:02 (16)	07:36	08:07 (5)	08:26	10:28 (3)
	22:04	56 21:05 (22)	21:33	10 21:02 (22)	20:33		19:25	53 18:58 (21)	17:21	84 16:26 (15)	16:42	104 15:08 (2)
2	05:35	06:09 (1)	06:11		06:59		07:46	18:02 (16)	07:38	08:08 (5)	08:27	10:28 (3)
	22:04	57 21:05 (22)	21:32		20:31		19:23	51 18:57 (21)	17:19	82 16:26 (15)	16:42	104 15:08 (2)
3	05:35	06:09 (1)	06:12		07:00		07:48	18:02 (16)	07:40	08:10 (5)	08:29	10:28 (3)
	22:03	57 21:05 (22)	21:30		20:29		19:21	44 18:54 (21)	17:17	80 16:27 (15)	16:41	105 15:09 (2)
4	05:36	06:10 (1)	06:14		07:02		07:49	18:03 (16)	07:42	08:40 (4)	08:30	10:28 (3)
	22:03	58 21:06 (22)	21:29		20:27		19:19	37 18:52 (21)	17:16	70 16:28 (15)	16:40	106 15:09 (2)
5	05:37	06:10 (1)	06:15		07:03		07:51	18:03 (16)	07:43	08:40 (4)	08:31	10:29 (3)
	22:02	59 21:07 (22)	21:27		20:24		19:16	35 18:38 (16)	17:14	71 16:28 (15)	16:40	106 15:10 (2)
6	05:38	06:10 (1)	06:17		07:05		07:52	18:03 (16)	07:45	08:41 (4)	08:32	10:29 (3)
	22:02	60 21:07 (22)	21:25		20:22		19:14	33 18:36 (16)	17:12	71 16:29 (15)	16:40	107 15:11 (2)
7	05:38	06:10 (1)	06:18		07:07		07:54	18:05 (16)	07:47	08:41 (4)	08:34	10:30 (3)
	22:01	59 21:07 (22)	21:23		20:20		19:12	29 18:34 (16)	17:11	89 16:31 (10)	16:39	106 15:11 (2)
8	05:39	06:11 (1)	06:20		07:08		07:56	18:06 (16)	07:49	08:42 (4)	08:35	10:31 (3)
	22:01	59 21:08 (22)	21:22		20:18		19:10	27 18:33 (16)	17:09	99 16:34 (10)	16:39	106 15:12 (2)
9	05:40	06:11 (1)	06:21		07:10	19:24 (6)	07:57	18:07 (16)	07:50	08:42 (4)	08:36	10:31 (3)
	22:00	59 21:08 (22)	21:20		20:15	10 19:34 (6)	19:08	23 18:30 (16)	17:07	103 16:35 (10)	16:39	106 15:12 (2)
10	05:41	06:12 (1)	06:23		07:11	19:21 (6)	07:59	18:09 (16)	07:52	08:42 (4)	08:37	10:31 (3)
	21:59	59 21:09 (22)	21:18		20:13	14 19:35 (6)	19:05	18 18:27 (16)	17:06	108 16:35 (10)	16:38	107 15:13 (2)
11	05:42	06:12 (1)	06:24		07:13	19:20 (6)	08:01	18:13 (16)	07:54	08:43 (4)	08:38	10:32 (3)
	21:59	60 21:09 (22)	21:16		20:11	16 19:36 (6)	19:03	11 18:24 (16)	17:04	108 16:34 (10)	16:38	106 15:13 (2)
12	05:43	06:13 (1)	06:26		07:14	19:18 (6)	08:02		07:55	08:44 (4)	08:39	10:32 (3)
	21:58	60 21:10 (22)	21:14		20:09	18 19:36 (6)	19:01		17:03	108 16:32 (10)	16:38	107 15:13 (2)
13	05:44	06:14 (1)	06:27		07:16	19:17 (6)	08:04		07:57	08:45 (4)	08:40	10:33 (3)
	21:57	59 21:10 (22)	21:12		20:06	20 19:37 (6)	18:59		17:01	107 16:31 (10)	16:38	106 15:14 (2)
14	05:45	06:15 (1)	06:29		07:17	19:16 (6)	08:06	09:17 (5)	07:59	08:46 (4)	08:41	10:33 (3)
	21:56	58 21:10 (22)	21:10		20:04	21 19:37 (6)	18:57	2 09:19 (5)	17:00	106 16:30 (10)	16:38	107 15:14 (2)
15	05:47	06:16 (1)	06:30	20:20 (23)	07:19	19:16 (6)	08:07	09:11 (5)	08:01	08:47 (4)	08:42	10:34 (3)
	21:55	57 21:10 (22)	21:09	2 20:22 (23)	20:02	19 19:35 (6)	18:55	13 09:24 (5)	16:59	115 16:28 (10)	16:38	107 16:03 (8)
16	05:48	06:17 (1)	06:32	20:17 (23)	07:21	18:59 (21)	08:09	09:08 (5)	08:02	08:48 (4)	08:43	10:34 (3)
	21:54	56 21:10 (22)	21:07	9 20:26 (23)	19:59	20 19:33 (6)	18:52	18 09:26 (5)	16:57	121 16:27 (15)	16:38	111 16:05 (8)
17	05:49	06:18 (1)	06:34	20:15 (23)	07:22	18:21 (16)	08:11	09:07 (5)	08:04	08:49 (4)	08:44	10:34 (3)
	21:53	54 21:10 (22)	21:05	12 20:27 (23)	19:57	42 19:31 (6)	18:50	21 09:28 (5)	16:56	120 16:25 (15)	16:39	109 16:04 (8)
18	05:50	06:19 (1)	06:35	20:14 (23)	07:24	18:17 (16)	08:12	09:05 (5)	08:06	08:51 (4)	08:44	10:35 (3)
	21:52	53 21:10 (22)	21:03	15 20:29 (23)	19:55	49 19:28 (6)	18:48	24 09:29 (5)	16:55	120 16:24 (15)	16:39	110 16:05 (8)
19	05:51	06:20 (1)	06:37	20:12 (23)	07:25	18:15 (16)	08:14	09:05 (5)	08:07	08:52 (4)	08:45	10:36 (3)
	21:51	51 21:10 (22)	21:01	17 20:29 (23)	19:53	54 19:26 (6)	18:46	26 10:03 (4)	16:53	119 16:22 (15)	16:39	109 16:05 (8)
20	05:53	06:22 (1)	06:38	20:12 (23)	07:27	18:13 (16)	08:16	09:03 (5)	08:09	08:55 (4)	08:46	10:35 (3)
	21:50	49 21:11 (22)	20:59	17 20:29 (23)	19:50	57 19:24 (6)	18:44	42 10:09 (4)	16:52	114 16:21 (15)	16:39	110 16:05 (8)
21	05:54	06:23 (1)	06:40	20:11 (23)	07:28	18:10 (16)	08:17	09:02 (5)	08:11	08:57 (4)	08:46	10:36 (3)
	21:49	48 21:11 (22)	20:57	18 20:29 (23)	19:48	57 19:21 (6)	18:42	50 10:12 (4)	16:51	105 15:00 (2)	16:40	111 16:06 (8)
22	05:55	06:24 (1)	06:41	20:11 (23)	07:30	18:09 (16)	08:19	09:02 (5)	08:12	08:59 (4)	08:47	10:36 (3)
	21:48	45 21:10 (22)	20:54	17 20:28 (23)	19:46	60 19:12 (21)	18:40	55 10:15 (4)	16:50	102 15:01 (2)	16:40	111 16:06 (8)
23	05:56	06:25 (1)	06:43	20:11 (23)	07:32	18:07 (16)	08:21	09:02 (5)	08:14	10:27 (3)	08:47	10:37 (3)
	21:46	42 21:10 (22)	20:52	14 20:25 (23)	19:43	62 19:11 (21)	18:38	59 10:17 (4)	16:49	93 15:02 (2)	16:41	110 16:07 (8)
24	05:58	06:27 (1)	06:45	20:11 (23)	07:33	18:06 (16)	08:23	09:02 (5)	08:15	10:27 (3)	08:48	10:37 (3)
	21:45	40 21:11 (22)	20:50	13 20:24 (23)	19:41	66 19:12 (21)	18:36	62 10:18 (4)	16:48	95 15:03 (2)	16:41	110 16:07 (8)
25	05:59	06:28 (1)	06:46	20:11 (23)	07:35	18:05 (16)	07:24	08:02 (5)	08:17	10:26 (3)	08:48	10:38 (3)
	21:44	36 21:10 (22)	20:48	10 20:21 (23)	19:39	66 19:11 (21)	17:34	65 09:20 (4)	16:47	97 15:03 (2)	16:42	110 16:08 (8)
26	06:01	06:29 (1)	06:48	20:12 (23)	07:36	18:04 (16)	07:26	08:01 (5)	08:18	10:27 (3)	08:49	10:39 (3)
	21:42	32 21:09 (22)	20:46	8 20:20 (23)	19:37	66 19:10 (21)	17:32	67 09:20 (4)	16:46	98 15:04 (2)	16:43	109 16:09 (8)
27	06:02	06:30 (1)	06:49	20:13 (23)	07:38	18:04 (16)	07:28	08:02 (5)	08:20	10:27 (3)	08:49	10:39 (3)
	21:41	27 21:08 (22)	20:44	4 20:17 (23)	19:34	64 19:08 (21)	17:30	66 09:21 (4)	16:45	101 15:06 (2)	16:44	112 16:10 (8)
28	06:03	20:47 (22)	06:51		07:40	18:03 (16)	07:29	08:02 (5)	08:21	10:27 (3)	08:49	10:39 (3)
	21:39	21 21:08 (22)	20:42		19:32	62 19:05 (21)	17:28	68 09:22 (4)	16:44	101 15:06 (2)	16:44	109 16:09 (8)
29	06:05	20:47 (22)	06:52		07:41	18:03 (16)	07:31	08:03 (5)	08:23	10:27 (3)	08:49	10:40 (3)
	21:38	20 21:07 (22)	20:40		19:30	59 19:03 (21)	17:27	77 16:21 (15)	16:44	103 15:07 (2)	16:45	106 15:21 (2)
30	06:06	20:48 (22)	06:54		07:43	18:02 (16)	07:33	08:04 (5)	08:24	10:28 (3)	08:49	10:40 (3)
	21:37	17 21:05 (22)	20:37		19:28	56 19:00 (21)	17:25	83 16:23 (15)	16:43	103 15:08 (2)	16:46	107 15:22 (2)
31	06:08	20:50 (22)	06:56				07:35	08:05 (5)			08:49	10:41 (3)
	21:35	14 21:04 (22)	20:35				17:23	85 16:25 (15)			16:47	106 15:22 (2)
Potential sun hours	498		451		380		333		269		248	
Total, worst case		1482		166		958		1244		2993		3340
Sun reduction		0,45		0,47		0,43		0,36		0,26		0,21
Oper. time red.		0,96		0,96		0,96		0,96		0,96		0,96
Wind dir. red.		0,63		0,56		0,63		0,58		0,63		0,66
Total reduction		0,27		0,25		0,26		0,20		0,16		0,14
Total, real		400		41		252		254		465		451

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: G - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		10:59 (2)	08:24		11:07 (2)	07:32		08:07 (3)	07:23			06:20		19:39 (21)	05:37		06:09 (1)
	16:48	75	12:14 (2)	17:35	146	16:51 (10)	18:25	34	08:41 (3)	20:17			21:06	51	20:30 (21)	21:50	79	20:36 (21)
2	08:49		11:00 (2)	08:22		11:08 (2)	07:30		08:06 (3)	07:21			06:18		19:38 (21)	05:36		06:10 (1)
	16:49	74	12:14 (2)	17:37	144	16:51 (10)	18:27	36	08:42 (3)	20:19			21:08	53	20:31 (21)	21:51	78	20:37 (21)
3	08:49		10:59 (2)	08:21		11:09 (2)	07:28		08:05 (3)	07:19			06:17		19:38 (21)	05:35		06:10 (1)
	16:50	75	12:14 (2)	17:38	141	16:50 (10)	18:28	37	08:42 (3)	20:20			21:09	54	20:32 (21)	21:52	76	20:36 (21)
4	08:49		11:00 (2)	08:19		11:09 (2)	07:26		08:05 (3)	07:17			06:15		19:37 (21)	05:34		06:12 (1)
	16:52	75	12:15 (2)	17:40	136	16:48 (10)	18:30	38	08:43 (3)	20:22			21:11	56	20:33 (21)	21:53	75	20:37 (21)
5	08:49		11:01 (2)	08:18		11:10 (2)	07:24		08:03 (3)	07:14			06:13		19:36 (21)	05:34		06:12 (1)
	16:53	75	12:16 (2)	17:42	125	16:31 (15)	18:32	40	08:43 (3)	20:24			21:13	57	20:33 (21)	21:54	78	21:22 (23)
6	08:49		11:00 (2)	08:16		11:11 (2)	07:21		08:03 (3)	07:12			06:11		19:36 (21)	05:33		06:13 (1)
	16:54	76	12:16 (2)	17:44	122	16:30 (15)	18:33	40	08:43 (3)	20:25			21:14	58	20:34 (21)	21:55	80	21:24 (23)
7	08:48		11:01 (2)	08:14		11:11 (2)	07:19		07:44 (4)	07:10			06:09		19:35 (21)	05:33		06:13 (1)
	16:55	76	12:17 (2)	17:46	121	16:30 (15)	18:35	53	08:43 (3)	20:27			21:16	59	20:34 (21)	21:56	79	21:24 (23)
8	08:48		11:01 (2)	08:13		11:12 (2)	07:17		07:40 (5)	07:08			06:08		19:34 (21)	05:32		06:14 (1)
	16:56	76	12:17 (2)	17:47	119	16:30 (15)	18:37	60	08:43 (3)	20:28			21:17	60	20:34 (21)	21:57	79	21:25 (23)
9	08:47		11:01 (2)	08:11		11:14 (2)	07:15		07:37 (5)	07:06			06:06		19:34 (21)	05:32		06:14 (1)
	16:58	82	15:59 (15)	17:49	115	16:30 (15)	18:39	64	08:42 (3)	20:30			21:19	61	20:35 (21)	21:58	79	21:25 (23)
10	08:47		11:02 (2)	08:09		11:14 (2)	07:13		07:35 (5)	07:03			06:04		19:33 (21)	05:31		06:16 (1)
	16:59	89	16:03 (15)	17:51	114	16:30 (15)	18:40	67	08:42 (3)	20:32			21:20	62	20:35 (21)	21:59	77	21:26 (23)
11	08:46		11:02 (2)	08:08		11:15 (2)	07:10		07:33 (5)	07:01			06:03		19:33 (21)	05:31		06:17 (1)
	17:00	94	16:06 (15)	17:53	111	16:29 (15)	18:42	69	08:42 (3)	20:33			21:22	63	20:36 (21)	21:59	77	21:27 (23)
12	08:46		11:02 (2)	08:06		11:16 (2)	07:08		07:31 (5)	06:59			06:01		19:33 (21)	05:30		06:17 (1)
	17:02	99	16:08 (15)	17:55	107	16:29 (15)	18:44	71	08:42 (3)	20:35			21:23	62	20:35 (21)	22:00	76	21:27 (23)
13	08:45		11:02 (2)	08:04		11:18 (2)	07:06		07:28 (5)	06:57		20:03 (6)	06:00		19:33 (21)	05:30		06:19 (1)
	17:03	101	16:09 (15)	17:56	101	16:28 (15)	18:45	72	08:40 (3)	20:37	7	20:10 (6)	21:25	63	20:36 (21)	22:01	73	21:28 (23)
14	08:44		11:03 (2)	08:02		11:19 (2)	07:04		07:28 (5)	06:55		19:59 (6)	05:58		06:23 (1)	05:30		19:41 (21)
	17:05	104	16:12 (15)	17:58	98	16:27 (15)	18:47	71	08:39 (3)	20:38	13	20:12 (6)	21:27	65	20:36 (21)	22:01	71	21:29 (23)
15	08:44		11:03 (2)	08:00		11:21 (2)	07:02		07:28 (5)	06:53		19:57 (6)	05:57		06:22 (1)	05:30		19:42 (21)
	17:06	107	16:13 (15)	18:00	91	16:26 (15)	18:49	70	08:38 (3)	20:40	17	20:14 (6)	21:28	67	20:36 (21)	22:02	71	21:29 (23)
16	08:43		11:03 (2)	07:58		11:23 (2)	06:59		07:29 (5)	06:50		19:55 (6)	05:55		06:21 (1)	05:30		19:42 (21)
	17:08	113	16:36 (10)	18:02	84	16:25 (15)	18:50	67	08:37 (3)	20:42	20	20:15 (6)	21:29	70	20:37 (21)	22:02	72	21:30 (23)
17	08:42		11:03 (2)	07:56		11:25 (2)	06:57		07:28 (5)	06:48		19:54 (6)	05:54		06:19 (1)	05:30		19:43 (21)
	17:09	119	16:38 (10)	18:04	77	16:24 (15)	18:52	65	08:35 (3)	20:43	23	20:17 (6)	21:31	72	20:36 (21)	22:03	71	21:30 (23)
18	08:41		11:04 (2)	07:54		11:28 (2)	06:55		07:29 (5)	06:46		19:52 (6)	05:52		06:18 (1)	05:30		19:43 (21)
	17:11	122	16:39 (10)	18:05	67	16:23 (15)	18:54	60	08:33 (3)	20:45	26	20:18 (6)	21:32	73	20:36 (21)	22:03	71	21:30 (23)
19	08:40		11:03 (2)	07:53		11:32 (2)	06:53		07:30 (5)	06:44		19:52 (6)	05:51		06:17 (1)	05:30		19:43 (21)
	17:13	126	16:40 (10)	18:07	54	16:21 (15)	18:55	55	08:31 (3)	20:47	27	20:19 (6)	21:34	75	20:37 (21)	22:04	72	21:31 (23)
20	08:39		11:03 (2)	07:51		11:42 (2)	06:50		07:32 (5)	06:42		19:51 (6)	05:50		06:16 (1)	05:30		19:43 (21)
	17:14	131	16:42 (10)	18:09	29	16:19 (15)	18:57	48	08:29 (3)	20:48	28	20:19 (6)	21:35	77	20:37 (21)	22:04	72	21:31 (23)
21	08:38		11:04 (2)	07:49		15:56 (15)	06:48		07:35 (4)	06:40		19:50 (6)	05:48		06:15 (1)	05:30		19:44 (21)
	17:16	134	16:44 (10)	18:11	20	16:16 (15)	18:59	36	08:25 (3)	20:50	29	20:19 (6)	21:37	78	20:37 (21)	22:04	72	21:32 (23)
22	08:37		11:04 (2)	07:47		16:01 (15)	06:46		07:36 (4)	06:38		19:50 (6)	05:47		06:13 (1)	05:30		19:44 (21)
	17:17	137	16:46 (10)	18:12	11	16:12 (15)	19:00	19	07:55 (4)	20:51	29	20:19 (6)	21:38	78	20:36 (21)	22:04	72	21:32 (23)
23	08:36		11:05 (2)	07:45			06:44		07:38 (4)	06:36		19:50 (6)	05:46		06:12 (1)	05:30		19:44 (21)
	17:19	141	16:48 (10)	18:14			19:02	15	07:53 (4)	20:53	29	20:19 (6)	21:39	80	20:36 (21)	22:05	72	21:32 (23)
24	08:35		11:04 (2)	07:43		08:19 (3)	06:41		07:41 (4)	06:34		19:49 (6)	05:45		06:11 (1)	05:31		19:44 (21)
	17:21	145	16:50 (10)	18:16	12	08:31 (3)	19:04	8	07:49 (4)	20:55	31	20:20 (21)	21:41	81	20:36 (21)	22:05	71	21:31 (23)
25	08:33		11:05 (2)	07:40		08:16 (3)	06:39			06:32		19:49 (21)	05:43		06:10 (1)	05:31		19:45 (21)
	17:23	147	16:52 (10)	18:18	19	08:35 (3)	19:05			20:56	33	20:22 (21)	21:42	81	20:36 (21)	22:05	71	21:32 (23)
26	08:32		11:06 (2)	07:38		08:13 (3)	06:37			06:30		19:47 (21)	05:42		06:09 (1)	05:31		19:44 (21)
	17:24	148	16:53 (10)	18:20	24	08:37 (3)	19:07			20:58	37	20:24 (21)	21:43	82	20:36 (21)	22:05	72	21:32 (23)
27	08:31		11:06 (2)	07:36		08:10 (3)	06:35			06:28		19:45 (21)	05:41		06:08 (1)	05:32		19:45 (21)
	17:26	149	16:53 (10)	18:21	28	08:38 (3)	19:09			21:00	40	20:25 (21)	21:44	83	20:36 (21)	22:05	71	21:32 (23)
28	08:30		11:06 (2)	07:34		08:09 (3)	06:32			06:26		19:44 (21)	05:40		06:08 (1)	05:32		19:45 (21)
	17:28	150	16:53 (10)	18:23	30	08:39 (3)	19:10			21:01	43	20:27 (21)	21:46	83	20:37 (21)	22:05	70	21:32 (23)
29	08:28		11:06 (2)				07:30			06:24		19:42 (21)	05:39		06:08 (1)	05:33		06:23 (1)
	17:29	150	16:53 (10)				20:12			21:03	46	20:28 (21)	21:47	83	20:37 (21)	22:04	73	21:32 (23)
30	08:27		11:07 (2)				07:28			06:22		19:41 (21)	05:38		06:09 (1)	05:33		06:22 (1)
	17:31	149	16:53 (10)				20:14			21:05	48	20:29 (21)	21:48	81	20:37 (21)	22:04	74	21:31 (23)
31	08:25		11:07 (2)				07:26						05:37		06:09 (1)			
	17:33	148	16:52 (10)				20:15						21:49	79	20:36 (21)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		3487			2246			1195			526			2147			2224	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,64			0,65			0,56			0,56			0,57			0,56	
Total reduction		0,15			0,18			0,20			0,25			0,25			0,24	
Total, real		516			414			242			130			540			537	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: G - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		06:21 (1)	06:09		19:43 (21)	06:57			07:44		08:09 (5)	07:36		10:44 (2)	08:26		10:44 (2)
	22:04	77	21:32 (23)	21:33	63	20:46 (21)	20:33			19:25	71	09:20 (3)	17:21	114	16:00 (15)	16:42	94	15:48 (15)
2	05:35		06:20 (1)	06:11		19:44 (21)	06:59			07:46		08:11 (5)	07:38		10:42 (2)	08:27		10:45 (2)
	22:04	78	21:31 (23)	21:32	62	20:46 (21)	20:31			19:23	70	09:21 (3)	17:19	117	15:59 (15)	16:42	90	15:47 (15)
3	05:35		06:20 (1)	06:12		19:44 (21)	07:00			07:48		08:12 (5)	07:40		10:41 (2)	08:29		10:45 (2)
	22:03	78	21:31 (23)	21:30	61	20:45 (21)	20:29			19:21	68	09:20 (3)	17:17	119	15:59 (15)	16:41	83	15:43 (15)
4	05:36		06:20 (1)	06:14		19:44 (21)	07:02			07:49		08:14 (5)	07:42		10:41 (2)	08:30		10:45 (2)
	22:03	79	21:31 (23)	21:29	60	20:44 (21)	20:27			19:19	65	09:20 (3)	17:16	121	16:00 (15)	16:41	77	12:02 (2)
5	05:37		06:20 (1)	06:15		19:45 (21)	07:03			07:51		08:16 (5)	07:43		10:40 (2)	08:31		10:46 (2)
	22:02	79	21:31 (23)	21:27	59	20:44 (21)	20:24			19:16	62	09:20 (3)	17:14	123	16:00 (15)	16:40	76	12:02 (2)
6	05:38		06:18 (1)	06:17		19:44 (21)	07:05			07:52		08:17 (5)	07:45		10:40 (2)	08:32		10:46 (2)
	22:02	80	21:29 (23)	21:25	59	20:43 (21)	20:22			19:14	58	09:19 (3)	17:12	127	16:15 (10)	16:40	76	12:02 (2)
7	05:39		06:18 (1)	06:18		19:45 (21)	07:07			07:54		08:22 (4)	07:47		10:40 (2)	08:34		10:47 (2)
	22:01	80	21:29 (23)	21:23	58	20:43 (21)	20:20			19:12	49	09:19 (3)	17:11	136	16:19 (10)	16:39	75	12:02 (2)
8	05:39		06:18 (1)	06:20		19:45 (21)	07:08			07:56		08:39 (3)	07:49		10:39 (2)	08:35		10:48 (2)
	22:01	80	21:29 (23)	21:22	57	20:42 (21)	20:18			19:10	40	09:19 (3)	17:09	143	16:21 (10)	16:39	75	12:03 (2)
9	05:40		06:18 (1)	06:21		19:47 (21)	07:10			07:57		08:38 (3)	07:50		10:39 (2)	08:36		10:48 (2)
	22:00	76	20:43 (21)	21:20	55	20:42 (21)	20:15			19:08	40	09:18 (3)	17:08	144	16:22 (10)	16:39	75	12:03 (2)
10	05:41		06:18 (1)	06:23		19:47 (21)	07:11			07:59		08:39 (3)	07:52		10:39 (2)	08:37		10:49 (2)
	21:59	77	20:44 (21)	21:18	53	20:40 (21)	20:13			19:05	38	09:17 (3)	17:06	146	16:23 (10)	16:38	75	12:04 (2)
11	05:42		06:18 (1)	06:24		19:48 (21)	07:13			08:01		08:40 (3)	07:54		10:38 (2)	08:38		10:49 (2)
	21:59	78	20:44 (21)	21:16	52	20:40 (21)	20:11			19:03	36	09:16 (3)	17:04	149	16:23 (10)	16:38	75	12:04 (2)
12	05:43		06:17 (1)	06:26		19:48 (21)	07:14			08:02		08:40 (3)	07:55		10:38 (2)	08:39		10:50 (2)
	21:58	80	20:45 (21)	21:14	50	20:38 (21)	20:09			19:01	34	09:14 (3)	17:03	149	16:24 (10)	16:38	74	12:04 (2)
13	05:44		06:17 (1)	06:27		19:49 (21)	07:16			08:04		08:41 (3)	07:57		10:38 (2)	08:40		10:51 (2)
	21:57	81	20:45 (21)	21:12	48	20:37 (21)	20:06			18:59	32	09:13 (3)	17:01	150	16:25 (10)	16:38	73	12:04 (2)
14	05:45		06:17 (1)	06:29		19:50 (21)	07:18			08:06		08:42 (3)	07:59		10:38 (2)	08:41		10:51 (2)
	21:56	81	20:45 (21)	21:10	46	20:36 (21)	20:04			18:57	30	09:12 (3)	17:00	149	16:25 (10)	16:38	74	12:05 (2)
15	05:47		06:17 (1)	06:31		19:51 (21)	07:19			08:07		08:44 (3)	08:01		10:38 (2)	08:42		10:52 (2)
	21:55	82	20:45 (21)	21:09	43	20:34 (21)	20:02			18:55	27	09:11 (3)	16:59	150	16:26 (10)	16:38	73	12:05 (2)
16	05:48		06:17 (1)	06:32		19:53 (21)	07:21			08:09		08:45 (3)	08:02		10:39 (2)	08:43		10:53 (2)
	21:54	83	20:46 (21)	21:07	39	20:32 (21)	19:59			18:53	23	09:08 (3)	16:57	148	16:26 (10)	16:38	73	12:06 (2)
17	05:49		06:18 (1)	06:34		19:54 (21)	07:22			08:11		08:48 (3)	08:04		10:38 (2)	08:44		10:52 (2)
	21:53	83	20:46 (21)	21:05	36	20:30 (21)	19:57			18:50	17	09:05 (3)	16:56	147	16:25 (10)	16:39	73	12:05 (2)
18	05:50		06:19 (1)	06:35		19:56 (21)	07:24			08:12		08:53 (3)	08:06		10:38 (2)	08:44		10:53 (2)
	21:52	82	20:46 (21)	21:03	32	20:28 (21)	19:55			18:48	7	09:00 (3)	16:55	145	16:24 (10)	16:39	73	12:06 (2)
19	05:51		06:20 (1)	06:37		19:55 (6)	07:25		08:29 (4)	08:14			08:07		10:39 (2)	08:45		10:54 (2)
	21:51	81	20:46 (21)	21:01	30	20:25 (21)	19:53	5	08:34 (4)	18:46			16:54	141	16:22 (10)	16:39	73	12:07 (2)
20	05:53		06:22 (1)	06:38		19:55 (6)	07:27		08:25 (4)	08:16		16:29 (15)	08:09		10:39 (2)	08:46		10:54 (2)
	21:50	80	20:47 (21)	20:59	30	20:25 (6)	19:50	14	08:39 (4)	18:44	15	16:44 (15)	16:52	137	16:21 (10)	16:40	73	12:07 (2)
21	05:54		06:23 (1)	06:40		19:55 (6)	07:28		08:22 (4)	08:17		16:26 (15)	08:11		10:40 (2)	08:46		10:55 (2)
	21:49	80	20:47 (21)	20:57	29	20:24 (6)	19:48	18	08:40 (4)	18:42	22	16:48 (15)	16:51	134	16:20 (10)	16:40	72	12:07 (2)
22	05:55		06:24 (1)	06:41		19:55 (6)	07:30		08:21 (4)	08:19		12:07 (2)	08:12		10:39 (2)	08:47		10:55 (2)
	21:48	79	20:47 (21)	20:54	29	20:24 (6)	19:46	33	09:09 (3)	18:40	40	16:50 (15)	16:50	131	16:18 (10)	16:40	72	12:07 (2)
23	05:57		06:25 (1)	06:43		19:55 (6)	07:32		08:17 (5)	08:21		12:01 (2)	08:14		10:40 (2)	08:47		10:56 (2)
	21:46	76	20:46 (21)	20:52	28	20:23 (6)	19:44	44	09:12 (3)	18:38	59	16:52 (15)	16:49	126	16:17 (10)	16:41	73	12:09 (2)
24	05:58		06:27 (1)	06:45		19:55 (6)	07:33		08:14 (5)	08:23		11:58 (2)	08:15		10:41 (2)	08:48		10:56 (2)
	21:45	76	20:47 (21)	20:50	28	20:23 (6)	19:41	52	09:14 (3)	18:36	70	16:54 (15)	16:48	123	16:17 (10)	16:42	73	12:09 (2)
25	05:59		06:28 (1)	06:46		19:55 (6)	07:35		08:12 (5)	07:24		10:55 (2)	08:17		10:41 (2)	08:48		10:56 (2)
	21:44	74	20:47 (21)	20:48	26	20:21 (6)	19:39	58	09:15 (3)	17:34	79	15:55 (15)	16:47	119	16:16 (10)	16:42	73	12:09 (2)
26	06:01		06:29 (1)	06:48		19:57 (6)	07:36		08:11 (5)	07:26		10:52 (2)	08:18		10:41 (2)	08:49		10:57 (2)
	21:42	73	20:47 (21)	20:46	22	20:19 (6)	19:37	64	09:17 (3)	17:32	86	15:55 (15)	16:46	113	16:14 (10)	16:43	73	12:10 (2)
27	06:02		06:30 (1)	06:49		19:57 (6)	07:38		08:10 (5)	07:28		10:50 (2)	08:20		10:42 (2)	08:49		10:57 (2)
	21:41	70	20:46 (21)	20:44	20	20:17 (6)	19:34	68	09:19 (3)	17:30	92	15:56 (15)	16:45	108	15:53 (15)	16:44	74	12:11 (2)
28	06:03		06:32 (1)	06:51		19:59 (6)	07:40		08:09 (5)	07:29		10:48 (2)	08:22		10:42 (2)	08:49		10:58 (2)
	21:40	69	20:47 (21)	20:42	16	20:15 (6)	19:32	70	09:19 (3)	17:28	99	15:57 (15)	16:44	104	15:51 (15)	16:44	73	12:11 (2)
29	06:05		06:33 (1)	06:52		20:00 (6)	07:41		08:09 (5)	07:31		10:47 (2)	08:23		10:43 (2)	08:49		10:58 (2)
	21:38	65	20:46 (21)	20:40	13	20:13 (6)	19:30	71	09:20 (3)	17:27	103	15:58 (15)	16:44	101	15:50 (15)	16:45	73	12:11 (2)
30	06:06		19:44 (21)	06:54		20:04 (6)	07:43		08:08 (5)	07:33		10:46 (2)	08:24		10:44 (2)	08:49		10:58 (2)
	21:37	63	20:47 (21)	20:38	6	20:10 (6)	19:28	72	09:20 (3)	17:25	108	15:59 (15)	16:43	99	15:50 (15)	16:46	74	12:12 (2)
31	06:08		19:43 (21)	06:56						07:35		10:45 (2)				08:49		10:59 (2)
	21:35	63	20:46 (21)	20:35						17:23	111	15:59 (15)				16:47	74	12:13 (2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		2383			1210			569			1651			3913			2334	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,57			0,55			0,56			0,61			0,65			0,62	
Total reduction		0,25			0,25			0,24			0,22			0,16			0,13	
Total, real		596			304			135			357			637			298	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: H - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		09:25 (4)	08:24		08:49 (5)	07:32		17:13 (21)	07:23		16:09 (18)	06:20		07:03 (1)	05:37		06:04 (19)
	16:48	102	16:15 (10)	17:35	77	15:56 (16)	18:25	11	17:24 (21)	20:17	83	19:51 (23)	21:06	218	20:28 (22)	21:50	178	18:11 (18)
2	08:49		09:25 (4)	08:22		08:50 (5)	07:30			07:21		16:06 (18)	06:18		07:04 (1)	05:36		06:04 (19)
	16:49	103	16:16 (10)	17:36	71	15:55 (16)	18:26			20:19	93	19:53 (23)	21:08	216	20:28 (22)	21:51	178	18:12 (18)
3	08:49		09:24 (4)	08:21		08:49 (5)	07:28			07:19		16:03 (18)	06:17		07:06 (1)	05:35		06:03 (19)
	16:50	104	16:16 (10)	17:38	67	15:53 (16)	18:28			20:20	102	19:55 (23)	21:09	216	20:29 (22)	21:52	177	18:11 (18)
4	08:49		09:24 (4)	08:19		08:49 (5)	07:26			07:17		16:00 (18)	06:15		07:08 (1)	05:34		06:03 (19)
	16:51	107	16:18 (10)	17:40	59	15:51 (16)	18:30			20:22	110	19:57 (23)	21:11	213	20:29 (22)	21:53	177	18:11 (18)
5	08:49		09:24 (4)	08:18		08:49 (5)	07:24			07:14		15:58 (18)	06:13		07:10 (1)	05:34		06:03 (19)
	16:53	107	16:19 (10)	17:42	47	15:48 (16)	18:32			20:24	116	19:58 (23)	21:13	208	20:28 (22)	21:54	178	18:12 (18)
6	08:49		09:23 (4)	08:16		08:49 (5)	07:21			07:12		15:54 (18)	06:11		15:19 (18)	05:33		06:03 (19)
	16:54	108	16:20 (10)	17:44	27	09:42 (4)	18:33			20:25	124	19:59 (23)	21:14	200	20:29 (22)	21:55	177	18:12 (18)
7	08:48		09:23 (4)	08:14		08:49 (5)	07:19			07:10		15:52 (18)	06:09		15:18 (18)	05:32		06:04 (19)
	16:55	111	16:22 (10)	17:45	24	09:13 (5)	18:35			20:27	128	19:59 (23)	21:16	202	20:29 (22)	21:56	176	18:12 (18)
8	08:48		09:22 (4)	08:13		08:49 (5)	07:17		18:07 (6)	07:08		15:50 (18)	06:08		15:18 (18)	05:32		06:04 (19)
	16:56	111	16:23 (10)	17:47	29	17:18 (21)	18:37	5	18:12 (6)	20:28	131	19:59 (23)	21:17	201	20:28 (22)	21:57	176	18:13 (18)
9	08:47		09:22 (4)	08:11		08:51 (5)	07:15		18:04 (6)	07:05		15:48 (18)	06:06		15:19 (18)	05:32		06:04 (19)
	16:58	111	16:24 (10)	17:49	32	17:21 (21)	18:39	9	18:13 (6)	20:30	134	19:58 (23)	21:19	200	20:28 (22)	21:58	176	18:13 (18)
10	08:47		09:22 (4)	08:09		08:51 (5)	07:13		18:02 (6)	07:03		15:46 (18)	06:04		15:18 (18)	05:31		06:05 (19)
	16:59	110	16:25 (10)	17:51	35	17:23 (21)	18:40	13	18:15 (6)	20:32	136	19:57 (23)	21:20	201	20:28 (22)	21:59	174	18:13 (18)
11	08:46		09:22 (4)	08:07		08:52 (5)	07:10		18:01 (6)	07:01		15:44 (18)	06:03		15:19 (18)	05:31		06:05 (19)
	17:00	110	16:25 (10)	17:53	36	17:25 (21)	18:42	16	18:17 (6)	20:33	138	19:56 (23)	21:22	200	20:28 (22)	21:59	174	18:14 (18)
12	08:46		09:21 (4)	08:06		08:53 (5)	07:08		18:00 (6)	06:59		15:41 (18)	06:01		15:18 (18)	05:30		06:05 (19)
	17:02	106	16:24 (10)	17:55	37	17:27 (21)	18:44	19	18:19 (6)	20:35	139	19:54 (23)	21:23	200	20:27 (22)	22:00	173	18:13 (18)
13	08:45		09:21 (4)	08:04		08:55 (5)	07:06		17:59 (6)	06:57		07:19 (1)	06:00		15:19 (18)	05:30		06:05 (19)
	17:03	102	16:24 (10)	17:56	36	17:29 (21)	18:45	21	18:20 (6)	20:37	144	19:52 (23)	21:25	199	20:27 (22)	22:01	173	18:13 (18)
14	08:44		09:22 (4)	08:02		08:57 (5)	07:04		17:59 (6)	06:55		07:17 (1)	05:58		15:19 (18)	05:30		06:06 (19)
	17:05	98	16:24 (10)	17:58	34	17:31 (21)	18:47	22	18:21 (6)	20:38	142	17:49 (18)	21:27	197	20:26 (22)	22:01	172	18:14 (18)
15	08:44		09:22 (4)	08:00		17:04 (21)	07:02		17:59 (6)	06:52		07:15 (1)	05:56		15:19 (18)	05:30		06:06 (19)
	17:06	89	16:23 (10)	18:00	28	17:32 (21)	18:49	22	18:21 (6)	20:40	148	17:50 (18)	21:28	197	20:26 (22)	22:02	172	18:14 (18)
16	08:43		09:22 (4)	07:58		17:04 (21)	06:59		17:59 (6)	06:50		07:13 (1)	05:55		15:20 (18)	05:30		06:07 (19)
	17:08	74	16:00 (15)	18:02	30	17:34 (21)	18:50	22	18:21 (6)	20:42	155	17:52 (18)	21:29	195	20:25 (22)	22:02	170	18:14 (18)
17	08:42		09:22 (4)	07:56		17:03 (21)	06:57		17:59 (6)	06:48		07:11 (1)	05:54		15:20 (18)	05:30		06:07 (19)
	17:09	73	15:59 (15)	18:04	32	17:35 (21)	18:52	21	18:20 (6)	20:43	160	17:53 (18)	21:31	193	20:24 (22)	22:03	172	18:15 (18)
18	08:41		09:22 (4)	07:54		17:03 (21)	06:55		17:59 (6)	06:46		07:09 (1)	05:52		15:20 (18)	05:30		06:07 (19)
	17:11	75	16:00 (16)	18:05	32	17:35 (21)	18:54	20	18:19 (6)	20:45	165	17:54 (18)	21:32	191	20:23 (22)	22:03	171	18:15 (18)
19	08:40		09:22 (4)	07:53		17:03 (21)	06:53		18:01 (6)	06:44		07:07 (1)	05:51		15:21 (18)	05:30		06:07 (19)
	17:12	75	16:00 (16)	18:07	32	17:35 (21)	18:55	17	18:18 (6)	20:47	170	17:55 (18)	21:34	189	20:23 (22)	22:04	171	18:15 (18)
20	08:39		09:21 (4)	07:51		17:03 (21)	06:50		18:02 (6)	06:42		07:05 (1)	05:49		15:22 (18)	05:30		06:07 (19)
	17:14	75	15:59 (16)	18:09	32	17:35 (21)	18:57	14	18:16 (6)	20:48	173	17:55 (18)	21:35	187	20:22 (22)	22:04	171	18:15 (18)
21	08:38		09:21 (4)	07:49		17:03 (21)	06:48		18:04 (6)	06:40		07:03 (1)	05:48		15:23 (18)	05:30		06:08 (19)
	17:16	76	16:00 (16)	18:11	32	17:35 (21)	18:59	8	18:12 (6)	20:50	177	17:56 (18)	21:37	183	20:21 (22)	22:04	171	18:16 (18)
22	08:37		09:22 (4)	07:47		17:04 (21)	06:46			06:38		07:02 (1)	05:47		15:22 (18)	05:30		06:08 (19)
	17:17	74	16:00 (16)	18:12	31	17:35 (21)	19:00			20:51	181	17:57 (18)	21:38	179	20:18 (22)	22:04	171	18:16 (18)
23	08:36		09:22 (4)	07:45		17:04 (21)	06:44			06:36		07:01 (1)	05:46		06:12 (19)	05:30		06:08 (19)
	17:19	74	16:00 (16)	18:14	30	17:34 (21)	19:02			20:53	184	17:58 (18)	21:39	177	20:16 (22)	22:05	171	18:16 (18)
24	08:35		09:22 (4)	07:42		17:05 (21)	06:41			06:34		07:01 (1)	05:44		06:11 (19)	05:31		06:08 (19)
	17:21	74	16:00 (16)	18:16	28	17:33 (21)	19:04			20:55	197	20:19 (22)	21:41	170	18:09 (18)	22:05	171	18:16 (18)
25	08:33		09:23 (4)	07:40		17:06 (21)	06:39			06:32		07:01 (1)	05:43		06:10 (19)	05:31		06:09 (19)
	17:22	72	16:00 (16)	18:18	27	17:33 (21)	19:05			20:56	203	20:21 (22)	21:42	172	18:09 (18)	22:05	172	18:17 (18)
26	08:32		09:24 (4)	07:38		17:07 (21)	06:37			06:30		07:01 (1)	05:42		06:09 (19)	05:31		06:09 (19)
	17:24	71	16:00 (16)	18:19	24	17:31 (21)	19:07			20:58	208	20:23 (22)	21:43	172	18:09 (18)	22:05	170	18:16 (18)
27	08:31		08:57 (5)	07:36		17:08 (21)	06:34		15:37 (18)	06:28		07:01 (1)	05:41		06:08 (19)	05:32		06:09 (19)
	17:26	77	15:59 (16)	18:21	21	17:29 (21)	19:09	28	16:05 (18)	21:00	211	20:24 (22)	21:44	174	18:10 (18)	22:05	171	18:17 (18)
28	08:30		08:56 (5)	07:34		17:10 (21)	06:32		15:28 (18)	06:26		07:01 (1)	05:40		06:07 (19)	05:32		06:09 (19)
	17:28	79	15:59 (16)	18:23	17	17:27 (21)	19:10	43	16:11 (18)	21:01	214	20:25 (22)	21:46	175	18:10 (18)	22:05	172	18:17 (18)
29	08:28		08:54 (5)				07:30		16:23 (18)	06:24		07:02 (1)	05:39		06:07 (19)	05:33		06:10 (19)
	17:29	78	15:58 (16)				20:12	53	17:16 (18)	21:03	217	20:27 (22)	21:47	175	18:11 (18)	22:04	172	18:18 (18)
30	08:27		08:53 (5)				07:28		16:18 (18)	06:22		07:03 (1)	05:38		06:06 (19)	05:33		06:09 (19)
	17:31	79	15:58 (16)				20:14	62	17:20 (18)	21:04	217	20:27 (22)	21:48	177	18:11 (18)	22:04	173	18:17 (18)
31	08:25		08:51 (5)				07:25		16:14 (18)				05:37		06:05 (19)			
	17:33	79	15:57 (16)				20:15	70	17:24 (18)				21:49	177	18:11 (18)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		2784			1007			496			4700			5954			5200	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,65			0,64			0,65			0,66			0,66			0,67	
Total reduction		0,15			0,18			0,23			0,29			0,29			0,28	
Total, real		411			178			115			1350			1706			1480	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: H - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		06:10 (19)	06:09		15:29 (18)	06:57		15:43 (18)	07:44		18:39 (6)	07:36		08:21 (5)	08:26		09:04 (4)
	22:04	173	18:18 (18)	21:33	200	20:38 (22)	20:33	138	19:55 (23)	19:25	19	18:58 (6)	17:21	34	16:52 (21)	16:42	108	16:07 (10)
2	05:35		06:09 (19)	06:11		15:29 (18)	06:59		15:44 (18)	07:46		18:40 (6)	07:38		08:19 (5)	08:27		09:05 (4)
	22:04	173	18:17 (18)	21:32	200	20:38 (22)	20:31	136	19:55 (23)	19:23	17	18:57 (6)	17:19	33	16:50 (21)	16:42	112	16:08 (10)
3	05:35		06:09 (19)	06:12		15:28 (18)	07:00		15:46 (18)	07:48		18:40 (6)	07:40		08:19 (5)	08:29		09:06 (4)
	22:03	175	18:18 (18)	21:30	201	20:38 (22)	20:29	134	19:56 (23)	19:21	14	18:54 (6)	17:17	27	16:48 (21)	16:41	110	16:08 (10)
4	05:36		06:10 (19)	06:14		15:28 (18)	07:02		15:47 (18)	07:49		18:41 (6)	07:42		08:19 (5)	08:30		09:06 (4)
	22:03	174	18:18 (18)	21:29	201	20:38 (22)	20:27	132	19:56 (23)	19:19	11	18:52 (6)	17:16	24	08:43 (5)	16:40	111	16:07 (10)
5	05:37		06:10 (19)	06:15		15:28 (18)	07:03		15:49 (18)	07:51		18:43 (6)	07:43		08:19 (5)	08:31		09:08 (4)
	22:02	176	18:19 (18)	21:27	202	20:39 (22)	20:24	128	19:56 (23)	19:16	7	18:50 (6)	17:14	29	09:13 (4)	16:40	111	16:07 (10)
6	05:38		06:09 (19)	06:17		15:28 (18)	07:05		15:50 (18)	07:52		18:45 (6)	07:45		08:19 (5)	08:32		09:09 (4)
	22:02	176	18:18 (18)	21:25	200	20:38 (22)	20:22	124	19:55 (23)	19:14	2	18:47 (6)	17:12	47	15:18 (16)	16:40	108	16:06 (10)
7	05:38		06:10 (19)	06:18		15:29 (18)	07:07		15:53 (18)	07:54			07:47		08:19 (5)	08:34		09:10 (4)
	22:01	176	18:18 (18)	21:23	200	20:39 (22)	20:20	117	19:54 (23)	19:12			17:11	60	15:22 (16)	16:39	107	16:06 (10)
8	05:39		06:10 (19)	06:20		07:18 (1)	07:08		15:54 (18)	07:56			07:49		08:20 (5)	08:35		09:12 (4)
	22:01	177	18:19 (18)	21:22	211	20:38 (22)	20:18	111	19:51 (23)	19:10			17:09	67	15:24 (16)	16:39	107	16:06 (10)
9	05:40		06:10 (19)	06:21		07:17 (1)	07:10		15:57 (18)	07:57			07:50		08:20 (5)	08:36		09:13 (4)
	22:00	179	18:19 (18)	21:20	213	20:38 (22)	20:15	103	19:49 (23)	19:08			17:07	73	15:26 (16)	16:39	103	16:05 (10)
10	05:41		06:11 (19)	06:23		07:14 (1)	07:11		15:59 (18)	07:59			07:52		08:21 (5)	08:37		09:14 (4)
	21:59	178	18:19 (18)	21:18	217	20:37 (22)	20:13	93	19:46 (23)	19:05			17:06	76	15:28 (16)	16:38	103	16:05 (10)
11	05:42		06:12 (19)	06:24		07:12 (1)	07:13		16:02 (18)	08:01			07:54		08:22 (5)	08:38		09:15 (4)
	21:59	177	18:19 (18)	21:16	217	20:36 (22)	20:11	85	19:45 (23)	19:03			17:04	79	15:28 (16)	16:38	102	16:05 (10)
12	05:43		06:13 (19)	06:26		07:12 (1)	07:14		16:05 (18)	08:02		17:50 (21)	07:55		08:24 (5)	08:39		09:17 (4)
	21:58	177	18:19 (18)	21:14	217	20:36 (22)	20:09	73	19:42 (23)	19:01	3	17:53 (21)	17:03	79	15:29 (16)	16:38	96	16:05 (10)
13	05:44		06:14 (19)	06:27		07:10 (1)	07:16		16:09 (18)	08:04		17:45 (21)	07:57		08:26 (5)	08:40		09:19 (4)
	21:57	176	18:19 (18)	21:12	216	20:35 (22)	20:06	63	17:12 (18)	18:59	14	17:59 (21)	17:01	78	15:30 (16)	16:38	94	16:04 (10)
14	05:45		06:15 (19)	06:29		07:10 (1)	07:17		16:12 (18)	08:06		17:42 (21)	07:59		08:28 (5)	08:41		10:21 (3)
	21:56	176	18:19 (18)	21:10	215	20:34 (22)	20:04	55	17:07 (18)	18:57	19	18:01 (21)	17:00	79	15:31 (16)	16:38	88	16:04 (10)
15	05:47		06:16 (19)	06:30		07:09 (1)	07:19		16:17 (18)	08:07		17:41 (21)	08:01		08:30 (5)	08:42		10:22 (3)
	21:55	175	18:19 (18)	21:09	215	20:33 (22)	20:02	45	17:02 (18)	18:55	22	18:03 (21)	16:59	77	15:32 (16)	16:38	88	16:05 (10)
16	05:48		06:17 (19)	06:32		07:08 (1)	07:21		16:23 (18)	08:09		17:38 (21)	08:02		08:57 (4)	08:43		10:22 (3)
	21:54	174	18:19 (18)	21:07	211	20:32 (22)	19:59	32	16:55 (18)	18:53	25	18:03 (21)	16:57	70	15:33 (16)	16:38	88	16:05 (10)
17	05:49		06:18 (19)	06:34		07:07 (1)	07:22			08:11		17:37 (21)	08:04		08:56 (4)	08:44		10:22 (3)
	21:53	173	18:19 (18)	21:05	208	20:29 (22)	19:57			18:50	27	18:04 (21)	16:56	72	15:33 (16)	16:39	87	16:04 (10)
18	05:50		06:19 (19)	06:35		07:07 (1)	07:24			08:12		17:36 (21)	08:06		08:56 (4)	08:44		10:22 (3)
	21:52	172	18:19 (18)	21:03	203	20:28 (22)	19:55			18:48	29	18:05 (21)	16:55	75	15:34 (16)	16:39	88	16:05 (10)
19	05:51		06:20 (19)	06:37		07:07 (1)	07:25			08:14		17:35 (21)	08:07		08:56 (4)	08:45		10:23 (3)
	21:51	171	18:19 (18)	21:01	195	20:24 (22)	19:53			18:46	31	18:06 (21)	16:53	74	15:34 (16)	16:39	88	16:05 (10)
20	05:53		06:22 (19)	06:38		07:07 (1)	07:27			08:16		17:34 (21)	08:09		08:57 (4)	08:46		10:23 (3)
	21:50	174	20:25 (22)	20:59	182	18:03 (18)	19:50			18:44	31	18:05 (21)	16:52	74	15:35 (16)	16:39	88	16:05 (10)
21	05:54		06:23 (19)	06:40		07:06 (1)	07:28			08:17		17:34 (21)	08:11		08:58 (4)	08:46		10:24 (3)
	21:49	179	20:28 (22)	20:57	182	18:02 (18)	19:48			18:42	31	18:05 (21)	16:51	75	15:36 (16)	16:40	87	16:06 (10)
22	05:55		15:33 (18)	06:41		07:08 (1)	07:30		18:51 (6)	08:19		17:33 (21)	08:12		08:57 (4)	08:47		10:24 (3)
	21:48	182	20:30 (22)	20:54	178	18:01 (18)	19:46	6	18:57 (6)	18:40	33	18:06 (21)	16:50	75	15:35 (16)	16:40	87	16:06 (10)
23	05:56		15:32 (18)	06:43		07:09 (1)	07:32		18:47 (6)	08:21		17:33 (21)	08:14		08:58 (4)	08:47		10:25 (3)
	21:46	184	20:31 (22)	20:52	173	17:59 (18)	19:44	12	18:59 (6)	18:38	33	18:06 (21)	16:49	75	15:36 (16)	16:41	87	16:07 (10)
24	05:58		15:32 (18)	06:45		07:11 (1)	07:33		18:45 (6)	08:23		17:34 (21)	08:15		08:59 (4)	08:48		10:25 (3)
	21:45	188	20:33 (22)	20:50	168	17:58 (18)	19:41	16	19:01 (6)	18:36	32	18:06 (21)	16:48	75	15:37 (16)	16:41	88	16:07 (10)
25	05:59		15:31 (18)	06:46		07:12 (1)	07:35		18:42 (6)	07:24		16:34 (21)	08:17		09:00 (4)	08:48		10:25 (3)
	21:44	191	20:34 (22)	20:48	164	17:56 (18)	19:39	19	19:01 (6)	17:34	32	17:06 (21)	16:47	73	15:37 (15)	16:42	88	16:08 (10)
26	06:01		15:31 (18)	06:48		07:14 (1)	07:36		18:42 (6)	07:26		16:33 (21)	08:18		09:00 (4)	08:49		10:27 (3)
	21:42	191	20:34 (22)	20:46	158	17:55 (18)	19:37	20	19:02 (6)	17:32	30	17:03 (21)	16:46	75	15:38 (15)	16:43	87	16:09 (10)
27	06:02		15:30 (18)	06:49		07:15 (1)	07:38		18:41 (6)	07:28		16:34 (21)	08:20		09:01 (4)	08:49		10:27 (3)
	21:41	195	20:35 (22)	20:44	153	17:53 (18)	19:34	22	19:03 (6)	17:30	27	17:01 (21)	16:45	89	16:02 (10)	16:44	87	16:10 (10)
28	06:03		15:30 (18)	06:51		07:17 (1)	07:40		18:40 (6)	07:29		08:26 (5)	08:22		09:01 (4)	08:49		10:27 (3)
	21:40	196	20:36 (22)	20:42	148	17:52 (18)	19:32	22	19:02 (6)	17:28	34	17:00 (21)	16:44	98	16:03 (10)	16:44	88	16:10 (10)
29	06:05		15:30 (18)	06:52		07:18 (1)	07:41		18:40 (6)	07:31		08:24 (5)	08:23		09:02 (4)	08:49		10:28 (3)
	21:38	196	20:36 (22)	20:40	142	17:50 (18)	19:30	22	19:02 (6)	17:27	37	16:58 (21)	16:44	103	16:05 (10)	16:45	87	16:11 (10)
30	06:06		15:29 (18)	06:54		07:20 (1)	07:43		18:39 (6)	07:33		08:22 (5)	08:24		09:03 (4)	08:49		09:27 (4)
	21:37	199	20:37 (22)	20:38	144	19:53 (23)	19:28	21	19:00 (6)	17:25	38	16:56 (21)	16:43	107	16:07 (10)	16:46	94	16:12 (10)
31	06:08		15:29 (18)	06:56		15:41 (18)				07:35		08:21 (5)				08:49		09:26 (4)
	21:35	200	20:38 (22)	20:35	139	19:54 (23)				17:23	36	16:54 (21)				16:47	97	16:13 (10)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		5603			5873			1729			634			2072			2964	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,66			0,65			0,66			0,67			0,63			0,67	
Total reduction		0,28			0,29			0,27			0,23			0,16			0,14	
Total, real		1597			1715			472			147			322			405	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: I - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		11:29 (1)	08:24		16:32 (17)	07:32		17:41 (22)	07:23		08:13 (19)	06:20		08:55 (20)	05:36		09:04 (20)
	16:48	41	16:14 (18)	17:35	23	16:55 (17)	18:25	15	17:56 (22)	20:17	126	10:45 (20)	21:06	226	20:29 (14)	21:50	130	19:43 (12)
2	08:49		11:30 (1)	08:22		16:34 (17)	07:30		17:42 (22)	07:21		08:11 (19)	06:18		08:55 (20)	05:36		09:05 (20)
	16:49	41	16:16 (18)	17:36	21	16:55 (17)	18:26	13	17:55 (22)	20:19	132	10:46 (20)	21:08	224	20:28 (14)	21:51	129	19:43 (12)
3	08:49		11:30 (1)	08:21		16:34 (17)	07:28		17:43 (22)	07:19		08:10 (19)	06:16		08:55 (20)	05:35		09:05 (20)
	16:50	36	16:16 (18)	17:38	20	16:54 (17)	18:28	11	17:54 (22)	20:20	155	19:27 (12)	21:09	223	20:28 (14)	21:52	126	19:42 (12)
4	08:49		11:32 (1)	08:19		16:35 (17)	07:26		17:46 (22)	07:16		08:09 (19)	06:15		08:55 (20)	05:34		09:05 (20)
	16:51	36	16:18 (18)	17:40	18	16:53 (17)	18:30	6	17:52 (22)	20:22	169	19:32 (12)	21:11	222	20:28 (14)	21:53	125	19:42 (12)
5	08:49		11:34 (1)	08:18		16:37 (17)	07:23			07:14		08:08 (19)	06:13		08:55 (20)	05:34		09:07 (20)
	16:53	34	16:19 (18)	17:42	16	16:53 (17)	18:32			20:23	181	19:36 (12)	21:13	219	20:27 (14)	21:54	122	19:42 (12)
6	08:48		11:34 (1)	08:16		16:39 (17)	07:21			07:12		08:06 (19)	06:11		08:55 (20)	05:33		09:07 (20)
	16:54	34	16:20 (18)	17:44	12	16:51 (17)	18:33			20:25	189	19:37 (12)	21:14	216	20:26 (14)	21:55	119	19:41 (12)
7	08:48		11:37 (1)	08:14		16:41 (17)	07:19			07:10		08:06 (19)	06:09		08:56 (20)	05:32		09:07 (20)
	16:55	33	16:22 (18)	17:45	8	16:49 (17)	18:35			20:27	197	19:39 (12)	21:16	214	20:26 (14)	21:56	118	19:41 (12)
8	08:48		11:38 (1)	08:13			07:17			07:08		08:05 (19)	06:08		08:55 (20)	05:32		09:08 (20)
	16:56	31	16:23 (18)	17:47			18:37			20:28	203	19:41 (12)	21:17	211	20:25 (14)	21:57	116	19:41 (12)
9	08:47		11:40 (1)	08:11			07:15			07:05		08:05 (19)	06:06		08:56 (20)	05:31		09:08 (20)
	16:58	28	16:24 (18)	17:49			18:38			20:30	209	19:43 (12)	21:19	206	20:24 (14)	21:58	114	19:40 (12)
10	08:47		11:44 (1)	08:09			07:13			07:03		08:04 (19)	06:04		08:56 (20)	05:31		09:09 (20)
	16:59	23	16:26 (18)	17:51			18:40			20:32	216	19:45 (12)	21:20	202	20:23 (14)	21:59	112	19:40 (12)
11	08:46		16:14 (18)	08:07			07:10			07:01		08:03 (19)	06:03		08:56 (20)	05:31		09:10 (20)
	17:00	13	16:27 (18)	17:53			18:42			20:33	219	19:45 (12)	21:22	199	20:22 (14)	21:59	110	19:40 (12)
12	08:46		16:14 (18)	08:06			07:08			06:59		08:03 (19)	06:01		08:56 (20)	05:30		09:09 (20)
	17:02	15	16:29 (18)	17:54			18:44			20:35	222	19:46 (12)	21:23	193	20:20 (14)	22:00	110	19:40 (12)
13	08:45		16:14 (18)	08:04			07:06			06:57		08:03 (19)	05:59		08:57 (20)	05:30		09:10 (20)
	17:03	16	16:30 (18)	17:56			18:45			20:37	225	19:48 (12)	21:25	188	20:18 (14)	22:01	108	19:40 (12)
14	08:44		16:16 (18)	08:02			07:04			06:55		08:03 (19)	05:58		08:56 (20)	05:30		09:11 (20)
	17:05	16	16:32 (18)	17:58			18:47			20:38	229	19:49 (12)	21:26	179	20:14 (14)	22:01	107	19:40 (12)
15	08:44		16:16 (18)	08:00			07:01			06:52		08:03 (19)	05:56		08:57 (20)	05:30		09:11 (20)
	17:06	16	16:32 (18)	18:00			18:49			20:40	231	19:49 (12)	21:28	171	19:50 (12)	22:02	106	19:40 (12)
16	08:43		16:17 (18)	07:58			06:59			06:50		08:03 (19)	05:55		08:58 (20)	05:30		09:11 (20)
	17:08	15	16:32 (18)	18:02			18:50			20:42	233	19:50 (12)	21:29	168	19:50 (12)	22:02	105	19:40 (12)
17	08:42		16:18 (18)	07:56			06:57			06:48		08:03 (19)	05:53		08:57 (20)	05:30		09:12 (20)
	17:09	14	16:32 (18)	18:03			18:52			20:43	238	20:16 (14)	21:31	167	19:49 (12)	22:03	104	19:40 (12)
18	08:41		16:19 (18)	07:54			06:55			06:46		08:03 (19)	05:52		08:58 (20)	05:29		09:12 (20)
	17:11	14	16:39 (17)	18:05			18:54			20:45	246	20:18 (14)	21:32	164	19:49 (12)	22:03	104	19:40 (12)
19	08:40		16:19 (18)	07:52			06:52			06:44		08:03 (19)	05:51		08:58 (20)	05:30		09:12 (20)
	17:12	17	16:40 (17)	18:07			18:55			20:47	250	20:20 (14)	21:34	163	19:49 (12)	22:04	103	19:40 (12)
20	08:39		16:21 (18)	07:50			06:50			06:42		08:04 (19)	05:49		08:59 (20)	05:30		09:12 (20)
	17:14	17	16:42 (17)	18:09			18:57			20:48	254	20:22 (14)	21:35	159	19:48 (12)	22:04	103	19:40 (12)
21	08:38		16:23 (18)	07:49			06:48		08:54 (20)	06:40		08:04 (19)	05:48		08:59 (20)	05:30		09:12 (20)
	17:16	17	16:44 (21)	18:11			18:59	24	09:18 (20)	20:50	258	20:23 (14)	21:37	156	19:47 (12)	22:04	103	19:40 (12)
22	08:37		16:33 (17)	07:47			06:46		08:48 (20)	06:38		08:05 (19)	05:47		08:59 (20)	05:30		09:13 (20)
	17:17	13	16:46 (21)	18:12			19:00	36	09:24 (20)	20:51	259	20:25 (14)	21:38	155	19:47 (12)	22:04	103	19:41 (12)
23	08:36		16:33 (17)	07:44		17:44 (22)	06:43		08:44 (20)	06:36		08:05 (19)	05:46		09:00 (20)	05:30		09:13 (20)
	17:19	15	16:48 (21)	18:14	4	17:48 (22)	19:02	44	09:28 (20)	20:53	260	20:26 (14)	21:39	153	19:47 (12)	22:05	103	19:41 (12)
24	08:35		16:32 (17)	07:42		17:43 (22)	06:41		08:39 (20)	06:34		08:06 (19)	05:44		09:00 (20)	05:30		09:13 (20)
	17:21	17	16:49 (21)	18:16	7	17:50 (22)	19:04	52	09:31 (20)	20:55	261	20:28 (14)	21:41	150	19:46 (12)	22:05	104	19:41 (12)
25	08:33		16:32 (17)	07:40		17:42 (22)	06:39		08:36 (20)	06:32		08:07 (19)	05:43		09:01 (20)	05:31		09:14 (20)
	17:22	20	16:52 (21)	18:18	10	17:52 (22)	19:05	58	09:34 (20)	20:56	261	20:29 (14)	21:42	147	19:46 (12)	22:05	104	19:42 (12)
26	08:32		16:32 (17)	07:38		17:42 (22)	06:37		07:30 (19)	06:30		08:08 (19)	05:42		09:01 (20)	05:31		09:14 (20)
	17:24	22	16:54 (21)	18:19	12	17:54 (22)	19:07	73	09:36 (20)	20:58	259	20:29 (14)	21:43	144	19:45 (12)	22:05	104	19:42 (12)
27	08:31		16:31 (17)	07:36		17:40 (22)	06:34		07:25 (19)	06:28		08:09 (19)	05:41		09:01 (20)	05:32		09:13 (20)
	17:26	24	16:55 (21)	18:21	15	17:55 (22)	19:09	88	09:39 (20)	21:00	257	20:29 (14)	21:44	143	19:45 (12)	22:05	106	19:42 (12)
28	08:30		16:32 (17)	07:34		17:41 (22)	06:32		07:21 (19)	06:26		08:11 (19)	05:40		09:02 (20)	05:32		09:14 (20)
	17:28	23	16:55 (21)	18:23	16	17:57 (22)	19:10	99	09:40 (20)	21:01	252	20:29 (14)	21:46	140	19:44 (12)	22:05	106	19:43 (12)
29	08:28		16:32 (17)				07:30		08:19 (19)	06:24		08:14 (19)	05:39		09:03 (20)	05:33		09:13 (20)
	17:29	23	16:55 (17)				20:12	106	10:41 (20)	21:03	248	20:30 (14)	21:47	138	19:45 (12)	22:04	108	19:43 (12)
30	08:27		16:32 (17)				07:28		08:17 (19)	06:22		08:17 (19)	05:38		09:04 (20)	05:33		09:14 (20)
	17:31	24	16:56 (17)				20:14	114	10:43 (20)	21:04	241	20:29 (14)	21:48	134	19:44 (12)	22:04	109	19:44 (12)
31	08:25		16:32 (17)				07:25		08:15 (19)				05:37		09:04 (20)			
	17:33	23	16:55 (17)				20:15	121	10:45 (20)				21:49	132	19:43 (12)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		711			182			860			6680			5506			3321	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,68			0,69			0,57			0,57			0,57			0,57	
Total reduction		0,15			0,19			0,20			0,25			0,25			0,24	
Total, real		109			35			174			1681			1379			807	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: I - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		09:14 (20)	06:09		09:06 (20)	06:57		08:03 (19)	07:44			07:36			08:26		15:56 (18)
	22:04	111	19:45 (12)	21:33	195	20:31 (14)	20:33	219	19:45 (12)	19:25			17:21			16:42	14	16:10 (18)
2	05:34		09:13 (20)	06:11		09:07 (20)	06:59		08:02 (19)	07:46			07:38			08:27		11:27 (1)
	22:04	112	19:44 (12)	21:32	200	20:33 (14)	20:31	215	19:43 (12)	19:23			17:19			16:41	22	16:09 (18)
3	05:35		09:14 (20)	06:12		09:06 (20)	07:00		08:03 (19)	07:48			07:40			08:29		11:24 (1)
	22:03	112	19:45 (12)	21:30	205	20:34 (14)	20:29	209	19:41 (12)	19:21			17:17			16:41	28	16:08 (18)
4	05:36		09:14 (20)	06:14		09:05 (20)	07:02		08:02 (19)	07:49			07:42		16:10 (17)	08:30		11:22 (1)
	22:03	115	19:46 (12)	21:28	209	20:34 (14)	20:26	203	19:38 (12)	19:19			17:16	9	16:19 (17)	16:40	31	16:07 (18)
5	05:37		09:13 (20)	06:15		09:06 (20)	07:03		08:03 (19)	07:51			07:43		16:08 (17)	08:31		11:22 (1)
	22:02	117	19:46 (12)	21:27	212	20:36 (14)	20:24	198	19:37 (12)	19:16			17:14	13	16:21 (17)	16:40	33	16:07 (18)
6	05:37		09:13 (20)	06:17		09:05 (20)	07:05		08:02 (19)	07:52			07:45		16:07 (17)	08:32		11:21 (1)
	22:02	119	19:47 (12)	21:25	215	20:36 (14)	20:22	189	19:33 (12)	19:14			17:12	16	16:23 (17)	16:39	33	16:06 (18)
7	05:38		09:13 (20)	06:18		09:05 (20)	07:06		08:03 (19)	07:54			07:47		16:06 (17)	08:34		11:20 (1)
	22:01	121	19:48 (12)	21:23	219	20:37 (14)	20:20	181	19:31 (12)	19:12			17:11	18	16:24 (17)	16:39	35	16:06 (18)
8	05:39		09:13 (20)	06:20		09:05 (20)	07:08		08:03 (19)	07:56			07:49		16:05 (17)	08:35		11:20 (1)
	22:01	123	19:49 (12)	21:22	219	20:37 (14)	20:18	171	19:27 (12)	19:10			17:09	20	16:25 (17)	16:39	36	16:06 (18)
9	05:40		09:13 (20)	06:21		09:04 (20)	07:10		08:04 (19)	07:57			07:50		16:05 (17)	08:36		11:20 (1)
	22:00	125	19:49 (12)	21:20	222	20:37 (14)	20:15	157	19:22 (12)	19:08			17:07	21	16:26 (17)	16:39	35	16:05 (18)
10	05:41		09:13 (20)	06:23		09:04 (20)	07:11		08:04 (19)	07:59		18:19 (22)	07:52		16:03 (17)	08:37		11:19 (1)
	21:59	127	19:50 (12)	21:18	223	20:37 (14)	20:13	132	10:39 (20)	19:05	8	18:27 (22)	17:06	23	16:26 (17)	16:38	41	16:05 (18)
11	05:42		09:13 (20)	06:24		09:04 (20)	07:13		08:06 (19)	08:01		18:17 (22)	07:54		16:03 (17)	08:38		11:19 (1)
	21:59	129	19:51 (12)	21:16	225	20:37 (14)	20:11	126	10:38 (20)	19:03	12	18:29 (22)	17:04	23	16:26 (17)	16:38	42	16:05 (18)
12	05:43		09:12 (20)	06:26		08:29 (19)	07:14		08:06 (19)	08:02		18:15 (22)	07:55		16:03 (17)	08:39		11:19 (1)
	21:58	132	19:52 (12)	21:14	231	20:38 (14)	20:09	122	10:36 (20)	19:01	14	18:29 (22)	17:03	24	16:27 (17)	16:38	42	16:04 (18)
13	05:44		09:12 (20)	06:27		08:23 (19)	07:16		08:08 (19)	08:04		18:14 (22)	07:57		16:04 (17)	08:40		11:19 (1)
	21:57	134	19:52 (12)	21:12	243	20:37 (14)	20:06	115	10:35 (20)	18:59	16	18:30 (22)	17:01	23	16:27 (17)	16:38	44	16:01 (16)
14	05:45		09:12 (20)	06:29		08:21 (19)	07:17		08:09 (19)	08:06		18:14 (22)	07:59		16:04 (17)	08:41		11:19 (1)
	21:56	136	19:53 (12)	21:10	248	20:37 (14)	20:04	108	10:32 (20)	18:57	15	18:29 (22)	17:00	23	16:27 (21)	16:38	45	16:02 (16)
15	05:46		09:12 (20)	06:30		08:18 (19)	07:19		08:11 (19)	08:07		18:14 (22)	08:01		16:04 (17)	08:42		11:19 (1)
	21:55	138	19:53 (12)	21:09	255	20:37 (14)	20:02	100	10:30 (20)	18:55	13	18:27 (22)	16:59	24	16:28 (21)	16:38	47	16:03 (16)
16	05:48		09:11 (20)	06:32		08:17 (19)	07:21		08:13 (19)	08:09		18:13 (22)	08:02		16:05 (17)	08:43		11:20 (1)
	21:54	142	19:54 (12)	21:07	257	20:37 (14)	19:59	90	10:27 (20)	18:52	11	18:24 (22)	16:57	22	16:27 (21)	16:38	48	16:04 (16)
17	05:49		09:11 (20)	06:34		08:14 (19)	07:22		08:17 (19)	08:11		18:14 (22)	08:04		16:05 (17)	08:44		11:19 (1)
	21:53	144	19:55 (12)	21:05	261	20:36 (14)	19:57	77	10:25 (20)	18:50	8	18:22 (22)	16:56	20	16:25 (21)	16:38	49	16:04 (16)
18	05:50		09:10 (20)	06:35		08:13 (19)	07:24		09:23 (20)	08:12		18:14 (22)	08:06		16:06 (17)	08:44		11:20 (1)
	21:52	146	19:55 (12)	21:03	261	20:35 (14)	19:55	59	10:22 (20)	18:48	7	18:21 (22)	16:55	17	16:23 (21)	16:39	49	16:04 (16)
19	05:51		09:10 (20)	06:37		08:12 (19)	07:25		09:26 (20)	08:14		18:16 (22)	08:07		16:07 (17)	08:45		11:20 (1)
	21:51	149	19:56 (12)	21:01	262	20:33 (14)	19:53	53	10:19 (20)	18:46	3	18:19 (22)	16:53	15	16:22 (21)	16:39	50	16:05 (16)
20	05:52		09:10 (20)	06:38		08:11 (19)	07:27		09:28 (20)	08:16			08:09		16:08 (17)	08:46		11:20 (1)
	21:50	152	19:57 (12)	20:59	261	20:32 (14)	19:50	47	10:15 (20)	18:44			16:52	13	16:21 (21)	16:39	50	16:05 (16)
21	05:54		09:10 (20)	06:40		08:09 (19)	07:28		09:32 (20)	08:17			08:11		15:59 (18)	08:46		11:21 (1)
	21:49	153	19:57 (12)	20:57	260	20:29 (14)	19:48	39	10:11 (20)	18:42			16:51	17	16:20 (21)	16:40	50	16:06 (16)
22	05:55		09:09 (20)	06:41		08:09 (19)	07:30		09:37 (20)	08:19			08:12		15:57 (18)	08:47		11:21 (1)
	21:48	156	19:58 (12)	20:54	257	20:28 (14)	19:46	29	10:06 (20)	18:40			16:50	17	16:18 (17)	16:40	50	16:06 (16)
23	05:56		09:09 (20)	06:43		08:07 (19)	07:32		09:45 (20)	08:21			08:14		15:56 (18)	08:47		11:22 (1)
	21:46	158	19:58 (12)	20:52	254	20:25 (14)	19:43	11	09:56 (20)	18:38			16:49	17	16:17 (17)	16:41	50	16:07 (16)
24	05:58		09:08 (20)	06:44		08:07 (19)	07:33			08:23			08:15		15:56 (18)	08:48		11:22 (1)
	21:45	161	19:58 (12)	20:50	250	20:24 (14)	19:41			18:36			16:48	14	16:16 (17)	16:41	50	16:07 (16)
25	05:59		09:09 (20)	06:46		08:06 (19)	07:35			07:24			08:17		15:56 (18)	08:48		11:23 (1)
	21:44	162	19:59 (12)	20:48	245	20:21 (14)	19:39			17:34			16:47	14	16:10 (18)	16:42	49	16:07 (16)
26	06:00		09:08 (20)	06:48		08:06 (19)	07:36			07:26			08:18		15:55 (18)	08:49		11:24 (1)
	21:42	165	19:59 (12)	20:46	234	19:54 (12)	19:37			17:32			16:46	15	16:10 (18)	16:43	48	16:08 (16)
27	06:02		09:08 (20)	06:49		08:04 (19)	07:38			07:28			08:20		15:55 (18)	08:49		11:25 (1)
	21:41	168	20:00 (12)	20:44	234	19:52 (12)	19:34			17:30			16:45	16	16:11 (18)	16:43	48	16:09 (16)
28	06:03		09:08 (20)	06:51		08:04 (19)	07:40			07:29			08:21		15:55 (18)	08:49		11:25 (1)
	21:39	170	20:01 (12)	20:42	232	19:51 (12)	19:32			17:28			16:44	16	16:11 (18)	16:44	47	16:09 (16)
29	06:05		09:07 (20)	06:52		08:03 (19)	07:41			07:31			08:23		15:56 (18)	08:49		11:26 (1)
	21:38	173	20:01 (12)	20:40	229	19:49 (12)	19:30			17:26			16:44	15	16:11 (18)	16:45	46	16:09 (16)
30	06:06		09:07 (20)	06:54		08:03 (19)	07:43			07:33			08:24		15:56 (18)	08:49		11:27 (1)
	21:37	182	20:26 (14)	20:37	225	19:48 (12)	19:28			17:25			16:43	15	16:11 (18)	16:46	45	16:12 (18)
31	06:08		09:07 (20)	06:55		08:03 (19)				07:35						08:49		11:28 (1)
	21:35	191	20:30 (14)	20:35	222	19:46 (12)				17:23						16:47	43	16:13 (18)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		4423			7265			2850			107			480			1300	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,57			0,57			0,57			0,65			0,71			0,64	
Total reduction		0,25			0,26			0,24			0,23			0,17			0,13	
Total, real		1089			1865			678			25			84			170	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: J - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		12:08 (1)	08:24			07:32		17:50 (22)	07:23			06:20		07:37 (19)	05:36		07:42 (19)
	16:48	48	12:56 (1)	17:35			18:25	9	17:59 (22)	20:17			21:06	153	20:34 (14)	21:50	86	20:00 (12)
2	08:49		12:09 (1)	08:22		17:03 (17)	07:30		17:50 (22)	07:21			06:18		07:36 (19)	05:36		07:44 (19)
	16:49	47	12:56 (1)	17:36	4	17:07 (17)	18:26	11	18:01 (22)	20:19			21:08	153	20:33 (14)	21:51	84	20:00 (12)
3	08:49		12:09 (1)	08:21		17:01 (17)	07:28		17:50 (22)	07:19			06:16		07:35 (19)	05:35		07:44 (19)
	16:50	46	12:55 (1)	17:38	8	17:09 (17)	18:28	13	18:03 (22)	20:20			21:09	154	20:33 (14)	21:52	81	19:59 (12)
4	08:49		12:10 (1)	08:19		17:00 (17)	07:26		17:50 (22)	07:16			06:15		07:36 (19)	05:34		07:44 (19)
	16:51	47	16:18 (16)	17:40	11	17:11 (17)	18:30	15	18:05 (22)	20:22			21:11	153	20:33 (14)	21:53	99	19:58 (12)
5	08:49		12:12 (1)	08:18		17:00 (17)	07:23		17:50 (22)	07:14			06:13		07:35 (19)	05:34		07:45 (19)
	16:53	46	16:19 (16)	17:42	13	17:13 (17)	18:32	14	18:04 (22)	20:23			21:12	153	20:32 (14)	21:54	106	19:58 (12)
6	08:48		12:12 (1)	08:16		16:59 (17)	07:21		17:51 (22)	07:12			06:11		07:35 (19)	05:33		07:45 (19)
	16:54	46	16:20 (16)	17:44	16	17:15 (17)	18:33	12	18:03 (22)	20:25			21:14	151	20:31 (14)	21:55	110	19:57 (12)
7	08:48		12:14 (1)	08:14		16:58 (17)	07:19		17:52 (22)	07:10			06:09		07:35 (19)	05:32		07:46 (19)
	16:55	45	16:22 (16)	17:45	19	17:17 (17)	18:35	9	18:01 (22)	20:27			21:16	152	20:31 (14)	21:56	112	19:57 (12)
8	08:48		12:14 (1)	08:13		16:58 (17)	07:17			07:08			06:08		07:35 (19)	05:32		07:47 (19)
	16:56	45	16:23 (16)	17:47	20	17:18 (17)	18:37			20:28			21:17	150	20:30 (14)	21:57	115	19:56 (12)
9	08:47		12:15 (1)	08:11		16:59 (17)	07:15			07:05			06:06		07:35 (19)	05:31		07:47 (19)
	16:58	44	16:24 (16)	17:49	21	17:20 (17)	18:38			20:30			21:19	150	20:30 (14)	21:58	115	19:55 (12)
10	08:47		12:18 (1)	08:09		16:59 (17)	07:13			07:03			06:04		07:35 (19)	05:31		07:48 (19)
	16:59	42	16:26 (16)	17:51	21	17:20 (17)	18:40			20:32			21:20	147	20:28 (14)	21:59	115	19:54 (12)
11	08:46		12:19 (1)	08:07		16:59 (17)	07:10			07:01		19:38 (12)	06:03		07:35 (19)	05:31		07:49 (19)
	17:00	40	16:27 (16)	17:53	21	17:20 (17)	18:42			20:33	13	19:51 (12)	21:22	145	20:27 (14)	21:59	115	19:54 (12)
12	08:46		12:20 (1)	08:06		16:59 (17)	07:08			06:59		08:07 (19)	06:01		07:35 (19)	05:30		07:49 (19)
	17:02	40	16:29 (16)	17:54	20	17:19 (17)	18:44			20:35	39	19:55 (12)	21:23	142	20:25 (14)	22:00	113	19:52 (12)
13	08:45		12:22 (1)	08:04		17:00 (17)	07:06			06:57		08:03 (19)	05:59		07:35 (19)	05:30		07:49 (19)
	17:03	36	16:30 (16)	17:56	19	17:19 (17)	18:45			20:37	55	19:58 (12)	21:25	135	20:22 (14)	22:01	114	19:51 (12)
14	08:44		12:26 (1)	08:02		17:01 (17)	07:04			06:55		07:59 (19)	05:58		07:35 (19)	05:30		07:50 (19)
	17:05	30	16:31 (16)	17:58	17	17:18 (17)	18:47			20:38	67	20:01 (12)	21:26	126	20:10 (12)	22:01	112	19:50 (12)
15	08:43		12:29 (1)	08:00		17:02 (17)	07:01			06:52		07:57 (19)	05:56		07:35 (19)	05:30		07:50 (19)
	17:06	22	16:30 (16)	18:00	14	17:16 (17)	18:49			20:40	76	20:03 (12)	21:28	125	20:10 (12)	22:02	110	19:49 (12)
16	08:43		12:35 (1)	07:58		17:04 (17)	06:59			06:50		07:54 (19)	05:55		07:36 (19)	05:30		07:51 (19)
	17:08	3	12:38 (1)	18:02	11	17:15 (17)	18:50			20:42	84	20:04 (12)	21:29	123	20:10 (12)	22:02	105	11:34 (20)
17	08:42			07:56		17:08 (17)	06:57			06:48		07:52 (19)	05:53		07:36 (19)	05:30		07:51 (19)
	17:09			18:03	3	17:11 (17)	18:52			20:43	90	20:06 (12)	21:31	121	20:09 (12)	22:03	107	11:35 (20)
18	08:41		16:38 (18)	07:54			06:55			06:46		07:50 (19)	05:52		07:36 (19)	05:29		07:52 (19)
	17:11	1	16:39 (18)	18:05			18:54			20:45	97	20:07 (12)	21:32	119	20:08 (12)	22:03	106	11:35 (20)
19	08:40		16:37 (18)	07:52			06:52			06:44		07:49 (19)	05:51		07:37 (19)	05:30		07:52 (19)
	17:12	3	16:40 (18)	18:07			18:55			20:46	101	20:08 (12)	21:34	117	20:08 (12)	22:04	107	11:36 (20)
20	08:39		16:37 (18)	07:50			06:50			06:42		07:47 (19)	05:49		07:37 (19)	05:30		07:52 (19)
	17:14	5	16:42 (18)	18:09			18:57			20:48	113	20:22 (14)	21:35	116	20:08 (12)	22:04	107	11:36 (20)
21	08:38		16:37 (18)	07:49			06:48			06:40		07:46 (19)	05:48		07:37 (19)	05:30		07:52 (19)
	17:16	7	16:44 (18)	18:11			18:59			20:50	121	20:23 (14)	21:37	113	20:07 (12)	22:04	107	11:36 (20)
22	08:37		16:37 (18)	07:47			06:46			06:38		07:44 (19)	05:47		07:37 (19)	05:30		07:53 (19)
	17:17	9	16:46 (18)	18:12			19:00			20:51	129	20:25 (14)	21:38	112	20:06 (12)	22:04	107	11:37 (20)
23	08:36		16:38 (18)	07:44			06:43			06:36		07:43 (19)	05:46		07:38 (19)	05:30		07:53 (19)
	17:19	10	16:48 (18)	18:14			19:02			20:53	132	20:26 (14)	21:39	110	20:06 (12)	22:04	107	11:37 (20)
24	08:35		16:37 (18)	07:42			06:41			06:34		07:42 (19)	05:44		07:38 (19)	05:30		07:53 (19)
	17:21	12	16:49 (18)	18:16			19:04			20:55	136	20:28 (14)	21:41	107	20:05 (12)	22:05	106	11:36 (20)
25	08:33		16:38 (18)	07:40			06:39			06:32		07:41 (19)	05:43		07:39 (19)	05:31		07:53 (19)
	17:22	14	16:52 (18)	18:18			19:05			20:56	140	20:29 (14)	21:42	105	20:05 (12)	22:05	107	11:37 (20)
26	08:32		16:39 (18)	07:38			06:37			06:30		07:40 (19)	05:42		07:39 (19)	05:31		07:53 (19)
	17:24	15	16:54 (18)	18:19			19:07			20:58	144	20:31 (14)	21:43	102	20:04 (12)	22:05	105	11:36 (20)
27	08:31		16:39 (18)	07:36		17:53 (22)	06:34			06:28		07:39 (19)	05:41		07:40 (19)	05:32		07:53 (19)
	17:26	14	16:53 (18)	18:21	2	17:55 (22)	19:09			21:00	147	20:32 (14)	21:44	99	20:03 (12)	22:05	105	19:49 (12)
28	08:30		16:40 (18)	07:34		17:51 (22)	06:32			06:26		07:38 (19)	05:40		07:40 (19)	05:32		07:53 (19)
	17:28	13	16:53 (18)	18:23	6	17:57 (22)	19:10			21:01	149	20:33 (14)	21:46	97	20:03 (12)	22:05	111	19:53 (12)
29	08:28		16:41 (18)				07:30			06:24		07:38 (19)	05:39		07:41 (19)	05:33		07:53 (19)
	17:29	11	16:52 (18)				20:12			21:03	152	20:35 (14)	21:47	94	20:03 (12)	22:04	112	19:54 (12)
30	08:27		16:44 (18)				07:28			06:22		07:38 (19)	05:38		07:42 (19)	05:33		07:53 (19)
	17:31	8	16:52 (18)				20:14			21:04	151	20:34 (14)	21:48	92	20:02 (12)	22:04	115	19:56 (12)
31	08:25						07:25						05:37		07:42 (19)			
	17:33						20:15						21:49	89	20:01 (12)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		749			246			83			2136			3905			3201	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,68			0,69			0,64			0,59			0,60			0,61	
Total reduction		0,15			0,19			0,23			0,26			0,26			0,26	
Total, real		116			48			19			556			1028			838	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: J - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		07:53 (19)	06:09		07:45 (19)	06:57		19:38 (12)	07:44			07:36		16:28 (17)	08:26		12:01 (1)
	22:04	114	19:57 (12)	21:33	144	20:36 (14)	20:33	12	19:50 (12)	19:25			17:21	22	16:50 (17)	16:42	41	16:10 (16)
2	05:34		07:52 (19)	06:11		07:46 (19)	06:59			07:46			07:38		16:27 (17)	08:27		12:01 (1)
	22:04	115	19:58 (12)	21:32	146	20:38 (14)	20:31			19:23			17:19	22	16:49 (17)	16:41	42	16:09 (16)
3	05:35		07:53 (19)	06:12		07:45 (19)	07:00			07:48			07:40		16:28 (17)	08:29		12:00 (1)
	22:03	114	20:00 (12)	21:30	148	20:39 (14)	20:29			19:21			17:17	20	16:48 (17)	16:41	43	16:08 (16)
4	05:36		07:53 (19)	06:14		07:45 (19)	07:02			07:49			07:42		16:28 (17)	08:30		11:59 (1)
	22:03	114	20:01 (12)	21:28	149	20:39 (14)	20:26			19:19			17:16	18	16:46 (17)	16:40	44	16:07 (16)
5	05:37		07:52 (19)	06:15		07:45 (19)	07:03			07:51			07:43		16:29 (17)	08:31		11:59 (1)
	22:02	112	20:01 (12)	21:27	151	20:41 (14)	20:24			19:16			17:14	15	16:44 (17)	16:40	45	16:07 (16)
6	05:37		07:52 (19)	06:17		07:45 (19)	07:05			07:52		18:30 (22)	07:45		16:30 (17)	08:32		11:58 (1)
	22:02	110	20:03 (12)	21:25	151	20:41 (14)	20:22			19:14	6	18:36 (22)	17:12	13	16:43 (17)	16:39	46	16:06 (16)
7	05:38		07:52 (19)	06:18		07:45 (19)	07:06			07:54		18:27 (22)	07:47		16:31 (17)	08:34		11:58 (1)
	22:01	107	20:04 (12)	21:23	153	20:42 (14)	20:20			19:12	11	18:38 (22)	17:11	10	16:41 (17)	16:39	47	16:06 (16)
8	05:39		07:52 (19)	06:20		07:45 (19)	07:08			07:56		18:26 (22)	07:49		16:32 (17)	08:35		11:58 (1)
	22:01	102	20:05 (12)	21:22	153	20:42 (14)	20:18			19:10	13	18:39 (22)	17:09	8	16:40 (17)	16:39	47	16:06 (16)
9	05:40		07:52 (19)	06:21		07:44 (19)	07:10			07:57		18:24 (22)	07:50		16:34 (17)	08:36		11:58 (1)
	22:00	91	20:06 (12)	21:20	154	20:42 (14)	20:15			19:08	15	18:39 (22)	17:07	4	16:38 (17)	16:39	46	12:44 (1)
10	05:41		07:51 (19)	06:23		07:45 (19)	07:11			07:59		18:24 (22)	07:52			08:37		11:58 (1)
	21:59	83	20:07 (12)	21:18	153	20:42 (14)	20:13			19:05	14	18:38 (22)	17:06			16:38	47	12:45 (1)
11	05:42		07:51 (19)	06:24		07:45 (19)	07:13			08:01		18:24 (22)	07:54		16:17 (18)	08:38		11:58 (1)
	21:59	84	20:08 (12)	21:16	154	20:42 (14)	20:11			19:03	12	18:36 (22)	17:04	2	16:19 (18)	16:38	48	12:46 (1)
12	05:43		07:51 (19)	06:26		07:45 (19)	07:14			08:02		18:23 (22)	07:55		16:14 (18)	08:39		11:58 (1)
	21:58	87	20:09 (12)	21:14	154	20:43 (14)	20:09			19:01	10	18:33 (22)	17:03	9	16:23 (18)	16:38	48	12:46 (1)
13	05:44		07:50 (19)	06:27		07:45 (19)	07:16			08:04		18:24 (22)	07:57		16:13 (18)	08:40		11:58 (1)
	21:57	91	20:10 (12)	21:12	153	20:42 (14)	20:06			18:59	7	18:31 (22)	17:01	11	16:24 (18)	16:38	49	12:47 (1)
14	05:45		07:50 (19)	06:29		07:46 (19)	07:17			08:06		18:25 (22)	07:59		16:12 (18)	08:41		11:58 (1)
	21:56	94	20:11 (12)	21:10	151	20:42 (14)	20:04			18:57	4	18:29 (22)	17:00	13	16:25 (18)	16:38	50	12:48 (1)
15	05:46		07:50 (19)	06:30		07:46 (19)	07:19			08:07			08:01		16:12 (18)	08:42		11:59 (1)
	21:55	95	20:12 (12)	21:08	148	20:40 (14)	20:02			18:55			16:59	14	16:26 (18)	16:38	50	12:49 (1)
16	05:48		07:49 (19)	06:32		07:47 (19)	07:21			08:09			08:02		16:12 (18)	08:43		11:59 (1)
	21:54	99	20:13 (12)	21:07	146	20:39 (14)	19:59			18:52			16:57	15	16:27 (18)	16:38	51	12:50 (1)
17	05:49		07:49 (19)	06:33		07:47 (19)	07:22			08:11			08:04		16:11 (18)	08:44		11:59 (1)
	21:53	100	20:13 (12)	21:05	143	20:37 (14)	19:57			18:50			16:56	14	16:25 (18)	16:38	50	12:49 (1)
18	05:50		07:49 (19)	06:35		07:48 (19)	07:24			08:12			08:06		16:11 (18)	08:44		11:59 (1)
	21:52	103	20:14 (12)	21:03	138	20:35 (14)	19:55			18:48			16:55	12	16:23 (18)	16:39	51	12:50 (1)
19	05:51		07:48 (19)	06:37		07:48 (19)	07:25			08:14			08:07		16:12 (18)	08:45		12:00 (1)
	21:51	106	20:14 (12)	21:01	136	20:33 (14)	19:53			18:46			16:53	10	16:22 (18)	16:39	51	12:51 (1)
20	05:52		07:49 (19)	06:38		07:49 (19)	07:27			08:16			08:09		16:12 (18)	08:46		12:00 (1)
	21:50	108	20:16 (12)	20:59	133	20:32 (14)	19:50			18:44			16:52	9	16:21 (18)	16:39	51	12:51 (1)
21	05:54		07:48 (19)	06:40		07:49 (19)	07:28			08:17			08:11		16:13 (18)	08:46		12:01 (1)
	21:49	110	20:16 (12)	20:56	128	20:29 (14)	19:48			18:42			16:51	7	16:20 (18)	16:40	51	12:52 (1)
22	05:55		07:48 (19)	06:41		07:51 (19)	07:30			08:19			08:12		16:13 (18)	08:47		12:01 (1)
	21:48	112	20:17 (12)	20:54	120	20:28 (14)	19:46			18:40			16:50	5	16:18 (18)	16:40	51	12:52 (1)
23	05:56		07:47 (19)	06:43		07:51 (19)	07:32			08:21			08:14		16:14 (18)	08:47		12:02 (1)
	21:46	114	20:17 (12)	20:52	109	20:25 (14)	19:43			18:38			16:49	3	16:17 (18)	16:41	51	12:53 (1)
24	05:58		07:47 (19)	06:44		07:53 (19)	07:33			08:23			08:15		16:15 (18)	08:48		12:02 (1)
	21:45	116	20:18 (12)	20:50	100	20:12 (12)	19:41			18:36			16:48	1	16:16 (18)	16:41	51	12:53 (1)
25	05:59		07:47 (19)	06:46		07:53 (19)	07:35			07:24		16:37 (17)	08:17			08:48		12:02 (1)
	21:44	119	20:19 (12)	20:48	96	20:10 (12)	19:39			17:34	6	16:43 (17)	16:47			16:42	51	12:53 (1)
26	06:00		07:46 (19)	06:48		07:55 (19)	07:36			07:26		16:33 (17)	08:18			08:49		12:03 (1)
	21:42	121	20:19 (12)	20:46	89	20:08 (12)	19:37			17:32	12	16:45 (17)	16:46			16:43	51	12:54 (1)
27	06:02		07:46 (19)	06:49		07:56 (19)	07:38			07:28		16:31 (17)	08:20		12:08 (1)	08:49		12:04 (1)
	21:41	122	20:19 (12)	20:44	83	20:06 (12)	19:34			17:30	15	16:46 (17)	16:45	21	16:09 (16)	16:43	50	12:54 (1)
28	06:03		07:46 (19)	06:51		07:59 (19)	07:40			07:29		16:30 (17)	08:21		12:05 (1)	08:49		12:04 (1)
	21:39	124	20:20 (12)	20:42	75	20:04 (12)	19:32			17:28	17	16:47 (17)	16:44	30	16:10 (16)	16:44	51	12:55 (1)
29	06:05		07:46 (19)	06:52		08:00 (19)	07:41			07:31		16:29 (17)	08:23		12:04 (1)	08:49		12:05 (1)
	21:38	125	20:20 (12)	20:40	65	20:01 (12)	19:30			17:26	19	16:48 (17)	16:43	35	16:11 (16)	16:45	50	12:55 (1)
30	06:06		07:45 (19)	06:54		08:04 (19)	07:43			07:33		16:29 (17)	08:24		12:03 (1)	08:49		12:06 (1)
	21:36	127	20:20 (12)	20:37	54	19:59 (12)	19:28			17:25	20	16:49 (17)	16:43	39	16:11 (16)	16:46	49	12:55 (1)
31	06:08		07:46 (19)	06:55		08:07 (19)				07:35		16:28 (17)				08:49		12:07 (1)
	21:35	137	20:34 (14)	20:35	39	19:55 (12)				17:23	21	16:49 (17)				16:47	48	12:55 (1)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		3356			3916			12			202			382			1501	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,60			0,59			0,57			0,67			0,69			0,67	
Total reduction		0,26			0,27			0,24			0,24			0,17			0,14	
Total, real		877			1044			3			48			65			206	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: K - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April	May		June	
1	08:49	12:35 (1)	08:24	12:57 (1)	07:32	17:32 (17)	07:23	06:20		20:34 (11)	05:36	20:04 (12)
	16:48	87 14:02 (1)	17:35	63 14:00 (1)	18:25	19 17:51 (17)	20:17	21:06	4	20:38 (14)	21:50	53 20:57 (12)
2	08:49	12:35 (1)	08:22	12:59 (1)	07:30	17:33 (17)	07:21	06:18		20:32 (11)	05:36	20:05 (12)
	16:49	87 14:02 (1)	17:36	60 13:59 (1)	18:26	17 17:50 (17)	20:19	21:08	7	20:39 (14)	21:51	53 20:58 (12)
3	08:49	12:35 (1)	08:21	13:01 (1)	07:28	17:35 (17)	07:19	06:16		20:31 (14)	05:35	20:05 (12)
	16:50	87 14:02 (1)	17:38	57 17:09 (18)	18:28	14 17:49 (17)	20:20	21:09	10	20:41 (14)	21:52	52 20:57 (12)
4	08:49	12:36 (1)	08:19	13:02 (1)	07:26	17:36 (17)	07:16	06:15		20:31 (14)	05:34	20:04 (12)
	16:51	87 14:03 (1)	17:40	58 17:11 (18)	18:30	10 17:46 (17)	20:22	21:11	12	20:43 (14)	21:53	53 20:57 (12)
5	08:49	12:37 (1)	08:18	13:05 (1)	07:23		07:14	06:13		20:22 (12)	05:34	20:05 (12)
	16:53	87 14:04 (1)	17:42	55 17:13 (18)	18:32		20:23	21:12	22	20:44 (14)	21:54	53 20:58 (12)
6	08:48	12:37 (1)	08:16	13:08 (1)	07:21		07:12	06:11		20:18 (12)	05:33	20:05 (12)
	16:54	86 14:03 (1)	17:44	53 17:15 (18)	18:33		20:25	21:14	27	20:45 (14)	21:55	52 20:57 (12)
7	08:48	12:38 (1)	08:14	13:11 (1)	07:19	18:08 (22)	07:10	06:09		20:16 (12)	05:32	20:05 (12)
	16:55	86 14:04 (1)	17:45	49 17:17 (18)	18:35	2 18:10 (22)	20:27	21:16	31	20:47 (14)	21:56	53 20:58 (12)
8	08:48	12:38 (1)	08:13	13:15 (1)	07:17	18:06 (22)	07:08	06:08		20:14 (12)	05:32	20:06 (12)
	16:56	86 14:04 (1)	17:47	42 17:18 (18)	18:37	6 18:12 (22)	20:28	21:17	34	20:48 (14)	21:57	53 20:59 (12)
9	08:47	12:38 (1)	08:11	13:22 (1)	07:15	18:05 (22)	07:05	06:06		20:13 (12)	05:31	20:06 (12)
	16:58	86 14:04 (1)	17:49	33 17:21 (18)	18:38	8 18:13 (22)	20:30	21:19	37	20:50 (14)	21:58	52 20:58 (12)
10	08:47	12:39 (1)	08:09	17:07 (18)	07:13	18:04 (22)	07:03	06:04		20:11 (12)	05:31	20:06 (12)
	16:59	86 14:05 (1)	17:51	15 17:22 (18)	18:40	11 18:15 (22)	20:32	21:20	40	20:51 (14)	21:59	53 20:59 (12)
11	08:46	12:39 (1)	08:07	17:08 (18)	07:10	18:04 (22)	07:01	06:03		20:11 (12)	05:31	20:07 (12)
	17:00	86 14:05 (1)	17:53	13 17:21 (18)	18:42	13 18:17 (22)	20:33	21:22	42	20:53 (14)	21:59	52 20:59 (12)
12	08:46	12:40 (1)	08:06	17:10 (18)	07:08	18:04 (22)	06:59	06:01		20:09 (12)	05:30	20:06 (12)
	17:02	85 14:05 (1)	17:54	10 17:20 (18)	18:44	15 18:19 (22)	20:35	21:23	44	20:53 (14)	22:00	52 20:58 (12)
13	08:45	12:40 (1)	08:04	17:12 (18)	07:06	18:04 (22)	06:57	05:59		20:09 (12)	05:30	20:07 (12)
	17:03	85 14:05 (1)	17:56	5 17:17 (18)	18:45	13 18:17 (22)	20:37	21:25	45	20:54 (14)	22:01	52 20:59 (12)
14	08:44	12:42 (1)	08:02		07:04	18:06 (22)	06:55	05:58		20:07 (12)	05:30	20:07 (12)
	17:05	84 14:06 (1)	17:58		18:47	10 18:16 (22)	20:38	21:26	46	20:53 (14)	22:01	52 20:59 (12)
15	08:43	12:42 (1)	08:00		07:01	18:08 (22)	06:52	05:56		20:07 (12)	05:30	20:07 (12)
	17:06	84 14:06 (1)	18:00		18:49	6 18:14 (22)	20:40	21:28	46	20:53 (14)	22:02	52 20:59 (12)
16	08:43	12:43 (1)	07:58		06:59		06:50	05:55		20:07 (12)	05:30	20:08 (12)
	17:08	83 14:06 (1)	18:02		18:50		20:42	21:29	46	20:53 (14)	22:02	52 21:00 (12)
17	08:42	12:43 (1)	07:56		06:57		06:48	05:53		20:05 (12)	05:30	20:08 (12)
	17:09	83 14:06 (1)	18:03		18:52		20:43	21:31	47	20:52 (14)	22:03	52 21:00 (12)
18	08:41	12:44 (1)	07:54		06:55		06:46	05:52		20:05 (12)	05:29	20:08 (12)
	17:11	82 14:06 (1)	18:05		18:54		20:45	21:32	48	20:53 (12)	22:03	52 21:00 (12)
19	08:40	12:44 (1)	07:52		06:52		06:44	05:51		20:05 (12)	05:30	20:08 (12)
	17:12	82 14:06 (1)	18:07		18:55		20:46	21:34	49	20:54 (12)	22:04	52 21:00 (12)
20	08:39	12:45 (1)	07:50	17:38 (17)	06:50		06:42	05:49		20:05 (12)	05:30	20:08 (12)
	17:14	81 14:06 (1)	18:09	4 17:42 (17)	18:57		20:48	21:35	49	20:54 (12)	22:04	52 21:00 (12)
21	08:38	12:46 (1)	07:48	17:36 (17)	06:48		06:40	05:48		20:04 (12)	05:30	20:08 (12)
	17:16	80 14:06 (1)	18:11	8 17:44 (17)	18:59		20:50	21:37	50	20:54 (12)	22:04	52 21:00 (12)
22	08:37	12:47 (1)	07:46	17:34 (17)	06:46		06:38	05:47		20:04 (12)	05:30	20:09 (12)
	17:17	81 16:46 (16)	18:12	12 17:46 (17)	19:00		20:51	21:38	50	20:54 (12)	22:04	52 21:01 (12)
23	08:36	12:48 (1)	07:44	17:33 (17)	06:43		06:36	05:46		20:04 (12)	05:30	20:09 (12)
	17:19	82 16:48 (16)	18:14	15 17:48 (17)	19:02		20:53	21:39	51	20:55 (12)	22:04	52 21:01 (12)
24	08:35	12:48 (1)	07:42	17:33 (17)	06:41		06:34	05:44		20:04 (12)	05:30	20:09 (12)
	17:21	82 16:49 (16)	18:16	17 17:50 (17)	19:04		20:55	21:41	51	20:55 (12)	22:05	52 21:01 (12)
25	08:33	12:49 (1)	07:40	17:32 (17)	06:39		06:32	05:43		20:04 (12)	05:31	20:10 (12)
	17:22	83 16:52 (16)	18:18	20 17:52 (17)	19:05		20:56	21:42	51	20:55 (12)	22:05	52 21:02 (12)
26	08:32	12:51 (1)	07:38	17:32 (17)	06:37		06:30	05:42		20:03 (12)	05:31	20:10 (12)
	17:24	82 16:54 (16)	18:19	21 17:53 (17)	19:07		20:58	21:43	53	20:56 (12)	22:05	52 21:02 (12)
27	08:31	12:51 (1)	07:36	17:31 (17)	06:34		06:28	05:41		20:03 (12)	05:32	20:10 (12)
	17:26	82 16:55 (16)	18:21	21 17:52 (17)	19:09		21:00	21:44	53	20:56 (12)	22:05	51 21:01 (12)
28	08:29	12:53 (1)	07:34	17:32 (17)	06:32		06:26	05:40		20:03 (12)	05:32	20:10 (12)
	17:28	77 16:55 (16)	18:23	20 17:52 (17)	19:10		21:01	21:46	53	20:56 (12)	22:05	52 21:02 (12)
29	08:28	12:53 (1)			07:30		06:24	05:39		20:04 (12)	05:33	20:10 (12)
	17:29	70 14:03 (1)			20:12		21:03	21:47	53	20:57 (12)	22:04	52 21:02 (12)
30	08:27	12:55 (1)			07:28		06:22	05:38		20:04 (12)	05:33	20:11 (12)
	17:31	67 14:02 (1)			20:14		21:04	21:48	53	20:57 (12)	22:04	52 21:03 (12)
31	08:25	12:56 (1)			07:25			05:37		20:04 (12)		
	17:33	65 14:01 (1)			20:15			21:49	53	20:57 (12)		
Potential sun hours	262		279		367		414	482			494	
Total, worst case		2551		651		144			1257			1566
Sun reduction		0,24		0,29		0,37			0,46			0,44
Oper. time red.		0,96		0,96		0,96			0,96			0,96
Wind dir. red.		0,69		0,69		0,64			0,56			0,56
Total reduction		0,16		0,20		0,24			0,25			0,24
Total, real		414		129		34			316			382

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:
Total_Ertvelde-RE-20-64-WE-REV-20200701_v2

Licensed user:
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Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: K - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		20:11 (12)	06:09		20:20 (12)	06:57			07:44		18:44 (22)	07:36		16:37 (18)	08:26		12:22 (1)
	22:04	52	21:03 (12)	21:33	44	21:04 (14)	20:33			19:25	14	18:58 (22)	17:21	15	16:52 (18)	16:42	85	13:47 (1)
2	05:34		20:11 (12)	06:11		20:21 (12)	06:59			07:46		18:43 (22)	07:38		12:49 (1)	08:27		12:21 (1)
	22:04	52	21:03 (12)	21:32	42	21:03 (14)	20:31			19:23	14	18:57 (22)	17:19	35	16:50 (18)	16:41	86	13:47 (1)
3	05:35		20:11 (12)	06:12		20:22 (12)	07:00			07:48		18:42 (22)	07:40		12:44 (1)	08:29		12:22 (1)
	22:03	52	21:03 (12)	21:30	39	21:01 (14)	20:29			19:21	12	18:54 (22)	17:17	44	16:48 (18)	16:41	86	13:48 (1)
4	05:36		20:11 (12)	06:14		20:23 (12)	07:02			07:49		18:42 (22)	07:42		12:40 (1)	08:30		12:22 (1)
	22:03	53	21:04 (12)	21:28	36	20:59 (14)	20:26			19:19	10	18:52 (22)	17:16	49	16:46 (18)	16:40	86	13:48 (1)
5	05:37		20:11 (12)	06:15		20:25 (12)	07:03			07:51		18:43 (22)	07:43		12:37 (1)	08:31		12:23 (1)
	22:02	52	21:03 (12)	21:27	33	20:58 (14)	20:24			19:16	7	18:50 (22)	17:14	53	16:44 (18)	16:40	86	13:49 (1)
6	05:37		20:11 (12)	06:17		20:27 (12)	07:05			07:52		18:43 (22)	07:45		12:35 (1)	08:32		12:23 (1)
	22:02	53	21:04 (12)	21:25	29	20:56 (14)	20:22			19:14	4	18:47 (22)	17:12	55	16:43 (18)	16:39	86	13:49 (1)
7	05:38		20:11 (12)	06:18		20:29 (12)	07:06			07:54			07:47		12:33 (1)	08:34		12:23 (1)
	22:01	53	21:04 (12)	21:23	26	20:55 (14)	20:20			19:12			17:11	57	16:41 (18)	16:39	87	13:50 (1)
8	05:39		20:12 (12)	06:20		20:33 (12)	07:08			07:56			07:49		12:31 (1)	08:35		12:24 (1)
	22:01	52	21:04 (12)	21:22	20	20:53 (14)	20:18			19:10			17:09	58	16:40 (18)	16:39	87	13:51 (1)
9	05:40		20:12 (12)	06:21		20:39 (14)	07:10			07:57		18:13 (17)	07:50		12:30 (1)	08:36		12:24 (1)
	22:00	53	21:05 (12)	21:20	12	20:51 (14)	20:15			19:07	6	18:19 (17)	17:07	60	13:30 (1)	16:39	87	13:51 (1)
10	05:41		20:12 (12)	06:23		20:41 (14)	07:11			07:59		18:10 (17)	07:52		12:28 (1)	08:37		12:24 (1)
	21:59	53	21:05 (12)	21:18	9	20:50 (14)	20:13			19:05	12	18:22 (17)	17:06	63	13:31 (1)	16:38	87	13:51 (1)
11	05:42		20:12 (12)	06:24		20:41 (11)	07:13			08:01		18:08 (17)	07:54		12:27 (1)	08:38		12:25 (1)
	21:59	53	21:05 (12)	21:16	7	20:48 (14)	20:11			19:03	16	18:24 (17)	17:04	65	13:32 (1)	16:38	87	13:52 (1)
12	05:43		20:12 (12)	06:26		20:44 (11)	07:14			08:02		18:06 (17)	07:55		12:26 (1)	08:39		12:25 (1)
	21:58	53	21:05 (12)	21:14	2	20:46 (11)	20:09			19:01	18	18:24 (17)	17:03	67	13:33 (1)	16:38	87	13:52 (1)
13	05:44		20:13 (12)	06:27			07:16			08:04		18:05 (17)	07:57		12:25 (1)	08:40		12:26 (1)
	21:57	52	21:05 (12)	21:12			20:06			18:59	20	18:25 (17)	17:01	71	16:24 (16)	16:38	87	13:53 (1)
14	05:45		20:13 (12)	06:29			07:17			08:06		18:05 (17)	07:59		12:24 (1)	08:41		12:26 (1)
	21:56	52	21:05 (12)	21:10			20:04			18:57	20	18:25 (17)	17:00	79	16:27 (16)	16:38	87	13:53 (1)
15	05:46		20:13 (12)	06:30			07:19			08:07		18:05 (17)	08:01		12:24 (1)	08:42		12:27 (1)
	21:55	52	21:05 (12)	21:08			20:02			18:55	20	18:25 (17)	16:59	82	16:28 (16)	16:38	90	15:41 (2)
16	05:48		20:13 (12)	06:32			07:21			08:09		18:04 (17)	08:02		12:23 (1)	08:43		12:27 (1)
	21:54	52	21:05 (12)	21:07			19:59			18:52	20	18:24 (17)	16:57	83	16:27 (16)	16:38	92	15:43 (2)
17	05:49		20:13 (12)	06:33			07:22			08:11		18:04 (17)	08:04		12:22 (1)	08:44		12:27 (1)
	21:53	52	21:05 (12)	21:05			19:57			18:50	18	18:22 (17)	16:56	83	16:25 (16)	16:38	93	15:43 (2)
18	05:50		20:13 (12)	06:35			07:24			08:12		18:04 (17)	08:06		12:22 (1)	08:44		12:28 (1)
	21:52	52	21:05 (12)	21:03			19:55			18:48	17	18:21 (17)	16:55	82	16:23 (16)	16:39	94	15:44 (2)
19	05:51		20:13 (12)	06:37			07:25			08:14		18:05 (17)	08:07		12:22 (1)	08:45		12:28 (1)
	21:51	52	21:05 (12)	21:01			19:53			18:46	14	18:19 (17)	16:53	82	16:22 (16)	16:39	95	15:45 (2)
20	05:52		20:14 (12)	06:38			07:27			08:16		18:05 (17)	08:09		12:22 (1)	08:46		12:28 (1)
	21:50	51	21:05 (12)	20:59			19:50			18:44	11	18:16 (17)	16:52	81	16:21 (16)	16:39	95	15:45 (2)
21	05:54		20:14 (12)	06:40			07:28			08:17		18:06 (17)	08:11		12:22 (1)	08:46		12:29 (1)
	21:49	51	21:05 (12)	20:56			19:48			18:42	8	18:14 (17)	16:51	80	13:42 (1)	16:40	96	15:46 (2)
22	05:55		20:14 (12)	06:41			07:30			08:19		18:09 (17)	08:12		12:21 (1)	08:47		12:29 (1)
	21:48	51	21:05 (12)	20:54			19:46			18:40	3	18:12 (17)	16:50	81	13:42 (1)	16:40	96	15:46 (2)
23	05:56		20:14 (12)	06:43			07:32			08:21			08:14		12:21 (1)	08:47		12:30 (1)
	21:46	50	21:04 (12)	20:52			19:43			18:38			16:49	82	13:43 (1)	16:41	95	15:47 (2)
24	05:58		20:15 (12)	06:44			07:33			08:22			08:15		12:21 (1)	08:48		12:30 (1)
	21:45	48	21:03 (12)	20:50			19:41			18:36			16:48	82	13:43 (1)	16:41	95	15:47 (2)
25	05:59		20:16 (12)	06:46			07:35			07:24			08:17		12:20 (1)	08:48		12:31 (1)
	21:44	48	21:04 (12)	20:48			19:39			17:34			16:47	83	13:43 (1)	16:42	94	15:47 (2)
26	06:00		20:16 (12)	06:48			07:36			07:26			08:18		12:21 (1)	08:48		12:32 (1)
	21:42	47	21:03 (14)	20:46			19:37			17:32			16:46	83	13:44 (1)	16:43	93	15:48 (2)
27	06:02		20:16 (12)	06:49			07:38			07:28			08:20		12:21 (1)	08:49		12:32 (1)
	21:41	47	21:03 (14)	20:44			19:34			17:30			16:45	84	13:45 (1)	16:43	93	15:48 (2)
28	06:03		20:17 (12)	06:51			07:40			07:29			08:21		12:21 (1)	08:49		12:32 (1)
	21:39	47	21:04 (14)	20:42			19:32			17:28			16:44	84	13:45 (1)	16:44	91	15:47 (2)
29	06:05		20:18 (12)	06:52			07:41		18:47 (22)	07:31		16:41 (18)	08:23		12:21 (1)	08:49		12:33 (1)
	21:38	46	21:04 (14)	20:40			19:30	9	18:56 (22)	17:26	6	16:47 (18)	16:43	85	13:46 (1)	16:45	87	14:00 (1)
30	06:06		20:18 (12)	06:54			07:43		18:44 (22)	07:33		16:39 (18)	08:24		12:22 (1)	08:49		12:33 (1)
	21:36	45	21:03 (14)	20:37			19:28	13	18:57 (22)	17:25	11	16:50 (18)	16:43	85	13:47 (1)	16:46	88	14:01 (1)
31	06:08		20:19 (12)	06:55						07:35		16:38 (18)				08:49		12:34 (1)
	21:35	45	21:04 (14)	20:35						17:23	13	16:51 (18)				16:47	87	14:01 (1)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		1571			299			22			294			2093			2785	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,56			0,56			0,63			0,66			0,69			0,70	
Total reduction		0,25			0,26			0,27			0,24			0,18			0,15	
Total, real		387			77			6			70			369			407	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: L - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		11:47 (1)	08:24		11:56 (1)	07:32		17:44 (17)	07:23			06:20			05:36		20:45 (14)
	16:48	114	15:53 (2)	17:35	110	16:58 (16)	18:25	15	17:59 (17)	20:17			21:06			21:50	28	21:13 (14)
2	08:49		11:47 (1)	08:22		11:57 (1)	07:30		17:43 (17)	07:21			06:18			05:36		20:46 (14)
	16:49	112	15:52 (2)	17:36	106	13:43 (1)	18:26	18	18:01 (17)	20:19			21:08			21:51	27	21:13 (14)
3	08:49		11:47 (1)	08:21		11:57 (1)	07:28		17:43 (17)	07:19			06:16			05:35		20:46 (14)
	16:50	110	15:51 (2)	17:38	105	13:42 (1)	18:28	20	18:03 (17)	20:20			21:09			21:52	27	21:13 (14)
4	08:49		11:48 (1)	08:19		11:58 (1)	07:26		17:42 (17)	07:16			06:15			05:34		20:46 (14)
	16:51	106	13:34 (1)	17:40	104	13:42 (1)	18:30	23	18:05 (17)	20:22			21:11			21:53	27	21:13 (14)
5	08:49		11:48 (1)	08:18		11:59 (1)	07:23		17:41 (17)	07:14			06:13			05:34		20:47 (14)
	16:53	107	13:35 (1)	17:42	103	13:42 (1)	18:32	23	18:04 (17)	20:23			21:12			21:54	27	21:14 (12)
6	08:48		11:48 (1)	08:16		11:59 (1)	07:21		17:41 (17)	07:12			06:11			05:33		20:47 (14)
	16:54	107	13:35 (1)	17:44	102	13:41 (1)	18:33	23	18:04 (17)	20:25			21:14			21:55	28	21:15 (12)
7	08:48		11:49 (1)	08:14		12:00 (1)	07:19		17:42 (17)	07:10			06:09			05:32		20:47 (14)
	16:55	107	13:36 (1)	17:45	102	17:17 (18)	18:35	22	18:04 (17)	20:27			21:16			21:56	30	21:17 (12)
8	08:48		11:49 (1)	08:13		12:00 (1)	07:17		17:42 (17)	07:08			06:08			05:32		20:48 (14)
	16:56	107	13:36 (1)	17:47	104	17:18 (21)	18:37	21	18:03 (17)	20:28			21:17			21:57	31	21:19 (12)
9	08:47		11:49 (1)	08:11		12:02 (1)	07:15		17:42 (17)	07:05			06:06			05:31		20:48 (14)
	16:58	107	13:36 (1)	17:49	105	17:21 (21)	18:38	19	18:01 (17)	20:30			21:19			21:58	31	21:19 (12)
10	08:47		11:50 (1)	08:09		12:02 (1)	07:13		17:43 (17)	07:03			06:04		20:47 (11)	05:31		20:49 (14)
	16:59	107	13:37 (1)	17:51	107	17:23 (21)	18:40	17	18:00 (17)	20:32			21:20	4	20:51 (11)	21:59	31	21:20 (12)
11	08:46		11:50 (1)	08:07		12:03 (1)	07:10		17:45 (17)	07:01			06:03		20:46 (11)	05:31		20:49 (14)
	17:00	107	13:37 (1)	17:53	108	17:25 (21)	18:42	18	18:17 (22)	20:33			21:22	7	20:53 (11)	21:59	32	21:21 (12)
12	08:46		11:50 (1)	08:06		12:04 (1)	07:08		17:48 (17)	06:59			06:01		20:45 (11)	05:30		20:49 (14)
	17:02	108	13:38 (1)	17:54	108	17:27 (21)	18:44	15	18:19 (22)	20:35			21:23	9	20:54 (11)	22:00	32	21:21 (12)
13	08:45		11:50 (1)	08:04		12:05 (1)	07:06		18:10 (22)	06:57			05:59		20:44 (11)	05:30		20:50 (14)
	17:03	108	13:38 (1)	17:56	108	17:29 (21)	18:45	10	18:20 (22)	20:37			21:25	12	20:56 (14)	22:01	32	21:22 (12)
14	08:44		11:51 (1)	08:02		12:06 (1)	07:04		18:10 (22)	06:55			05:58		20:43 (11)	05:30		20:50 (14)
	17:05	108	13:39 (1)	17:58	105	17:29 (18)	18:47	12	18:22 (22)	20:38			21:26	14	20:57 (14)	22:01	33	21:23 (12)
15	08:43		11:51 (1)	08:00		12:07 (1)	07:01		18:10 (22)	06:52			05:56		20:43 (11)	05:30		20:50 (14)
	17:06	109	13:40 (1)	18:00	102	17:29 (18)	18:49	14	18:24 (22)	20:40			21:28	15	20:58 (14)	22:02	33	21:23 (12)
16	08:43		11:52 (1)	07:58		12:08 (1)	06:59		18:10 (22)	06:50			05:55		20:43 (11)	05:30		20:51 (14)
	17:08	108	13:40 (1)	18:02	98	17:28 (18)	18:50	15	18:25 (22)	20:42			21:29	17	21:00 (14)	22:02	33	21:24 (12)
17	08:42		11:52 (1)	07:56		12:09 (1)	06:57		18:10 (22)	06:48			05:53		20:43 (11)	05:30		20:51 (14)
	17:09	108	13:40 (1)	18:03	91	17:26 (18)	18:52	13	18:23 (22)	20:43			21:31	18	21:01 (14)	22:03	33	21:24 (12)
18	08:41		11:52 (1)	07:54		12:11 (1)	06:55		18:11 (22)	06:46			05:52		20:43 (11)	05:30		20:51 (14)
	17:11	109	13:41 (1)	18:05	82	17:23 (18)	18:54	11	18:22 (22)	20:45			21:32	19	21:02 (14)	22:03	33	21:24 (12)
19	08:40		11:52 (1)	07:52		12:13 (1)	06:52		18:13 (22)	06:44			05:51		20:43 (11)	05:30		20:52 (14)
	17:12	108	13:40 (1)	18:07	75	13:28 (1)	18:55	7	18:20 (22)	20:46			21:34	21	21:04 (14)	22:04	33	21:25 (12)
20	08:39		11:52 (1)	07:50		12:14 (1)	06:50			06:42			05:49		20:44 (11)	05:30		20:52 (14)
	17:14	109	13:41 (1)	18:09	72	13:26 (1)	18:57			20:48			21:35	21	21:05 (14)	22:04	33	21:25 (12)
21	08:38		11:53 (1)	07:48		12:17 (1)	06:48			06:40			05:48		20:43 (11)	05:30		20:52 (14)
	17:16	108	13:41 (1)	18:11	66	13:23 (1)	18:59			20:50			21:37	23	21:06 (14)	22:04	33	21:25 (12)
22	08:37		11:53 (1)	07:46		12:19 (1)	06:46			06:38			05:47		20:44 (14)	05:30		20:53 (14)
	17:17	109	13:42 (1)	18:12	61	13:20 (1)	19:00			20:51			21:38	23	21:07 (14)	22:04	33	21:26 (12)
23	08:36		11:54 (1)	07:44		12:23 (1)	06:43			06:36			05:46		20:44 (14)	05:30		20:53 (14)
	17:19	108	13:42 (1)	18:14	54	13:17 (1)	19:02			20:53			21:39	24	21:08 (14)	22:04	33	21:26 (12)
24	08:35		11:53 (1)	07:42		12:26 (1)	06:41			06:34			05:44		20:44 (14)	05:30		20:53 (14)
	17:21	110	16:49 (16)	18:16	47	13:13 (1)	19:04			20:55			21:41	26	21:10 (14)	22:05	33	21:26 (12)
25	08:33		11:54 (1)	07:40		12:32 (1)	06:39			06:32			05:43		20:44 (14)	05:31		20:53 (14)
	17:22	111	16:52 (16)	18:18	36	13:08 (1)	19:05			20:56			21:42	27	21:11 (14)	22:05	33	21:26 (12)
26	08:32		11:55 (1)	07:38		12:41 (1)	06:37			06:30			05:42		20:44 (14)	05:31		20:53 (14)
	17:24	113	16:54 (16)	18:19	17	12:58 (1)	19:07			20:58			21:43	28	21:12 (14)	22:05	33	21:26 (12)
27	08:31		11:55 (1)	07:36		17:48 (17)	06:34			06:28			05:41		20:44 (14)	05:32		20:53 (14)
	17:26	114	16:55 (16)	18:21	7	17:55 (17)	19:09			21:00			21:44	28	21:12 (14)	22:05	32	21:25 (12)
28	08:29		11:55 (1)	07:34		17:46 (17)	06:32			06:26			05:40		20:44 (14)	05:32		20:53 (14)
	17:28	116	16:58 (16)	18:23	11	17:57 (17)	19:10			21:01			21:46	28	21:12 (14)	22:05	33	21:26 (12)
29	08:28		11:55 (1)				07:30			06:24			05:39		20:45 (14)	05:33		20:53 (14)
	17:29	117	16:59 (16)				20:12			21:03			21:47	28	21:13 (14)	22:04	32	21:25 (12)
30	08:27		11:56 (1)				07:28			06:22			05:38		20:45 (14)	05:33		20:53 (14)
	17:31	118	17:02 (16)				20:14			21:04			21:48	28	21:13 (14)	22:04	32	21:25 (12)
31	08:25		11:56 (1)				07:25						05:37		20:45 (14)			
	17:33	116	17:01 (16)				20:15						21:49	28	21:13 (14)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		3406			2296			316						448			941	
Sun reduction		0,24			0,29			0,37						0,46			0,44	
Oper. time red.		0,96			0,96			0,96						0,96			0,96	
Wind dir. red.		0,67			0,67			0,64						0,56			0,56	
Total reduction		0,15			0,19			0,23						0,25			0,24	
Total, real		526			437			73						111			225	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: L - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		20:54 (14)	06:09		20:55 (11)	06:57			07:44		18:29 (17)	07:36		11:32 (1)	08:26		11:32 (1)
	22:04	32	21:26 (12)	21:33	9	21:04 (11)	20:33			19:25	11	18:58 (22)	17:21	106	16:52 (21)	16:42	108	13:20 (1)
2	05:34		20:53 (14)	06:11		20:57 (11)	06:59			07:46		18:25 (17)	07:38		11:30 (1)	08:27		11:32 (1)
	22:04	32	21:25 (12)	21:32	6	21:03 (11)	20:31			19:23	17	18:57 (22)	17:19	106	16:50 (21)	16:41	107	13:19 (1)
3	05:35		20:53 (14)	06:12		20:59 (11)	07:00			07:48		18:22 (17)	07:40		11:30 (1)	08:29		11:33 (1)
	22:03	31	21:24 (12)	21:30	2	21:01 (11)	20:29			19:21	17	18:54 (22)	17:17	104	16:48 (21)	16:41	107	13:20 (1)
4	05:36		20:54 (14)	06:14			07:02			07:49		18:20 (17)	07:42		11:29 (1)	08:30		11:33 (1)
	22:03	30	21:24 (12)	21:28			20:26			19:19	19	18:39 (17)	17:16	102	13:11 (1)	16:40	107	13:20 (1)
5	05:37		20:53 (14)	06:15			07:03			07:51		18:19 (17)	07:43		11:29 (1)	08:31		11:34 (1)
	22:02	30	21:23 (12)	21:27			20:24			19:16	21	18:40 (17)	17:14	102	13:11 (1)	16:40	107	13:21 (1)
6	05:38		20:53 (14)	06:17			07:05			07:52		18:18 (17)	07:45		11:29 (1)	08:32		11:34 (1)
	22:02	29	21:22 (12)	21:25			20:22			19:14	21	18:39 (17)	17:12	103	13:12 (1)	16:39	107	13:21 (1)
7	05:38		20:53 (14)	06:18			07:06			07:54		18:17 (17)	07:47		11:28 (1)	08:34		11:35 (1)
	22:01	28	21:21 (12)	21:23			20:20			19:12	23	18:40 (17)	17:11	104	13:12 (1)	16:39	106	13:21 (1)
8	05:39		20:53 (14)	06:20			07:08			07:56		18:17 (17)	07:49		11:28 (1)	08:35		11:36 (1)
	22:01	27	21:20 (14)	21:22			20:18			19:10	23	18:40 (17)	17:09	105	13:13 (1)	16:39	106	13:22 (1)
9	05:40		20:53 (14)	06:21			07:10			07:57		18:16 (17)	07:50		11:28 (1)	08:36		11:36 (1)
	22:00	27	21:20 (14)	21:20			20:15			19:08	23	18:39 (17)	17:07	106	13:14 (1)	16:39	108	15:39 (2)
10	05:41		20:53 (14)	06:23			07:11			07:59		18:17 (17)	07:52		11:27 (1)	08:37		11:37 (1)
	21:59	28	21:21 (14)	21:18			20:13			19:05	21	18:38 (17)	17:06	111	16:30 (16)	16:38	111	15:41 (2)
11	05:42		20:53 (14)	06:24			07:13			08:01		18:17 (17)	07:54		11:27 (1)	08:38		11:37 (1)
	21:59	28	21:21 (14)	21:16			20:11			19:03	19	18:36 (17)	17:04	116	16:32 (16)	16:38	114	15:43 (2)
12	05:43		20:54 (14)	06:26			07:14			08:02		18:17 (17)	07:55		11:27 (1)	08:39		11:37 (1)
	21:58	27	21:21 (14)	21:14			20:09			19:01	16	18:33 (17)	17:03	117	16:32 (16)	16:38	116	15:44 (2)
13	05:44		20:54 (14)	06:27			07:16			08:04		18:18 (17)	07:57		11:27 (1)	08:40		11:38 (1)
	21:57	28	21:22 (14)	21:12			20:06			18:59	13	18:31 (17)	17:01	117	16:31 (16)	16:38	116	15:45 (2)
14	05:45		20:54 (14)	06:29			07:17			08:06		18:20 (17)	07:59		11:27 (1)	08:41		11:39 (1)
	21:56	28	21:22 (14)	21:10			20:04			18:57	9	18:29 (17)	17:00	116	16:30 (16)	16:38	117	15:46 (2)
15	05:46		20:54 (14)	06:30			07:19			08:07		18:22 (17)	08:01		11:27 (1)	08:42		11:39 (1)
	21:55	28	21:22 (14)	21:08			20:02			18:55	5	18:27 (17)	16:59	115	16:28 (16)	16:38	117	15:46 (2)
16	05:48		20:54 (14)	06:32			07:21			08:09		13:08 (1)	08:02		11:28 (1)	08:43		11:40 (1)
	21:54	28	21:22 (14)	21:07			19:59			18:52	26	13:34 (1)	16:57	113	16:27 (16)	16:38	117	15:47 (2)
17	05:49		20:54 (14)	06:34			07:22			08:11		13:01 (1)	08:04		11:27 (1)	08:44		11:40 (1)
	21:53	28	21:22 (14)	21:05			19:57			18:50	40	13:41 (1)	16:56	111	16:25 (16)	16:38	117	15:47 (2)
18	05:50		20:54 (14)	06:35			07:24			08:12		12:56 (1)	08:06		11:27 (1)	08:44		11:40 (1)
	21:52	27	21:21 (14)	21:03			19:55			18:48	50	13:46 (1)	16:55	110	16:23 (16)	16:39	118	15:48 (2)
19	05:51		20:54 (14)	06:37			07:25			08:14		12:53 (1)	08:07		11:28 (1)	08:45		11:41 (1)
	21:51	26	21:20 (14)	21:01			19:53			18:46	57	13:50 (1)	16:53	108	13:16 (1)	16:39	119	15:49 (2)
20	05:52		20:55 (14)	06:38			07:27			08:16		12:49 (1)	08:09		11:28 (1)	08:46		11:41 (1)
	21:50	25	21:20 (14)	20:59			19:50			18:44	63	13:52 (1)	16:52	109	13:17 (1)	16:39	119	15:49 (2)
21	05:54		20:55 (14)	06:40			07:28			08:17		12:46 (1)	08:11		11:29 (1)	08:46		11:42 (1)
	21:49	23	21:18 (14)	20:56			19:48			18:42	68	13:54 (1)	16:51	108	13:17 (1)	16:40	119	15:50 (2)
22	05:55		20:54 (11)	06:41			07:30			08:19		12:44 (1)	08:12		11:28 (1)	08:47		11:42 (1)
	21:48	23	21:17 (14)	20:54			19:46			18:40	73	13:57 (1)	16:50	109	13:17 (1)	16:40	119	15:50 (2)
23	05:56		20:54 (11)	06:43			07:32			08:21		12:42 (1)	08:14		11:29 (1)	08:47		11:43 (1)
	21:46	22	21:16 (14)	20:52			19:43			18:38	77	13:59 (1)	16:49	108	13:17 (1)	16:41	119	15:51 (2)
24	05:58		20:53 (11)	06:44			07:33		18:58 (22)	08:22		12:41 (1)	08:15		11:29 (1)	08:48		11:43 (1)
	21:45	21	21:14 (14)	20:50			19:41	4	19:02 (22)	18:36	86	17:55 (18)	16:48	109	13:18 (1)	16:41	119	15:51 (2)
25	05:59		20:54 (11)	06:46			07:35		18:54 (22)	07:24		11:39 (1)	08:17		11:29 (1)	08:48		11:43 (1)
	21:44	20	21:14 (14)	20:48			19:39	10	19:04 (22)	17:34	93	16:57 (18)	16:47	109	13:18 (1)	16:42	118	15:51 (2)
26	06:00		20:53 (11)	06:48			07:36		18:53 (22)	07:26		11:37 (1)	08:18		11:30 (1)	08:48		11:45 (1)
	21:42	19	21:12 (14)	20:46			19:37	13	19:06 (22)	17:32	99	16:57 (18)	16:46	108	13:18 (1)	16:43	117	15:52 (2)
27	06:02		20:53 (11)	06:49			07:38		18:52 (22)	07:28		11:36 (1)	08:20		11:30 (1)	08:49		11:45 (1)
	21:41	18	21:11 (14)	20:44			19:34	15	19:07 (22)	17:30	103	16:58 (18)	16:45	109	13:19 (1)	16:43	117	15:52 (2)
28	06:03		20:54 (11)	06:51			07:40		18:51 (22)	07:29		11:35 (1)	08:21		11:30 (1)	08:49		11:45 (1)
	21:39	16	21:10 (14)	20:42			19:32	14	19:05 (22)	17:28	106	16:59 (18)	16:44	108	13:18 (1)	16:44	117	15:52 (2)
29	06:05		20:54 (11)	06:52			07:41		18:50 (22)	07:31		11:34 (1)	08:23		11:31 (1)	08:49		11:45 (1)
	21:38	14	21:08 (14)	20:40			19:30	13	19:03 (22)	17:26	108	16:58 (21)	16:44	108	13:19 (1)	16:45	116	15:52 (2)
30	06:06		20:54 (11)	06:54			07:43		18:50 (22)	07:33		11:33 (1)	08:24		11:31 (1)	08:49		11:46 (1)
	21:36	13	21:07 (14)	20:37			19:28	10	19:00 (22)	17:25	108	16:56 (21)	16:43	108	13:19 (1)	16:46	116	15:53 (2)
31	06:08		20:55 (11)	06:55						07:35		11:32 (1)				08:49		11:46 (1)
	21:35	11	21:06 (14)	20:35						17:23	107	16:54 (21)				16:47	116	15:53 (2)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		767			17			79			1522			3265			3537	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,56			0,56			0,63			0,67			0,67			0,68	
Total reduction		0,24			0,25			0,27			0,24			0,17			0,14	
Total, real		186			4			21			359			547			494	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: M - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		14:02 (1)	08:24		14:17 (1)	07:32		17:42 (17)	07:23			06:20		20:02 (12)	05:36		20:09 (12)
	16:48	76	15:18 (1)	17:35	74	17:05 (16)	18:25	17	17:59 (17)	20:17			21:06	36	20:38 (14)	21:50	22	20:31 (12)
2	08:49		14:03 (1)	08:22		14:18 (1)	07:30		17:42 (17)	07:21			06:18		20:00 (12)	05:36		20:11 (12)
	16:49	76	15:19 (1)	17:36	70	17:05 (16)	18:26	18	18:00 (17)	20:19			21:08	39	20:39 (14)	21:51	19	20:30 (12)
3	08:49		14:02 (1)	08:21		14:19 (1)	07:28		17:43 (17)	07:19			06:16		19:59 (12)	05:35		20:12 (12)
	16:50	76	15:18 (1)	17:38	64	15:23 (1)	18:28	17	18:00 (17)	20:20			21:09	42	20:41 (14)	21:52	17	20:29 (12)
4	08:49		14:03 (1)	08:19		14:20 (1)	07:26		17:43 (17)	07:16			06:15		19:59 (12)	05:34		20:13 (12)
	16:51	76	15:19 (1)	17:40	62	15:22 (1)	18:30	15	17:58 (17)	20:22			21:11	44	20:43 (14)	21:53	15	20:28 (12)
5	08:49		14:04 (1)	08:18		14:22 (1)	07:23		17:44 (17)	07:14			06:13		19:59 (12)	05:34		20:15 (12)
	16:53	76	15:20 (1)	17:42	60	15:22 (1)	18:32	13	17:57 (17)	20:23			21:12	45	20:44 (14)	21:54	12	20:27 (12)
6	08:48		14:04 (1)	08:16		14:23 (1)	07:21		17:46 (17)	07:12			06:11		19:58 (12)	05:33		20:17 (12)
	16:54	76	15:20 (1)	17:44	58	15:21 (1)	18:33	9	17:55 (17)	20:25			21:14	46	20:44 (14)	21:55	8	20:25 (12)
7	08:48		14:05 (1)	08:14		14:25 (1)	07:19			07:10			06:09		19:58 (12)	05:32		
	16:55	76	15:21 (1)	17:45	54	15:19 (1)	18:35			20:27			21:16	46	20:44 (14)	21:56		
8	08:48		14:04 (1)	08:13		14:26 (1)	07:17			07:08			06:08		19:57 (12)	05:32		
	16:56	77	15:21 (1)	17:47	52	15:18 (1)	18:37			20:28			21:17	47	20:44 (14)	21:57		
9	08:47		14:04 (1)	08:11		14:29 (1)	07:15			07:05			06:06		19:58 (12)	05:31		
	16:58	77	15:21 (1)	17:49	50	17:21 (18)	18:38			20:30			21:19	46	20:44 (14)	21:58		
10	08:47		14:05 (1)	08:09		14:31 (1)	07:13			07:03			06:04		19:57 (12)	05:31		
	16:59	77	15:22 (1)	17:51	50	17:23 (18)	18:40			20:32			21:20	46	20:43 (14)	21:59		
11	08:46		14:06 (1)	08:07		14:33 (1)	07:10			07:01			06:03		19:58 (12)	05:31		
	17:00	77	15:23 (1)	17:53	48	17:25 (18)	18:42			20:33			21:22	44	20:42 (14)	21:59		
12	08:46		14:06 (1)	08:06		14:36 (1)	07:08			06:59			06:01		19:57 (12)	05:30		
	17:02	77	15:23 (1)	17:54	44	17:27 (18)	18:44			20:35			21:23	44	20:41 (14)	22:00		
13	08:45		14:06 (1)	08:04		14:40 (1)	07:06			06:57			05:59		19:58 (12)	05:30		
	17:03	77	15:23 (1)	17:56	39	17:29 (18)	18:45			20:37			21:25	42	20:40 (14)	22:01		
14	08:44		14:07 (1)	08:02		14:45 (1)	07:04			06:55			05:58		19:57 (12)	05:30		
	17:05	77	15:24 (1)	17:58	31	17:30 (18)	18:47			20:38			21:26	42	20:39 (12)	22:01		
15	08:43		14:07 (1)	08:00		17:19 (18)	07:01			06:52			05:56		19:58 (12)	05:30		
	17:06	77	15:24 (1)	18:00	11	17:30 (18)	18:49			20:40			21:28	41	20:39 (12)	22:02		
16	08:43		14:08 (1)	07:58		17:21 (18)	06:59			06:50			05:55		19:58 (12)	05:30		
	17:08	77	15:25 (1)	18:02	8	17:29 (18)	18:50			20:42			21:29	41	20:39 (12)	22:02		
17	08:42		14:08 (1)	07:56			06:57			06:48			05:53		19:58 (12)	05:29		
	17:09	77	15:25 (1)	18:03			18:52			20:43			21:31	40	20:38 (12)	22:03		
18	08:41		14:09 (1)	07:54			06:55			06:46			05:52		19:59 (12)	05:29		
	17:11	76	15:25 (1)	18:05			18:54			20:45			21:32	39	20:38 (12)	22:03		
19	08:40		14:08 (1)	07:52			06:52			06:44			05:51		19:59 (12)	05:30		
	17:12	77	15:25 (1)	18:07			18:55			20:46			21:34	39	20:38 (12)	22:04		
20	08:39		14:09 (1)	07:50			06:50			06:42			05:49		20:00 (12)	05:30		
	17:14	76	15:25 (1)	18:09			18:57			20:48			21:35	38	20:38 (12)	22:04		
21	08:38		14:10 (1)	07:48			06:48			06:40			05:48		20:00 (12)	05:30		
	17:16	75	15:25 (1)	18:11			18:59			20:50			21:37	37	20:37 (12)	22:04		
22	08:37		14:10 (1)	07:46			06:46			06:38			05:47		20:01 (12)	05:30		
	17:17	76	15:26 (1)	18:12			19:00			20:51			21:38	35	20:36 (12)	22:04		
23	08:36		14:11 (1)	07:44			06:43			06:36			05:46		20:01 (12)	05:30		
	17:19	75	15:26 (1)	18:14			19:02			20:53			21:39	35	20:36 (12)	22:04		
24	08:35		14:11 (1)	07:42		17:47 (17)	06:41			06:34		20:17 (12)	05:44		20:02 (12)	05:30		
	17:21	75	15:26 (1)	18:16	3	17:50 (17)	19:04			20:55	5	20:22 (12)	21:41	34	20:36 (12)	22:05		
25	08:33		14:12 (1)	07:40		17:45 (17)	06:39			06:32		20:12 (12)	05:43		20:03 (12)	05:31		
	17:22	74	15:26 (1)	18:18	7	17:52 (17)	19:05			20:56	15	20:27 (12)	21:42	32	20:35 (12)	22:05		
26	08:32		14:13 (1)	07:38		17:44 (17)	06:37			06:30		20:09 (12)	05:42		20:04 (12)	05:31		
	17:24	73	15:26 (1)	18:19	10	17:54 (17)	19:07			20:58	21	20:30 (14)	21:43	30	20:34 (12)	22:05		
27	08:31		14:13 (1)	07:36		17:42 (17)	06:34			06:28		20:07 (12)	05:41		20:05 (12)	05:32		
	17:26	73	15:26 (1)	18:21	13	17:55 (17)	19:09			21:00	25	20:32 (14)	21:44	29	20:34 (12)	22:05		
28	08:29		14:14 (1)	07:34		17:42 (17)	06:32			06:26		20:05 (12)	05:40		20:05 (12)	05:32		
	17:28	74	16:58 (16)	18:23	15	17:57 (17)	19:10			21:01	28	20:33 (14)	21:46	28	20:33 (12)	22:05		
29	08:28		14:15 (1)				07:30			06:24		20:04 (12)	05:39		20:07 (12)	05:33		
	17:29	73	16:59 (16)				20:12			21:03	32	20:36 (14)	21:47	26	20:33 (12)	22:04		
30	08:27		14:16 (1)				07:28			06:22		20:03 (12)	05:38		20:08 (12)	05:33		
	17:31	74	17:02 (16)				20:14			21:04	34	20:37 (14)	21:48	25	20:33 (12)	22:04		
31	08:25		14:16 (1)				07:25						05:37		20:09 (12)			
	17:33	75	17:03 (16)				20:15						21:49	23	20:32 (12)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		2348			823			89			160			1181			93	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,72			0,72			0,65			0,55			0,55			0,55	
Total reduction		0,17			0,21			0,24			0,25			0,25			0,24	
Total, real		398			170			21			40			295			22	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: M - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September	October			November			December		
1	05:34			06:09		20:08 (12)	06:57	07:44			07:36		14:00 (1)	08:26		13:48 (1)
	22:04			21:33	44	20:52 (14)	20:33	19:25			17:21	50	16:52 (18)	16:42	77	15:05 (1)
2	05:34			06:11		20:08 (12)	06:59	07:46			07:38		13:57 (1)	08:27		13:48 (1)
	22:04			21:32	45	20:53 (14)	20:31	19:23			17:19	51	16:50 (18)	16:41	76	15:04 (1)
3	05:35			06:12		20:08 (12)	07:00	07:48			07:40		13:55 (1)	08:29		13:48 (1)
	22:03			21:30	45	20:53 (14)	20:29	19:21			17:17	53	14:48 (1)	16:41	77	15:05 (1)
4	05:36			06:13		20:07 (12)	07:02	07:49			07:42		13:54 (1)	08:30		13:49 (1)
	22:03			21:28	46	20:53 (14)	20:26	19:19			17:16	55	14:49 (1)	16:40	76	15:05 (1)
5	05:37			06:15		20:08 (12)	07:03	07:51			07:43		13:53 (1)	08:31		13:50 (1)
	22:02			21:27	46	20:54 (14)	20:24	19:16			17:14	58	14:51 (1)	16:40	76	15:06 (1)
6	05:37		20:24 (12)	06:17		20:08 (12)	07:05	07:52			07:45		13:52 (1)	08:32		13:50 (1)
	22:02	6	20:30 (12)	21:25	46	20:54 (14)	20:22	19:14			17:12	60	14:52 (1)	16:39	76	15:06 (1)
7	05:38		20:22 (12)	06:18		20:08 (12)	07:06	07:54		18:24 (17)	07:47		13:51 (1)	08:34		13:50 (1)
	22:01	11	20:33 (12)	21:23	47	20:55 (14)	20:20	19:12	5	18:29 (17)	17:11	62	14:53 (1)	16:39	76	15:06 (1)
8	05:39		20:21 (12)	06:20		20:08 (12)	07:08	07:56		18:21 (17)	07:49		13:50 (1)	08:35		13:51 (1)
	22:01	13	20:34 (12)	21:22	45	20:53 (14)	20:18	19:10	11	18:32 (17)	17:09	64	14:54 (1)	16:39	76	15:07 (1)
9	05:40		20:20 (12)	06:21		20:08 (12)	07:10	07:57		18:18 (17)	07:50		13:49 (1)	08:36		13:51 (1)
	22:00	16	20:36 (12)	21:20	43	20:51 (14)	20:15	19:07	14	18:32 (17)	17:07	71	16:36 (16)	16:39	77	15:08 (1)
10	05:41		20:19 (12)	06:23		20:09 (12)	07:11	07:59		18:17 (17)	07:52		13:48 (1)	08:37		13:52 (1)
	21:59	18	20:37 (12)	21:18	41	20:50 (14)	20:13	19:05	16	18:33 (17)	17:06	73	16:35 (16)	16:38	76	15:08 (1)
11	05:42		20:18 (12)	06:24		20:09 (12)	07:13	08:01		18:17 (17)	07:54		13:47 (1)	08:38		13:52 (1)
	21:59	21	20:39 (12)	21:16	39	20:48 (14)	20:11	19:03	17	18:34 (17)	17:04	74	16:34 (16)	16:38	76	15:08 (1)
12	05:43		20:17 (12)	06:26		20:10 (12)	07:14	08:02		18:15 (17)	07:55		13:47 (1)	08:39		13:53 (1)
	21:58	23	20:40 (12)	21:14	36	20:46 (14)	20:08	19:01	18	18:33 (17)	17:03	73	16:32 (16)	16:38	75	15:08 (1)
13	05:44		20:17 (12)	06:27		20:11 (12)	07:16	08:04		18:15 (17)	07:57		13:46 (1)	08:40		13:53 (1)
	21:57	24	20:41 (12)	21:12	33	20:44 (14)	20:06	18:59	16	18:31 (17)	17:01	74	16:31 (16)	16:38	76	15:09 (1)
14	05:45		20:16 (12)	06:29		20:12 (12)	07:17	08:06		18:15 (17)	07:59		13:46 (1)	08:41		13:54 (1)
	21:56	25	20:41 (12)	21:10	31	20:43 (14)	20:04	18:57	14	18:29 (17)	17:00	74	16:30 (16)	16:38	75	15:09 (1)
15	05:46		20:15 (12)	06:30		20:13 (12)	07:19	08:07		18:16 (17)	08:01		13:46 (1)	08:42		13:54 (1)
	21:55	27	20:42 (12)	21:08	27	20:40 (14)	20:02	18:55	11	18:27 (17)	16:59	72	14:58 (1)	16:38	76	15:10 (1)
16	05:48		20:14 (12)	06:32		20:15 (12)	07:21	08:09		18:16 (17)	08:02		13:46 (1)	08:43		13:55 (1)
	21:54	29	20:43 (12)	21:07	24	20:39 (14)	19:59	18:52	8	18:24 (17)	16:57	73	14:59 (1)	16:38	75	15:10 (1)
17	05:49		20:14 (12)	06:33		20:16 (12)	07:22	08:11		18:17 (17)	08:04		13:45 (1)	08:44		13:55 (1)
	21:53	30	20:44 (12)	21:05	21	20:37 (14)	19:57	18:50	5	18:22 (17)	16:56	74	14:59 (1)	16:38	75	15:10 (1)
18	05:50		20:13 (12)	06:35		20:19 (12)	07:24	08:12		18:19 (17)	08:06		13:45 (1)	08:44		13:56 (1)
	21:52	31	20:44 (12)	21:03	14	20:33 (12)	19:55	18:48	2	18:21 (17)	16:55	75	15:00 (1)	16:39	75	15:11 (1)
19	05:51		20:12 (12)	06:37			07:25	08:14			08:07		13:45 (1)	08:45		13:56 (1)
	21:51	33	20:45 (12)	21:01			19:53	18:46			16:53	75	15:00 (1)	16:39	75	15:11 (1)
20	05:52		20:12 (12)	06:38			07:27	08:16			08:09		13:45 (1)	08:46		13:56 (1)
	21:50	34	20:46 (12)	20:59			19:50	18:44			16:52	76	15:01 (1)	16:39	75	15:11 (1)
21	05:54		20:12 (12)	06:40			07:28	08:17			08:11		13:46 (1)	08:46		13:57 (1)
	21:49	35	20:47 (12)	20:56			19:48	18:42			16:51	75	15:01 (1)	16:40	75	15:12 (1)
22	05:55		20:11 (12)	06:41			07:30	08:19			08:12		13:45 (1)	08:47		13:57 (1)
	21:48	36	20:47 (12)	20:54			19:46	18:40			16:50	76	15:01 (1)	16:40	75	15:12 (1)
23	05:56		20:10 (12)	06:43			07:32	08:21			08:14		13:45 (1)	08:47		13:58 (1)
	21:46	37	20:47 (12)	20:52			19:43	18:38			16:49	77	15:02 (1)	16:41	75	15:13 (1)
24	05:58		20:09 (12)	06:44			07:33	08:22			08:15		13:46 (1)	08:48		13:58 (1)
	21:45	38	20:47 (12)	20:50			19:41	18:36			16:48	76	15:02 (1)	16:41	75	15:13 (1)
25	05:59		20:10 (12)	06:46			07:35	07:24		16:53 (18)	08:17		13:45 (1)	08:48		13:59 (1)
	21:44	39	20:49 (12)	20:48			19:39	17:34	3	16:56 (18)	16:47	77	15:02 (1)	16:42	75	15:14 (1)
26	06:00		20:09 (12)	06:48			07:36	07:26		16:50 (18)	08:18		13:46 (1)	08:48		14:00 (1)
	21:42	40	20:49 (12)	20:46			19:37	17:32	8	16:58 (18)	16:46	77	15:03 (1)	16:43	75	15:15 (1)
27	06:02		20:08 (12)	06:49			07:38	07:28		14:22 (1)	08:20		13:46 (1)	08:49		14:00 (1)
	21:41	41	20:49 (12)	20:44			19:34	17:30	15	17:00 (18)	16:45	78	15:04 (1)	16:43	75	15:15 (1)
28	06:03		20:09 (12)	06:51			07:39	07:29		14:13 (1)	08:21		13:46 (1)	08:49		14:00 (1)
	21:39	41	20:50 (12)	20:42			19:32	17:28	33	17:00 (18)	16:44	77	15:03 (1)	16:44	76	15:16 (1)
29	06:05		20:08 (12)	06:52			07:41	07:31		14:09 (1)	08:23		13:47 (1)	08:49		14:01 (1)
	21:38	41	20:49 (12)	20:40			19:30	17:26	40	16:58 (18)	16:43	77	15:04 (1)	16:45	75	15:16 (1)
30	06:06		20:08 (12)	06:54			07:43	07:33		14:05 (1)	08:24		13:47 (1)	08:49		14:01 (1)
	21:36	41	20:49 (14)	20:37			19:28	17:25	45	16:56 (18)	16:43	77	15:04 (1)	16:46	76	15:17 (1)
31	06:08		20:08 (12)	06:55				07:35		14:02 (1)				08:49		14:02 (1)
	21:35	43	20:51 (14)	20:35				17:23	49	16:54 (18)				16:47	75	15:17 (1)
Potential sun hours	498			451			380	333			269			248		
Total, worst case		773			673				330			2104			2343	
Sun reduction		0,45			0,47				0,36			0,26			0,21	
Oper. time red.		0,96			0,96				0,96			0,96			0,96	
Wind dir. red.		0,55			0,55				0,69			0,72			0,72	
Total reduction		0,24			0,26				0,25			0,18			0,15	
Total, real		189			172				82			387			358	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: N - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:50 (1)	08:24		15:54 (1)	07:32			07:23		18:59 (20)	06:20		18:14 (19)	05:36		18:07 (19)
	16:48	24	16:14 (1)	17:35	39	16:33 (1)	18:25			20:17	44	19:51 (12)	21:06	89	20:38 (13)	21:50	93	19:40 (19)
2	08:49		15:49 (1)	08:22		15:55 (1)	07:30			07:21		18:57 (20)	06:18		18:13 (19)	05:36		18:08 (19)
	16:49	26	16:15 (1)	17:36	38	16:33 (1)	18:26			20:18	51	19:53 (12)	21:08	93	20:39 (13)	21:51	93	19:41 (19)
3	08:49		15:50 (1)	08:21		15:56 (1)	07:28			07:19		18:56 (20)	06:16		18:11 (19)	05:35		18:08 (19)
	16:50	26	16:16 (1)	17:38	36	16:32 (1)	18:28			20:20	56	19:55 (12)	21:09	98	20:41 (13)	21:52	93	19:41 (19)
4	08:49		15:50 (1)	08:19		15:56 (1)	07:26			07:16		18:54 (20)	06:15		18:11 (19)	05:34		18:08 (19)
	16:51	28	16:18 (1)	17:40	35	16:31 (1)	18:30			20:22	62	19:57 (12)	21:11	102	20:43 (13)	21:53	93	19:41 (19)
5	08:49		15:50 (1)	08:18		15:58 (1)	07:23			07:14		18:52 (20)	06:13		18:10 (19)	05:33		18:09 (19)
	16:52	29	16:19 (1)	17:42	33	16:31 (1)	18:32			20:23	65	19:57 (12)	21:12	104	20:44 (13)	21:54	93	19:42 (19)
6	08:48		15:50 (1)	08:16		15:59 (1)	07:21			07:12		18:51 (20)	06:11		18:09 (19)	05:33		18:09 (19)
	16:54	30	16:20 (1)	17:44	31	16:30 (1)	18:33			20:25	67	19:58 (12)	21:14	108	20:45 (13)	21:55	92	19:41 (19)
7	08:48		15:50 (1)	08:14		16:01 (1)	07:19			07:10		18:51 (20)	06:09		18:09 (19)	05:32		18:09 (19)
	16:55	32	16:22 (1)	17:45	27	16:28 (1)	18:35			20:27	67	19:58 (12)	21:16	109	20:46 (13)	21:56	93	19:42 (19)
8	08:48		15:50 (1)	08:13		16:03 (1)	07:17			07:08		18:50 (20)	06:08		18:08 (19)	05:32		18:09 (19)
	16:56	32	16:22 (1)	17:47	24	16:27 (1)	18:37			20:28	68	19:58 (12)	21:17	111	20:46 (13)	21:57	92	19:41 (19)
9	08:47		15:49 (1)	08:11		16:06 (1)	07:15			07:05		18:50 (20)	06:06		18:08 (19)	05:31		18:10 (19)
	16:58	34	16:23 (1)	17:49	20	16:26 (1)	18:38			20:30	71	20:05 (14)	21:19	111	20:46 (13)	21:58	92	19:42 (19)
10	08:47		15:50 (1)	08:09		16:09 (1)	07:13			07:03		18:49 (20)	06:04		18:07 (19)	05:31		18:10 (19)
	16:59	35	16:25 (1)	17:51	13	16:22 (1)	18:40			20:32	73	20:06 (14)	21:20	111	20:45 (13)	21:59	92	19:42 (19)
11	08:46		15:49 (1)	08:07		17:23 (18)	07:10			07:01		18:48 (20)	06:03		18:07 (19)	05:31		18:11 (19)
	17:00	36	16:25 (1)	17:53	2	17:25 (18)	18:42			20:33	76	20:07 (14)	21:22	112	20:45 (13)	21:59	92	19:43 (19)
12	08:46		15:49 (1)	08:06		17:23 (18)	07:08			06:59		18:48 (20)	06:01		18:06 (19)	05:30		18:10 (19)
	17:02	37	16:26 (1)	17:54	4	17:27 (18)	18:44			20:35	78	20:09 (14)	21:23	112	20:44 (13)	22:00	93	21:27 (7)
13	08:45		15:49 (1)	08:04		17:24 (18)	07:06			06:57		18:48 (20)	05:59		18:07 (19)	05:30		18:11 (19)
	17:03	37	16:26 (1)	17:56	5	17:29 (18)	18:45			20:37	78	20:10 (14)	21:25	111	20:44 (13)	22:01	93	21:28 (7)
14	08:44		15:50 (1)	08:02		17:24 (18)	07:04			06:55		18:48 (20)	05:58		18:06 (19)	05:30		18:11 (19)
	17:05	38	16:28 (1)	17:58	6	17:30 (18)	18:47			20:38	79	20:12 (14)	21:26	110	20:43 (13)	22:01	94	21:29 (7)
15	08:43		15:50 (1)	08:00		17:26 (18)	07:01			06:52		18:48 (20)	05:56		18:06 (19)	05:30		18:12 (19)
	17:06	39	16:29 (1)	18:00	6	17:32 (18)	18:49			20:40	76	20:14 (14)	21:28	110	20:43 (13)	22:02	93	21:29 (7)
16	08:43		15:50 (1)	07:58			06:59			06:50		18:48 (20)	05:55		18:06 (19)	05:30		18:12 (19)
	17:08	39	16:29 (1)	18:02			18:50			20:42	69	20:15 (14)	21:29	108	20:42 (13)	22:02	95	21:30 (7)
17	08:42		15:50 (1)	07:56			06:57			06:48		18:48 (20)	05:53		18:05 (19)	05:29		18:12 (19)
	17:09	40	16:30 (1)	18:03			18:52			20:43	62	20:16 (11)	21:31	106	20:40 (13)	22:03	95	21:30 (7)
18	08:41		15:50 (1)	07:54			06:55			06:46		18:49 (20)	05:52		18:05 (19)	05:29		18:12 (19)
	17:11	41	16:31 (1)	18:05			18:54			20:45	58	20:14 (11)	21:32	104	20:39 (13)	22:03	96	21:31 (7)
19	08:40		15:49 (1)	07:52			06:52			06:44		18:41 (19)	05:51		18:06 (19)	05:29		18:13 (19)
	17:12	41	16:30 (1)	18:07			18:55			20:46	60	20:11 (14)	21:34	97	20:36 (13)	22:04	95	21:31 (7)
20	08:39		15:49 (1)	07:50			06:50			06:42		18:36 (19)	05:49		18:06 (19)	05:30		18:13 (19)
	17:14	42	16:31 (1)	18:09			18:57			20:48	58	20:08 (14)	21:35	93	19:39 (19)	22:04	94	21:31 (7)
21	08:38		15:50 (1)	07:48			06:48			06:40		18:33 (19)	05:48		18:05 (19)	05:30		18:13 (19)
	17:16	42	16:32 (1)	18:11			18:59			20:50	56	19:29 (20)	21:37	93	19:38 (19)	22:04	94	21:31 (7)
22	08:37		15:50 (1)	07:46		17:44 (17)	06:46			06:38		18:30 (19)	05:47		18:05 (19)	05:30		18:14 (19)
	17:17	43	16:33 (1)	18:12	2	17:46 (17)	19:00			20:51	58	19:28 (20)	21:38	93	19:38 (19)	22:04	94	21:32 (7)
23	08:36		15:51 (1)	07:44		17:44 (17)	06:43			06:36		18:27 (19)	05:46		18:05 (19)	05:30		18:14 (19)
	17:19	42	16:33 (1)	18:14	4	17:48 (17)	19:02			20:53	60	19:27 (20)	21:39	94	19:39 (19)	22:04	94	21:32 (7)
24	08:35		15:50 (1)	07:42		17:43 (17)	06:41			06:34		18:25 (19)	05:44		18:06 (19)	05:30		18:14 (19)
	17:21	43	16:33 (1)	18:16	7	17:50 (17)	19:04			20:55	60	19:25 (20)	21:41	93	19:39 (19)	22:05	95	21:32 (7)
25	08:33		15:51 (1)	07:40		17:43 (17)	06:39			06:32		18:23 (19)	05:43		18:06 (19)	05:31		18:14 (19)
	17:22	42	16:33 (1)	18:18	9	17:52 (17)	19:05			20:56	60	19:23 (20)	21:42	93	19:39 (19)	22:05	95	21:32 (7)
26	08:32		15:50 (1)	07:38		17:43 (17)	06:37			06:30		18:21 (19)	05:42		18:06 (19)	05:31		18:14 (19)
	17:24	43	16:33 (1)	18:19	10	17:53 (17)	19:07			20:58	61	19:22 (20)	21:43	93	19:39 (19)	22:05	95	21:32 (7)
27	08:31		15:51 (1)	07:36		17:44 (17)	06:34			06:28		18:19 (19)	05:41		18:06 (19)	05:32		18:14 (19)
	17:26	43	16:34 (1)	18:21	10	17:54 (17)	19:09			21:00	66	20:32 (13)	21:44	93	19:39 (19)	22:05	93	21:31 (7)
28	08:29		15:52 (1)	07:34		17:45 (17)	06:32			06:26		18:17 (19)	05:40		18:06 (19)	05:32		18:15 (19)
	17:28	42	16:34 (1)	18:23	8	17:53 (17)	19:10			21:01	73	20:33 (13)	21:46	94	19:40 (19)	22:04	93	21:32 (7)
29	08:28		15:52 (1)				07:30		19:09 (20)	06:24		18:17 (19)	05:39		18:07 (19)	05:33		18:14 (19)
	17:29	42	16:34 (1)				20:12	12	19:21 (20)	21:03	79	20:36 (13)	21:47	94	19:41 (19)	22:04	93	21:31 (7)
30	08:27		15:53 (1)				07:28		19:05 (20)	06:22		18:15 (19)	05:38		18:07 (19)	05:33		18:15 (19)
	17:31	41	16:34 (1)				20:14	28	19:49 (12)	21:04	85	20:37 (13)	21:48	94	19:41 (19)	22:04	94	21:32 (7)
31	08:25		15:53 (1)				07:25		19:02 (20)				05:37		18:07 (19)			
	17:33	40	16:33 (1)				20:15	36	19:50 (12)				21:49	94	19:41 (19)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		1149			369			76			1976			3127			2806	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,71			0,70			0,61			0,60			0,59			0,59	
Total reduction		0,16			0,20			0,22			0,27			0,26			0,26	
Total, real		186			73			17			527			818			717	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: N - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		18:15 (19)	06:09		18:17 (19)	06:57		18:48 (20)	07:44			07:36		15:37 (1)	08:26		15:31 (1)
	22:04	93	21:32 (7)	21:33	111	20:55 (13)	20:33	76	20:07 (14)	19:25			17:21	15	15:52 (1)	16:42	36	16:07 (1)
2	05:34		18:15 (19)	06:10		18:17 (19)	06:59		18:47 (20)	07:46			07:38		15:34 (1)	08:27		15:32 (1)
	22:04	92	19:47 (19)	21:32	112	20:55 (13)	20:31	73	20:04 (14)	19:23			17:19	21	15:55 (1)	16:41	35	16:07 (1)
3	05:35		18:15 (19)	06:12		18:18 (19)	07:00		18:48 (20)	07:48			07:40		15:32 (1)	08:29		15:33 (1)
	22:03	92	19:47 (19)	21:30	112	20:56 (13)	20:29	71	20:03 (14)	19:21			17:17	25	15:57 (1)	16:41	34	16:07 (1)
4	05:36		18:15 (19)	06:13		18:18 (19)	07:02		18:47 (20)	07:49			07:42		15:30 (1)	08:30		15:34 (1)
	22:03	93	19:48 (19)	21:28	111	20:56 (13)	20:26	68	19:55 (12)	19:19			17:16	28	15:58 (1)	16:40	33	16:07 (1)
5	05:37		18:15 (19)	06:15		18:19 (19)	07:03		18:48 (20)	07:51			07:43		15:29 (1)	08:31		15:35 (1)
	22:02	92	19:47 (19)	21:27	109	20:56 (13)	20:24	68	19:56 (12)	19:16			17:14	31	16:00 (1)	16:40	32	16:07 (1)
6	05:37		18:15 (19)	06:16		18:19 (19)	07:05		18:47 (20)	07:52			07:45		15:28 (1)	08:32		15:36 (1)
	22:02	93	19:48 (19)	21:25	109	20:56 (13)	20:22	68	19:55 (12)	19:14			17:12	33	16:01 (1)	16:39	30	16:06 (1)
7	05:38		18:15 (19)	06:18		18:20 (19)	07:06		18:48 (20)	07:54			07:47		15:27 (1)	08:34		15:36 (1)
	22:01	93	19:48 (19)	21:23	106	20:55 (13)	20:20	66	19:54 (12)	19:12			17:11	35	16:02 (1)	16:39	30	16:06 (1)
8	05:39		18:15 (19)	06:20		18:20 (19)	07:08		18:48 (20)	07:56			07:48		15:26 (1)	08:35		15:38 (1)
	22:01	93	19:48 (19)	21:22	104	20:53 (13)	20:18	63	19:51 (12)	19:10			17:09	37	16:03 (1)	16:39	28	16:06 (1)
9	05:40		18:16 (19)	06:21		18:20 (19)	07:10		18:50 (20)	07:57			07:50		15:26 (1)	08:36		15:39 (1)
	22:00	92	19:48 (19)	21:20	100	20:51 (13)	20:15	57	19:49 (12)	19:07			17:07	38	16:04 (1)	16:38	26	16:05 (1)
10	05:41		18:16 (19)	06:23		18:21 (19)	07:11		18:50 (20)	07:59			07:52		15:24 (1)	08:37		15:39 (1)
	21:59	93	19:49 (19)	21:18	97	20:50 (13)	20:13	51	19:46 (12)	19:05			17:06	40	16:04 (1)	16:38	26	16:05 (1)
11	05:42		18:16 (19)	06:24		18:21 (19)	07:13		18:52 (20)	08:01			07:54		15:24 (1)	08:38		15:40 (1)
	21:59	93	19:49 (19)	21:16	93	20:48 (13)	20:11	46	19:45 (12)	19:03			17:04	40	16:04 (1)	16:38	25	16:05 (1)
12	05:43		18:16 (19)	06:26		18:23 (19)	07:14		18:53 (20)	08:02			07:55		15:24 (1)	08:39		15:41 (1)
	21:58	93	19:49 (19)	21:14	87	20:46 (13)	20:08	38	19:42 (12)	19:01			17:03	41	16:05 (1)	16:38	23	16:04 (1)
13	05:44		18:16 (19)	06:27		18:23 (19)	07:16		18:55 (20)	08:04		18:20 (17)	07:57		15:24 (1)	08:40		15:42 (1)
	21:57	93	19:49 (19)	21:12	83	20:44 (13)	20:06	29	19:40 (12)	18:59	4	18:24 (17)	17:01	42	16:06 (1)	16:38	22	16:04 (1)
14	05:45		18:16 (19)	06:29		18:25 (19)	07:17		18:58 (20)	08:06		18:18 (17)	07:59		15:24 (1)	08:41		15:43 (1)
	21:56	93	19:49 (19)	21:10	77	20:43 (13)	20:04	15	19:37 (12)	18:57	9	18:27 (17)	17:00	42	16:06 (1)	16:38	21	16:04 (1)
15	05:46		18:16 (19)	06:30		18:25 (19)	07:19			08:07		18:16 (17)	08:01		15:24 (1)	08:42		15:44 (1)
	21:55	93	19:49 (19)	21:08	71	20:40 (13)	20:02			18:55	11	18:27 (17)	16:59	43	16:07 (1)	16:38	20	16:04 (1)
16	05:48		18:16 (19)	06:32		18:27 (19)	07:20			08:09		18:15 (17)	08:02		15:24 (1)	08:43		15:45 (1)
	21:54	93	19:49 (19)	21:06	63	19:30 (19)	19:59			18:52	9	18:24 (17)	16:57	43	16:07 (1)	16:38	20	16:05 (1)
17	05:49		18:16 (19)	06:33		18:28 (19)	07:22			08:11		18:15 (17)	08:04		15:24 (1)	08:44		15:45 (1)
	21:53	93	19:49 (19)	21:05	61	19:29 (20)	19:57			18:50	7	18:22 (17)	16:56	42	16:06 (1)	16:38	19	16:04 (1)
18	05:50		18:15 (19)	06:35		18:30 (19)	07:24			08:12		18:15 (17)	08:06		15:24 (1)	08:44		15:46 (1)
	21:52	94	19:49 (19)	21:03	60	19:30 (20)	19:55			18:48	6	18:21 (17)	16:55	43	16:07 (1)	16:39	19	16:05 (1)
19	05:51		18:15 (19)	06:37		18:31 (19)	07:25			08:14		18:15 (17)	08:07		15:25 (1)	08:45		15:47 (1)
	21:51	94	19:49 (19)	21:01	60	19:31 (20)	19:53			18:46	4	18:19 (17)	16:53	42	16:07 (1)	16:39	18	16:05 (1)
20	05:52		18:15 (19)	06:38		18:33 (19)	07:27			08:16		18:15 (17)	08:09		15:25 (1)	08:46		15:47 (1)
	21:50	93	19:48 (19)	20:58	59	19:32 (20)	19:50			18:44	1	18:16 (17)	16:52	43	16:08 (1)	16:39	18	16:05 (1)
21	05:54		18:16 (19)	06:40		18:35 (19)	07:28			08:17			08:11		15:26 (1)	08:46		15:48 (1)
	21:49	93	19:49 (19)	20:56	58	19:33 (20)	19:48			18:42			16:51	42	16:08 (1)	16:40	18	16:06 (1)
22	05:55		18:16 (19)	06:41		18:38 (19)	07:30			08:19			08:12		15:25 (1)	08:47		15:48 (1)
	21:48	93	19:49 (19)	20:54	56	19:34 (20)	19:46			18:40			16:50	42	16:07 (1)	16:40	18	16:06 (1)
23	05:56		18:16 (19)	06:43		18:40 (19)	07:32			08:21			08:14		15:26 (1)	08:47		15:49 (1)
	21:46	92	19:48 (19)	20:52	59	20:12 (14)	19:43			18:38			16:49	42	16:08 (1)	16:41	18	16:07 (1)
24	05:58		18:15 (19)	06:44		18:45 (19)	07:33			08:22			08:15		15:27 (1)	08:48		15:49 (1)
	21:45	93	19:48 (19)	20:50	62	20:16 (11)	19:41			18:36			16:48	41	16:08 (1)	16:41	18	16:07 (1)
25	05:59		18:16 (19)	06:46		18:51 (20)	07:35			07:24			08:17		15:27 (1)	08:48		15:49 (1)
	21:44	100	20:48 (13)	20:48	58	20:17 (11)	19:39			17:34			16:47	40	16:07 (1)	16:42	18	16:07 (1)
26	06:00		18:16 (19)	06:48		18:51 (20)	07:36			07:26			08:18		15:28 (1)	08:48		15:50 (1)
	21:42	104	20:50 (13)	20:46	62	20:19 (11)	19:37			17:32			16:46	39	16:07 (1)	16:43	19	16:09 (1)
27	06:02		18:16 (19)	06:49		18:50 (20)	07:38			07:28		16:55 (18)	08:20		15:29 (1)	08:49		15:50 (1)
	21:41	106	20:51 (13)	20:44	72	20:17 (14)	19:34			17:30	6	17:01 (18)	16:45	39	16:08 (1)	16:43	19	16:09 (1)
28	06:03		18:17 (19)	06:51		18:50 (20)	07:39			07:29		16:54 (18)	08:21		15:29 (1)	08:49		15:50 (1)
	21:39	109	20:53 (13)	20:42	76	20:15 (14)	19:32			17:28	6	17:00 (18)	16:44	38	16:07 (1)	16:44	20	16:10 (1)
29	06:05		18:16 (19)	06:52		18:48 (20)	07:41			07:31		16:53 (18)	08:23		15:30 (1)	08:49		15:50 (1)
	21:38	110	20:53 (13)	20:40	79	20:13 (14)	19:30			17:26	5	16:58 (18)	16:43	37	16:07 (1)	16:45	21	16:11 (1)
30	06:06		18:16 (19)	06:54		18:49 (20)	07:43			07:33		16:53 (18)	08:24		15:30 (1)	08:49		15:50 (1)
	21:36	111	20:54 (13)	20:37	78	20:11 (14)	19:28			17:25	3	16:56 (18)	16:43	37	16:07 (1)	16:46	22	16:12 (1)
31	06:08		18:17 (19)	06:55		18:48 (20)				07:35		15:43 (1)				08:49		15:50 (1)
	21:35	111	20:55 (13)	20:35	78	20:09 (14)				17:23	5	16:54 (18)				16:47	23	16:13 (1)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		2980			2523			789			76			1121			729	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,59			0,59			0,61			0,67			0,71			0,71	
Total reduction		0,26			0,27			0,26			0,24			0,18			0,15	
Total, real		770			679			202			18			197			106	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: O - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:40 (3)	08:24			07:32		16:31 (1)	07:23			06:20		20:10 (12)	05:36		20:22 (20)
	16:48	17	15:57 (3)	17:35			18:25	51	17:22 (1)	20:17			21:06	28	20:38 (14)	21:50	44	21:18 (13)
2	08:49		15:40 (3)	08:22			07:30		16:31 (1)	07:21			06:18		20:09 (12)	05:36		20:22 (20)
	16:49	16	15:56 (3)	17:36			18:26	50	17:21 (1)	20:18			21:08	30	20:39 (14)	21:51	46	21:20 (13)
3	08:49		15:41 (3)	08:21		16:53 (1)	07:28		16:32 (1)	07:19			06:16		20:09 (12)	05:35		20:22 (20)
	16:50	16	15:57 (3)	17:38	6	16:59 (1)	18:28	49	17:21 (1)	20:20			21:09	32	20:41 (14)	21:52	49	21:21 (13)
4	08:49		15:42 (3)	08:19		16:47 (1)	07:26		16:32 (1)	07:16			06:15		20:10 (12)	05:34		20:21 (20)
	16:51	15	15:57 (3)	17:40	17	17:04 (1)	18:30	47	17:19 (1)	20:22			21:11	32	20:42 (14)	21:53	50	21:21 (13)
5	08:49		15:43 (3)	08:18		16:45 (1)	07:23		16:34 (1)	07:14			06:13		20:09 (12)	05:34		20:21 (20)
	16:53	13	15:56 (3)	17:42	23	17:08 (1)	18:32	44	17:18 (1)	20:23			21:12	32	20:41 (14)	21:54	53	21:23 (13)
6	08:48		15:44 (3)	08:16		16:43 (1)	07:21		16:35 (1)	07:12			06:11		20:09 (12)	05:33		20:20 (20)
	16:54	13	15:57 (3)	17:44	27	17:10 (1)	18:33	42	17:17 (1)	20:25			21:14	31	20:40 (14)	21:55	55	21:23 (13)
7	08:48		15:46 (3)	08:14		16:40 (1)	07:19		16:36 (1)	07:10			06:09		20:10 (12)	05:32		20:20 (20)
	16:55	11	15:57 (3)	17:45	32	17:12 (1)	18:35	39	17:15 (1)	20:27			21:16	29	20:39 (14)	21:56	57	21:24 (13)
8	08:48		15:47 (3)	08:13		16:39 (1)	07:17		16:38 (1)	07:08			06:08		20:10 (12)	05:32		20:20 (20)
	16:56	9	15:56 (3)	17:47	35	17:14 (1)	18:37	37	18:12 (17)	20:28			21:17	27	20:37 (14)	21:57	58	21:24 (13)
9	08:47		15:49 (3)	08:11		16:38 (1)	07:15		16:40 (1)	07:05			06:06		20:11 (12)	05:31		20:20 (20)
	16:58	5	15:54 (3)	17:49	38	17:16 (1)	18:38	35	18:13 (17)	20:30			21:19	26	20:37 (12)	21:58	59	21:25 (13)
10	08:47			08:09		16:37 (1)	07:13		16:42 (1)	07:03			06:04		20:11 (12)	05:31		20:20 (20)
	16:59			17:51	41	17:18 (1)	18:40	34	18:15 (17)	20:32			21:20	24	20:35 (12)	21:59	60	21:26 (13)
11	08:46			08:07		16:36 (1)	07:10		16:45 (1)	07:01			06:03		20:13 (12)	05:31		20:20 (20)
	17:00			17:53	45	17:25 (16)	18:42	30	18:17 (17)	20:33			21:22	22	20:35 (12)	21:59	61	21:27 (13)
12	08:46			08:06		16:35 (1)	07:08		16:51 (1)	06:59			06:01		20:13 (12)	05:30		20:19 (20)
	17:02			17:54	48	17:27 (16)	18:44	20	18:19 (17)	20:35			21:23	21	20:34 (12)	22:00	63	21:27 (13)
13	08:45			08:04		16:34 (1)	07:06		18:08 (17)	06:57			05:59		20:15 (12)	05:30		20:20 (20)
	17:03			17:56	51	17:29 (16)	18:45	12	18:20 (17)	20:37			21:25	18	20:33 (12)	22:01	63	21:28 (13)
14	08:44			08:02		16:33 (1)	07:04		18:09 (17)	06:55			05:58		20:16 (12)	05:30		20:20 (20)
	17:05			17:58	48	17:21 (1)	18:47	11	18:20 (17)	20:38			21:26	15	20:31 (12)	22:01	64	21:29 (13)
15	08:43			08:00		16:32 (1)	07:01		18:10 (17)	06:52			05:56		20:18 (12)	05:30		20:20 (20)
	17:06			18:00	50	17:22 (1)	18:49	8	18:18 (17)	20:40			21:28	12	20:30 (12)	22:02	64	21:29 (13)
16	08:43			07:58		16:31 (1)	06:59			06:50			05:55		20:21 (12)	05:30		20:20 (20)
	17:08			18:02	52	17:23 (1)	18:50			20:42			21:29	6	20:27 (12)	22:02	66	21:30 (13)
17	08:42			07:56		16:31 (1)	06:57			06:48			05:53			05:29		20:20 (20)
	17:09			18:03	52	17:23 (1)	18:52			20:43			21:31			22:03	66	21:30 (13)
18	08:41			07:54		16:30 (1)	06:55			06:46			05:52			05:29		20:20 (20)
	17:11			18:05	54	17:24 (1)	18:54			20:45			21:32			22:03	65	21:30 (13)
19	08:40			07:52		16:30 (1)	06:52			06:44			05:51			05:30		20:20 (20)
	17:12			18:07	54	17:24 (1)	18:55			20:46			21:34			22:04	67	21:31 (13)
20	08:39			07:50		16:30 (1)	06:50			06:42			05:49			05:30		20:20 (20)
	17:14			18:09	54	17:24 (1)	18:57			20:48			21:35			22:04	67	21:31 (13)
21	08:38			07:48		16:30 (1)	06:48			06:40			05:48			05:30		20:20 (20)
	17:16			18:11	54	17:24 (1)	18:59			20:50			21:37			22:04	67	21:31 (13)
22	08:37			07:46		16:30 (1)	06:46			06:38			05:47			05:30		20:21 (20)
	17:17			18:12	55	17:46 (18)	19:00			20:51			21:38			22:04	67	21:32 (13)
23	08:36			07:44		16:30 (1)	06:43			06:36		20:20 (12)	05:46			05:30		20:21 (20)
	17:19			18:14	58	17:48 (18)	19:02			20:53	6	20:26 (12)	21:39			22:04	67	21:32 (13)
24	08:35			07:42		16:30 (1)	06:41			06:34		20:17 (12)	05:44			05:30		20:21 (20)
	17:21			18:16	60	17:50 (18)	19:04			20:55	11	20:28 (12)	21:41			22:05	66	21:32 (13)
25	08:33			07:40		16:30 (1)	06:39			06:32		20:15 (12)	05:43		20:33 (20)	05:31		20:22 (20)
	17:22			18:18	61	17:52 (18)	19:05			20:56	14	20:29 (12)	21:42	9	21:11 (13)	22:05	66	21:32 (13)
26	08:32			07:38		16:29 (1)	06:37			06:30		20:14 (12)	05:42		20:29 (20)	05:31		20:22 (20)
	17:24			18:19	62	17:53 (18)	19:07			20:58	16	20:30 (14)	21:43	18	21:12 (13)	22:05	66	21:32 (13)
27	08:31			07:36		16:30 (1)	06:34			06:28		20:12 (12)	05:41		20:27 (20)	05:32		20:22 (20)
	17:26			18:21	58	17:52 (18)	19:09			21:00	20	20:32 (14)	21:44	24	21:13 (13)	22:05	65	21:31 (13)
28	08:29			07:34		16:30 (1)	06:32			06:26		20:11 (12)	05:40		20:26 (20)	05:32		20:23 (20)
	17:28			18:23	52	17:22 (1)	19:10			21:01	22	20:33 (14)	21:46	29	21:14 (13)	22:04	64	21:32 (13)
29	08:28						07:30			06:24		20:11 (12)	05:39		20:25 (20)	05:33		20:23 (20)
	17:29						20:12			21:03	25	20:36 (14)	21:47	34	21:16 (13)	22:04	63	21:31 (13)
30	08:27						07:28			06:22		20:11 (12)	05:38		20:24 (20)	05:33		20:24 (20)
	17:31						20:14			21:04	26	20:37 (14)	21:48	38	21:17 (13)	22:04	63	21:32 (13)
31	08:25						07:25						05:37		20:23 (20)			
	17:33						20:15						21:49	41	21:18 (13)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		115			1187			509			140			578			1831	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,72			0,69			0,69			0,55			0,55			0,56	
Total reduction		0,17			0,20			0,25			0,25			0,25			0,24	
Total, real		19			234			127			34			143			442	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: O - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		20:24 (20)	06:09		20:23 (12)	06:57			07:44		18:47 (17)	07:36		16:06 (1)	08:26		
	22:04	62	21:32 (13)	21:33	21	20:44 (12)	20:33			19:25	11	18:58 (17)	17:21	40	16:46 (1)	16:42		
2	05:34		20:24 (20)	06:10		20:22 (12)	06:59			07:46		17:26 (1)	07:38		16:07 (1)	08:27		
	22:04	62	21:31 (13)	21:32	23	20:45 (12)	20:31			19:23	27	18:57 (17)	17:19	38	16:45 (1)	16:41		
3	05:35		20:25 (20)	06:12		20:22 (12)	07:00			07:48		17:21 (1)	07:40		16:09 (1)	08:29		15:33 (3)
	22:03	60	21:31 (13)	21:30	24	20:46 (12)	20:29			19:21	32	18:54 (17)	17:17	34	16:43 (1)	16:41	5	15:38 (3)
4	05:36		20:26 (20)	06:13		20:20 (12)	07:02			07:49		17:19 (1)	07:42		16:10 (1)	08:30		15:31 (3)
	22:03	58	21:31 (13)	21:28	26	20:46 (14)	20:26			19:19	35	18:52 (17)	17:16	32	16:42 (1)	16:40	9	15:40 (3)
5	05:37		20:26 (20)	06:15		20:20 (12)	07:03			07:51		17:15 (1)	07:43		16:13 (1)	08:31		15:31 (3)
	22:02	57	21:30 (13)	21:27	28	20:48 (14)	20:24			19:16	37	18:49 (17)	17:14	27	16:40 (1)	16:40	11	15:42 (3)
6	05:37		20:26 (20)	06:16		20:19 (12)	07:05			07:52		17:13 (1)	07:45		16:15 (1)	08:32		15:30 (3)
	22:02	55	21:29 (13)	21:25	30	20:49 (14)	20:22			19:14	38	17:51 (1)	17:12	23	16:38 (1)	16:39	13	15:43 (3)
7	05:38		20:27 (20)	06:18		20:20 (12)	07:06			07:54		17:12 (1)	07:47		16:18 (1)	08:34		15:30 (3)
	22:01	54	21:29 (13)	21:23	31	20:51 (14)	20:20			19:12	40	17:52 (1)	17:11	17	16:35 (1)	16:39	13	15:43 (3)
8	05:39		20:28 (20)	06:20		20:19 (12)	07:08			07:56		17:10 (1)	07:48		16:26 (1)	08:35		15:29 (3)
	22:01	52	21:29 (13)	21:22	32	20:51 (14)	20:18			19:10	43	17:53 (1)	17:09	2	16:28 (1)	16:39	15	15:44 (3)
9	05:40		20:29 (20)	06:21		20:18 (12)	07:10			07:57		17:08 (1)	07:50			08:36		15:30 (3)
	22:00	49	21:28 (13)	21:20	33	20:51 (14)	20:15			19:07	45	17:53 (1)	17:07			16:39	16	15:46 (3)
10	05:41		20:29 (20)	06:23		20:19 (12)	07:11			07:59		17:07 (1)	07:52			08:37		15:30 (3)
	21:59	48	21:28 (13)	21:18	31	20:50 (14)	20:13			19:05	47	17:54 (1)	17:06			16:38	16	15:46 (3)
11	05:42		20:30 (20)	06:24		20:18 (12)	07:13			08:01		17:06 (1)	07:54			08:38		15:30 (3)
	21:59	45	21:27 (13)	21:16	30	20:48 (14)	20:11			19:03	49	17:55 (1)	17:04			16:38	17	15:47 (3)
12	05:43		20:31 (20)	06:26		20:19 (12)	07:14			08:02		17:04 (1)	07:55			08:39		15:30 (3)
	21:58	43	21:27 (13)	21:14	27	20:46 (14)	20:08			19:01	51	17:55 (1)	17:03			16:38	18	15:48 (3)
13	05:44		20:32 (20)	06:27		20:18 (12)	07:16			08:04		17:04 (1)	07:57			08:40		15:30 (3)
	21:57	39	21:26 (13)	21:12	26	20:44 (14)	20:06			18:59	51	17:55 (1)	17:01			16:38	18	15:48 (3)
14	05:45		20:33 (20)	06:29		20:19 (12)	07:17			08:06		17:03 (1)	07:59			08:41		15:31 (3)
	21:56	36	21:25 (13)	21:10	24	20:43 (14)	20:04			18:57	53	17:56 (1)	17:00			16:38	18	15:49 (3)
15	05:46		20:35 (20)	06:30		20:19 (12)	07:19			08:07		17:03 (1)	08:01			08:42		15:31 (3)
	21:55	31	21:24 (13)	21:08	21	20:40 (14)	20:02			18:55	60	18:26 (18)	16:59			16:38	19	15:50 (3)
16	05:48		20:36 (20)	06:32		20:20 (12)	07:20			08:09		17:01 (1)	08:02			08:43		15:32 (3)
	21:54	27	21:23 (13)	21:06	19	20:39 (14)	19:59			18:52	61	18:24 (18)	16:57			16:38	18	15:50 (3)
17	05:49		20:38 (20)	06:33		20:21 (12)	07:22			08:11		17:01 (1)	08:04			08:44		15:31 (3)
	21:53	21	21:22 (13)	21:05	16	20:37 (14)	19:57			18:50	61	18:22 (18)	16:56			16:38	19	15:50 (3)
18	05:50		20:40 (20)	06:35		20:22 (12)	07:24			08:12		17:01 (1)	08:06			08:44		15:32 (3)
	21:52	14	21:21 (13)	21:03	13	20:35 (12)	19:55			18:48	60	18:21 (18)	16:55			16:39	19	15:51 (3)
19	05:51			06:37		20:23 (12)	07:25			08:14		17:01 (1)	08:07			08:45		15:33 (3)
	21:51			21:01	10	20:33 (12)	19:53			18:46	58	18:19 (18)	16:53			16:39	19	15:52 (3)
20	05:52			06:38		20:26 (12)	07:27			08:16		17:00 (1)	08:09			08:46		15:32 (3)
	21:50			20:58	6	20:32 (12)	19:50			18:44	56	18:16 (18)	16:52			16:39	20	15:52 (3)
21	05:54			06:40			07:28			08:17		17:00 (1)	08:10			08:46		15:33 (3)
	21:49			20:56			19:48			18:42	55	17:55 (1)	16:51			16:40	20	15:53 (3)
22	05:55			06:41			07:30			08:19		17:00 (1)	08:12			08:47		15:33 (3)
	21:48			20:54			19:46			18:40	54	17:54 (1)	16:50			16:40	20	15:53 (3)
23	05:56			06:43			07:32			08:21		17:01 (1)	08:14			08:47		15:34 (3)
	21:46			20:52			19:43			18:38	53	17:54 (1)	16:49			16:41	20	15:54 (3)
24	05:58			06:44			07:33			08:22		17:01 (1)	08:15			08:48		15:35 (3)
	21:45			20:50			19:41			18:36	53	17:54 (1)	16:48			16:41	19	15:54 (3)
25	05:59			06:46			07:35			07:24		16:00 (1)	08:17			08:48		15:35 (3)
	21:44			20:48			19:39			17:34	52	16:52 (1)	16:47			16:42	19	15:54 (3)
26	06:00			06:48			07:36			07:26		16:01 (1)	08:18			08:48		15:36 (3)
	21:42			20:46			19:37			17:32	51	16:52 (1)	16:46			16:43	19	15:55 (3)
27	06:02			06:49			07:38			07:28		16:02 (1)	08:20			08:49		15:36 (3)
	21:41			20:44			19:34			17:30	49	16:51 (1)	16:45			16:43	19	15:55 (3)
28	06:03		20:30 (12)	06:51			07:39		18:52 (17)	07:29		16:03 (1)	08:21			08:49		15:37 (3)
	21:39	9	20:39 (12)	20:42			19:32	6	18:58 (17)	17:28	49	16:58 (16)	16:44			16:44	19	15:56 (3)
29	06:05		20:27 (12)	06:52			07:41		18:50 (17)	07:31		16:03 (1)	08:23			08:49		15:37 (3)
	21:38	14	20:41 (12)	20:40			19:30	10	19:00 (17)	17:26	51	16:58 (16)	16:43			16:45	19	15:56 (3)
30	06:06		20:26 (12)	06:54			07:43		18:48 (17)	07:33		16:04 (1)	08:24			08:49		15:38 (3)
	21:36	16	20:42 (12)	20:37			19:28	12	19:00 (17)	17:25	48	16:56 (16)	16:43			16:46	18	15:56 (3)
31	06:08		20:25 (12)	06:55						07:35		16:05 (1)				08:49		15:39 (3)
	21:35	19	20:44 (12)	20:35						17:23	44	16:54 (16)				16:47	18	15:57 (3)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		871			471			28			1474			213			493	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,56			0,55			0,63			0,69			0,69			0,72	
Total reduction		0,24			0,25			0,27			0,25			0,17			0,15	
Total, real		213			118			7			362			37			74	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: P - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:45 (4)	08:24		16:33 (3)	07:32		17:56 (16)	07:23		19:13 (1)	06:20			05:36		20:52 (12)
	16:48	25	16:10 (4)	17:35	18	16:51 (3)	18:25	3	17:59 (16)	20:17	38	19:51 (17)	21:06			21:50	23	21:15 (12)
2	08:49		15:44 (4)	08:22		16:34 (3)	07:30			07:21		19:12 (1)	06:18			05:36		20:53 (12)
	16:49	25	16:09 (4)	17:36	17	16:51 (3)	18:26			20:18	41	19:53 (17)	21:08			21:51	22	21:15 (12)
3	08:49		15:45 (4)	08:21		16:35 (3)	07:28			07:19		19:11 (1)	06:16			05:35		20:53 (12)
	16:50	25	16:10 (4)	17:38	15	16:50 (3)	18:28			20:20	42	19:53 (17)	21:09			21:52	22	21:15 (12)
4	08:49		15:45 (4)	08:19		16:37 (3)	07:26			07:16		19:10 (1)	06:15			05:34		20:53 (12)
	16:51	26	16:11 (4)	17:40	11	16:48 (3)	18:30			20:22	43	19:53 (1)	21:11			21:53	21	21:14 (12)
5	08:49		15:45 (4)	08:18		16:41 (3)	07:23			07:14		19:08 (1)	06:13			05:34		20:54 (12)
	16:53	26	16:11 (4)	17:42	4	16:45 (3)	18:32			20:23	44	19:52 (1)	21:12			21:54	21	21:15 (12)
6	08:48		15:46 (4)	08:16			07:21			07:12		19:08 (1)	06:11			05:33		20:54 (12)
	16:54	26	16:12 (4)	17:44			18:33			20:25	45	19:53 (1)	21:14			21:55	20	21:14 (12)
7	08:48		15:46 (4)	08:14			07:19			07:10		19:07 (1)	06:09			05:32		20:55 (12)
	16:55	27	16:13 (4)	17:45			18:35			20:27	46	19:53 (1)	21:16			21:56	20	21:15 (12)
8	08:48		15:46 (4)	08:13			07:17			07:08		19:07 (1)	06:08			05:32		20:55 (12)
	16:56	27	16:13 (4)	17:47			18:37			20:28	47	19:54 (1)	21:17			21:57	19	21:14 (12)
9	08:47		15:46 (4)	08:11			07:15			07:05		19:06 (1)	06:06			05:31		20:56 (12)
	16:58	27	16:13 (4)	17:49			18:38			20:30	48	19:54 (1)	21:19			21:58	18	21:14 (12)
10	08:47		15:47 (4)	08:09			07:13			07:03		19:06 (1)	06:04			05:31		20:56 (12)
	16:59	28	16:15 (4)	17:51			18:40			20:32	48	19:54 (1)	21:20			21:59	19	21:15 (12)
11	08:46		15:47 (4)	08:07			07:10			07:01		19:05 (1)	06:03			05:31		20:57 (12)
	17:00	28	16:15 (4)	17:53			18:42			20:33	48	19:53 (1)	21:22			21:59	18	21:15 (12)
12	08:46		15:48 (4)	08:06			07:08			06:59		19:05 (1)	06:01		20:52 (14)	05:30		20:57 (12)
	17:02	27	16:15 (4)	17:54			18:44			20:35	47	19:52 (1)	21:23	2	20:54 (14)	22:00	17	21:14 (12)
13	08:45		15:48 (4)	08:04			07:06		18:18 (18)	06:57		19:05 (1)	05:59		20:51 (14)	05:30		20:58 (12)
	17:03	27	16:15 (4)	17:56			18:45	2	18:20 (18)	20:37	47	19:52 (1)	21:25	5	20:56 (14)	22:01	16	21:14 (12)
14	08:44		15:48 (4)	08:02			07:04		18:18 (18)	06:55		19:05 (1)	05:58		20:51 (14)	05:30		20:58 (12)
	17:05	27	16:15 (4)	17:58			18:47	4	18:22 (18)	20:38	47	19:52 (1)	21:26	6	20:57 (14)	22:01	16	21:14 (12)
15	08:43		15:50 (4)	08:00			07:01		18:18 (18)	06:52		19:06 (1)	05:56		20:51 (14)	05:30		20:59 (12)
	17:06	26	16:16 (4)	18:00			18:49	6	18:24 (18)	20:40	45	19:51 (1)	21:28	7	20:58 (14)	22:02	15	21:14 (12)
16	08:43		15:50 (4)	07:58			06:59		18:19 (18)	06:50		19:06 (1)	05:55		20:51 (14)	05:30		20:59 (12)
	17:08	26	16:16 (4)	18:02			18:50	7	18:26 (18)	20:42	45	19:51 (1)	21:29	9	21:00 (14)	22:02	15	21:14 (12)
17	08:42		15:51 (4)	07:56			06:57		18:22 (18)	06:48		19:06 (1)	05:53		20:50 (14)	05:29		21:00 (12)
	17:09	29	16:38 (3)	18:03			18:52	1	18:23 (18)	20:43	44	19:50 (1)	21:31	11	21:01 (14)	22:03	14	21:14 (12)
18	08:41		15:52 (4)	07:54			06:55			06:46		19:07 (1)	05:52		20:51 (14)	05:29		21:00 (12)
	17:11	31	16:39 (3)	18:05			18:54			20:45	42	19:49 (1)	21:32	11	21:02 (14)	22:03	14	21:14 (12)
19	08:40		15:52 (4)	07:52			06:52			06:44		19:08 (1)	05:51		20:51 (14)	05:30		21:00 (12)
	17:12	33	16:40 (3)	18:07			18:55			20:46	40	19:48 (1)	21:34	13	21:04 (14)	22:03	14	21:14 (12)
20	08:39		15:53 (4)	07:50			06:50			06:42		19:08 (1)	05:49		20:52 (14)	05:30		21:00 (12)
	17:14	33	16:42 (3)	18:09			18:57			20:48	39	19:47 (1)	21:35	13	21:05 (14)	22:04	14	21:14 (12)
21	08:38		15:54 (4)	07:48			06:48			06:40		19:09 (1)	05:48		20:51 (12)	05:30		21:00 (12)
	17:16	34	16:44 (3)	18:11			18:59			20:50	37	19:46 (1)	21:36	15	21:06 (14)	22:04	14	21:14 (12)
22	08:37		15:55 (4)	07:46			06:46			06:38		19:10 (1)	05:47		20:51 (12)	05:30		21:01 (12)
	17:17	36	16:46 (3)	18:12			19:00			20:51	34	19:44 (1)	21:38	16	21:07 (12)	22:04	14	21:15 (12)
23	08:36		15:57 (4)	07:44			06:43			06:36		19:12 (1)	05:46		20:51 (12)	05:30		21:01 (12)
	17:19	35	16:48 (3)	18:14			19:02			20:53	31	19:43 (1)	21:39	17	21:08 (12)	22:04	14	21:15 (12)
24	08:34		15:58 (4)	07:42			06:41			06:34		19:13 (1)	05:44		20:51 (12)	05:30		21:01 (12)
	17:21	35	16:50 (3)	18:16			19:04			20:55	28	19:41 (1)	21:41	19	21:10 (12)	22:05	14	21:15 (12)
25	08:33		16:00 (4)	07:40			06:39			06:32		19:15 (1)	05:43		20:51 (12)	05:31		21:02 (12)
	17:22	33	16:51 (3)	18:18			19:05			20:56	24	19:39 (1)	21:42	20	21:11 (12)	22:05	14	21:16 (12)
26	08:32		16:03 (4)	07:38			06:37			06:30		19:17 (1)	05:42		20:51 (12)	05:31		21:01 (12)
	17:24	26	16:51 (3)	18:19			19:07			20:58	19	19:36 (1)	21:43	21	21:12 (12)	22:05	15	21:16 (12)
27	08:31		16:30 (3)	07:36			06:34		18:27 (1)	06:28		19:20 (1)	05:41		20:51 (12)	05:32		21:01 (12)
	17:26	22	16:52 (3)	18:21			19:09	14	18:41 (1)	21:00	12	19:32 (1)	21:44	22	21:13 (12)	22:05	15	21:16 (12)
28	08:29		16:31 (3)	07:34		17:55 (16)	06:32		18:22 (1)	06:26			05:40		20:51 (12)	05:32		21:01 (12)
	17:28	22	16:53 (3)	18:23	2	17:57 (16)	19:10	21	18:43 (1)	21:01			21:46	23	21:14 (12)	22:04	16	21:17 (12)
29	08:28		16:31 (3)				07:30		19:19 (1)	06:24			05:39		20:52 (12)	05:33		21:01 (12)
	17:29	21	16:52 (3)				20:12	28	19:47 (17)	21:03			21:47	23	21:15 (12)	22:04	16	21:17 (12)
30	08:27		16:32 (3)				07:28		19:17 (1)	06:22			05:38		20:52 (12)	05:33		21:01 (12)
	17:31	21	16:53 (3)				20:14	31	19:48 (1)	21:04			21:48	23	21:15 (12)	22:04	17	21:18 (12)
31	08:25		16:32 (3)				07:25		19:16 (1)				05:37		20:52 (12)			
	17:33	20	16:52 (3)				20:15	34	19:50 (1)				21:49	23	21:15 (12)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		854			67			151			1071			299			507	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,71			0,70			0,61			0,61			0,56			0,56	
Total reduction		0,16			0,20			0,22			0,27			0,25			0,24	
Total, real		141			13			34			291			75			123	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: P - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:02 (12)	06:09		21:02 (14)	06:57		19:05 (1)	07:44			07:36			08:26		15:30 (4)
	22:04	17	21:19 (12)	21:33	2	21:04 (14)	20:33	48	19:53 (1)	19:25			17:21			16:42	27	15:57 (4)
2	05:34		21:01 (12)	06:10			06:59		19:04 (1)	07:46			07:38			08:27		15:29 (4)
	22:04	18	21:19 (12)	21:32			20:31	48	19:52 (1)	19:23			17:19			16:41	28	15:57 (4)
3	05:35		21:01 (12)	06:12			07:00		19:04 (1)	07:47			07:40			08:28		15:30 (4)
	22:03	18	21:19 (12)	21:30			20:29	48	19:52 (1)	19:21			17:17			16:41	28	15:58 (4)
4	05:36		21:01 (12)	06:13			07:02		19:04 (1)	07:49			07:42			08:30		15:30 (4)
	22:03	19	21:20 (12)	21:28			20:26	47	19:51 (1)	19:19			17:16			16:40	27	15:57 (4)
5	05:37		21:00 (12)	06:15			07:03		19:04 (1)	07:51			07:43			08:31		15:32 (4)
	22:02	20	21:20 (12)	21:27			20:24	46	19:50 (1)	19:16			17:14			16:40	26	15:58 (4)
6	05:37		21:00 (12)	06:16			07:05		19:04 (1)	07:52			07:45		16:10 (3)	08:32		15:32 (4)
	22:02	21	21:21 (12)	21:25			20:22	45	19:49 (1)	19:14			17:12	6	16:16 (3)	16:39	26	15:58 (4)
7	05:38		21:01 (12)	06:18			07:06		19:04 (1)	07:54			07:47		16:08 (3)	08:34		15:32 (4)
	22:01	20	21:21 (12)	21:23			20:20	45	19:49 (1)	19:12			17:11	11	16:19 (3)	16:39	26	15:58 (4)
8	05:39		21:01 (12)	06:20			07:08		19:04 (1)	07:56			07:48		16:06 (3)	08:35		15:32 (4)
	22:01	21	21:22 (12)	21:21			20:17	43	19:47 (1)	19:10			17:09	15	16:21 (3)	16:39	26	15:58 (4)
9	05:40		21:01 (12)	06:21			07:10		19:05 (1)	07:57			07:50		16:05 (3)	08:36		15:34 (4)
	22:00	21	21:22 (12)	21:20			20:15	42	19:47 (17)	19:07			17:07	17	16:22 (3)	16:39	25	15:59 (4)
10	05:41		21:01 (12)	06:23			07:11		19:05 (1)	07:59			07:52		16:03 (3)	08:37		15:34 (4)
	21:59	22	21:23 (12)	21:18			20:13	41	19:46 (17)	19:05			17:06	19	16:22 (3)	16:38	26	16:00 (4)
11	05:42		21:01 (12)	06:24			07:13		19:06 (1)	08:01			07:54		16:03 (3)	08:38		15:35 (4)
	21:59	22	21:23 (12)	21:16			20:11	39	19:45 (17)	19:03			17:04	20	16:23 (3)	16:38	25	16:00 (4)
12	05:43		21:01 (12)	06:26			07:14		19:07 (1)	08:02		18:30 (16)	07:55		16:03 (3)	08:39		15:35 (4)
	21:58	22	21:23 (12)	21:14			20:08	35	19:42 (17)	19:01	3	18:33 (16)	17:03	20	16:23 (3)	16:38	25	16:00 (4)
13	05:44		21:00 (12)	06:27			07:16		19:08 (1)	08:04		18:29 (16)	07:57		16:03 (3)	08:40		15:36 (4)
	21:57	24	21:24 (12)	21:12			20:06	32	19:40 (17)	18:59	2	18:31 (16)	17:01	21	16:24 (3)	16:38	24	16:00 (4)
14	05:45		21:00 (12)	06:29			07:17		19:09 (1)	08:06		18:28 (16)	07:59		16:03 (3)	08:41		15:36 (4)
	21:56	24	21:24 (12)	21:10			20:04	28	19:37 (1)	18:57	1	18:29 (16)	17:00	22	16:25 (3)	16:38	25	16:01 (4)
15	05:46		21:00 (12)	06:30			07:19		19:12 (1)	08:07			08:00		16:03 (3)	08:42		15:37 (4)
	21:55	24	21:24 (12)	21:08			20:02	22	19:34 (1)	18:55			16:59	22	16:25 (3)	16:38	24	16:01 (4)
16	05:48		21:00 (12)	06:32		19:27 (1)	07:20		19:14 (1)	08:09			08:02		15:37 (4)	08:43		15:38 (4)
	21:54	23	21:23 (12)	21:06	14	19:41 (1)	19:59	16	19:30 (1)	18:52			16:57	26	16:25 (3)	16:38	24	16:02 (4)
17	05:49		21:00 (12)	06:33		19:23 (1)	07:22			08:11			08:04		15:33 (4)	08:44		15:38 (4)
	21:53	22	21:22 (12)	21:05	20	19:43 (1)	19:57			18:50			16:56	33	16:24 (3)	16:38	23	16:01 (4)
18	05:50		21:00 (12)	06:35		19:21 (1)	07:24			08:12			08:06		15:32 (4)	08:44		15:38 (4)
	21:52	21	21:21 (12)	21:03	25	19:46 (1)	19:55			18:48			16:55	35	16:24 (3)	16:39	24	16:02 (4)
19	05:51		21:00 (12)	06:37		19:18 (1)	07:25			08:14			08:07		15:31 (4)	08:45		15:39 (4)
	21:51	20	21:20 (12)	21:01	29	19:47 (1)	19:53			18:46			16:53	35	16:22 (3)	16:39	24	16:03 (4)
20	05:52		21:00 (12)	06:38		19:17 (1)	07:27			08:16			08:09		15:30 (4)	08:46		15:39 (4)
	21:50	19	21:19 (12)	20:58	32	19:49 (1)	19:50			18:44			16:52	35	16:21 (3)	16:39	23	16:02 (4)
21	05:54		21:01 (12)	06:40		19:15 (1)	07:28			08:17			08:10		15:30 (4)	08:46		15:40 (4)
	21:49	17	21:18 (12)	20:56	34	19:49 (1)	19:48			18:42			16:51	34	16:20 (3)	16:40	23	16:03 (4)
22	05:55		21:02 (12)	06:41		19:14 (1)	07:30			08:19			08:12		15:29 (4)	08:47		15:40 (4)
	21:48	15	21:17 (12)	20:54	37	19:51 (1)	19:46			18:40			16:50	33	16:18 (3)	16:40	23	16:03 (4)
23	05:56		21:02 (14)	06:43		19:12 (1)	07:32			08:21			08:14		15:29 (4)	08:47		15:41 (4)
	21:46	14	21:16 (14)	20:52	39	19:51 (1)	19:43			18:38			16:49	33	16:17 (3)	16:41	23	16:04 (4)
24	05:58		21:01 (14)	06:44		19:11 (1)	07:33			08:22			08:15		15:29 (4)	08:48		15:41 (4)
	21:45	13	21:14 (14)	20:50	41	19:52 (1)	19:41			18:36			16:48	31	16:16 (3)	16:41	24	16:05 (4)
25	05:59		21:02 (14)	06:46		19:10 (1)	07:35			07:24			08:17		15:28 (4)	08:48		15:41 (4)
	21:44	12	21:14 (14)	20:48	42	19:52 (1)	19:39			17:34			16:47	30	16:15 (3)	16:42	24	16:05 (4)
26	06:00		21:01 (14)	06:48		19:09 (1)	07:36			07:26			08:18		15:28 (4)	08:48		15:43 (4)
	21:42	11	21:12 (14)	20:46	44	19:53 (1)	19:37			17:32			16:46	26	15:54 (4)	16:43	23	16:06 (4)
27	06:02		21:01 (14)	06:49		19:08 (1)	07:38		19:01 (18)	07:28			08:20		15:29 (4)	08:49		15:43 (4)
	21:41	10	21:11 (14)	20:44	44	19:52 (1)	19:34	6	19:07 (18)	17:30			16:45	26	15:55 (4)	16:43	23	16:06 (4)
28	06:03		21:01 (14)	06:51		19:07 (1)	07:39		18:59 (18)	07:29			08:21		15:28 (4)	08:49		15:43 (4)
	21:39	9	21:10 (14)	20:42	46	19:53 (1)	19:32	6	19:05 (18)	17:28			16:44	27	15:55 (4)	16:44	24	16:07 (4)
29	06:05		21:01 (14)	06:52		19:06 (1)	07:41		18:59 (18)	07:31			08:23		15:29 (4)	08:49		15:43 (4)
	21:38	7	21:08 (14)	20:40	47	19:53 (1)	19:30	4	19:03 (18)	17:26			16:43	27	15:56 (4)	16:45	24	16:07 (4)
30	06:06		21:01 (14)	06:54		19:06 (1)	07:43		18:57 (18)	07:33			08:24		15:29 (4)	08:49		15:44 (4)
	21:36	6	21:07 (14)	20:37	47	19:53 (1)	19:28	3	19:00 (18)	17:25			16:43	27	15:56 (4)	16:46	24	16:08 (4)
31	06:08		21:02 (14)	06:55		19:05 (1)				07:35						08:49		15:44 (4)
	21:35	4	21:06 (14)	20:35	47	19:52 (1)				17:23						16:47	25	16:09 (4)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		536			590			644			6			631			766	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,56			0,61			0,61			0,64			0,71			0,71	
Total reduction		0,25			0,28			0,26			0,23			0,18			0,15	
Total, real		132			164			167			1			113			114	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: Q - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		15:07 (5)	08:24		16:21 (4)	07:32			07:23			06:20		19:40 (1)	05:36		20:56 (12)
	16:48	30	15:37 (5)	17:35	36	17:05 (3)	18:25			20:17			21:06	14	19:54 (1)	21:50	19	21:15 (12)
2	08:49		15:07 (5)	08:22		16:23 (4)	07:30			07:21		19:52 (17)	06:18		19:45 (1)	05:36		20:57 (12)
	16:49	30	15:37 (5)	17:36	36	17:07 (3)	18:26			20:18	1	19:53 (17)	21:08	3	19:48 (1)	21:51	19	21:16 (12)
3	08:49		15:08 (5)	08:21		16:24 (4)	07:28			07:19		19:52 (17)	06:16			05:35		20:57 (12)
	16:50	29	15:37 (5)	17:38	35	17:09 (3)	18:28			20:20	3	19:55 (17)	21:09			21:52	18	21:15 (12)
4	08:49		15:09 (5)	08:19		16:25 (4)	07:26			07:16		19:52 (17)	06:15			05:34		20:57 (12)
	16:51	29	15:38 (5)	17:40	36	17:11 (3)	18:30			20:22	5	19:57 (17)	21:11			21:53	18	21:15 (12)
5	08:49		15:09 (5)	08:18		16:28 (4)	07:23			07:14		19:44 (1)	06:13			05:34		20:58 (12)
	16:53	28	15:37 (5)	17:42	31	17:12 (3)	18:32			20:23	13	19:57 (1)	21:12			21:54	17	21:15 (12)
6	08:48		15:10 (5)	08:16		16:51 (3)	07:21			07:12		19:41 (1)	06:11			05:33		20:58 (12)
	16:54	28	15:38 (5)	17:44	20	17:11 (3)	18:33			20:25	18	19:59 (1)	21:14			21:55	16	21:14 (12)
7	08:48		15:12 (5)	08:14		16:51 (3)	07:19			07:10		19:39 (1)	06:09			05:32		20:59 (12)
	16:55	27	15:39 (5)	17:45	20	17:11 (3)	18:35			20:27	22	20:01 (1)	21:16			21:56	16	21:15 (12)
8	08:48		15:12 (5)	08:13		16:51 (3)	07:17			07:08		19:37 (1)	06:08			05:32		20:59 (12)
	16:56	26	15:38 (5)	17:47	20	17:11 (3)	18:37			20:28	26	20:03 (1)	21:17			21:57	15	21:14 (12)
9	08:47		15:13 (5)	08:11		16:52 (3)	07:15			07:05		19:35 (1)	06:06			05:31		21:00 (12)
	16:58	25	15:38 (5)	17:49	18	17:10 (3)	18:38			20:30	29	20:04 (1)	21:19			21:58	14	21:14 (12)
10	08:47		15:14 (5)	08:09		16:54 (3)	07:13			07:03		19:34 (1)	06:04			05:31		21:01 (12)
	16:59	24	15:38 (5)	17:51	16	17:10 (3)	18:40			20:32	32	20:06 (1)	21:20			21:59	13	21:14 (12)
11	08:46		15:15 (5)	08:07		16:55 (3)	07:10			07:01		19:32 (1)	06:03			05:31		21:02 (12)
	17:00	23	15:38 (5)	17:53	14	17:09 (3)	18:42			20:33	35	20:07 (1)	21:22			21:59	12	21:14 (12)
12	08:46		15:16 (5)	08:06		16:57 (3)	07:08			06:59		19:31 (1)	06:01			05:30		21:02 (12)
	17:02	27	16:29 (4)	17:54	10	17:07 (3)	18:44			20:35	37	20:08 (1)	21:23			22:00	11	21:13 (12)
13	08:45		15:17 (5)	08:04			07:06			06:57		19:31 (1)	05:59		20:54 (14)	05:30		21:03 (12)
	17:03	29	16:30 (4)	17:56			18:45			20:37	37	20:08 (1)	21:25	2	20:56 (14)	22:01	10	21:13 (12)
14	08:44		15:19 (5)	08:02			07:04			06:54		19:30 (1)	05:58		20:53 (14)	05:30		21:04 (12)
	17:05	29	16:32 (4)	17:58			18:47			20:38	39	20:09 (1)	21:26	4	20:57 (14)	22:01	9	21:13 (12)
15	08:43		15:21 (5)	08:00			07:01			06:52		19:30 (1)	05:56		20:53 (14)	05:30		21:04 (12)
	17:06	29	16:34 (4)	18:00			18:49			20:40	39	20:09 (1)	21:28	5	20:58 (14)	22:02	9	21:13 (12)
16	08:43		15:24 (5)	07:58			06:59			06:50		19:29 (1)	05:55		20:53 (14)	05:30		21:05 (12)
	17:08	27	16:36 (4)	18:02			18:50			20:42	40	20:09 (1)	21:29	7	21:00 (14)	22:02	8	21:13 (12)
17	08:42		15:28 (5)	07:56			06:57			06:48		19:29 (1)	05:53		20:53 (14)	05:29		21:06 (12)
	17:09	22	16:38 (4)	18:03			18:52			20:43	40	20:09 (1)	21:31	8	21:01 (14)	22:03	7	21:13 (12)
18	08:41		16:18 (4)	07:54			06:55		18:27 (18)	06:46		19:29 (1)	05:52		20:53 (14)	05:29		21:06 (12)
	17:11	20	16:38 (4)	18:05			18:54	2	18:29 (18)	20:45	39	20:08 (1)	21:32	9	21:02 (14)	22:03	6	21:12 (12)
19	08:40		16:17 (4)	07:52			06:52		18:27 (18)	06:44		19:29 (1)	05:51		20:54 (14)	05:30		21:07 (12)
	17:12	22	16:39 (4)	18:07			18:55	4	18:31 (18)	20:46	39	20:08 (1)	21:34	10	21:04 (14)	22:03	5	21:12 (12)
20	08:39		16:17 (4)	07:50			06:50		18:27 (18)	06:42		19:29 (1)	05:49		20:55 (14)	05:30		21:07 (12)
	17:14	23	16:40 (4)	18:09			18:57	5	18:32 (18)	20:48	39	20:08 (1)	21:35	10	21:05 (14)	22:04	5	21:12 (12)
21	08:38		16:17 (4)	07:48			06:48		18:29 (18)	06:40		19:29 (1)	05:48		20:54 (14)	05:30		21:07 (12)
	17:16	24	16:41 (4)	18:11			18:59	4	18:33 (18)	20:50	38	20:07 (1)	21:36	12	21:06 (14)	22:04	5	21:12 (12)
22	08:37		16:18 (4)	07:46			06:46			06:38		19:29 (1)	05:47		20:54 (12)	05:30		21:08 (12)
	17:17	24	16:42 (4)	18:12			19:00			20:51	38	20:07 (1)	21:38	13	21:07 (12)	22:04	5	21:13 (12)
23	08:36		16:18 (4)	07:44			06:43			06:36		19:30 (1)	05:46		20:54 (12)	05:30		21:08 (12)
	17:19	25	16:43 (4)	18:14			19:02			20:53	36	20:06 (1)	21:39	14	21:08 (12)	22:04	5	21:13 (12)
24	08:34		16:17 (4)	07:42			06:41			06:34		19:30 (1)	05:44		20:54 (12)	05:30		21:07 (12)
	17:21	26	16:43 (4)	18:16			19:04			20:55	35	20:05 (1)	21:41	16	21:10 (12)	22:05	6	21:13 (12)
25	08:33		16:18 (4)	07:40			06:39			06:32		19:31 (1)	05:43		20:54 (12)	05:31		21:08 (12)
	17:22	25	16:43 (4)	18:18			19:05			20:56	33	20:04 (1)	21:42	17	21:11 (12)	22:05	7	21:15 (12)
26	08:32		16:17 (4)	07:38			06:37			06:30		19:32 (1)	05:42		20:54 (12)	05:31		21:07 (12)
	17:24	26	16:43 (4)	18:19			19:07			20:58	31	20:03 (1)	21:43	18	21:12 (12)	22:05	8	21:15 (12)
27	08:31		16:18 (4)	07:36			06:34			06:28		19:32 (1)	05:41		20:54 (12)	05:32		21:07 (12)
	17:26	26	16:44 (4)	18:21			19:09			21:00	29	20:01 (1)	21:44	19	21:13 (12)	22:05	8	21:15 (12)
28	08:29		16:19 (4)	07:34			06:32			06:26		19:34 (1)	05:40		20:54 (12)	05:32		21:07 (12)
	17:28	26	16:58 (3)	18:23			19:10			21:01	26	20:00 (1)	21:46	20	21:14 (12)	22:04	9	21:16 (12)
29	08:28		16:19 (4)				07:30			06:24		19:36 (1)	05:39		20:56 (12)	05:33		21:06 (12)
	17:29	30	16:59 (3)				20:12			21:03	23	19:59 (1)	21:47	20	21:16 (12)	22:04	10	21:16 (12)
30	08:27		16:20 (4)				07:28			06:22		19:38 (1)	05:38		20:56 (12)	05:33		21:06 (12)
	17:31	32	17:02 (3)				20:14			21:04	19	19:57 (1)	21:48	20	21:16 (12)	22:04	11	21:17 (12)
31	08:25		16:20 (4)				07:25						05:37		20:56 (12)			
	17:33	34	17:03 (3)				20:15						21:49	20	21:16 (12)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		825			292			15			841			261			321	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,72			0,70			0,62			0,59			0,56			0,56	
Total reduction		0,17			0,20			0,23			0,26			0,25			0,24	
Total, real		138			59			3			222			66			79	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: Q - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:07 (12)	06:09			06:57		19:32 (1)	07:44			07:36		16:22 (3)	08:26		14:57 (5)
	22:04	11	21:18 (12)	21:33			20:33	35	20:07 (1)	19:25			17:21	17	16:39 (3)	16:42	23	15:20 (5)
2	05:34		21:06 (12)	06:10			06:59		19:32 (1)	07:46			07:38		16:21 (3)	08:27		14:56 (5)
	22:04	12	21:18 (12)	21:32			20:31	32	20:04 (1)	19:23			17:19	19	16:40 (3)	16:41	24	15:20 (5)
3	05:35		21:06 (12)	06:12			07:00		19:33 (1)	07:47			07:40		16:21 (3)	08:28		14:57 (5)
	22:03	13	21:19 (12)	21:30			20:29	30	20:03 (1)	19:21			17:17	19	16:40 (3)	16:41	25	15:22 (5)
4	05:36		21:06 (12)	06:13			07:02		19:34 (1)	07:49			07:42		16:21 (3)	08:30		14:56 (5)
	22:03	14	21:20 (12)	21:28			20:26	26	20:00 (1)	19:19			17:16	20	16:41 (3)	16:40	26	15:22 (5)
5	05:37		21:05 (12)	06:15			07:03		19:36 (1)	07:51			07:43		16:21 (3)	08:31		14:57 (5)
	22:02	15	21:20 (12)	21:27			20:24	22	19:58 (1)	19:16			17:14	20	16:41 (3)	16:40	27	15:24 (5)
6	05:37		21:05 (12)	06:16			07:05		19:37 (1)	07:52			07:45		15:58 (4)	08:32		14:56 (5)
	22:02	16	21:21 (12)	21:25			20:22	18	19:55 (1)	19:14			17:12	30	16:41 (3)	16:39	28	15:24 (5)
7	05:38		21:05 (12)	06:18			07:06		19:40 (1)	07:54			07:47		15:56 (4)	08:34		14:56 (5)
	22:01	16	21:21 (12)	21:23			20:20	14	19:54 (1)	19:12			17:11	35	16:41 (3)	16:39	29	15:25 (5)
8	05:39		21:05 (12)	06:20			07:08		19:45 (1)	07:56			07:48		15:54 (4)	08:35		14:56 (5)
	22:01	17	21:22 (12)	21:21			20:17	6	19:51 (17)	19:10			17:09	36	16:40 (3)	16:39	29	15:25 (5)
9	05:40		21:05 (12)	06:21			07:10		19:46 (17)	07:57			07:50		15:53 (4)	08:36		14:57 (5)
	22:00	17	21:22 (12)	21:20			20:15	3	19:49 (17)	19:07			17:07	36	16:38 (3)	16:39	29	15:26 (5)
10	05:41		21:04 (12)	06:23			07:11			07:59			07:52		15:52 (4)	08:37		14:57 (5)
	21:59	19	21:23 (12)	21:18			20:13			19:05			17:06	34	16:35 (3)	16:38	30	15:27 (5)
11	05:42		21:04 (12)	06:24		19:51 (1)	07:13			08:01			07:54		15:51 (4)	08:38		14:57 (5)
	21:59	19	21:23 (12)	21:16	8	19:59 (1)	20:11			19:03			17:04	34	16:34 (3)	16:38	30	15:27 (5)
12	05:43		21:04 (12)	06:26		19:48 (1)	07:14			08:02			07:55		15:51 (4)	08:39		14:58 (5)
	21:58	20	21:24 (12)	21:14	15	20:03 (1)	20:08			19:01			17:03	31	16:32 (3)	16:38	30	15:28 (5)
13	05:44		21:04 (12)	06:27		19:45 (1)	07:16			08:04			07:57		15:51 (4)	08:40		14:58 (5)
	21:57	20	21:24 (12)	21:12	20	20:05 (1)	20:06			18:59			17:01	30	16:31 (3)	16:38	30	15:28 (5)
14	05:45		21:04 (12)	06:29		19:43 (1)	07:17			08:06			07:59		15:51 (4)	08:41		14:58 (5)
	21:56	21	21:25 (12)	21:10	24	20:07 (1)	20:04			18:57			17:00	26	16:30 (3)	16:38	31	15:29 (5)
15	05:46		21:04 (12)	06:30		19:41 (1)	07:19			08:07			08:00		15:51 (4)	08:42		14:59 (5)
	21:55	20	21:24 (12)	21:08	27	20:08 (1)	20:02			18:54			16:59	26	16:17 (4)	16:38	31	15:30 (5)
16	05:48		21:04 (12)	06:32		19:40 (1)	07:20			08:09			08:02		15:51 (4)	08:43		14:59 (5)
	21:54	19	21:23 (12)	21:06	29	20:09 (1)	19:59			18:52			16:57	26	16:17 (4)	16:38	31	15:30 (5)
17	05:49		21:04 (12)	06:33		19:38 (1)	07:22			08:11			08:04		15:51 (4)	08:44		14:59 (5)
	21:53	18	21:22 (12)	21:04	31	20:09 (1)	19:57			18:50			16:56	25	16:16 (4)	16:38	31	15:30 (5)
18	05:50		21:04 (12)	06:35		19:37 (1)	07:24			08:12			08:06		15:51 (4)	08:44		15:00 (5)
	21:52	17	21:21 (12)	21:02	34	20:11 (1)	19:55			18:48			16:55	26	16:17 (4)	16:39	31	15:31 (5)
19	05:51		21:04 (12)	06:37		19:36 (1)	07:25			08:14			08:07		15:52 (4)	08:45		15:00 (5)
	21:51	16	21:20 (12)	21:00	35	20:11 (1)	19:53			18:46			16:53	25	16:17 (4)	16:39	32	15:32 (5)
20	05:52		21:04 (12)	06:38		19:35 (1)	07:27			08:16			08:09		15:53 (4)	08:46		15:00 (5)
	21:50	15	21:19 (12)	20:58	37	20:12 (1)	19:50			18:44			16:52	24	16:17 (4)	16:39	32	15:32 (5)
21	05:54		21:05 (12)	06:40		19:34 (1)	07:28			08:17			08:10		15:53 (4)	08:46		15:01 (5)
	21:49	13	21:18 (12)	20:56	37	20:11 (1)	19:48			18:42			16:51	24	16:17 (4)	16:40	32	15:33 (5)
22	05:55		21:05 (14)	06:41		19:34 (1)	07:30		19:16 (18)	08:19			08:12		15:53 (4)	08:47		15:01 (5)
	21:48	12	21:17 (14)	20:54	38	20:12 (1)	19:46	1	19:17 (18)	18:40			16:50	23	16:16 (4)	16:40	32	15:33 (5)
23	05:56		21:05 (14)	06:43		19:33 (1)	07:32		19:12 (18)	08:21			08:14		15:54 (4)	08:47		15:02 (5)
	21:46	11	21:16 (14)	20:52	39	20:12 (1)	19:43	5	19:17 (18)	18:38			16:49	22	16:16 (4)	16:41	32	15:34 (5)
24	05:58		21:04 (14)	06:44		19:33 (1)	07:33		19:11 (18)	08:22			08:15		15:56 (4)	08:48		15:02 (5)
	21:45	10	21:14 (14)	20:50	39	20:12 (1)	19:41	4	19:15 (18)	18:36			16:48	20	16:16 (4)	16:41	32	15:34 (5)
25	05:59		21:04 (14)	06:46		19:32 (1)	07:35		19:09 (18)	07:24			08:17		15:06 (5)	08:48		15:03 (5)
	21:44	10	21:14 (14)	20:48	39	20:11 (1)	19:39	3	19:12 (18)	17:34			16:47	20	16:15 (4)	16:42	31	15:34 (5)
26	06:00		21:04 (14)	06:48		19:32 (1)	07:36			07:26			08:18		15:02 (5)	08:48		15:04 (5)
	21:42	8	21:12 (14)	20:46	39	20:11 (1)	19:37			17:32			16:46	27	16:14 (4)	16:43	31	15:35 (5)
27	06:02		21:03 (14)	06:49		19:31 (1)	07:38			07:28			08:20		15:01 (5)	08:49		15:04 (5)
	21:41	8	21:11 (14)	20:44	40	20:11 (1)	19:34			17:30			16:45	28	16:13 (4)	16:43	31	15:35 (5)
28	06:03		21:04 (14)	06:51		19:32 (1)	07:39			07:29			08:21		14:59 (5)	08:49		15:05 (5)
	21:39	6	21:10 (14)	20:42	39	20:11 (1)	19:32			17:28			16:44	29	16:12 (4)	16:44	31	15:36 (5)
29	06:05		21:04 (14)	06:52		19:31 (1)	07:41			07:31		16:29 (3)	08:23		14:58 (5)	08:49		15:05 (5)
	21:38	4	21:08 (14)	20:40	38	20:09 (1)	19:30			17:26	5	16:34 (3)	16:43	29	16:11 (4)	16:45	31	15:36 (5)
30	06:06		21:04 (14)	06:54		19:32 (1)	07:43			07:33		16:26 (3)	08:24		14:57 (5)	08:49		15:06 (5)
	21:36	2	21:06 (14)	20:37	37	20:09 (1)	19:27			17:25	11	16:37 (3)	16:43	27	16:10 (4)	16:46	30	15:36 (5)
31	06:08		21:05 (14)	06:55		19:31 (1)				07:35		16:24 (3)				08:49		15:06 (5)
	21:35	1	21:06 (14)	20:35	37	20:08 (1)				17:23	15	16:39 (3)				16:47	31	15:37 (5)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		420			682			199			31			788			923	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,56			0,59			0,59			0,70			0,71			0,73	
Total reduction		0,25			0,27			0,25			0,25			0,18			0,15	
Total, real		104			185			50			8			141			141	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: R - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		14:59 (5)	08:24		16:17 (4)	07:32			07:23			06:20		19:35 (1)	05:36		21:02 (12)
	16:48	31	15:30 (5)	17:35	39	17:05 (3)	18:25			20:17			21:06	38	20:13 (1)	21:50	16	21:18 (12)
2	08:49		14:59 (5)	08:22		16:19 (4)	07:30			07:21			06:18		19:36 (1)	05:36		21:03 (12)
	16:49	30	15:29 (5)	17:36	39	17:07 (3)	18:26			20:18			21:08	36	20:12 (1)	21:51	17	21:20 (12)
3	08:49		15:00 (5)	08:21		16:20 (4)	07:28			07:19			06:16		19:36 (1)	05:35		21:03 (12)
	16:50	30	15:30 (5)	17:38	38	17:09 (3)	18:28			20:20			21:09	34	20:10 (1)	21:52	18	21:21 (12)
4	08:49		15:01 (5)	08:19		16:22 (4)	07:26			07:16		19:56 (17)	06:15		19:38 (1)	05:34		21:02 (12)
	16:51	29	15:30 (5)	17:40	35	17:10 (3)	18:30			20:22	1	19:57 (17)	21:11	32	20:10 (1)	21:53	19	21:21 (12)
5	08:49		15:01 (5)	08:18		16:25 (4)	07:23			07:14		19:54 (17)	06:13		19:39 (1)	05:34		21:03 (12)
	16:53	29	15:30 (5)	17:42	32	17:11 (3)	18:32			20:23	3	19:57 (17)	21:12	30	20:09 (1)	21:54	20	21:23 (12)
6	08:48		15:03 (5)	08:16		16:49 (3)	07:21			07:12		19:54 (17)	06:11		19:40 (1)	05:33		21:03 (12)
	16:54	27	15:30 (5)	17:44	22	17:11 (3)	18:33			20:25	5	19:59 (17)	21:14	27	20:07 (1)	21:55	20	21:23 (12)
7	08:48		15:04 (5)	08:14		16:49 (3)	07:19			07:10		19:54 (17)	06:09		19:42 (1)	05:32		21:04 (12)
	16:55	27	15:31 (5)	17:45	21	17:10 (3)	18:35			20:27	7	20:01 (17)	21:16	24	20:06 (1)	21:56	20	21:24 (12)
8	08:48		15:05 (5)	08:13		16:50 (3)	07:17			07:08		19:55 (17)	06:08		19:43 (1)	05:32		21:03 (12)
	16:56	25	15:30 (5)	17:47	20	17:10 (3)	18:37			20:28	8	20:03 (17)	21:17	21	20:04 (1)	21:57	21	21:24 (12)
9	08:47		15:05 (5)	08:11		16:50 (3)	07:15			07:05		19:53 (1)	06:06		19:46 (1)	05:31		21:04 (12)
	16:58	25	15:30 (5)	17:49	19	17:09 (3)	18:38			20:30	11	20:04 (1)	21:19	16	20:02 (1)	21:58	21	21:25 (12)
10	08:47		15:07 (5)	08:09		16:52 (3)	07:13			07:03		19:49 (1)	06:04		19:48 (1)	05:31		21:04 (12)
	16:59	30	16:26 (4)	17:51	17	17:09 (3)	18:40			20:32	17	20:06 (1)	21:20	11	19:59 (1)	21:59	22	21:26 (12)
11	08:46		15:08 (5)	08:07		16:53 (3)	07:10			07:01		19:45 (1)	06:03			05:31		21:05 (12)
	17:00	31	16:27 (4)	17:53	15	17:08 (3)	18:42			20:33	22	20:07 (1)	21:22			21:59	21	21:26 (12)
12	08:46		15:09 (5)	08:06		16:55 (3)	07:08			06:59		19:43 (1)	06:01			05:30		21:05 (12)
	17:02	33	16:29 (4)	17:54	11	17:06 (3)	18:44			20:35	26	20:09 (1)	21:23			22:00	20	21:25 (12)
13	08:45		15:11 (5)	08:04		16:59 (3)	07:06			06:57		19:42 (1)	05:59			05:30		21:05 (12)
	17:03	32	16:30 (4)	17:56	3	17:02 (3)	18:45			20:37	28	20:10 (1)	21:25			22:01	21	21:26 (12)
14	08:44		15:13 (5)	08:02			07:04			06:55		19:40 (1)	05:58			05:30		21:05 (12)
	17:05	32	16:32 (4)	17:58			18:47			20:38	32	20:12 (1)	21:26			22:01	21	21:26 (12)
15	08:43		15:16 (5)	08:00			07:01			06:52		19:39 (1)	05:56			05:30		21:06 (12)
	17:06	29	16:34 (4)	18:00			18:49			20:40	35	20:14 (1)	21:28			22:02	20	21:26 (12)
16	08:43		16:14 (4)	07:58			06:59			06:50		19:38 (1)	05:55			05:30		21:06 (12)
	17:08	21	16:35 (4)	18:02			18:50			20:42	37	20:15 (1)	21:29			22:02	20	21:26 (12)
17	08:42		16:14 (4)	07:56			06:57			06:48		19:37 (1)	05:53		20:58 (14)	05:29		21:06 (12)
	17:09	22	16:36 (4)	18:03			18:52			20:43	39	20:16 (1)	21:31	3	21:01 (14)	22:03	20	21:26 (12)
18	08:41		16:13 (4)	07:54			06:55			06:46		19:36 (1)	05:52		20:58 (14)	05:29		21:07 (12)
	17:11	23	16:36 (4)	18:05			18:54			20:45	40	20:16 (1)	21:32	4	21:02 (14)	22:03	20	21:27 (12)
19	08:40		16:13 (4)	07:52			06:52		18:29 (18)	06:44		19:35 (1)	05:51		20:59 (14)	05:30		21:07 (12)
	17:12	24	16:37 (4)	18:07			18:55	2	18:31 (18)	20:46	41	20:16 (1)	21:34	5	21:04 (14)	22:03	20	21:27 (12)
20	08:39		16:13 (4)	07:50			06:50		18:28 (18)	06:42		19:35 (1)	05:49		20:59 (14)	05:30		21:07 (12)
	17:14	25	16:38 (4)	18:09			18:57	4	18:32 (18)	20:48	42	20:17 (1)	21:35	6	21:05 (14)	22:04	20	21:27 (12)
21	08:38		16:13 (4)	07:48			06:48		18:29 (18)	06:40		19:34 (1)	05:48		20:58 (14)	05:30		21:07 (12)
	17:16	26	16:39 (4)	18:11			18:59	4	18:33 (18)	20:50	43	20:17 (1)	21:36	8	21:06 (14)	22:04	20	21:27 (12)
22	08:37		16:13 (4)	07:46			06:46		18:30 (18)	06:38		19:34 (1)	05:47		20:58 (14)	05:30		21:08 (12)
	17:17	27	16:40 (4)	18:12			19:00	5	18:35 (18)	20:51	43	20:17 (1)	21:38	9	21:07 (14)	22:04	20	21:28 (12)
23	08:36		16:14 (4)	07:44			06:43			06:36		19:34 (1)	05:46		20:59 (14)	05:30		21:08 (12)
	17:19	27	16:41 (4)	18:14			19:02			20:53	42	20:16 (1)	21:39	9	21:08 (14)	22:04	20	21:28 (12)
24	08:34		16:13 (4)	07:42			06:41			06:34		19:33 (1)	05:44		20:59 (14)	05:30		21:08 (12)
	17:21	27	16:40 (4)	18:16			19:04			20:55	43	20:16 (1)	21:41	11	21:10 (14)	22:05	20	21:28 (12)
25	08:33		16:14 (4)	07:40			06:39			06:32		19:33 (1)	05:43		21:00 (14)	05:31		21:08 (12)
	17:22	27	16:41 (4)	18:18			19:05			20:56	43	20:16 (1)	21:42	11	21:11 (14)	22:05	20	21:28 (12)
26	08:32		16:13 (4)	07:38			06:37			06:30		19:33 (1)	05:42		21:00 (14)	05:31		21:08 (12)
	17:24	28	16:41 (4)	18:19			19:07			20:58	42	20:15 (1)	21:43	12	21:12 (14)	22:05	20	21:28 (12)
27	08:31		16:14 (4)	07:36			06:34			06:28		19:33 (1)	05:41		21:01 (14)	05:32		21:08 (12)
	17:26	27	16:41 (4)	18:21			19:09			21:00	42	20:15 (1)	21:44	12	21:13 (12)	22:05	20	21:28 (12)
28	08:29		16:15 (4)	07:34			06:32			06:26		19:33 (1)	05:40		21:02 (14)	05:32		21:09 (12)
	17:28	31	16:58 (3)	18:23			19:10			21:01	41	20:14 (1)	21:46	12	21:14 (12)	22:04	20	21:29 (12)
29	08:28		16:15 (4)				07:30			06:24		19:35 (1)	05:39		21:03 (12)	05:33		21:08 (12)
	17:29	33	16:59 (3)				20:12			21:03	39	20:14 (1)	21:47	13	21:16 (12)	22:04	21	21:29 (12)
30	08:27		16:16 (4)				07:28			06:22		19:35 (1)	05:38		21:03 (12)	05:33		21:09 (12)
	17:31	36	17:02 (3)				20:14			21:04	39	20:14 (1)	21:48	14	21:17 (12)	22:04	20	21:29 (12)
31	08:25		16:17 (4)				07:25						05:37		21:02 (12)			
	17:33	37	17:03 (3)				20:15						21:49	16	21:18 (12)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		881			311			15			811			414			598	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,71			0,70			0,62			0,57			0,57			0,56	
Total reduction		0,17			0,20			0,23			0,26			0,26			0,24	
Total, real		147			63			3			210			106			146	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: R - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:09 (12)	06:09			06:57		19:45 (1)	07:44			07:36		16:20 (3)	08:26		14:50 (5)
	22:04	21	21:30 (12)	21:33			20:33	22	20:07 (1)	19:25			17:21	18	16:38 (3)	16:42	32	16:10 (4)
2	05:34		21:09 (12)	06:10		20:02 (1)	06:59		19:47 (1)	07:46			07:38		16:20 (3)	08:27		14:49 (5)
	22:04	21	21:30 (12)	21:32	2	20:04 (1)	20:31	17	20:04 (1)	19:23			17:19	19	16:39 (3)	16:41	30	16:08 (4)
3	05:35		21:09 (12)	06:12		19:57 (1)	07:00		19:51 (1)	07:47			07:40		16:19 (3)	08:28		14:49 (5)
	22:03	21	21:30 (12)	21:30	14	20:11 (1)	20:29	11	20:02 (1)	19:21			17:17	20	16:39 (3)	16:41	25	15:14 (5)
4	05:36		21:09 (12)	06:13		19:54 (1)	07:02		19:52 (17)	07:49			07:42		16:19 (3)	08:30		14:49 (5)
	22:03	22	21:31 (12)	21:28	19	20:13 (1)	20:26	8	20:00 (17)	19:19			17:16	21	16:40 (3)	16:40	25	15:14 (5)
5	05:37		21:09 (12)	06:15		19:53 (1)	07:03		19:51 (17)	07:51			07:43		16:19 (3)	08:31		14:49 (5)
	22:02	21	21:30 (12)	21:27	22	20:15 (1)	20:24	7	19:58 (17)	19:16			17:14	21	16:40 (3)	16:40	27	15:16 (5)
6	05:37		21:09 (12)	06:16		19:50 (1)	07:05		19:50 (17)	07:52			07:45		15:55 (4)	08:32		14:49 (5)
	22:02	20	21:29 (12)	21:25	26	20:16 (1)	20:22	5	19:55 (17)	19:14			17:12	31	16:40 (3)	16:39	27	15:16 (5)
7	05:38		21:09 (12)	06:18		19:50 (1)	07:06		19:50 (17)	07:54			07:47		15:52 (4)	08:34		14:49 (5)
	22:01	20	21:29 (12)	21:23	28	20:18 (1)	20:20	4	19:54 (17)	19:12			17:11	37	16:41 (3)	16:39	28	15:17 (5)
8	05:39		21:10 (12)	06:20		19:48 (1)	07:08		19:50 (17)	07:56			07:48		15:51 (4)	08:35		14:48 (5)
	22:01	19	21:29 (12)	21:21	30	20:18 (1)	20:17	1	19:51 (17)	19:10			17:09	38	16:40 (3)	16:39	29	15:17 (5)
9	05:40		21:10 (12)	06:21		19:46 (1)	07:10			07:57			07:50		15:50 (4)	08:36		14:49 (5)
	22:00	18	21:28 (12)	21:20	33	20:19 (1)	20:15			19:07			17:07	38	16:38 (3)	16:39	30	15:19 (5)
10	05:41		21:10 (12)	06:23		19:45 (1)	07:11			07:59			07:52		15:48 (4)	08:37		14:49 (5)
	21:59	18	21:28 (12)	21:18	35	20:20 (1)	20:13			19:05			17:06	38	16:35 (3)	16:38	30	15:19 (5)
11	05:42		21:10 (12)	06:24		19:44 (1)	07:13			08:01			07:54		15:48 (4)	08:38		14:49 (5)
	21:59	17	21:27 (12)	21:16	36	20:20 (1)	20:11			19:03			17:04	36	16:34 (3)	16:38	31	15:20 (5)
12	05:43		21:11 (12)	06:26		19:44 (1)	07:14			08:02			07:55		15:47 (4)	08:39		14:50 (5)
	21:58	15	21:26 (12)	21:14	37	20:21 (1)	20:08			19:01			17:03	35	16:32 (3)	16:38	30	15:20 (5)
13	05:44		21:11 (12)	06:27		19:42 (1)	07:16			08:04			07:57		15:47 (4)	08:40		14:50 (5)
	21:57	15	21:26 (12)	21:12	39	20:21 (1)	20:06			18:59			17:01	33	16:31 (3)	16:38	31	15:21 (5)
14	05:45		21:11 (12)	06:29		19:42 (1)	07:17			08:06			07:59		15:47 (4)	08:41		14:50 (5)
	21:56	14	21:25 (12)	21:10	40	20:22 (1)	20:04			18:57			17:00	31	16:30 (3)	16:38	32	15:22 (5)
15	05:46		21:11 (12)	06:30		19:41 (1)	07:19			08:07			08:00		15:47 (4)	08:42		14:51 (5)
	21:55	13	21:24 (12)	21:08	41	20:22 (1)	20:02			18:55			16:59	27	16:14 (4)	16:38	31	15:22 (5)
16	05:48		21:11 (14)	06:32		19:41 (1)	07:20			08:09			08:02		15:47 (4)	08:43		14:51 (5)
	21:54	12	21:23 (12)	21:06	42	20:23 (1)	19:59			18:52			16:57	28	16:15 (4)	16:38	32	15:23 (5)
17	05:49		21:10 (14)	06:33		19:40 (1)	07:22			08:11			08:04		15:47 (4)	08:44		14:51 (5)
	21:53	12	21:22 (14)	21:04	42	20:22 (1)	19:57			18:50			16:56	27	16:14 (4)	16:38	32	15:23 (5)
18	05:50		21:09 (14)	06:35		19:40 (1)	07:24			08:12			08:06		15:47 (4)	08:44		14:52 (5)
	21:52	12	21:21 (14)	21:03	43	20:23 (1)	19:55			18:48			16:55	27	16:14 (4)	16:39	32	15:24 (5)
19	05:51		21:09 (14)	06:37		19:39 (1)	07:25			08:14			08:07		15:48 (4)	08:45		14:52 (5)
	21:51	11	21:20 (14)	21:00	43	20:22 (1)	19:53			18:46			16:53	27	16:15 (4)	16:39	32	15:24 (5)
20	05:52		21:08 (14)	06:38		19:39 (1)	07:27			08:16			08:09		15:48 (4)	08:46		14:52 (5)
	21:50	11	21:19 (14)	20:58	43	20:22 (1)	19:50			18:44			16:52	27	16:15 (4)	16:39	32	15:24 (5)
21	05:54		21:09 (14)	06:40		19:39 (1)	07:28		19:16 (18)	08:17			08:10		15:49 (4)	08:46		14:53 (5)
	21:49	9	21:18 (14)	20:56	42	20:21 (1)	19:48	5	19:21 (18)	18:42			16:51	26	16:15 (4)	16:40	32	15:25 (5)
22	05:55		21:09 (14)	06:41		19:39 (1)	07:30		19:14 (18)	08:19			08:12		15:49 (4)	08:47		14:53 (5)
	21:48	8	21:17 (14)	20:54	42	20:21 (1)	19:46	6	19:20 (18)	18:40			16:50	25	16:14 (4)	16:40	32	15:25 (5)
23	05:56		21:08 (14)	06:43		19:39 (1)	07:32		19:13 (18)	08:21			08:14		15:50 (4)	08:47		14:54 (5)
	21:46	8	21:16 (14)	20:52	41	20:20 (1)	19:43	4	19:17 (18)	18:38			16:49	24	16:14 (4)	16:41	32	15:26 (5)
24	05:58		21:08 (14)	06:44		19:39 (1)	07:33		19:12 (18)	08:22			08:15		15:51 (4)	08:48		14:54 (5)
	21:45	6	21:14 (14)	20:50	41	20:20 (1)	19:41	3	19:15 (18)	18:36			16:48	23	16:14 (4)	16:41	32	15:26 (5)
25	05:59		21:09 (14)	06:46		19:39 (1)	07:35			07:24			08:17		15:51 (4)	08:48		14:54 (5)
	21:44	5	21:14 (14)	20:48	40	20:19 (1)	19:39			17:34			16:47	22	16:13 (4)	16:42	32	15:26 (5)
26	06:00		21:09 (14)	06:48		19:40 (1)	07:36			07:26			08:18		15:52 (4)	08:48		14:56 (5)
	21:42	3	21:12 (14)	20:46	38	20:18 (1)	19:37			17:32			16:46	21	16:13 (4)	16:43	32	15:28 (5)
27	06:02		21:09 (14)	06:49		19:40 (1)	07:38			07:28			08:20		14:55 (5)	08:49		14:56 (5)
	21:41	2	21:11 (14)	20:44	37	20:17 (1)	19:34			17:30			16:45	29	16:13 (4)	16:43	32	15:28 (5)
28	06:03			06:51		19:41 (1)	07:39			07:29			08:21		14:53 (5)	08:49		14:57 (5)
	21:39			20:42	34	20:15 (1)	19:32			17:28			16:44	31	16:12 (4)	16:44	31	15:28 (5)
29	06:05			06:52		19:41 (1)	07:41			07:31		16:27 (3)	08:23		14:52 (5)	08:49		14:57 (5)
	21:38			20:40	32	20:13 (1)	19:30			17:26	6	16:33 (3)	16:43	32	16:11 (4)	16:45	31	15:28 (5)
30	06:06			06:54		19:42 (1)	07:43			07:33		16:24 (3)	08:24		14:50 (5)	08:49		14:58 (5)
	21:36			20:37	29	20:11 (1)	19:28			17:25	12	16:36 (3)	16:43	33	16:10 (4)	16:46	31	15:29 (5)
31	06:08			06:55		19:43 (1)				07:35		16:23 (3)				08:49		14:58 (5)
	21:35			20:35	25	20:08 (1)				17:23	15	16:38 (3)				16:47	31	15:29 (5)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		374			1016			93			33			845			946	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,56			0,57			0,59			0,70			0,71			0,73	
Total reduction		0,25			0,27			0,25			0,25			0,18			0,15	
Total, real		93			270			24			8			152			145	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: S - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		14:42 (5)	08:24		16:10 (4)	07:32			07:23			06:20		20:00 (1)	05:36		19:58 (1)
	16:48	34	15:16 (5)	17:35	44	17:05 (3)	18:25			20:17			21:06	37	20:37 (1)	21:50	49	21:18 (14)
2	08:49		14:42 (5)	08:22		16:12 (4)	07:30			07:21			06:18		19:58 (1)	05:36		19:59 (1)
	16:49	34	15:16 (5)	17:36	44	17:07 (3)	18:26			20:18			21:08	40	20:38 (1)	21:51	49	21:20 (14)
3	08:49		14:43 (5)	08:21		16:12 (4)	07:28			07:19			06:16		19:57 (1)	05:35		19:59 (1)
	16:50	33	15:16 (5)	17:38	46	17:09 (3)	18:28			20:20			21:09	41	20:38 (1)	21:52	50	21:21 (14)
4	08:49		14:44 (5)	08:19		16:13 (4)	07:26			07:16			06:15		19:57 (1)	05:34		20:00 (1)
	16:51	33	15:17 (5)	17:40	46	17:10 (3)	18:30			20:22			21:11	43	20:40 (1)	21:53	49	21:21 (14)
5	08:49		14:44 (5)	08:18		16:16 (4)	07:23			07:14			06:13		19:56 (1)	05:34		20:01 (1)
	16:53	32	15:16 (5)	17:42	42	17:11 (3)	18:32			20:23			21:12	44	20:40 (1)	21:54	48	21:22 (14)
6	08:48		14:45 (5)	08:16		16:17 (4)	07:21			07:12			06:11		19:55 (1)	05:33		20:01 (1)
	16:54	32	15:17 (5)	17:44	40	17:11 (3)	18:33			20:25			21:14	45	20:40 (1)	21:55	49	21:23 (14)
7	08:48		14:46 (5)	08:14		16:20 (4)	07:19		18:09 (16)	07:10			06:09		19:55 (1)	05:32		20:02 (1)
	16:55	31	15:17 (5)	17:45	35	17:11 (3)	18:35	1	18:10 (16)	20:27			21:16	46	20:41 (1)	21:56	48	21:24 (14)
8	08:48		14:47 (5)	08:13		16:47 (3)	07:17		18:09 (16)	07:08			06:08		19:54 (1)	05:32		20:02 (1)
	16:56	30	15:17 (5)	17:47	24	17:11 (3)	18:37	3	18:12 (16)	20:28			21:17	47	20:41 (1)	21:57	48	21:24 (14)
9	08:47		14:47 (5)	08:11		16:49 (3)	07:15		18:09 (16)	07:05			06:06		19:54 (1)	05:31		20:03 (1)
	16:58	36	16:20 (4)	17:49	24	17:21 (2)	18:38	4	18:13 (16)	20:30			21:19	48	20:42 (1)	21:58	47	21:25 (14)
10	08:47		14:49 (5)	08:09		16:49 (3)	07:13		18:11 (16)	07:03		20:05 (17)	06:04		19:53 (1)	05:31		20:04 (1)
	16:59	38	16:23 (4)	17:51	27	17:23 (2)	18:40	4	18:15 (16)	20:32	1	20:06 (17)	21:20	49	20:42 (1)	21:59	47	21:26 (14)
11	08:46		14:50 (5)	08:07		16:50 (3)	07:10			07:01		20:03 (17)	06:03		19:53 (1)	05:31		20:04 (1)
	17:00	40	16:25 (4)	17:53	28	17:25 (2)	18:42			20:33	4	20:07 (17)	21:22	50	20:43 (1)	21:59	48	21:27 (14)
12	08:46		14:51 (5)	08:06		16:51 (3)	07:08			06:59		20:02 (17)	06:01		19:53 (1)	05:30		20:04 (1)
	17:02	41	16:26 (4)	17:54	29	17:27 (2)	18:44			20:35	7	20:09 (17)	21:23	49	20:42 (1)	22:00	47	21:27 (14)
13	08:45		14:52 (5)	08:04		16:52 (3)	07:06			06:57		20:02 (17)	05:59		19:53 (1)	05:30		20:05 (1)
	17:03	41	16:27 (4)	17:56	29	17:29 (2)	18:45			20:37	8	20:10 (17)	21:25	50	20:43 (1)	22:01	47	21:28 (14)
14	08:44		14:54 (5)	08:02		16:54 (3)	07:04			06:55		20:03 (17)	05:58		19:52 (1)	05:30		20:05 (1)
	17:05	40	16:29 (4)	17:58	27	17:31 (2)	18:47			20:38	9	20:12 (17)	21:26	51	20:43 (1)	22:01	47	21:29 (14)
15	08:43		14:57 (5)	08:00		16:57 (3)	07:01			06:52		20:03 (17)	05:56		19:53 (1)	05:30		20:06 (1)
	17:06	39	16:31 (4)	18:00	22	17:32 (2)	18:49			20:40	11	20:14 (17)	21:28	50	20:43 (1)	22:02	46	21:29 (14)
16	08:43		14:59 (5)	07:58		17:17 (2)	06:59			06:50		20:05 (17)	05:55		19:53 (1)	05:30		20:06 (1)
	17:08	37	16:32 (4)	18:02	15	17:32 (2)	18:50			20:42	7	20:12 (17)	21:29	50	20:43 (1)	22:02	47	21:30 (14)
17	08:42		15:03 (5)	07:56		17:18 (2)	06:57			06:48			05:53		19:52 (1)	05:30		20:07 (1)
	17:09	31	16:33 (4)	18:03	13	17:31 (2)	18:52			20:43			21:31	51	20:43 (1)	22:03	45	21:30 (14)
18	08:41		16:08 (4)	07:54		17:19 (2)	06:55			06:46			05:52		19:53 (1)	05:29		20:07 (1)
	17:11	26	16:34 (4)	18:05	10	17:29 (2)	18:54			20:45			21:32	50	20:43 (1)	22:03	46	21:30 (14)
19	08:40		16:07 (4)	07:52		17:22 (2)	06:52			06:44			05:51		19:53 (1)	05:30		20:07 (1)
	17:12	27	16:34 (4)	18:07	4	17:26 (2)	18:55			20:46			21:34	50	20:43 (1)	22:03	47	21:31 (14)
20	08:39		16:07 (4)	07:50			06:50			06:42			05:49		19:54 (1)	05:30		20:07 (1)
	17:14	28	16:35 (4)	18:09			18:57			20:48			21:35	49	20:43 (1)	22:04	47	21:31 (14)
21	08:38		16:07 (4)	07:48			06:48			06:40			05:48		19:53 (1)	05:30		20:07 (1)
	17:16	29	16:36 (4)	18:11			18:59			20:50			21:36	49	20:42 (1)	22:04	47	21:31 (14)
22	08:37		16:08 (4)	07:46			06:46			06:38			05:47		19:54 (1)	05:30		20:08 (1)
	17:17	29	16:37 (4)	18:12			19:00			20:51			21:38	48	20:42 (1)	22:04	47	21:32 (14)
23	08:36		16:08 (4)	07:44			06:43		18:34 (18)	06:36			05:46		19:54 (1)	05:30		20:08 (1)
	17:19	30	16:38 (4)	18:14			19:02	3	18:37 (18)	20:53			21:39	48	20:42 (1)	22:04	47	21:32 (14)
24	08:34		16:07 (4)	07:42			06:41		18:33 (18)	06:34			05:44		19:54 (1)	05:30		20:08 (1)
	17:21	30	16:37 (4)	18:16			19:04	5	18:38 (18)	20:55			21:41	48	20:42 (1)	22:05	47	21:32 (14)
25	08:33		16:08 (4)	07:40			06:39		18:34 (18)	06:32		20:14 (1)	05:43		19:55 (1)	05:31		20:09 (1)
	17:22	30	16:38 (4)	18:18			19:05	6	18:40 (18)	20:56	10	20:24 (1)	21:42	47	20:42 (1)	22:05	45	21:32 (14)
26	08:32		16:07 (4)	07:38			06:37		18:35 (18)	06:30		20:09 (1)	05:42		19:55 (1)	05:31		20:09 (1)
	17:24	31	16:38 (4)	18:19			19:07	7	18:42 (18)	20:58	19	20:28 (1)	21:43	47	20:42 (1)	22:05	45	21:32 (14)
27	08:31		16:08 (4)	07:36			06:34		18:37 (18)	06:28		20:06 (1)	05:41		19:55 (1)	05:32		20:08 (1)
	17:26	30	16:38 (4)	18:21			19:09	4	18:41 (18)	21:00	25	20:31 (1)	21:44	47	20:42 (1)	22:05	46	21:31 (14)
28	08:29		16:09 (4)	07:34			06:32			06:26		20:04 (1)	05:40		19:56 (1)	05:32		20:09 (1)
	17:28	30	16:39 (4)	18:23			19:10			21:01	28	20:32 (1)	21:46	47	21:14 (14)	22:04	46	21:32 (14)
29	08:28		16:09 (4)				07:30			06:24		20:03 (1)	05:39		19:57 (1)	05:33		20:08 (1)
	17:29	36	16:59 (3)				20:12			21:03	32	20:35 (1)	21:47	48	21:16 (14)	22:04	47	21:31 (14)
30	08:27		16:10 (4)				07:28			06:22		20:01 (1)	05:38		19:57 (1)	05:33		20:08 (1)
	17:31	39	17:02 (3)				20:14			21:04	35	20:36 (1)	21:48	49	21:17 (14)	22:04	47	21:31 (14)
31	08:25		16:10 (4)				07:25						05:37		19:58 (1)			
	17:33	41	17:03 (3)				20:15						21:49	49	21:18 (14)			
Potential sun hours	262			279			367			414			482			494		
Total, worst case		1038			549			37			196			1467			1415	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,72			0,70			0,62			0,56			0,55			0,55	
Total reduction		0,17			0,20			0,23			0,25			0,25			0,24	
Total, real		174			111			8			49			367			344	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: S - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		20:09 (1)	06:09		20:03 (1)	06:57		20:03 (17)	07:44			07:36		16:18 (3)	08:26		14:32 (5)
	22:04	48	21:32 (14)	21:33	50	20:53 (1)	20:33	4	20:07 (17)	19:25			17:21	25	16:51 (2)	16:42	40	16:07 (4)
2	05:34		20:08 (1)	06:11		20:04 (1)	06:59		20:03 (17)	07:46			07:38		16:17 (3)	08:27		14:31 (5)
	22:04	48	21:31 (14)	21:32	49	20:53 (1)	20:31	1	20:04 (17)	19:23			17:19	25	16:50 (2)	16:41	38	16:05 (4)
3	05:35		20:08 (1)	06:12		20:04 (1)	07:00			07:47			07:40		15:54 (4)	08:28		14:32 (5)
	22:03	49	21:31 (14)	21:30	48	20:52 (1)	20:29			19:21			17:17	25	16:40 (3)	16:41	35	16:04 (4)
4	05:36		20:08 (1)	06:13		20:04 (1)	07:02			07:49		18:48 (16)	07:42		15:49 (4)	08:30		14:31 (5)
	22:03	48	21:31 (14)	21:28	48	20:52 (1)	20:26			19:19	4	18:52 (16)	17:16	36	16:41 (3)	16:40	30	15:01 (5)
5	05:37		20:07 (1)	06:15		20:04 (1)	07:03			07:51		18:46 (16)	07:43		15:47 (4)	08:31		14:31 (5)
	22:02	49	21:30 (14)	21:27	48	20:52 (1)	20:24			19:16	3	18:49 (16)	17:14	41	16:41 (3)	16:40	32	15:03 (5)
6	05:37		20:07 (1)	06:17		20:04 (1)	07:05			07:52		18:45 (16)	07:45		15:45 (4)	08:32		14:31 (5)
	22:02	49	21:29 (14)	21:25	47	20:51 (1)	20:22			19:14	2	18:47 (16)	17:12	43	16:41 (3)	16:39	32	15:03 (5)
7	05:38		20:07 (1)	06:18		20:05 (1)	07:06			07:54			07:47		15:44 (4)	08:34		14:31 (5)
	22:01	49	21:29 (14)	21:23	46	20:51 (1)	20:20			19:12			17:11	45	16:40 (3)	16:39	32	15:03 (5)
8	05:39		20:07 (1)	06:20		20:05 (1)	07:08			07:56			07:48		15:43 (4)	08:35		14:31 (5)
	22:01	49	21:29 (14)	21:21	44	20:49 (1)	20:17			19:10			17:09	46	16:40 (3)	16:39	33	15:04 (5)
9	05:40		20:07 (1)	06:21		20:06 (1)	07:10			07:57			07:50		15:43 (4)	08:36		14:32 (5)
	22:00	49	21:28 (14)	21:20	42	20:48 (1)	20:15			19:07			17:07	44	16:38 (3)	16:39	33	15:05 (5)
10	05:41		20:07 (1)	06:23		20:07 (1)	07:11			07:59			07:52		15:41 (4)	08:37		14:32 (5)
	21:59	49	21:28 (14)	21:18	41	20:48 (1)	20:13			19:05			17:06	43	16:35 (3)	16:38	34	15:06 (5)
11	05:42		20:07 (1)	06:24		20:07 (1)	07:13			08:01			07:54		15:41 (4)	08:38		14:32 (5)
	21:59	49	21:27 (14)	21:16	39	20:46 (1)	20:11			19:03			17:04	41	16:34 (3)	16:38	35	15:07 (5)
12	05:43		20:06 (1)	06:26		20:09 (1)	07:14			08:02			07:55		15:41 (4)	08:39		14:32 (5)
	21:58	48	21:26 (14)	21:14	36	20:45 (1)	20:08			19:01			17:03	38	16:32 (3)	16:38	35	15:07 (5)
13	05:44		20:06 (1)	06:27		20:09 (1)	07:16			08:04			07:57		15:41 (4)	08:40		14:32 (5)
	21:57	49	21:26 (14)	21:12	34	20:43 (1)	20:06			18:59			17:01	36	16:31 (3)	16:38	36	15:08 (5)
14	05:45		20:06 (1)	06:29		20:11 (1)	07:17			08:06			07:59		15:41 (4)	08:41		14:33 (5)
	21:56	48	21:25 (14)	21:10	31	20:42 (1)	20:04			18:57			17:00	30	16:11 (4)	16:38	35	15:08 (5)
15	05:46		20:05 (1)	06:30		20:12 (1)	07:19			08:07			08:00		15:41 (4)	08:42		14:33 (5)
	21:55	48	21:24 (14)	21:08	28	20:40 (1)	20:02			18:55			16:59	30	16:11 (4)	16:38	36	15:09 (5)
16	05:48		20:05 (1)	06:32		20:15 (1)	07:20		19:27 (18)	08:09			08:02		15:41 (4)	08:43		14:34 (5)
	21:54	47	21:23 (14)	21:06	23	20:38 (1)	19:59	1	19:28 (18)	18:52			16:57	31	16:12 (4)	16:38	36	15:10 (5)
17	05:49		20:05 (1)	06:33		20:17 (1)	07:22		19:24 (18)	08:11			08:04		15:41 (4)	08:44		14:33 (5)
	21:53	46	20:51 (1)	21:04	17	20:34 (1)	19:57	7	19:31 (18)	18:50			16:56	30	16:11 (4)	16:38	36	15:09 (5)
18	05:50		20:04 (1)	06:35		20:22 (1)	07:24		19:21 (18)	08:12			08:06		15:41 (4)	08:44		14:34 (5)
	21:52	47	20:51 (1)	21:03	8	20:30 (1)	19:55	7	19:28 (18)	18:48			16:55	30	16:11 (4)	16:39	36	15:10 (5)
19	05:51		20:04 (1)	06:37			07:25		19:21 (18)	08:14			08:07		15:42 (4)	08:45		14:35 (5)
	21:51	48	20:52 (1)	21:00			19:53	5	19:26 (18)	18:46			16:53	30	16:12 (4)	16:39	36	15:11 (5)
20	05:52		20:05 (1)	06:38			07:27		19:20 (18)	08:16			08:09		15:43 (4)	08:46		14:34 (5)
	21:50	48	20:53 (1)	20:58			19:50	3	19:23 (18)	18:44			16:52	29	16:12 (4)	16:39	37	15:11 (5)
21	05:54		20:04 (1)	06:40			07:28		19:20 (18)	08:17			08:10		15:43 (4)	08:46		14:35 (5)
	21:49	49	20:53 (1)	20:56			19:48	1	19:21 (18)	18:42			16:51	29	16:12 (4)	16:40	37	15:12 (5)
22	05:55		20:04 (1)	06:41			07:30			08:19			08:12		15:43 (4)	08:47		14:35 (5)
	21:48	49	20:53 (1)	20:54			19:46			18:40			16:50	28	16:11 (4)	16:40	37	15:12 (5)
23	05:56		20:03 (1)	06:43			07:32			08:21		17:51 (2)	08:14		15:44 (4)	08:47		14:36 (5)
	21:46	50	20:53 (1)	20:52			19:43			18:38	7	17:58 (2)	16:49	27	16:11 (4)	16:41	37	15:13 (5)
24	05:58		20:03 (1)	06:44			07:33			08:22		17:49 (2)	08:15		15:45 (4)	08:48		14:37 (5)
	21:45	50	20:53 (1)	20:50			19:41			18:36	11	18:00 (2)	16:48	26	16:11 (4)	16:41	36	15:13 (5)
25	05:59		20:04 (1)	06:46			07:35			07:24		16:47 (2)	08:17		14:40 (5)	08:48		14:37 (5)
	21:44	50	20:54 (1)	20:48			19:39			17:34	13	17:00 (2)	16:47	31	16:10 (4)	16:42	36	15:13 (5)
26	06:00		20:03 (1)	06:48		20:11 (17)	07:36			07:26		16:46 (2)	08:18		14:37 (5)	08:48		14:38 (5)
	21:42	50	20:53 (1)	20:46	1	20:12 (17)	19:37			17:32	15	17:01 (2)	16:46	37	16:10 (4)	16:43	36	15:14 (5)
27	06:02		20:03 (1)	06:49		20:06 (17)	07:38			07:28		16:25 (3)	08:20		14:36 (5)	08:49		14:38 (5)
	21:41	50	20:53 (1)	20:44	8	20:14 (17)	19:34			17:30	23	17:01 (2)	16:45	39	16:10 (4)	16:43	37	15:15 (5)
28	06:03		20:04 (1)	06:51		20:05 (17)	07:39			07:29		16:23 (3)	08:21		14:34 (5)	08:49		14:39 (5)
	21:39	50	20:54 (1)	20:42	10	20:15 (17)	19:32			17:28	27	17:00 (2)	16:44	40	16:09 (4)	16:44	36	15:15 (5)
29	06:05		20:03 (1)	06:52		20:03 (17)	07:41			07:31		16:21 (3)	08:23		14:33 (5)	08:49		14:39 (5)
	21:38	50	20:53 (1)	20:40	10	20:13 (17)	19:30			17:26	29	16:58 (2)	16:43	42	16:09 (4)	16:45	36	15:15 (5)
30	06:06		20:03 (1)	06:54		20:03 (17)	07:43			07:33		16:20 (3)	08:24		14:32 (5)	08:49		14:40 (5)
	21:36	50	20:53 (1)	20:37	8	20:11 (17)	19:28			17:25	29	16:56 (2)	16:43	41	16:07 (4)	16:46	36	15:16 (5)
31	06:08		20:04 (1)	06:55		20:02 (17)				07:35		16:19 (3)				08:49		14:41 (5)
	21:35	49	20:53 (1)	20:35	6	20:08 (17)				17:23	28	16:54 (2)				16:47	35	15:16 (5)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		1512			722			29			191			1038			1096	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,55			0,55			0,61			0,69			0,71			0,73	
Total reduction		0,25			0,26			0,26			0,25			0,18			0,15	
Total, real		371			185			8			47			187			168	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: T - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April		May		June
1	08:49	13:38 (5)	08:24	15:44 (4)	07:32		07:23	19:45 (18)	06:20	20:23 (17)	05:36
	16:48 63	16:02 (4)	17:35 61	17:03 (3)	18:25		20:17 6	19:51 (18)	21:06 15	20:38 (17)	21:50
2	08:49	13:38 (5)	08:22	15:46 (4)	07:30		07:21	19:45 (18)	06:18	20:24 (17)	05:36
	16:49 64	16:02 (4)	17:36 60	17:04 (3)	18:26		20:18 8	19:53 (18)	21:08 13	20:37 (17)	21:51
3	08:49	13:39 (5)	08:21	15:46 (4)	07:28		07:19	19:45 (18)	06:16	20:24 (17)	05:35
	16:50 65	16:04 (4)	17:38 62	17:05 (3)	18:28		20:20 10	19:55 (18)	21:09 12	20:36 (17)	21:52
4	08:49	13:40 (5)	08:19	15:47 (4)	07:26		07:16	19:46 (18)	06:15	20:27 (17)	05:34
	16:51 66	16:05 (4)	17:40 61	17:05 (3)	18:30		20:22 11	19:57 (18)	21:11 8	20:35 (17)	21:53
5	08:49	13:40 (5)	08:18	15:49 (4)	07:23		07:14	19:46 (18)	06:13		05:34
	16:53 67	16:06 (4)	17:42 60	17:07 (3)	18:32		20:23 10	19:56 (18)	21:12		21:54
6	08:48	13:41 (5)	08:16	15:50 (4)	07:21		07:12	19:48 (18)	06:11		05:33
	16:54 67	16:07 (4)	17:44 58	17:07 (3)	18:33		20:25 6	19:54 (18)	21:14		21:55
7	08:48	13:42 (5)	08:14	15:51 (4)	07:19		07:10		06:09		05:32
	16:55 68	16:09 (4)	17:45 56	17:07 (3)	18:35		20:27		21:16		21:56
8	08:48	13:43 (5)	08:13	15:53 (4)	07:17		07:08		06:08		05:32
	16:56 69	16:10 (4)	17:47 52	17:07 (3)	18:37		20:28		21:17		21:57
9	08:47	13:44 (5)	08:11	15:56 (4)	07:15		07:05		06:06		05:31
	16:58 67	16:10 (4)	17:49 48	17:08 (3)	18:38		20:30		21:19		21:58
10	08:47	13:45 (5)	08:09	15:59 (4)	07:13		07:03		06:04		05:31
	16:59 69	16:12 (4)	17:51 48	17:23 (2)	18:40		20:32		21:20		21:59
11	08:46	13:46 (5)	08:07	16:39 (3)	07:10		18:16 (16)	07:01	06:03		05:31
	17:00 68	16:13 (4)	17:53 36	17:25 (2)	18:42	1	18:17 (16)	20:33	21:22		21:59
12	08:46	13:47 (5)	08:06	16:39 (3)	07:08		18:16 (16)	06:59	06:01		05:30
	17:02 69	16:14 (4)	17:54 39	17:27 (2)	18:44	3	18:19 (16)	20:35	21:23		22:00
13	08:45	13:48 (5)	08:04	16:40 (3)	07:06		18:15 (16)	06:57	05:59		05:30
	17:03 67	16:14 (4)	17:56 40	17:29 (2)	18:45	5	18:20 (16)	20:37	21:25		22:01
14	08:44	13:50 (5)	08:02	16:41 (3)	07:04		18:15 (16)	06:55	05:58		05:30
	17:05 65	16:15 (4)	17:58 40	17:31 (2)	18:47	7	18:22 (16)	20:38	21:26		22:01
15	08:43	13:52 (5)	08:00	16:42 (3)	07:01		18:16 (16)	06:52	05:56		05:30
	17:06 64	16:17 (4)	18:00 40	17:32 (2)	18:49	8	18:24 (16)	20:40	21:28		22:02
16	08:43	13:54 (5)	07:58	16:43 (3)	06:59		18:19 (16)	06:50	05:55		05:30
	17:08 63	16:18 (4)	18:02 39	17:33 (2)	18:50	4	18:23 (16)	20:42	21:29		22:02
17	08:42	13:56 (5)	07:56	16:45 (3)	06:57			06:48	05:53		05:30
	17:09 60	16:18 (4)	18:03 35	17:33 (2)	18:52			20:43	21:31		22:03
18	08:41	13:59 (5)	07:54	16:48 (3)	06:55			06:46	05:52		05:30
	17:11 56	16:19 (4)	18:05 29	17:33 (2)	18:54			20:45	21:32		22:03
19	08:40	14:02 (5)	07:52	17:16 (2)	06:52			06:44	05:51		05:30
	17:12 50	16:19 (4)	18:07 16	17:32 (2)	18:55			20:46	21:34		22:03
20	08:39	15:41 (4)	07:50	17:17 (2)	06:50			06:42	05:49		05:30
	17:14 39	16:20 (4)	18:09 14	17:31 (2)	18:57			20:48	21:35		22:04
21	08:38	15:41 (4)	07:48	17:19 (2)	06:48			06:40	05:48		05:30
	17:16 39	16:20 (4)	18:11 10	17:29 (2)	18:59			20:50	21:37		22:04
22	08:37	15:41 (4)	07:46	17:23 (2)	06:46			06:38	05:47		05:30
	17:17 40	16:21 (4)	18:12 2	17:25 (2)	19:00			20:51	21:38		22:04
23	08:36	15:42 (4)	07:44		06:43			06:36	05:46		05:30
	17:19 40	16:22 (4)	18:14		19:02			20:53	21:39		22:04
24	08:35	15:41 (4)	07:42		06:41			06:34	20:27 (17)	05:44	05:30
	17:21 41	16:22 (4)	18:16		19:04			20:55 1	20:28 (17)	21:41	22:05
25	08:33	15:42 (4)	07:40		06:39			06:32	20:25 (17)	05:43	05:31
	17:22 40	16:22 (4)	18:18		19:05			20:56 4	20:29 (17)	21:42	22:05
26	08:32	15:41 (4)	07:38		06:37			06:30	20:24 (17)	05:42	05:31
	17:24 41	16:22 (4)	18:19		19:07			20:58 6	20:30 (17)	21:43	22:05
27	08:31	15:42 (4)	07:36		06:34			06:28	20:23 (17)	05:41	05:32
	17:26 41	16:23 (4)	18:21		19:09			21:00 9	20:32 (17)	21:44	22:05
28	08:29	15:43 (4)	07:34		06:32			06:26	20:23 (17)	05:40	05:32
	17:28 49	16:56 (3)	18:23		19:10			21:01 10	20:33 (17)	21:46	22:04
29	08:28	15:43 (4)			07:30			06:24	20:23 (17)	05:39	05:33
	17:29 54	16:58 (3)			20:12			21:03 13	20:36 (17)	21:47	22:04
30	08:27	15:44 (4)			07:28			06:22	20:23 (17)	05:38	05:33
	17:31 56	17:00 (3)			20:14			21:04 14	20:37 (17)	21:48	22:04
31	08:25	15:44 (4)			07:25		19:47 (18)			05:37	
	17:33 60	17:02 (3)			20:15	3	19:50 (18)			21:49	
Potential sun hours	262		279		367			414		482	494
Total, worst case	1767		906		31			108		48	
Sun reduction	0,24		0,29		0,37			0,46		0,46	
Oper. time red.	0,96		0,96		0,96			0,96		0,96	
Wind dir. red.	0,71		0,70		0,63			0,57		0,55	
Total reduction	0,16		0,20		0,22			0,25		0,24	
Total, real	284		178		7			27		12	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: T - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July		August			September			October			November			December		
1	05:34		06:09			06:57			07:44		18:55 (16)	07:36		15:27 (4)	08:26		13:28 (5)
	22:04		21:33			20:33			19:25	3	18:58 (16)	17:21	48	16:51 (2)	16:42	68	15:55 (4)
2	05:34		06:11			06:59			07:46		18:55 (16)	07:38		15:24 (4)	08:27		13:27 (5)
	22:04		21:32			20:31			19:23	2	18:57 (16)	17:19	50	16:37 (3)	16:41	69	15:54 (4)
3	05:35		06:12			07:00			07:48			07:40		15:22 (4)	08:28		13:28 (5)
	22:03		21:30			20:29			19:21			17:17	54	16:37 (3)	16:41	68	15:55 (4)
4	05:36		06:14			07:02			07:49			07:42		15:20 (4)	08:30		13:27 (5)
	22:03		21:28			20:26			19:19			17:16	57	16:37 (3)	16:40	69	15:54 (4)
5	05:37		06:15			07:03			07:51			07:43		15:19 (4)	08:31		13:28 (5)
	22:02		21:27			20:24			19:16			17:14	59	16:37 (3)	16:40	67	15:54 (4)
6	05:38		06:17			07:05		19:44 (18)	07:52			07:45		15:18 (4)	08:32		13:27 (5)
	22:02		21:25			20:22	6	19:50 (18)	19:14			17:12	60	16:36 (3)	16:39	68	15:54 (4)
7	05:38		06:18			07:06		19:42 (18)	07:54			07:47		15:18 (4)	08:34		13:27 (5)
	22:01		21:23			20:20	10	19:52 (18)	19:12			17:11	61	16:36 (3)	16:39	67	15:53 (4)
8	05:39		06:20		20:37 (17)	07:08		19:40 (18)	07:56			07:48		15:17 (4)	08:35		13:27 (5)
	22:01		21:22	5	20:42 (17)	20:18	11	19:51 (18)	19:10			17:09	61	16:36 (3)	16:39	66	15:52 (4)
9	05:40		06:21		20:35 (17)	07:10		19:39 (18)	07:57			07:50		15:16 (4)	08:36		13:28 (5)
	22:00		21:20	9	20:44 (17)	20:15	10	19:49 (18)	19:07			17:07	61	16:35 (3)	16:39	65	15:53 (4)
10	05:41		06:23		20:34 (17)	07:11		19:38 (18)	07:59			07:52		15:15 (4)	08:37		13:28 (5)
	21:59		21:18	11	20:45 (17)	20:13	8	19:46 (18)	19:05			17:06	60	16:33 (3)	16:38	64	15:52 (4)
11	05:42		06:24		20:32 (17)	07:13		19:39 (18)	08:01			07:54		15:15 (4)	08:38		13:28 (5)
	21:59		21:16	14	20:46 (17)	20:11	6	19:45 (18)	19:03			17:04	59	16:32 (3)	16:38	63	15:52 (4)
12	05:43		06:26		20:32 (17)	07:14		19:38 (18)	08:02			07:55		15:15 (4)	08:39		13:28 (5)
	21:58		21:14	14	20:46 (17)	20:08	4	19:42 (18)	19:01			17:03	56	16:31 (3)	16:38	63	15:52 (4)
13	05:44		06:27		20:31 (17)	07:16		19:39 (18)	08:04			07:57		15:15 (4)	08:40		13:28 (5)
	21:57		21:12	13	20:44 (17)	20:06	1	19:40 (18)	18:59			17:01	54	16:30 (3)	16:38	63	15:52 (4)
14	05:45		06:29		20:31 (17)	07:17			08:06			07:59		15:15 (4)	08:41		13:29 (5)
	21:56		21:10	12	20:43 (17)	20:04			18:57			17:00	48	16:27 (3)	16:38	59	15:51 (4)
15	05:46		06:30		20:30 (17)	07:19			08:07			08:01		15:15 (4)	08:42		13:29 (5)
	21:55		21:08	10	20:40 (17)	20:02			18:55			16:59	41	15:56 (4)	16:38	59	15:51 (4)
16	05:48		06:32		20:31 (17)	07:21			08:09			08:02		15:15 (4)	08:43		13:29 (5)
	21:54		21:06	8	20:39 (17)	19:59			18:52			16:57	41	15:56 (4)	16:38	59	15:51 (4)
17	05:49		06:33		20:31 (17)	07:22			08:11			08:04		15:15 (4)	08:44		13:29 (5)
	21:53		21:05	6	20:37 (17)	19:57			18:50			16:56	40	15:55 (4)	16:38	57	15:50 (4)
18	05:50		06:35		20:32 (17)	07:24			08:12			08:06		15:15 (4)	08:44		13:30 (5)
	21:52		21:03	3	20:35 (17)	19:55			18:48			16:55	41	15:56 (4)	16:39	55	15:50 (4)
19	05:51		06:37			07:25			08:14			08:07		15:16 (4)	08:45		13:30 (5)
	21:51		21:01			19:53			18:46			16:53	40	15:56 (4)	16:39	56	15:51 (4)
20	05:52		06:38			07:27			08:16		17:51 (2)	08:09		15:16 (4)	08:46		13:30 (5)
	21:50		20:58			19:50			18:44	6	17:57 (2)	16:52	40	15:56 (4)	16:39	55	15:50 (4)
21	05:54		06:40			07:28			08:17		17:48 (2)	08:10		15:17 (4)	08:46		13:31 (5)
	21:49		20:56			19:48			18:42	12	18:00 (2)	16:51	39	15:56 (4)	16:40	54	15:51 (4)
22	05:55		06:41			07:30			08:19		17:47 (2)	08:12		15:17 (4)	08:47		13:31 (5)
	21:48		20:54			19:46			18:40	15	18:02 (2)	16:50	39	15:56 (4)	16:40	54	15:51 (4)
23	05:56		06:43			07:32			08:21		17:22 (3)	08:14		13:39 (5)	08:47		13:32 (5)
	21:46		20:52			19:43			18:38	20	18:03 (2)	16:49	50	15:56 (4)	16:41	54	15:52 (4)
24	05:58		06:44			07:33			08:22		17:17 (3)	08:15		13:36 (5)	08:48		13:32 (5)
	21:45		20:50			19:41			18:36	31	18:03 (2)	16:48	56	15:56 (4)	16:41	55	15:52 (4)
25	05:59		06:46			07:35			07:24		16:14 (3)	08:17		13:33 (5)	08:48		13:33 (5)
	21:44		20:48			19:39			17:34	36	17:03 (2)	16:47	60	15:55 (4)	16:42	55	15:53 (4)
26	06:00		06:48			07:36			07:26		16:12 (3)	08:18		13:32 (5)	08:48		13:34 (5)
	21:42		20:46			19:37			17:32	40	17:03 (2)	16:46	62	15:56 (4)	16:43	56	15:55 (4)
27	06:02		06:49			07:38			07:28		16:11 (3)	08:20		13:31 (5)	08:49		13:34 (5)
	21:41		20:44			19:34			17:30	40	17:01 (2)	16:45	64	15:56 (4)	16:43	59	15:56 (4)
28	06:03		06:51			07:39		18:58 (16)	07:29		16:10 (3)	08:21		13:30 (5)	08:49		13:35 (5)
	21:39		20:42			19:32	7	19:05 (16)	17:28	41	17:00 (2)	16:44	65	15:55 (4)	16:44	59	15:57 (4)
29	06:05		06:52			07:41		18:56 (16)	07:31		16:09 (3)	08:23		13:29 (5)	08:49		13:35 (5)
	21:38		20:40			19:30	7	19:03 (16)	17:26	40	16:58 (2)	16:44	67	15:55 (4)	16:45	60	15:58 (4)
30	06:06		06:54			07:43		18:55 (16)	07:33		16:09 (3)	08:24		13:28 (5)	08:49		13:36 (5)
	21:36		20:37			19:28	5	19:00 (16)	17:25	38	16:56 (2)	16:43	69	15:55 (4)	16:46	61	15:59 (4)
31	06:08		06:55						07:35		15:33 (4)				08:49		13:37 (5)
	21:35		20:35						17:23	40	16:54 (2)				16:47	62	16:00 (4)
Potential sun hours	498		451			380			333			269			248		
Total, worst case				105			75			364			1602			1889	
Sun reduction				0,47			0,43			0,36			0,26			0,21	
Oper. time red.				0,96			0,96			0,96			0,96			0,96	
Wind dir. red.				0,55			0,61			0,69			0,71			0,70	
Total reduction				0,25			0,25			0,24			0,17			0,14	
Total, real				26			19			88			280			273	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: U - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June		
1	08:49		10:29 (5)	08:24		15:23 (3)	07:32			07:23			06:20			05:36		21:03 (17)
	16:48	153	15:50 (3)	17:35	57	17:04 (2)	18:25			20:17			21:06			21:50	15	21:18 (17)
2	08:49		10:29 (5)	08:22		15:25 (3)	07:30			07:21			06:18			05:36		21:03 (17)
	16:49	152	15:50 (3)	17:36	57	17:06 (2)	18:26			20:19			21:08			21:51	17	21:20 (17)
3	08:49		10:30 (5)	08:21		15:26 (3)	07:28			07:19			06:16			05:35		21:02 (17)
	16:50	152	15:51 (3)	17:38	55	17:06 (2)	18:28			20:20			21:09			21:52	19	21:21 (17)
4	08:49		10:31 (5)	08:19		15:27 (3)	07:26			07:16			06:15			05:34		21:02 (17)
	16:51	152	15:52 (3)	17:40	53	17:06 (2)	18:30			20:22			21:11			21:53	19	21:21 (17)
5	08:49		10:30 (5)	08:18		15:30 (3)	07:23			07:14			06:13			05:34		21:02 (17)
	16:53	152	15:52 (3)	17:42	49	17:07 (2)	18:32			20:23			21:12			21:54	20	21:22 (17)
6	08:48		10:31 (5)	08:16		15:33 (3)	07:21			07:12			06:11			05:33		21:02 (17)
	16:54	152	15:53 (3)	17:44	44	17:07 (2)	18:33			20:25			21:14			21:55	21	21:23 (17)
7	08:48		10:32 (5)	08:14		15:36 (3)	07:19			07:10		19:59 (18)	06:09			05:32		21:02 (17)
	16:55	152	15:54 (3)	17:45	38	17:07 (2)	18:35			20:27	2	20:01 (18)	21:16			21:56	22	21:24 (17)
8	08:48		10:32 (5)	08:13		16:41 (2)	07:17			07:08		19:55 (18)	06:08			05:32		21:03 (17)
	16:56	152	15:54 (3)	17:47	26	17:07 (2)	18:37			20:28	8	20:03 (18)	21:17			21:57	22	21:25 (17)
9	08:47		10:33 (5)	08:11		16:42 (2)	07:15		18:10 (16)	07:05		19:54 (18)	06:06			05:31		21:02 (17)
	16:58	151	15:55 (3)	17:49	26	17:08 (2)	18:38	3	18:13 (16)	20:30	10	20:04 (18)	21:19			21:58	23	21:25 (17)
10	08:47		10:34 (5)	08:09		16:43 (2)	07:13		18:08 (16)	07:03		19:52 (18)	06:04			05:31		21:02 (17)
	16:59	151	15:56 (3)	17:51	24	17:07 (2)	18:40	7	18:15 (16)	20:32	14	20:06 (18)	21:20			21:59	24	21:26 (17)
11	08:46		10:34 (5)	08:07		16:43 (2)	07:10		18:07 (16)	07:01		19:51 (18)	06:03			05:31		21:03 (17)
	17:00	149	15:56 (3)	17:53	24	17:25 (15)	18:42	10	18:17 (16)	20:33	16	20:07 (18)	21:22			21:59	24	21:27 (17)
12	08:46		10:34 (5)	08:06		16:44 (2)	07:08		18:07 (16)	06:59		19:50 (18)	06:01			05:30		21:02 (17)
	17:02	149	15:56 (3)	17:54	26	17:27 (15)	18:44	12	18:19 (16)	20:35	19	20:09 (18)	21:23			22:00	24	21:26 (17)
13	08:45		10:35 (5)	08:04		16:45 (2)	07:06		18:06 (16)	06:57		19:49 (18)	05:59			05:30		21:02 (17)
	17:03	148	15:57 (3)	17:56	27	17:29 (15)	18:45	14	18:20 (21)	20:37	21	20:10 (18)	21:25			22:01	25	21:27 (17)
14	08:44		10:36 (5)	08:02		16:47 (2)	07:04		18:06 (16)	06:55		19:49 (18)	05:58			05:30		21:03 (17)
	17:05	147	15:58 (3)	17:58	27	17:31 (15)	18:47	16	18:22 (21)	20:38	21	20:10 (18)	21:26			22:01	24	21:27 (17)
15	08:43		10:37 (5)	08:00		16:49 (2)	07:01		18:06 (16)	06:52		19:49 (18)	05:56			05:30		21:03 (17)
	17:06	146	15:59 (3)	18:00	24	17:32 (15)	18:49	18	18:24 (21)	20:40	21	20:10 (18)	21:28			22:02	25	21:28 (17)
16	08:43		10:38 (5)	07:58		17:19 (15)	06:59		18:07 (16)	06:50		19:50 (18)	05:55			05:30		21:03 (17)
	17:08	143	15:59 (3)	18:02	15	17:34 (15)	18:50	19	18:26 (21)	20:42	20	20:15 (22)	21:29			22:02	25	21:28 (17)
17	08:42		10:38 (5)	07:56		17:19 (15)	06:57		18:08 (16)	06:48		19:50 (18)	05:54			05:30		21:03 (17)
	17:09	143	16:00 (3)	18:03	17	17:36 (15)	18:52	19	18:27 (21)	20:43	23	20:17 (22)	21:31			22:03	25	21:28 (17)
18	08:41		10:39 (5)	07:54		17:19 (15)	06:55		18:11 (16)	06:46		19:51 (18)	05:52			05:30		21:03 (17)
	17:11	140	16:00 (3)	18:05	18	17:37 (15)	18:54	18	18:29 (21)	20:45	24	20:18 (22)	21:32			22:03	25	21:28 (17)
19	08:40		10:39 (5)	07:52		17:20 (15)	06:52		18:17 (21)	06:44		19:52 (18)	05:51			05:30		21:04 (17)
	17:12	136	15:59 (3)	18:07	16	17:36 (15)	18:55	12	18:29 (21)	20:46	25	20:20 (22)	21:34			22:04	24	21:28 (17)
20	08:39		10:40 (5)	07:50		17:20 (15)	06:50		18:19 (21)	06:42		19:54 (18)	05:49			05:30		21:04 (17)
	17:14	134	16:00 (3)	18:09	16	17:36 (15)	18:57	9	18:28 (21)	20:48	23	20:22 (22)	21:35			22:04	24	21:28 (17)
21	08:38		10:41 (5)	07:48		17:22 (15)	06:48			06:40		20:08 (22)	05:48			05:30		21:04 (17)
	17:16	129	16:00 (3)	18:11	13	17:35 (15)	18:59			20:50	15	20:23 (22)	21:37			22:04	24	21:28 (17)
22	08:37		10:43 (5)	07:46		17:24 (15)	06:46			06:38		20:08 (22)	05:47			05:30		21:05 (17)
	17:17	124	16:01 (3)	18:12	9	17:33 (15)	19:00			20:51	17	20:25 (22)	21:38			22:04	24	21:29 (17)
23	08:36		10:44 (5)	07:44			06:43			06:36		20:08 (22)	05:46			05:30		21:05 (17)
	17:19	120	16:01 (3)	18:14			19:02			20:53	16	20:24 (22)	21:39			22:04	24	21:29 (17)
24	08:35		10:45 (5)	07:42			06:41			06:34		20:09 (22)	05:44			05:31		21:04 (17)
	17:21	115	16:01 (3)	18:16			19:04			20:55	15	20:24 (22)	21:41			22:05	25	21:29 (17)
25	08:33		10:47 (5)	07:40			06:39			06:32		20:09 (22)	05:43			05:31		21:05 (17)
	17:22	106	16:01 (3)	18:18			19:05			20:56	13	20:22 (22)	21:42			22:05	25	21:30 (17)
26	08:32		10:48 (5)	07:38			06:37			06:30		20:10 (22)	05:42	21:08 (17)		05:31		21:05 (17)
	17:24	98	16:00 (3)	18:19			19:07			20:58	11	20:21 (22)	21:43	4 21:12 (17)		22:05	25	21:30 (17)
27	08:31		10:50 (5)	07:36			06:34			06:28		20:12 (22)	05:41	21:06 (17)		05:32		21:06 (17)
	17:26	95	16:55 (2)	18:21			19:09			21:00	6	20:18 (22)	21:44	7 21:13 (17)		22:05	25	21:31 (17)
28	08:29		10:52 (5)	07:34			06:32			06:26			05:40	21:05 (17)		05:32		21:06 (17)
	17:28	78	16:58 (2)	18:23			19:10			21:01			21:46	9 21:14 (17)		22:04	24	21:30 (17)
29	08:28		10:55 (5)				07:30			06:24			05:39	21:05 (17)		05:33		21:06 (17)
	17:29	71	16:59 (2)				20:12			21:03			21:47	11 21:16 (17)		22:04	25	21:31 (17)
30	08:27		11:01 (5)				07:28			06:22			05:38	21:04 (17)		05:33		21:06 (17)
	17:31	64	17:02 (2)				20:14			21:04			21:48	13 21:17 (17)		22:04	24	21:30 (17)
31	08:25		15:22 (3)				07:25						05:37	21:03 (17)				
	17:33	57	17:03 (2)				20:15						21:49	15 21:18 (17)				
Potential sun hours	262			279			367			414			482			494		
Total, worst case		4011			661			157			340			59			692	
Sun reduction		0,24			0,29			0,37			0,46			0,46			0,44	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,68			0,70			0,63			0,57			0,56			0,56	
Total reduction		0,15			0,20			0,23			0,25			0,25			0,24	
Total, real		621			131			36			86			15			166	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: U - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34		21:07 (17)	06:09			06:57		19:50 (18)	07:44		18:46 (16)	07:36		16:11 (2)	08:26		10:16 (5)
	22:04	24	21:31 (17)	21:33			20:33	17	20:07 (18)	19:25	12	18:58 (16)	17:21	25	16:36 (2)	16:42	150	15:38 (3)
2	05:35		21:07 (17)	06:11			06:59		19:50 (18)	07:46		18:46 (16)	07:38		16:11 (2)	08:27		10:16 (5)
	22:04	23	21:30 (17)	21:32			20:31	14	20:04 (18)	19:23	11	18:57 (16)	17:19	25	16:36 (2)	16:42	151	15:38 (3)
3	05:35		21:07 (17)	06:12			07:00		19:52 (18)	07:48		18:46 (16)	07:40		16:11 (2)	08:29		10:17 (5)
	22:03	24	21:31 (17)	21:30			20:29	11	20:03 (18)	19:21	8	18:54 (16)	17:17	26	16:37 (2)	16:41	152	15:39 (3)
4	05:36		21:08 (17)	06:14			07:02		19:52 (18)	07:49		18:47 (16)	07:42		15:05 (3)	08:30		10:17 (5)
	22:03	23	21:31 (17)	21:28			20:26	8	20:00 (18)	19:19	5	18:52 (16)	17:16	39	16:37 (2)	16:40	151	15:38 (3)
5	05:37		21:08 (17)	06:15			07:03		19:55 (18)	07:51		18:49 (16)	07:43		15:02 (3)	08:31		10:17 (5)
	22:02	23	21:31 (17)	21:27			20:24	3	19:58 (18)	19:16	1	18:50 (16)	17:14	46	16:37 (2)	16:40	152	15:39 (3)
6	05:38		21:08 (17)	06:17			07:05			07:52			07:45		15:00 (3)	08:32		10:17 (5)
	22:02	21	21:29 (17)	21:25			20:22			19:14			17:12	50	16:37 (2)	16:40	152	15:39 (3)
7	05:38		21:09 (17)	06:18			07:06			07:54			07:47		14:58 (3)	08:34		10:17 (5)
	22:01	20	21:29 (17)	21:23			20:20			19:12			17:11	53	16:37 (2)	16:39	152	15:39 (3)
8	05:39		21:09 (17)	06:20			07:08			07:56			07:49		14:56 (3)	08:35		10:18 (5)
	22:01	20	21:29 (17)	21:22			20:18			19:10			17:09	56	16:37 (2)	16:39	152	15:39 (3)
9	05:40		21:10 (17)	06:21			07:10			07:57			07:50		14:55 (3)	08:36		10:19 (5)
	22:00	18	21:28 (17)	21:20			20:15			19:08			17:07	58	16:37 (2)	16:39	152	15:40 (3)
10	05:41		21:10 (17)	06:23			07:11			07:59			07:52		14:53 (3)	08:37		10:19 (5)
	21:59	18	21:28 (17)	21:18			20:13			19:05			17:06	58	16:35 (2)	16:38	152	15:40 (3)
11	05:42		21:11 (17)	06:24			07:13			08:01			07:54		14:53 (3)	08:38		10:19 (5)
	21:59	16	21:27 (17)	21:16			20:11			19:03			17:04	57	16:34 (2)	16:38	153	15:40 (3)
12	05:43		21:12 (17)	06:26			07:14			08:02			07:55		10:31 (5)	08:39		10:20 (5)
	21:58	14	21:26 (17)	21:14			20:09			19:01			17:03	64	16:32 (2)	16:38	151	15:40 (3)
13	05:44		21:12 (17)	06:27			07:16			08:04			07:57		10:27 (5)	08:40		10:20 (5)
	21:57	14	21:26 (17)	21:12			20:06			18:59			17:01	71	16:31 (2)	16:38	152	15:41 (3)
14	05:45		21:13 (17)	06:29			07:17			08:06			07:59		10:24 (5)	08:41		10:21 (5)
	21:56	12	21:25 (17)	21:10			20:04			18:57			17:00	80	16:30 (2)	16:38	151	15:41 (3)
15	05:47		21:14 (17)	06:30			07:19			08:07			08:01		10:23 (5)	08:42		10:21 (5)
	21:55	10	21:24 (17)	21:08			20:02			18:55			16:59	94	16:28 (2)	16:38	151	15:41 (3)
16	05:48		21:15 (17)	06:32		20:19 (22)	07:21			08:09			08:02		10:21 (5)	08:43		10:22 (5)
	21:54	8	21:23 (17)	21:07	8	20:27 (22)	19:59			18:52			16:57	99	15:34 (3)	16:38	150	15:42 (3)
17	05:49		21:17 (17)	06:34		20:17 (22)	07:22			08:11			08:04		10:19 (5)	08:44		10:21 (5)
	21:53	5	21:22 (17)	21:05	11	20:28 (22)	19:57			18:50			16:56	108	15:34 (3)	16:39	151	15:41 (3)
18	05:50			06:35		20:16 (22)	07:24			08:12			08:06		10:19 (5)	08:44		10:22 (5)
	21:52			21:03	13	20:29 (22)	19:55			18:48			16:55	115	15:35 (3)	16:39	152	15:42 (3)
19	05:51			06:37		20:14 (22)	07:25			08:14		17:57 (15)	08:07		10:18 (5)	08:45		10:23 (5)
	21:51			21:01	15	20:29 (22)	19:53			18:46	5	18:02 (15)	16:53	120	15:35 (3)	16:39	151	15:43 (3)
20	05:53			06:38		20:14 (22)	07:27			08:16		17:53 (15)	08:09		10:18 (5)	08:46		10:23 (5)
	21:50			20:59	16	20:30 (22)	19:50			18:44	11	18:04 (15)	16:52	124	15:36 (3)	16:39	150	15:42 (3)
21	05:54			06:40		20:13 (22)	07:28			08:17		17:52 (15)	08:11		10:18 (5)	08:46		10:24 (5)
	21:49			20:56	16	20:29 (22)	19:48			18:42	13	18:05 (15)	16:51	128	15:36 (3)	16:40	150	15:43 (3)
22	05:55			06:41		20:02 (18)	07:30			08:19		17:51 (15)	08:12		10:16 (5)	08:47		10:24 (5)
	21:48			20:54	18	20:28 (22)	19:46			18:40	15	18:06 (15)	16:50	134	15:36 (3)	16:40	150	15:43 (3)
23	05:56			06:43		19:57 (18)	07:32		19:04 (21)	08:21		17:50 (15)	08:14		10:16 (5)	08:47		10:25 (5)
	21:46			20:52	23	20:25 (22)	19:43	6	19:10 (21)	18:38	17	18:07 (15)	16:49	136	15:36 (3)	16:41	149	15:44 (3)
24	05:58			06:44		19:56 (18)	07:33		19:02 (21)	08:22		17:50 (15)	08:15		10:16 (5)	08:48		10:25 (5)
	21:45			20:50	25	20:24 (22)	19:41	11	19:13 (21)	18:36	17	18:07 (15)	16:48	139	15:37 (3)	16:41	151	15:45 (3)
25	05:59			06:46		19:54 (18)	07:35		18:59 (21)	07:24		16:48 (15)	08:17		10:16 (5)	08:48		10:25 (5)
	21:44			20:48	24	20:21 (22)	19:39	13	19:12 (21)	17:34	17	17:05 (15)	16:47	142	15:37 (3)	16:42	152	15:45 (3)
26	06:01			06:48		19:53 (18)	07:36		18:51 (16)	07:26		16:22 (2)	08:18		10:16 (5)	08:48		10:26 (5)
	21:42			20:46	23	20:20 (22)	19:37	19	19:10 (21)	17:32	19	17:03 (15)	16:46	143	15:37 (3)	16:43	151	15:46 (3)
27	06:02			06:49		19:51 (18)	07:38		18:50 (16)	07:28		16:18 (2)	08:20		10:16 (5)	08:49		10:27 (5)
	21:41			20:44	21	20:17 (22)	19:34	18	19:08 (21)	17:30	25	17:01 (15)	16:45	145	15:38 (3)	16:43	151	15:47 (3)
28	06:03			06:51		19:51 (18)	07:40		18:48 (16)	07:29		16:16 (2)	08:21		10:16 (5)	08:49		10:27 (5)
	21:39			20:42	21	20:12 (18)	19:32	17	19:05 (21)	17:28	27	17:00 (15)	16:44	145	15:37 (3)	16:44	151	15:47 (3)
29	06:05			06:52		19:50 (18)	07:41		18:47 (16)	07:31		16:15 (2)	08:23		10:16 (5)	08:49		10:27 (5)
	21:38			20:40	21	20:11 (18)	19:30	16	19:03 (21)	17:26	26	16:58 (15)	16:44	148	15:38 (3)	16:45	153	15:48 (3)
30	06:06			06:54		19:50 (18)	07:43		18:46 (16)	07:33		16:14 (2)	08:24		10:16 (5)	08:49		10:28 (5)
	21:36			20:37	21	20:11 (18)	19:28	14	19:00 (21)	17:25	25	16:56 (15)	16:43	149	15:38 (3)	16:46	150	15:48 (3)
31	06:08			06:55		19:50 (18)				07:35		16:13 (2)				08:49		10:28 (5)
	21:35			20:35	18	20:08 (18)				17:23	23	16:36 (2)				16:47	152	15:49 (3)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		293			294			167			277			2777			4688	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,56			0,57			0,61			0,68			0,68			0,67	
Total reduction		0,24			0,26			0,26			0,24			0,17			0,14	
Total, real		71			76			43			67			472			649	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: V - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January			February			March			April			May			June
1	08:49		09:32 (5)	08:24		09:28 (5)	07:32		17:47 (16)	07:23			06:20		19:43 (18)	05:37
	16:48	134	16:09 (2)	17:35	61	17:05 (15)	18:25	12	17:59 (16)	20:17			21:06	45	20:29 (22)	21:50
2	08:49		09:31 (5)	08:22		09:29 (5)	07:30		17:45 (16)	07:21			06:18		19:44 (18)	05:36
	16:49	139	16:10 (2)	17:36	58	17:07 (15)	18:26	16	18:01 (16)	20:19			21:08	41	20:28 (22)	21:51
3	08:49		09:30 (5)	08:21		09:29 (5)	07:28		17:44 (16)	07:19			06:16		19:46 (18)	05:35
	16:50	139	16:10 (2)	17:38	51	17:09 (15)	18:28	19	18:03 (16)	20:20			21:09	36	20:27 (22)	21:52
4	08:49		09:30 (5)	08:19		09:30 (5)	07:26		17:43 (16)	07:17			06:15		19:47 (18)	05:34
	16:51	142	16:12 (2)	17:40	49	17:11 (15)	18:30	22	18:05 (16)	20:22			21:11	32	20:26 (22)	21:53
5	08:49		09:30 (5)	08:18		09:32 (5)	07:24		17:42 (16)	07:14			06:13		19:49 (18)	05:34
	16:53	144	16:13 (2)	17:42	48	17:13 (15)	18:32	23	18:05 (16)	20:23			21:12	23	20:24 (22)	21:54
6	08:48		09:29 (5)	08:16		09:32 (5)	07:21		17:42 (16)	07:12		19:58 (23)	06:11		19:53 (18)	05:33
	16:54	144	16:13 (2)	17:44	49	17:15 (15)	18:33	23	18:05 (16)	20:25	1	19:59 (23)	21:14	9	20:21 (22)	21:55
7	08:48		09:28 (5)	08:14		09:34 (5)	07:19		17:42 (16)	07:10		19:56 (23)	06:09			05:32
	16:55	147	16:14 (2)	17:45	46	17:15 (15)	18:35	25	18:10 (21)	20:27	5	20:01 (23)	21:16			21:56
8	08:48		09:28 (5)	08:13		09:35 (5)	07:17		17:42 (16)	07:08		19:56 (23)	06:08			05:32
	16:56	147	16:15 (2)	17:47	43	17:15 (15)	18:37	29	18:12 (21)	20:28	7	20:03 (23)	21:17			21:57
9	08:47		09:27 (5)	08:11		09:38 (5)	07:15		17:41 (16)	07:05		19:55 (23)	06:06			05:31
	16:58	148	16:15 (2)	17:49	39	17:16 (15)	18:39	31	18:13 (21)	20:30	9	20:04 (23)	21:19			21:58
10	08:47		09:27 (5)	08:09		09:42 (5)	07:13		17:42 (16)	07:03		19:55 (23)	06:04			05:31
	16:59	148	16:16 (2)	17:51	29	17:15 (15)	18:40	33	18:15 (21)	20:32	11	20:06 (23)	21:20			21:59
11	08:46		09:26 (5)	08:07		16:55 (15)	07:10		17:43 (16)	07:01		19:55 (23)	06:03			05:31
	17:00	149	16:17 (2)	17:53	20	17:15 (15)	18:42	33	18:17 (21)	20:33	13	20:08 (23)	21:22			21:59
12	08:46		09:26 (5)	08:06		16:56 (15)	07:08		17:45 (16)	06:59		19:55 (23)	06:01			05:30
	17:02	147	16:17 (2)	17:54	18	17:14 (15)	18:44	31	18:19 (21)	20:35	12	20:07 (23)	21:23			22:00
13	08:45		09:26 (5)	08:04		16:57 (15)	07:06		17:46 (16)	06:57		19:52 (18)	06:00			05:30
	17:03	147	16:18 (2)	17:56	16	17:13 (15)	18:45	29	18:20 (21)	20:37	14	20:06 (18)	21:25			22:01
14	08:44		09:26 (5)	08:02		16:58 (15)	07:04		18:02 (21)	06:55		19:49 (18)	05:58			05:30
	17:05	146	16:19 (2)	17:58	13	17:11 (15)	18:47	20	18:22 (21)	20:38	19	20:08 (18)	21:26			22:01
15	08:43		09:26 (5)	08:00		17:01 (15)	07:01		18:03 (21)	06:52		19:47 (18)	05:56			05:30
	17:06	145	16:20 (2)	18:00	8	17:09 (15)	18:49	18	18:21 (21)	20:40	22	20:09 (18)	21:28			22:02
16	08:43		09:26 (5)	07:58			06:59		18:04 (21)	06:50		19:46 (18)	05:55			05:30
	17:08	142	16:20 (2)	18:02			18:50	16	18:20 (21)	20:42	25	20:11 (18)	21:29			22:02
17	08:42		09:26 (5)	07:56			06:57		18:05 (21)	06:48		19:45 (18)	05:54			05:30
	17:09	138	16:21 (2)	18:03			18:52	13	18:18 (21)	20:43	27	20:12 (18)	21:31			22:03
18	08:41		09:26 (5)	07:54			06:55		18:07 (21)	06:46		19:43 (18)	05:52			05:30
	17:11	132	16:21 (2)	18:05			18:54	8	18:15 (21)	20:45	30	20:13 (18)	21:32			22:03
19	08:40		09:25 (5)	07:52			06:53		18:27 (6)	06:44		19:43 (18)	05:51			05:30
	17:12	126	16:20 (2)	18:07			18:55	4	18:31 (6)	20:47	30	20:13 (18)	21:34			22:04
20	08:39		09:25 (5)	07:51			06:50		18:26 (6)	06:42		19:42 (18)	05:49			05:30
	17:14	112	16:21 (2)	18:09			18:57	7	18:33 (6)	20:48	34	20:22 (22)	21:35			22:04
21	08:38		09:25 (5)	07:49			06:48		18:24 (6)	06:40		19:41 (18)	05:48			05:30
	17:16	110	16:21 (2)	18:11			18:59	9	18:33 (6)	20:50	40	20:23 (22)	21:37			22:04
22	08:37		09:25 (5)	07:47			06:46		18:24 (6)	06:38		19:41 (18)	05:47			05:30
	17:17	109	16:22 (2)	18:12			19:00	11	18:35 (6)	20:51	44	20:25 (22)	21:38			22:04
23	08:36		09:26 (5)	07:44			06:43		18:24 (6)	06:36		19:41 (18)	05:46			05:30
	17:19	106	16:22 (2)	18:14			19:02	13	18:37 (6)	20:53	45	20:26 (22)	21:39			22:04
24	08:35		09:25 (5)	07:42			06:41		18:23 (6)	06:34		19:40 (18)	05:44			05:31
	17:21	103	16:21 (2)	18:16			19:04	15	18:38 (6)	20:55	48	20:28 (22)	21:41			22:05
25	08:33		09:25 (5)	07:40			06:39		18:24 (6)	06:32		19:40 (18)	05:43			05:31
	17:22	101	16:22 (2)	18:18			19:05	14	18:38 (6)	20:56	49	20:29 (22)	21:42			22:05
26	08:32		09:26 (5)	07:38			06:37		18:25 (6)	06:30		19:40 (18)	05:42			05:31
	17:24	96	16:22 (2)	18:19			19:07	12	18:37 (6)	20:58	50	20:30 (22)	21:43			22:05
27	08:31		09:26 (5)	07:36			06:34		18:26 (6)	06:28		19:40 (18)	05:41			05:32
	17:26	90	16:21 (2)	18:21			19:09	10	18:36 (6)	21:00	50	20:30 (22)	21:44			22:05
28	08:29		09:27 (5)	07:34		17:49 (16)	06:32			06:26		19:41 (18)	05:40			05:32
	17:28	81	16:21 (2)	18:23	8	17:57 (16)	19:10			21:01	49	20:30 (22)	21:46			22:05
29	08:28		09:26 (5)				07:30			06:24		19:42 (18)	05:39			05:33
	17:29	71	16:20 (2)				20:12			21:03	48	20:30 (22)	21:47			22:04
30	08:27		09:27 (5)				07:28			06:22		19:43 (18)	05:38			05:33
	17:31	62	17:02 (15)				20:14			21:04	47	20:30 (22)	21:48			22:04
31	08:25		09:27 (5)				07:25						05:37			
	17:33	62	17:03 (15)				20:15						21:49			
Potential sun hours	262			279			367			414			482			494
Total, worst case		3807			556			496			729			186		
Sun reduction		0,24			0,29			0,37			0,46			0,46		
Oper. time red.		0,96			0,96			0,96			0,96			0,96		
Wind dir. red.		0,63			0,62			0,63			0,57			0,56		
Total reduction		0,14			0,17			0,23			0,25			0,25		
Total, real		550			97			113			182			46		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: V - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July		August			September			October			November			December		
1	05:34		06:09			06:57		19:54 (23)	07:44		18:25 (16)	07:36		09:10 (5)	08:26		09:09 (5)
	22:04		21:33			20:33	13	20:07 (23)	19:25	30	18:58 (21)	17:21	33	16:45 (15)	16:42	149	15:59 (2)
2	05:35		06:11			06:59		19:53 (23)	07:46		18:23 (16)	07:38		09:06 (5)	08:27		09:09 (5)
	22:04		21:32			20:31	11	20:04 (23)	19:23	32	18:57 (21)	17:19	39	16:44 (15)	16:42	150	15:59 (2)
3	05:35		06:12			07:00		19:53 (23)	07:48		18:21 (16)	07:40		09:05 (5)	08:29		09:11 (5)
	22:03		21:30			20:29	10	20:03 (23)	19:21	32	18:54 (21)	17:17	43	16:45 (15)	16:41	147	15:59 (2)
4	05:36		06:14			07:02		19:53 (23)	07:49		18:20 (16)	07:42		09:03 (5)	08:30		09:12 (5)
	22:03		21:28			20:26	7	20:00 (23)	19:19	31	18:52 (21)	17:16	47	16:45 (15)	16:40	147	15:59 (2)
5	05:37		06:15			07:03		19:53 (23)	07:51		18:19 (16)	07:43		09:02 (5)	08:31		09:13 (5)
	22:02		21:27			20:24	5	19:58 (23)	19:16	31	18:50 (21)	17:14	49	16:44 (15)	16:40	147	15:59 (2)
6	05:38		06:17			07:05		19:54 (23)	07:52		18:18 (16)	07:45		09:01 (5)	08:32		09:14 (5)
	22:02		21:25			20:22	1	19:55 (23)	19:14	27	18:47 (21)	17:12	49	16:43 (15)	16:40	146	15:59 (2)
7	05:38		06:18		20:01 (18)	07:06			07:54		18:18 (16)	07:47		09:01 (5)	08:34		09:16 (5)
	22:01		21:23	15	20:32 (22)	20:20			19:12	23	18:41 (16)	17:11	47	16:41 (15)	16:39	143	15:59 (2)
8	05:39		06:20		19:58 (18)	07:08			07:56		18:18 (16)	07:49		09:00 (5)	08:35		09:18 (5)
	22:01		21:22	25	20:34 (22)	20:18			19:10	23	18:41 (16)	17:09	53	16:40 (15)	16:39	142	16:00 (2)
9	05:40		06:21		19:56 (18)	07:10			07:57		18:17 (16)	07:50		09:00 (5)	08:36		09:19 (5)
	22:00		21:20	33	20:36 (22)	20:15			19:08	23	18:40 (16)	17:07	58	16:38 (15)	16:39	141	16:00 (2)
10	05:41		06:23		19:54 (18)	07:11			07:59		18:18 (16)	07:52		08:58 (5)	08:37		09:20 (5)
	21:59		21:18	37	20:36 (22)	20:13			19:05	20	18:38 (16)	17:06	61	16:35 (15)	16:38	139	16:00 (2)
11	05:42		06:24		19:52 (18)	07:13			08:01		18:19 (16)	07:54		08:58 (5)	08:38		09:22 (5)
	21:59		21:16	42	20:36 (22)	20:11			19:03	17	18:36 (16)	17:04	63	16:34 (15)	16:38	134	15:59 (2)
12	05:43		06:26		19:51 (18)	07:14			08:02		18:19 (16)	07:55		08:58 (5)	08:39		09:24 (5)
	21:58		21:14	45	20:37 (22)	20:09			19:01	14	18:33 (16)	17:03	61	15:51 (2)	16:38	132	16:00 (2)
13	05:44		06:27		19:50 (18)	07:16			08:04		18:21 (16)	07:57		08:58 (5)	08:40		10:35 (4)
	21:57		21:12	47	20:37 (22)	20:06			18:59	10	18:31 (16)	17:01	71	15:52 (2)	16:38	126	16:00 (2)
14	05:45		06:29		19:49 (18)	07:17			08:06		18:23 (16)	07:59		08:58 (5)	08:41		10:35 (4)
	21:56		21:10	49	20:38 (22)	20:04			18:57	6	18:29 (16)	17:00	83	15:53 (2)	16:38	126	16:00 (2)
15	05:47		06:30		19:48 (18)	07:19			08:07			08:01		08:59 (5)	08:42		10:36 (4)
	21:55		21:08	49	20:37 (22)	20:02			18:55			16:59	90	15:54 (2)	16:38	124	16:00 (2)
16	05:48		06:32		19:48 (18)	07:21		19:15 (6)	08:09			08:02		08:59 (5)	08:43		10:36 (4)
	21:54		21:07	49	20:37 (22)	19:59	8	19:23 (6)	18:52			16:57	96	15:55 (2)	16:38	125	16:00 (2)
17	05:49		06:34		19:47 (18)	07:22		19:13 (6)	08:11			08:04		08:58 (5)	08:44		10:36 (4)
	21:53		21:05	50	20:37 (22)	19:57	12	19:25 (6)	18:50			16:56	101	15:55 (2)	16:39	124	16:00 (2)
18	05:50		06:35		19:47 (18)	07:24		19:11 (6)	08:12			08:06		08:59 (5)	08:44		10:37 (4)
	21:52		21:03	48	20:35 (22)	19:55	15	19:26 (6)	18:48			16:55	103	15:55 (2)	16:39	123	16:00 (2)
19	05:51		06:37		19:46 (18)	07:25		19:10 (6)	08:14			08:07		09:00 (5)	08:45		10:37 (4)
	21:51		21:01	47	20:33 (22)	19:53	16	19:26 (6)	18:46			16:53	106	15:56 (2)	16:39	125	16:01 (2)
20	05:53		06:38		19:46 (18)	07:27		19:10 (6)	08:16			08:09		09:00 (5)	08:46		10:37 (4)
	21:50		20:59	46	20:32 (22)	19:50	14	19:24 (6)	18:44			16:52	109	15:57 (2)	16:39	125	16:01 (2)
21	05:54		06:40		19:46 (18)	07:28		19:09 (6)	08:17			08:11		09:01 (5)	08:46		10:38 (4)
	21:49		20:57	43	20:29 (22)	19:48	12	19:21 (6)	18:42			16:51	110	15:57 (2)	16:40	125	16:02 (2)
22	05:55		06:41		19:46 (18)	07:30		19:09 (6)	08:19			08:12		09:01 (5)	08:47		10:38 (4)
	21:48		20:54	40	20:28 (22)	19:46	11	19:20 (6)	18:40			16:50	112	15:57 (2)	16:40	125	16:02 (2)
23	05:56		06:43		19:46 (18)	07:32		19:09 (6)	08:21			08:14		09:02 (5)	08:47		10:39 (4)
	21:46		20:52	31	20:17 (18)	19:43	8	19:17 (6)	18:38			16:49	125	15:58 (2)	16:41	125	16:03 (2)
24	05:58		06:45		19:46 (18)	07:33		19:10 (6)	08:23			08:15		09:03 (5)	08:48		10:39 (4)
	21:45		20:50	31	20:17 (18)	19:41	5	19:15 (6)	18:36			16:48	132	15:58 (2)	16:41	125	16:03 (2)
25	05:59		06:46		19:46 (18)	07:35		18:51 (21)	07:24			08:17		09:03 (5)	08:48		10:39 (4)
	21:44		20:48	29	20:15 (18)	19:39	7	19:12 (6)	17:34			16:47	139	15:58 (2)	16:42	125	16:03 (2)
26	06:01		06:48		19:47 (18)	07:36		18:48 (21)	07:26			08:18		09:04 (5)	08:48		10:41 (4)
	21:42		20:46	27	20:14 (18)	19:37	12	19:00 (21)	17:32			16:46	142	15:58 (2)	16:43	125	16:05 (2)
27	06:02		06:49		19:48 (18)	07:38		18:46 (21)	07:28		16:30 (15)	08:20		09:05 (5)	08:49		10:41 (4)
	21:41		20:44	25	20:13 (18)	19:34	16	19:02 (21)	17:30	9	16:39 (15)	16:45	145	15:59 (2)	16:43	125	16:05 (2)
28	06:03		06:51		19:49 (18)	07:40		18:44 (21)	07:29		16:28 (15)	08:21		09:05 (5)	08:49		10:41 (4)
	21:39		20:42	22	20:11 (18)	19:32	18	19:02 (21)	17:28	13	16:41 (15)	16:44	146	15:58 (2)	16:44	126	16:06 (2)
29	06:05		06:52		19:50 (18)	07:41		18:43 (21)	07:31		16:26 (15)	08:23		09:07 (5)	08:49		10:42 (4)
	21:38		20:40	19	20:09 (18)	19:30	20	19:03 (21)	17:26	17	16:43 (15)	16:44	147	15:59 (2)	16:45	126	16:07 (2)
30	06:06		06:54		19:53 (18)	07:43		18:27 (16)	07:33		16:25 (15)	08:24		09:07 (5)	08:49		10:42 (4)
	21:36		20:37	14	20:07 (23)	19:28	27	19:00 (21)	17:25	19	16:44 (15)	16:43	147	15:58 (2)	16:46	125	16:07 (2)
31	06:08		06:56		19:55 (23)				07:35		16:25 (15)				08:49		09:34 (5)
	21:35		20:35	12	20:07 (23)				17:23	19	16:44 (15)				16:47	129	16:08 (2)
Potential sun hours	498		451			380			333			269			248		
Total, worst case				875			248			396			2707			4096	
Sun reduction				0,47			0,43			0,36			0,26			0,21	
Oper. time red.				0,96			0,96			0,96			0,96			0,96	
Wind dir. red.				0,56			0,62			0,65			0,62			0,66	
Total reduction				0,26			0,26			0,23			0,15			0,13	
Total, real				223			64			91			416			552	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: W - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April		May		June	
1	08:49		14:10 (5)	08:24		14:18 (5)	07:32		16:31 (4)	07:23		06:20		05:36
	16:48	60	15:10 (5)	17:35	64	15:22 (5)	18:25	77	17:54 (2)	20:17		21:06		21:50
2	08:49		14:09 (5)	08:22		14:19 (5)	07:30		16:33 (4)	07:21		06:18		05:36
	16:49	61	15:10 (5)	17:36	64	15:23 (5)	18:26	74	17:54 (2)	20:18		21:08		21:51
3	08:49		14:10 (5)	08:21		14:19 (5)	07:28		16:35 (4)	07:19		06:16		05:35
	16:50	61	15:11 (5)	17:38	63	15:22 (5)	18:28	67	17:52 (2)	20:20		21:09		21:52
4	08:49		14:10 (5)	08:19		14:20 (5)	07:26		16:36 (4)	07:16		06:15		05:34
	16:51	62	15:12 (5)	17:40	72	16:53 (4)	18:30	58	17:50 (2)	20:22		21:11		21:53
5	08:49		14:10 (5)	08:18		14:21 (5)	07:23		16:40 (4)	07:14		06:13		05:34
	16:53	62	15:12 (5)	17:42	80	16:58 (4)	18:32	43	17:47 (2)	20:23		21:12		21:54
6	08:48		14:10 (5)	08:16		14:22 (5)	07:21		16:46 (4)	07:12		06:11		05:33
	16:54	63	15:13 (5)	17:44	82	17:00 (4)	18:33	20	17:33 (3)	20:25		21:14		21:55
7	08:48		14:11 (5)	08:14		14:23 (5)	07:19		17:19 (3)	07:10		06:09		05:32
	16:55	63	15:14 (5)	17:45	84	17:02 (4)	18:35	11	17:30 (3)	20:27		21:16		21:56
8	08:48		14:11 (5)	08:13		14:24 (5)	07:17			07:08		06:08		05:32
	16:56	63	15:14 (5)	17:47	85	17:03 (4)	18:37			20:28		21:17		21:57
9	08:47		14:11 (5)	08:11		14:26 (5)	07:15			07:05		06:06		05:31
	16:58	64	15:15 (5)	17:49	85	17:05 (4)	18:38			20:30		21:19		21:58
10	08:47		14:12 (5)	08:09		14:27 (5)	07:13			07:03		06:04		05:31
	16:59	64	15:16 (5)	17:51	87	17:07 (4)	18:40			20:32		21:20		21:59
11	08:46		14:11 (5)	08:07		14:29 (5)	07:10			07:01		06:03	20:50 (17)	05:31
	17:00	65	15:16 (5)	17:53	84	17:07 (4)	18:42			20:33		21:22	3	20:53 (17)	21:59
12	08:46		14:11 (5)	08:06		14:30 (5)	07:08			06:59		06:01		20:49 (17)	05:30
	17:02	66	15:17 (5)	17:54	83	17:08 (4)	18:44			20:35		21:23	5	20:54 (17)	22:00
13	08:45		14:11 (5)	08:04		14:32 (5)	07:06			06:57		20:08 (18)	05:59		20:49 (17)	05:30
	17:03	66	15:17 (5)	17:56	81	17:09 (4)	18:45			20:37	2	20:10 (18)	21:25	7	20:56 (17)	22:01
14	08:44		14:11 (5)	08:02		14:35 (5)	07:04			06:55		20:07 (18)	05:58		20:48 (17)	05:30
	17:05	67	15:18 (5)	17:58	78	17:10 (4)	18:47			20:38	5	20:12 (18)	21:26	9	20:57 (17)	22:01
15	08:43		14:13 (5)	08:00		14:38 (5)	07:01			06:52		20:07 (18)	05:56		20:49 (17)	05:30
	17:06	66	15:19 (5)	18:00	73	17:10 (4)	18:49			20:40	7	20:14 (18)	21:28	9	20:58 (17)	22:02
16	08:43		14:13 (5)	07:58		14:42 (5)	06:59			06:50		20:07 (18)	05:55		20:49 (17)	05:30
	17:08	67	15:20 (5)	18:02	75	17:30 (3)	18:50			20:42	8	20:15 (18)	21:29	11	21:00 (17)	22:02
17	08:42		14:13 (5)	07:56		14:47 (5)	06:57			06:48		20:07 (18)	05:53		20:49 (17)	05:30
	17:09	67	15:20 (5)	18:03	73	17:34 (3)	18:52			20:43	10	20:17 (18)	21:31	12	21:01 (17)	22:03
18	08:41		14:12 (5)	07:54		16:27 (4)	06:55			06:46		20:08 (18)	05:52		20:50 (17)	05:30
	17:11	68	15:20 (5)	18:05	64	17:36 (3)	18:54			20:45	10	20:18 (18)	21:32	12	21:02 (17)	22:03
19	08:40		14:13 (5)	07:52		16:27 (4)	06:52			06:44		20:09 (18)	05:51		20:50 (17)	05:30
	17:12	67	15:20 (5)	18:07	66	17:37 (3)	18:55			20:46	8	20:17 (18)	21:34	13	21:03 (17)	22:03
20	08:39		14:13 (5)	07:50		16:27 (4)	06:50			06:42			05:49		20:51 (17)	05:30
	17:14	68	15:21 (5)	18:09	68	17:38 (3)	18:57			20:48			21:35	11	21:02 (17)	22:04
21	08:38		14:13 (5)	07:48		16:27 (4)	06:48			06:40			05:48		20:52 (17)	05:30
	17:16	68	15:21 (5)	18:11	72	17:44 (2)	18:59			20:50			21:36	9	21:01 (17)	22:04
22	08:37		14:14 (5)	07:46		16:27 (4)	06:46			06:38			05:47		20:53 (17)	05:30
	17:17	68	15:22 (5)	18:12	78	17:46 (2)	19:00			20:51			21:38	7	21:00 (17)	22:04
23	08:36		14:14 (5)	07:44		16:27 (4)	06:43		18:35 (16)	06:36			05:46			05:30
	17:19	68	15:22 (5)	18:14	79	17:48 (2)	19:02	2	18:37 (16)	20:53			21:39			22:04
24	08:34		14:14 (5)	07:42		16:28 (4)	06:41		18:34 (16)	06:34			05:44			05:31
	17:21	68	15:22 (5)	18:16	81	17:50 (2)	19:04	4	18:38 (16)	20:55			21:41			22:05
25	08:33		14:15 (5)	07:40		16:28 (4)	06:39		18:34 (16)	06:32			05:43			05:31
	17:22	68	15:23 (5)	18:18	83	17:52 (2)	19:05	6	18:40 (16)	20:56			21:42			22:05
26	08:32		14:15 (5)	07:38		16:28 (4)	06:37		18:35 (16)	06:30			05:42			05:31
	17:24	67	15:22 (5)	18:19	83	17:53 (2)	19:07	7	18:42 (16)	20:58			21:43			22:05
27	08:31		14:15 (5)	07:36		16:29 (4)	06:34		18:37 (16)	06:28			05:41			05:32
	17:26	68	15:23 (5)	18:21	83	17:55 (2)	19:09	6	18:43 (16)	21:00			21:44			22:05
28	08:29		14:16 (5)	07:34		16:30 (4)	06:32			06:26			05:40			05:32
	17:28	67	15:23 (5)	18:23	81	17:55 (2)	19:10			21:01			21:46			22:04
29	08:28		14:16 (5)				07:30			06:24			05:39			05:33
	17:29	67	15:23 (5)				20:12			21:03			21:47			22:04
30	08:27		14:17 (5)				07:28			06:22			05:38			05:33
	17:31	66	15:23 (5)				20:14			21:04			21:48			22:04
31	08:25		14:17 (5)				07:25						05:37			
	17:33	66	15:23 (5)				20:15						21:49			
Potential sun hours	262			279			367			414			482			494
Total, worst case		2031			2151			375			50			108		
Sun reduction		0,24			0,29			0,37			0,46			0,46		
Oper. time red.		0,96			0,96			0,96			0,96			0,96		
Wind dir. red.		0,72			0,70			0,68			0,57			0,56		
Total reduction		0,17			0,20			0,24			0,25			0,25		
Total, real		335			424			91			12			27		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar

Calculation: SS OVA - Ontwikkeling incl. Kronos Shadow receptor: W - Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July			August			September			October			November			December		
1	05:34			06:09		21:00 (17)	06:57			07:44			07:36		13:56 (5)	08:26		13:54 (5)
	22:04			21:33	4	21:04 (17)	20:33			19:25			17:21	86	16:35 (4)	16:42	64	14:58 (5)
2	05:34			06:11		21:01 (17)	06:59			07:46			07:38		13:54 (5)	08:27		13:54 (5)
	22:04			21:32	2	21:03 (17)	20:31			19:23			17:19	86	16:34 (4)	16:41	64	14:58 (5)
3	05:35			06:12			07:00			07:48			07:40		13:53 (5)	08:28		13:55 (5)
	22:03			21:30			20:29			19:21			17:17	86	16:33 (4)	16:41	64	14:59 (5)
4	05:36			06:14			07:02			07:49			07:42		13:52 (5)	08:30		13:55 (5)
	22:03			21:28			20:26			19:19			17:16	84	16:31 (4)	16:40	64	14:59 (5)
5	05:37			06:15			07:03			07:51			07:43		13:52 (5)	08:31		13:56 (5)
	22:02			21:27			20:24			19:16			17:14	81	16:29 (4)	16:40	63	14:59 (5)
6	05:38			06:17			07:05			07:52		17:58 (3)	07:45		13:51 (5)	08:32		13:56 (5)
	22:02			21:25			20:22			19:14	6	18:04 (3)	17:12	78	16:27 (4)	16:39	63	14:59 (5)
7	05:38			06:18			07:06			07:54		17:53 (3)	07:47		13:50 (5)	08:34		13:57 (5)
	22:01			21:23			20:20			19:12	15	18:08 (3)	17:11	73	16:24 (4)	16:39	62	14:59 (5)
8	05:39			06:20			07:08			07:56		17:17 (4)	07:48		13:50 (5)	08:35		13:57 (5)
	22:01			21:21			20:18			19:10	31	18:09 (3)	17:09	63	14:53 (5)	16:39	62	14:59 (5)
9	05:40			06:21			07:10			07:57		17:13 (4)	07:50		13:50 (5)	08:36		13:59 (5)
	22:00			21:20			20:15			19:07	52	18:24 (2)	17:07	64	14:54 (5)	16:39	61	15:00 (5)
10	05:41			06:23			07:11			07:59		17:10 (4)	07:52		13:48 (5)	08:37		13:59 (5)
	21:59			21:18			20:13			19:05	63	18:26 (2)	17:06	65	14:53 (5)	16:38	61	15:00 (5)
11	05:42			06:24			07:13			08:01		17:08 (4)	07:54		13:48 (5)	08:38		14:00 (5)
	21:59			21:16			20:11			19:03	70	18:27 (2)	17:04	66	14:54 (5)	16:38	60	15:00 (5)
12	05:43			06:26			07:14			08:02		17:05 (4)	07:55		13:48 (5)	08:39		14:00 (5)
	21:58			21:14			20:08			19:01	75	18:27 (2)	17:03	66	14:54 (5)	16:38	61	15:01 (5)
13	05:44			06:27			07:16			08:04		17:04 (4)	07:57		13:48 (5)	08:40		14:01 (5)
	21:57			21:12			20:06			18:59	79	18:28 (2)	17:01	67	14:55 (5)	16:38	60	15:01 (5)
14	05:45			06:29			07:17			08:06		17:03 (4)	07:59		13:48 (5)	08:41		14:01 (5)
	21:56			21:10			20:04			18:57	82	18:28 (2)	17:00	67	14:55 (5)	16:38	60	15:01 (5)
15	05:46			06:30			07:19			08:07		17:02 (4)	08:00		13:48 (5)	08:42		14:02 (5)
	21:55			21:08			20:02			18:55	83	18:27 (2)	16:59	68	14:56 (5)	16:38	60	15:02 (5)
16	05:48			06:32			07:21		19:26 (16)	08:09		17:00 (4)	08:02		13:48 (5)	08:43		14:03 (5)
	21:54			21:06			19:59	5	19:31 (16)	18:52	82	18:24 (2)	16:57	68	14:56 (5)	16:38	59	15:02 (5)
17	05:49			06:33			07:22		19:24 (16)	08:11		16:59 (4)	08:04		13:48 (5)	08:44		14:03 (5)
	21:53			21:05			19:57	7	19:31 (16)	18:50	82	18:22 (2)	16:56	68	14:56 (5)	16:39	59	15:02 (5)
18	05:50			06:35			07:24		19:22 (16)	08:12		16:59 (4)	08:06		13:48 (5)	08:44		14:04 (5)
	21:52			21:03			19:55	6	19:28 (16)	18:48	80	18:21 (2)	16:55	68	14:56 (5)	16:39	58	15:02 (5)
19	05:51			06:37			07:25		19:22 (16)	08:14		16:58 (4)	08:07		13:48 (5)	08:45		14:04 (5)
	21:51			21:01			19:53	4	19:26 (16)	18:46	80	18:19 (2)	16:53	68	14:56 (5)	16:39	59	15:03 (5)
20	05:53			06:38			07:27		19:21 (16)	08:16		16:57 (4)	08:09		13:49 (5)	08:46		14:04 (5)
	21:50			20:58			19:50	2	19:23 (16)	18:44	76	18:16 (2)	16:52	68	14:57 (5)	16:39	59	15:03 (5)
21	05:54		21:05 (17)	06:40			07:28			08:17		16:57 (4)	08:10		13:49 (5)	08:46		14:05 (5)
	21:49	4	21:09 (17)	20:56			19:48			18:42	71	18:10 (3)	16:51	68	14:57 (5)	16:40	59	15:04 (5)
22	05:55		21:03 (17)	06:41			07:30			08:19		16:57 (4)	08:12		13:49 (5)	08:47		14:05 (5)
	21:48	8	21:11 (17)	20:54			19:46			18:40	69	18:09 (3)	16:50	68	14:57 (5)	16:40	59	15:04 (5)
23	05:56		21:02 (17)	06:43			07:32			08:21		16:57 (4)	08:14		13:50 (5)	08:47		14:06 (5)
	21:46	10	21:12 (17)	20:52			19:43			18:38	65	18:07 (3)	16:49	67	14:57 (5)	16:41	59	15:05 (5)
24	05:58		21:00 (17)	06:44		20:13 (18)	07:33			08:22		16:57 (4)	08:15		13:50 (5)	08:48		14:06 (5)
	21:45	12	21:12 (17)	20:50	8	20:21 (18)	19:41			18:36	63	18:06 (3)	16:48	68	14:58 (5)	16:41	59	15:05 (5)
25	05:59		21:01 (17)	06:46		20:11 (18)	07:35			07:24		14:15 (5)	08:17		13:50 (5)	08:48		14:06 (5)
	21:44	13	21:14 (17)	20:48	10	20:21 (18)	19:39			17:34	74	17:02 (3)	16:47	67	14:57 (5)	16:42	59	15:05 (5)
26	06:00		21:00 (17)	06:48		20:10 (18)	07:36			07:26		14:10 (5)	08:18		13:51 (5)	08:48		14:08 (5)
	21:42	12	21:12 (17)	20:46	9	20:19 (18)	19:37			17:32	74	16:58 (3)	16:46	67	14:58 (5)	16:43	59	15:07 (5)
27	06:02		20:59 (17)	06:49		20:09 (18)	07:38			07:28		14:06 (5)	08:20		13:52 (5)	08:49		14:08 (5)
	21:41	12	21:11 (17)	20:44	8	20:17 (18)	19:34			17:30	75	16:39 (4)	16:45	66	14:58 (5)	16:43	59	15:07 (5)
28	06:03		21:00 (17)	06:51		20:09 (18)	07:39			07:29		14:04 (5)	08:21		13:52 (5)	08:49		14:08 (5)
	21:39	10	21:10 (17)	20:42	6	20:15 (18)	19:32			17:28	78	16:39 (4)	16:44	66	14:58 (5)	16:44	59	15:07 (5)
29	06:05		20:59 (17)	06:52		20:08 (18)	07:41			07:31		14:01 (5)	08:23		13:52 (5)	08:49		14:08 (5)
	21:38	9	21:08 (17)	20:40	5	20:13 (18)	19:30			17:26	82	16:38 (4)	16:44	66	14:58 (5)	16:45	60	15:08 (5)
30	06:06		20:59 (17)	06:54		20:09 (18)	07:43			07:33		14:00 (5)	08:24		13:52 (5)	08:49		14:09 (5)
	21:36	7	21:06 (17)	20:37	2	20:11 (18)	19:28			17:25	84	16:38 (4)	16:43	66	14:58 (5)	16:46	60	15:09 (5)
31	06:08		21:00 (17)	06:55						07:35		13:58 (5)				08:49		14:09 (5)
	21:35	6	21:06 (17)	20:35						17:23	85	16:37 (4)				16:47	60	15:09 (5)
Potential sun hours	498			451			380			333			269			248		
Total, worst case		103			54			24			1776			2109			1875	
Sun reduction		0,45			0,47			0,43			0,36			0,26			0,21	
Oper. time red.		0,96			0,96			0,96			0,96			0,96			0,96	
Wind dir. red.		0,56			0,57			0,62			0,69			0,72			0,72	
Total reduction		0,24			0,25			0,26			0,24			0,18			0,15	
Total, real		25			14			6			431			377			279	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

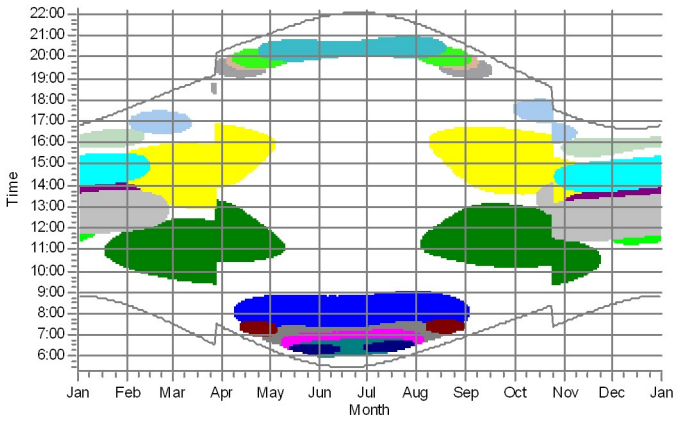
BIJLAGE 3: SLAGSCHADUWKALENDER PER WINDTURBINE

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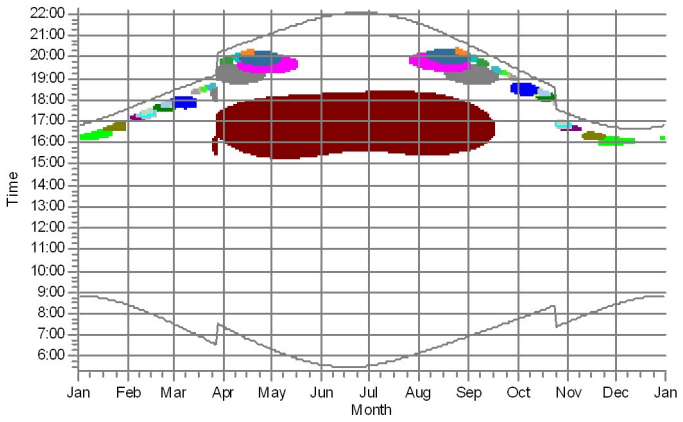
SHADOW - Calendar per WTG, graphical

Calculation: SS OVA - Gepland

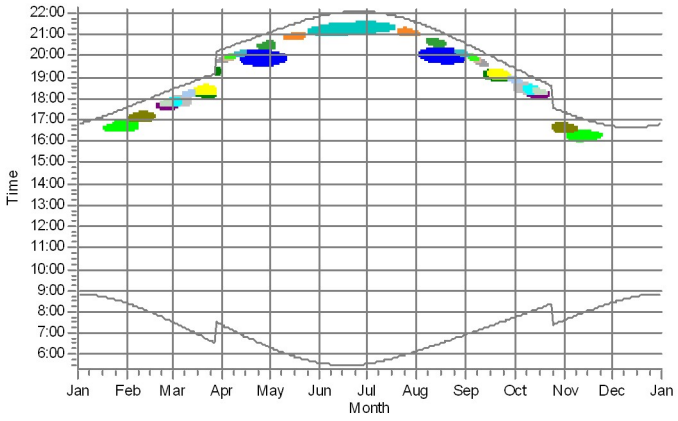
WT163: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)



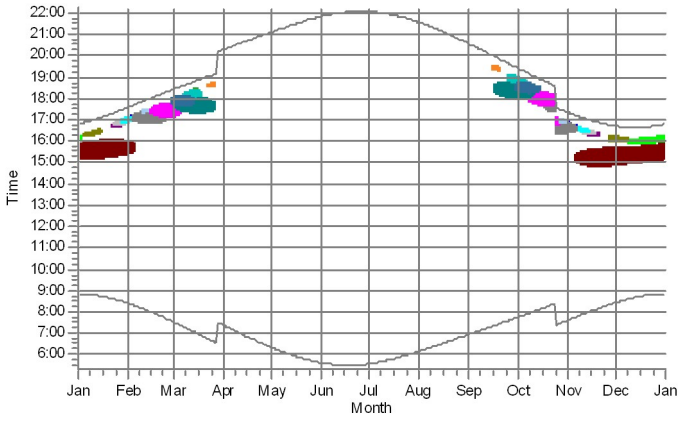
GC&T WT1: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m)



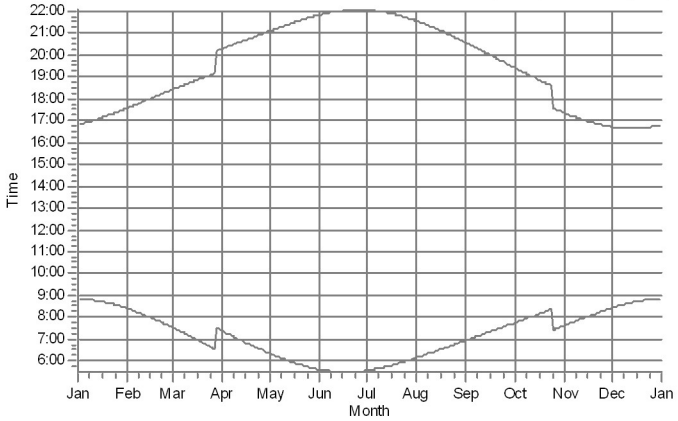
GC&T WT2: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m)



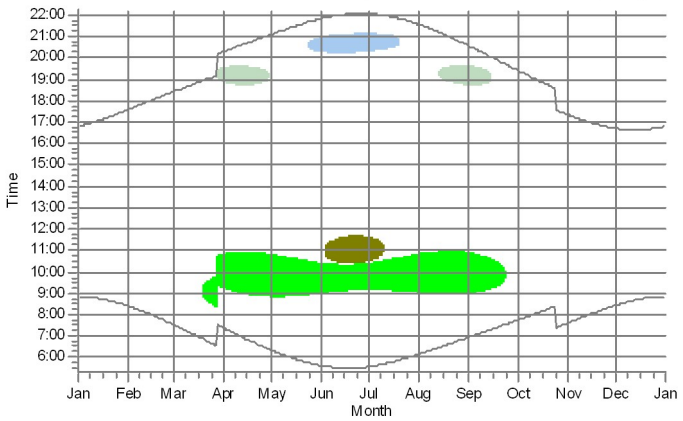
GC&T WT3: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m)



MV 2: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 164,0 m (TOT: 238,5 m)



MV Zuid WT1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT



Shadow receptors

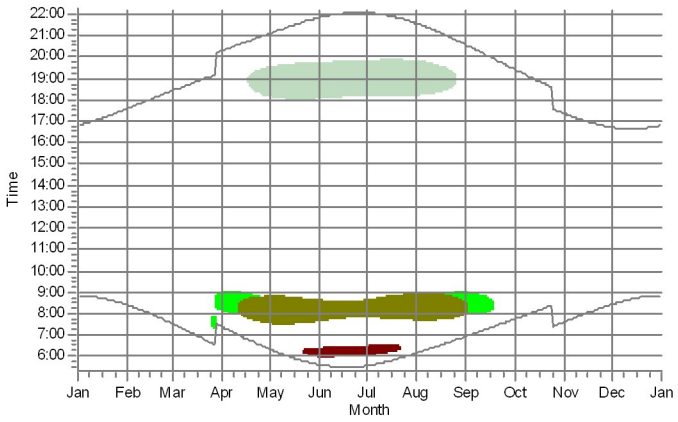
- A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)
- B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)
- C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)
- D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)
- E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)
- F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)
- G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)
- H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)
- I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)
- J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)
- K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)
- L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)
- M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)
- N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)
- O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)
- P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)
- Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)
- R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)
- S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)
- T: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)
- U: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)
- V: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)
- W: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)

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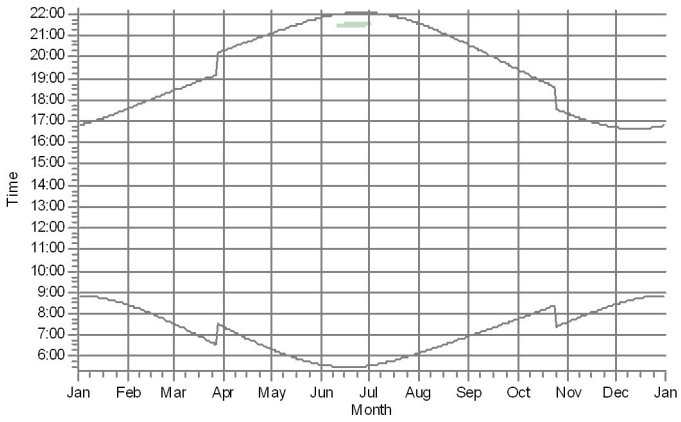
SHADOW - Calendar per WTG, graphical

Calculation: SS OVA - Gepland

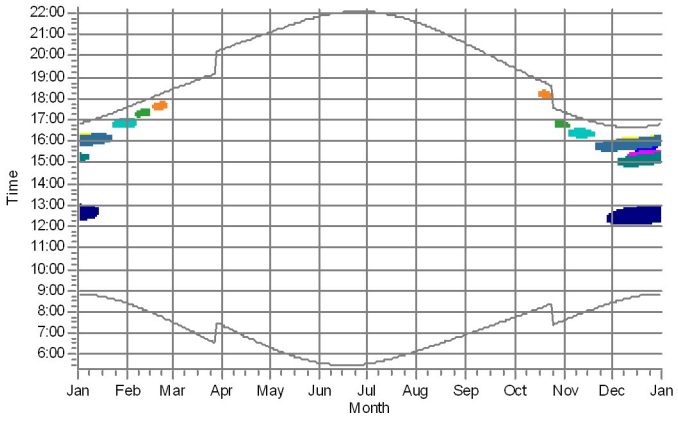
MV Zuid WT2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT



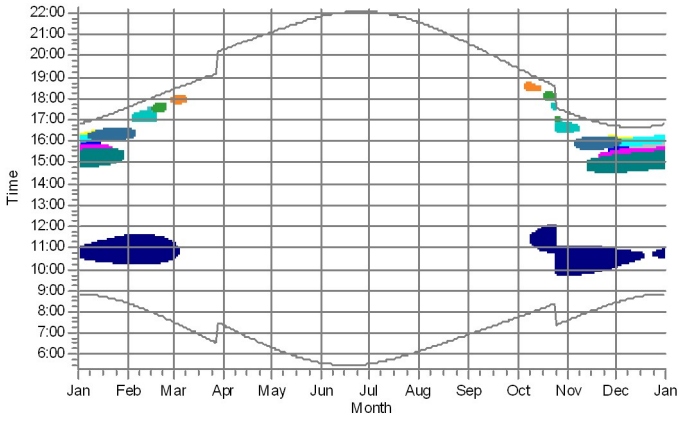
MX WT1: SENVION 3.4M104 3400 104.0 !O! hub: 100,0 m (TOT: 152,0 m) (



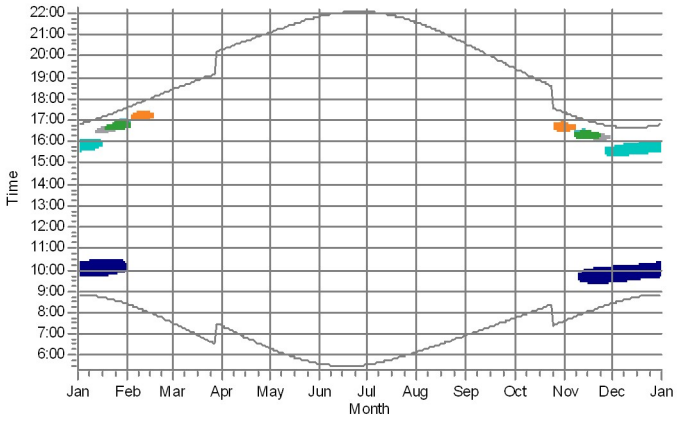
Skalden WT1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT:



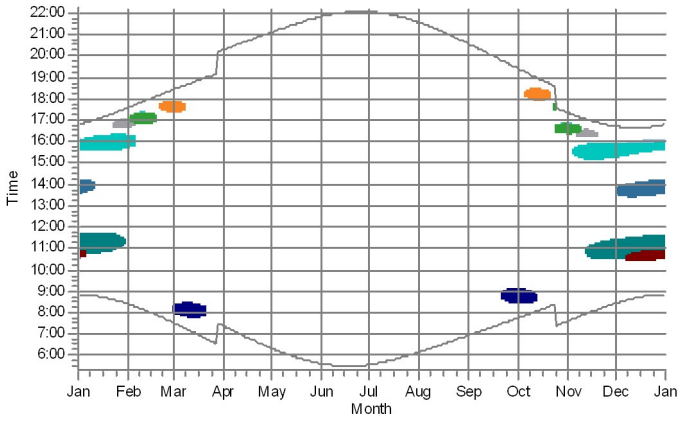
Skalden WT2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT:



Skalden WT3: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT:



Skalden WT4: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT:



Shadow receptors

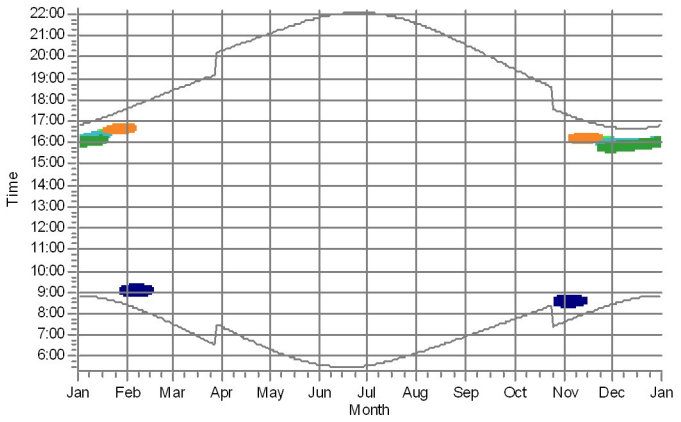
- A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)
- B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)
- C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)
- D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)
- E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)
- F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)
- G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)
- H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)
- I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)
- J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)
- K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)
- L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)
- M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)
- N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)
- O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)
- P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)
- Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)
- R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)
- S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)
- T: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)
- U: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)
- V: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)
- W: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)

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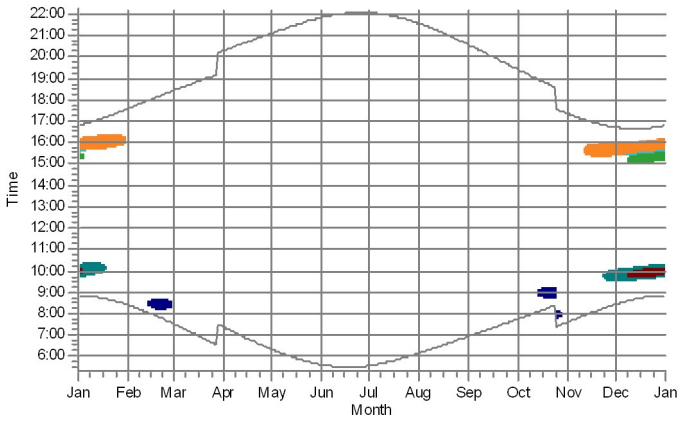
SHADOW - Calendar per WTG, graphical

Calculation: SS OVA - Gepland

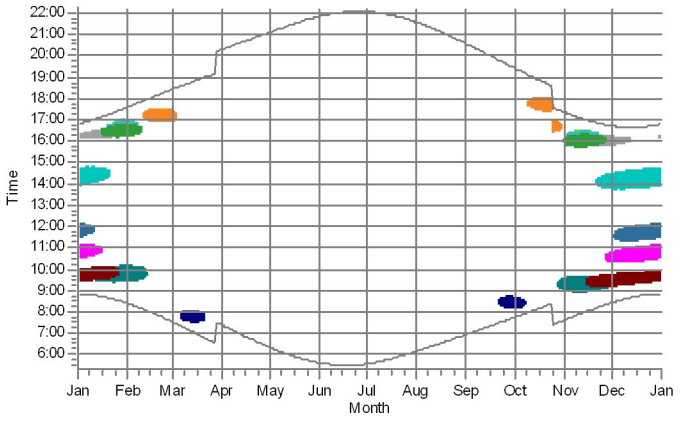
Skalden WTB1: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TO



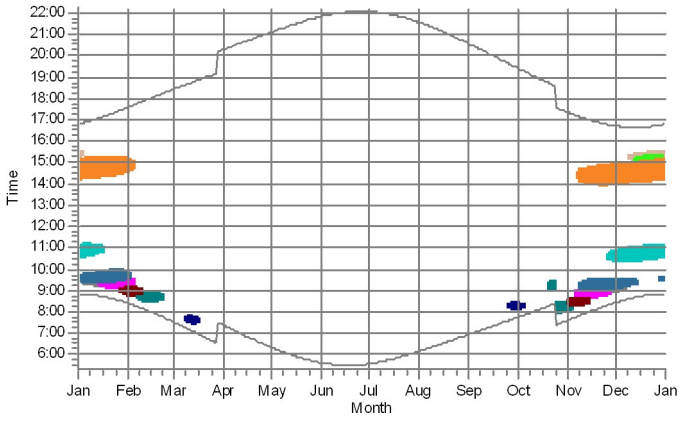
Skalden WTB2: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TO



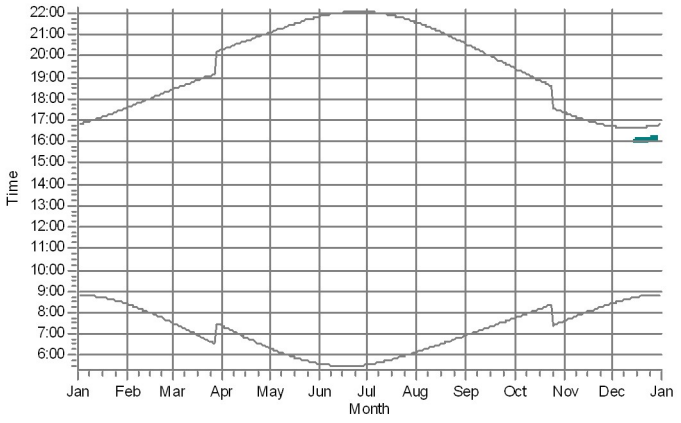
Skalden WTB3: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TO



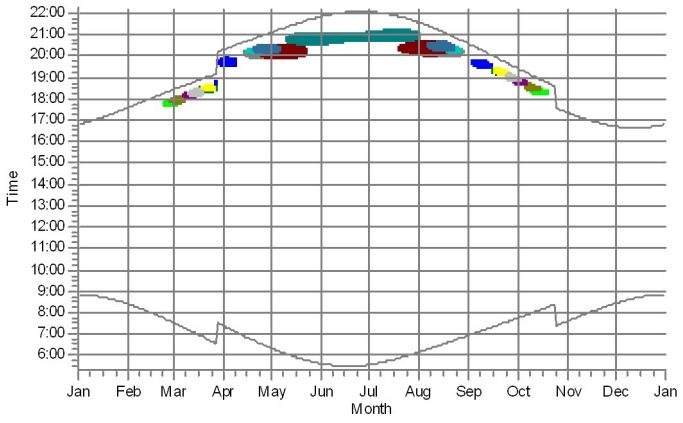
Skalden WTB4: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TO



VC WT3: SENVION MM92 2050 92.5 !O! hub: 100,0 m (TOT: 146,3 m) (122



WT-ATS: NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (



Shadow receptors

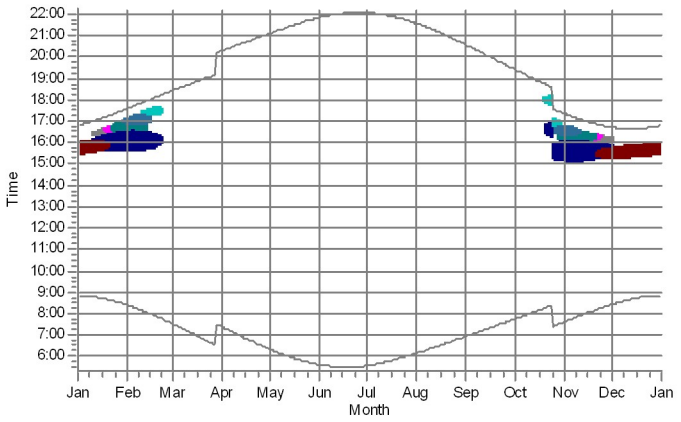
- A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)
- B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)
- C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)
- D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)
- E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)
- F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)
- G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)
- H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)
- I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)
- J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)
- K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)
- L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)
- P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)
- Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)
- R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)
- S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)
- T: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)
- U: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)
- V: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)
- W: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)

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Calculated:
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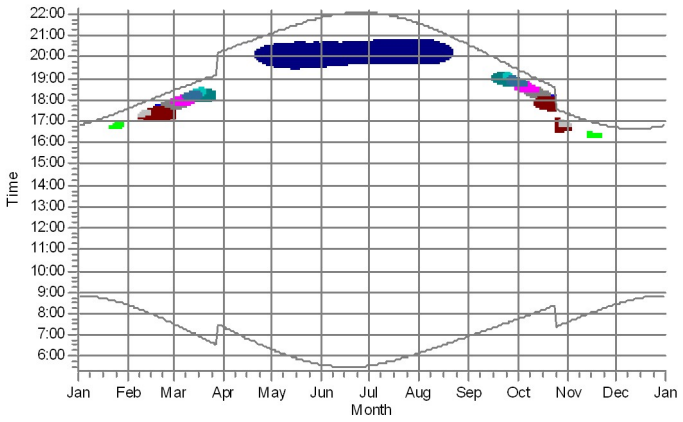
SHADOW - Calendar per WTG, graphical

Calculation: SS OVA - Gepland

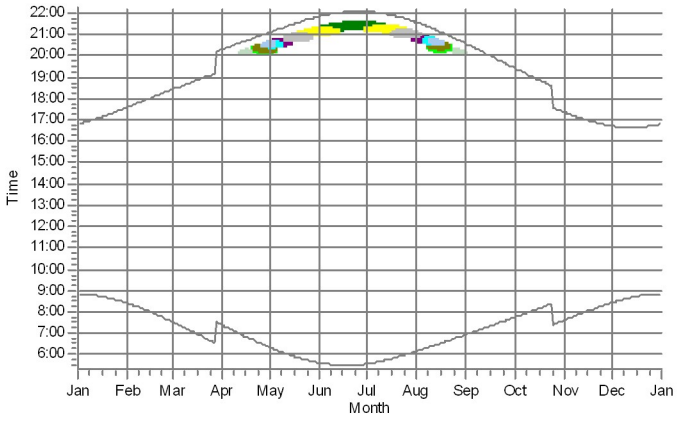
WT-MER: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT



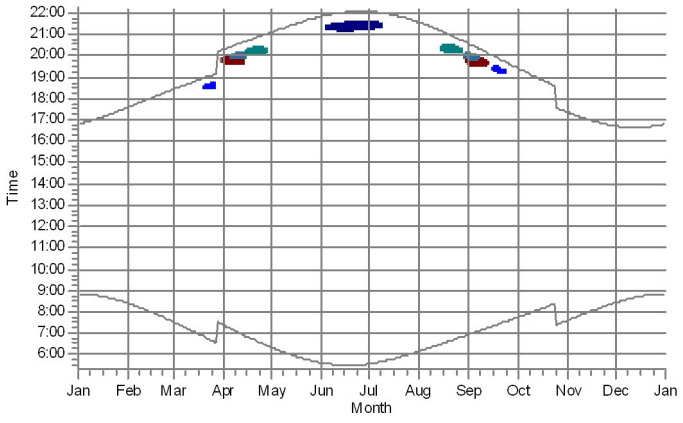
WT01-VLS: ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 18



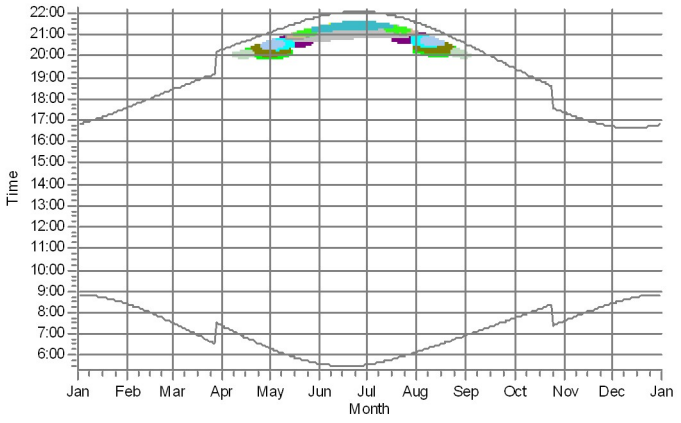
WT06_AB: ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 19



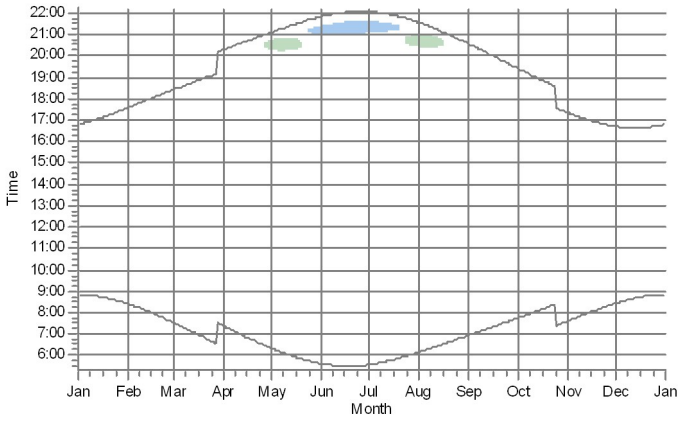
WT07_Sadaci: NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT:



WT1_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199



WT2_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199



Shadow receptors

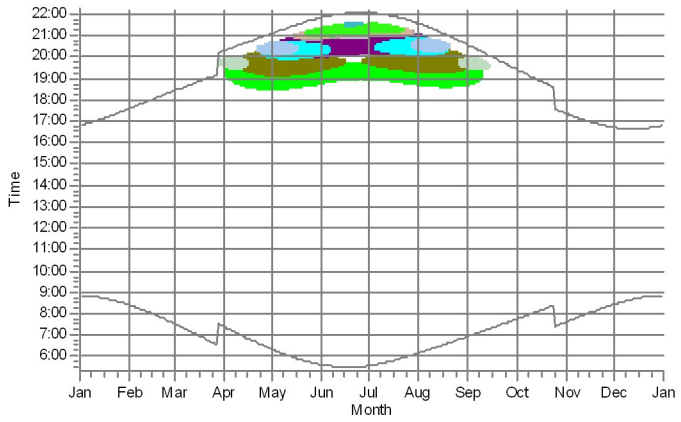
- A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)
- B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)
- C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)
- D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)
- E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)
- F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)
- G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)
- H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)
- I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)
- J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)
- K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)
- L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)
- M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)
- N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)
- O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)
- P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)
- Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)
- R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)
- S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)
- U: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)
- V: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)

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Calculated:
20/10/2023 12:02/3.6.355

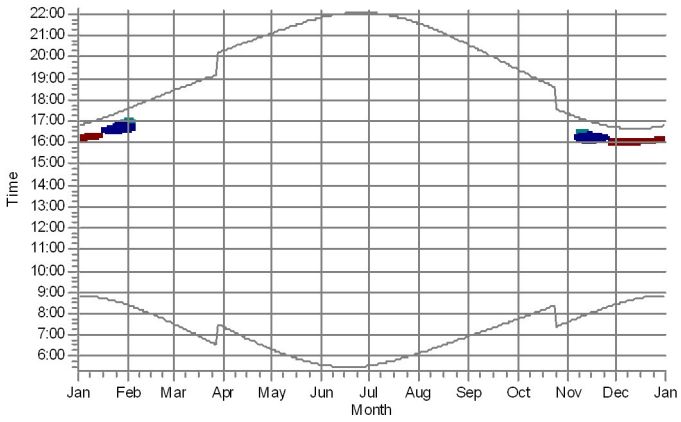
SHADOW - Calendar per WTG, graphical

Calculation: SS OVA - Gepland

WT3_RH_E: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199



WTSH: Siemens SWT-DD-142 4100 142.0 !O! hub: 129,0 m (TOT: 200,0 m)



Shadow receptors

- F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)
- G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)
- H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)
- I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)
- J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)
- K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)
- L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)
- M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)
- N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)
- O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)
- P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)
- Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)
- R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)
- S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)

Project:

Total_Ertvelde-RE-20-64-WE-REV-20200701_v2

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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT163 - Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

January	February	March	April	May	June
1 | 08:49 15:50-16:14/24	| 08:24 15:54-16:33/39 10:13-11:45/92	| 07:32 16:31-17:22/51 09:41-12:18/157	| 07:23 19:13-19:50/37 10:27-13:09/162	| 06:20 19:35-20:37/62 15:32-16:10/38	| 05:36 19:58-20:41/43
| 16:48 11:29-15:18/229	| 17:35 11:56-15:25/209	| 18:25 13:07-15:51/164	| 20:17 14:00-16:46/166	| 21:06 06:44-08:45/121 10:40-11:47/67	| 21:50 06:04-08:44/160
2 | 08:49 15:49-16:15/26 11:30-14:02/152	| 08:22 15:55-16:33/38 10:12-11:48/96	| 07:30 16:31-17:21/50 09:40-12:19/159	| 07:21 19:12-19:51/39 10:27-13:08/161	| 06:18 19:36-20:38/62 15:37-16:06/29	| 05:36 19:59-20:41/42
| 16:49 14:03-15:19/76	| 17:36 11:57-15:28/211	| 18:26 13:07-15:52/165	| 20:19 14:01-16:45/164	| 21:08 06:42-08:45/123 10:41-11:43/62	| 21:51 06:04-08:45/161
3 | 08:49 15:50-16:16/26	| 08:21 16:53-16:59/6 11:57-15:29/212	| 07:28 16:32-17:21/49 09:40-12:19/159	| 07:19 19:11-19:52/41 10:27-13:07/160	| 06:16 19:36-20:38/62 15:44-16:01/17	| 05:35 19:59-20:41/42
| 16:50 11:30-15:18/228	| 17:38 15:56-16:32/36 10:10-11:49/99	| 18:28 13:06-15:52/166	| 20:20 14:02-16:45/163	| 21:09 06:41-08:46/125 10:44-11:40/56	| 21:52 06:04-08:45/161
4 | 08:49 15:50-16:18/28	| 08:19 16:47-17:04/17 11:58-15:30/212	| 07:26 16:32-17:19/47 09:39-12:20/161	| 07:16 19:10-19:53/43 10:27-13:06/159	| 06:15 19:38-20:40/62 10:45-11:36/51	| 05:34 20:00-20:40/40
| 16:51 11:32-15:19/227	| 17:40 15:56-16:31/35 10:08-11:51/103	| 18:30 13:05-15:52/167	| 20:22 14:04-16:44/160	| 21:11 06:39-08:46/127	| 21:53 06:03-08:44/161
5 | 08:49 15:50-16:19/29	| 08:18 16:45-17:08/23 11:59-15:32/213	| 07:23 16:34-17:18/44 09:38-12:19/161	| 07:14 19:08-19:57/49 10:27-13:04/157	| 06:13 19:39-20:40/61 10:47-11:32/45	| 05:34 20:01-20:40/39
| 16:53 11:34-15:20/226	| 17:42 15:58-16:31/33 10:07-11:53/106	| 18:32 13:04-15:52/168	| 20:23 14:04-16:43/159	| 21:12 06:38-08:46/128	| 21:54 06:04-08:45/161
6 | 08:48 15:50-16:20/30 11:34-14:03/149	| 08:16 16:43-17:10/27 11:59-15:33/214	| 07:21 16:35-17:17/42 09:37-12:20/163	| 07:12 19:08-19:59/51 10:27-13:02/155	| 06:11 19:40-20:40/60 10:48-11:28/40	| 05:33 20:01-20:40/39
| 16:54 14:04-15:20/76	| 17:44 15:59-16:30/31 10:06-11:54/108	| 18:33 13:04-15:53/169	| 20:25 14:06-16:42/156	| 21:14 06:38-08:46/128	| 21:55 06:04-08:44/160
7 | 08:48 15:50-16:22/32 11:37-14:04/147	| 08:14 16:40-17:12/32 12:00-15:34/214	| 07:19 16:36-17:15/39 09:37-12:20/163	| 07:10 19:07-20:01/54 10:27-13:00/153	| 06:09 19:42-20:41/59 10:52-11:24/32	| 05:32 20:02-20:40/38
| 16:55 14:05-15:21/76	| 17:45 16:01-16:28/27 10:04-11:56/112	| 18:35 13:04-15:53/169	| 20:27 14:07-16:42/155	| 21:16 06:37-08:47/130	| 21:56 06:04-08:44/160
8 | 08:48 15:50-16:22/32	| 08:13 16:39-17:14/35 12:00-15:35/215	| 07:17 16:38-17:14/36 09:37-12:21/164	| 07:08 19:07-20:03/56 10:27-12:58/151	| 06:08 19:43-20:41/58 10:55-11:19/24	| 05:32 20:02-20:39/37
| 16:56 11:38-15:21/223	| 17:47 16:03-16:27/24 10:03-11:57/114	| 18:37 13:03-15:53/170	| 20:28 14:09-16:41/152	| 21:17 06:36-08:46/130	| 21:57 06:05-08:45/160
9 | 08:47 15:49-16:23/34	| 08:11 16:38-17:16/39 12:02-15:37/215	| 07:15 16:40-17:11/31 09:35-12:20/165	| 07:05 19:06-20:04/59 10:27-12:56/149	| 06:06 19:46-20:42/56 11:02-11:11/9	| 05:31 20:03-20:39/36
| 16:58 11:40-15:21/221	| 17:49 16:06-16:26/20 10:02-11:59/117	| 18:38 13:02-15:53/171	| 20:30 14:11-16:41/150	| 21:19 06:33-08:47/134	| 21:58 06:04-08:44/160
10 | 08:47 15:50-16:25/35	| 08:09 16:37-17:18/41 12:02-15:38/216	| 07:13 16:42-17:09/27 09:35-12:20/165	| 07:03 19:06-20:06/60 14:14-16:40/146	| 06:04 19:48-20:42/54	| 05:31 20:04-20:40/36
| 16:59 11:44-15:22/218	| 17:51 16:09-16:22/13 10:01-12:01/120	| 18:40 13:02-15:53/171	| 20:32 07:56-08:16/20 10:28-12:54/146	| 21:20 06:29-08:46/137	| 21:59 06:05-08:44/159
11 | 08:46 15:49-16:25/36 11:50-14:05/135	| 08:07 16:36-17:19/43 09:59-12:02/123	| 07:10 16:45-17:06/21 09:34-12:21/167	| 07:01 19:05-20:07/62 14:15-16:38/143	| 06:03 19:53-20:43/50	| 05:31 20:04-20:40/36
| 17:00 14:06-15:23/77	| 17:53 12:03-15:39/216	| 18:42 13:01-15:53/172	| 20:33 07:49-08:20/31 10:27-12:51/144	| 21:22 06:28-08:47/139	| 21:59 06:05-08:45/160
12 | 08:46 15:49-16:26/37 11:50-14:05/135	| 08:06 16:35-17:20/45 09:58-12:03/125	| 07:08 16:51-17:00/9 09:34-12:21/167	| 06:59 19:05-20:09/64 14:18-16:37/139	| 06:01 19:53-20:42/49	| 05:30 20:04-20:39/35
| 17:02 14:06-15:23/77	| 17:54 12:04-15:40/216	| 18:44 13:01-15:53/172	| 20:35 07:45-08:24/39 10:27-12:48/141	| 21:23 06:26-08:46/140	| 22:00 06:05-08:44/159
13 | 08:45 15:49-16:26/37	| 08:04 16:34-17:21/47 09:57-12:04/127	| 07:06 13:00-15:52/172	| 06:57 19:05-20:10/65 07:42-08:27/45 10:28-12:46/138	| 05:59 19:53-20:43/50	| 05:30 20:05-20:39/34
| 17:03 11:50-15:23/213	| 17:56 12:05-15:41/216	| 18:45 09:33-12:20/167	| 20:37 07:19-07:25/6 14:21-16:36/135	| 21:25 06:25-08:47/142	| 22:01 06:05-08:44/159
14 | 08:44 15:50-16:28/38	| 08:02 16:33-17:21/48 09:55-12:05/130	| 07:04 13:00-15:53/173	| 06:55 19:05-20:12/67 07:39-08:29/50 10:28-12:43/135	| 05:58 19:52-20:43/51	| 05:30 20:05-20:39/34
| 17:05 11:51-15:24/213	| 17:58 12:06-15:42/216	| 18:47 09:32-12:20/168	| 20:38 07:17-07:28/11 14:24-16:36/132	| 21:26 06:23-08:46/143	| 22:01 06:05-08:45/160
15 | 08:43 15:50-16:29/39	| 08:00 16:32-17:22/50	| 07:01 13:00-15:53/173	| 06:52 19:06-20:14/68 07:37-08:31/54 10:29-12:40/131	| 05:56 19:53-20:43/50	| 05:30 20:06-20:39/33 07:16-08:45/89
| 17:06 11:51-15:24/213	| 18:00 09:54-15:43/349	| 18:49 09:32-12:21/169	| 20:40 07:15-07:29/14 14:27-16:35/128	| 21:28 06:22-08:47/145	| 22:02 06:06-07:15/69
16 | 08:43 15:50-16:29/39	| 07:58 16:31-17:23/52	| 06:59 13:00-15:53/173	| 06:50 19:06-20:15/69 07:35-08:33/58 10:29-12:37/128	| 05:55 19:53-20:43/50	| 05:30 20:06-20:39/33 07:16-08:45/89
| 17:08 11:52-15:25/213	| 18:02 09:53-15:44/351	| 18:50 09:32-12:21/169	| 20:42 07:13-07:31/18 14:31-16:34/123	| 21:29 06:21-08:47/146	| 22:02 06:06-07:15/69
17 | 08:42 15:50-16:30/40	| 07:56 16:31-17:23/52	| 06:57 12:59-15:52/173	| 06:48 19:06-20:16/70 07:33-08:35/62 10:30-12:34/124	| 05:53 19:52-20:43/51	| 05:30 20:07-20:39/32 07:16-08:45/89
| 17:09 11:52-15:25/213	| 18:03 09:52-15:44/352	| 18:52 09:31-12:20/169	| 20:43 07:11-07:32/21 14:35-16:33/118	| 21:31 06:19-08:46/147	| 22:03 06:06-07:15/69
18 | 08:41 15:50-16:31/41	| 07:54 16:30-17:24/54 09:51-12:10/139	| 06:55 12:59-15:52/173	| 06:46 19:07-20:16/69 14:39-16:32/113	| 05:52 19:53-20:43/50	| 05:30 20:07-20:40/33 07:16-08:45/89
| 17:11 11:52-15:25/213	| 18:05 12:11-15:45/214	| 18:54 09:31-12:20/169	| 20:45 07:09-08:36/87 10:30-12:31/121	| 21:32 06:18-08:46/148	| 22:03 06:06-07:15/69
19 | 08:40 15:49-16:30/41 10:47-11:05/18	| 07:52 16:30-17:24/54 09:50-12:11/141	| 06:52 12:59-15:52/173	| 06:44 19:08-20:16/68 14:42-16:31/109	| 05:51 19:53-20:43/50	| 05:30 20:07-20:40/33 07:17-08:45/88
| 17:12 11:52-15:25/213	| 18:07 12:13-15:46/213	| 18:55 09:31-12:20/169	| 20:46 07:07-08:37/90 10:31-12:27/116	| 21:34 06:17-08:46/149	| 22:04 06:06-07:15/69
20 | 08:39 15:49-16:31/42 10:42-11:12/30	| 07:50 16:30-17:24/54 09:49-12:12/143	| 06:50 12:59-15:52/173	| 06:42 19:08-20:17/69 14:46-16:29/103	| 05:49 19:54-20:43/49	| 05:30 20:07-20:40/33 07:17-08:45/88
| 17:14 11:52-15:25/213	| 18:09 12:14-15:47/213	| 18:57 09:30-12:20/170	| 20:48 07:05-08:38/93 10:31-12:24/113	| 21:35 06:16-08:46/150	| 22:04 06:06-07:15/69
21 | 08:38 15:50-16:32/42 10:38-11:16/38	| 07:48 16:30-17:24/54 09:48-12:13/145	| 06:48 12:58-15:51/173	| 06:40 19:09-20:17/68 14:51-16:28/97	| 05:48 19:53-20:42/49	| 05:30 20:07-20:40/33 07:17-08:45/88
| 17:16 11:53-15:25/212	| 18:11 12:17-15:47/210	| 18:59 09:29-12:19/170	| 20:50 07:03-08:39/96 10:32-12:21/109	| 21:37 06:15-08:45/150	| 22:04 06:07-07:15/68
22 | 08:37 15:50-16:33/43 10:35-11:20/45	| 07:46 16:30-17:24/54 09:47-12:13/146	| 06:46 12:58-15:51/173	| 06:38 19:10-20:17/67 14:55-16:27/92	| 05:47 19:54-20:42/48	| 05:30 20:08-20:41/33 07:18-08:46/88
| 17:17 11:53-15:26/213	| 18:12 12:19-15:48/209	| 19:00 09:29-12:18/169	| 20:51 07:02-08:40/98 10:32-12:17/105	| 21:38 06:13-08:45/152	| 22:04 06:07-07:16/69
23 | 08:36 15:51-16:33/42 10:33-11:24/51	| 07:44 16:30-17:24/54 09:46-12:14/148	| 06:43 12:58-15:51/173	| 06:36 19:12-20:16/64 14:59-16:26/87	| 05:46 19:54-20:42/48	| 05:30 20:08-20:41/33 07:18-08:46/88
| 17:19 11:54-15:26/212	| 18:14 12:23-15:49/206	| 19:02 09:29-12:18/169	| 20:53 07:01-08:41/100 10:33-12:14/101	| 21:39 06:12-08:45/153	| 22:04 06:07-07:16/69
24 | 08:35 15:50-16:33/43 10:30-11:26/56	| 07:42 16:30-17:24/54 09:46-12:15/149	| 06:41 12:58-15:50/172	| 06:34 19:13-20:16/63 15:03-16:24/81	| 05:44 19:54-20:42/48	| 05:31 20:08-20:41/33 07:17-08:46/89
| 17:21 11:53-15:26/213	| 18:16 12:26-15:49/203	| 19:04 09:28-12:17/169	| 20:55 07:01-08:42/101 10:34-12:10/96	| 21:41 06:11-08:45/154	| 22:05 06:07-07:16/69
25 | 08:33 15:51-16:33/42 10:28-11:30/62	| 07:40 16:30-17:24/54 13:11-15:50/159	| 06:39 12:58-15:50/172	| 06:32 19:15-20:24/69 15:06-16:22/76	| 05:43 19:55-20:42/47	| 05:31 20:09-20:41/32 07:18-08:47/89
| 17:22 11:54-15:26/212	| 18:18 12:32-13:08/36 09:45-12:16/151	| 19:05 09:28-12:16/168	| 20:56 07:01-08:42/101 10:34-12:07/93	| 21:42 06:10-08:45/155	| 22:05 06:08-07:17/69
26 | 08:32 15:50-16:33/43 10:26-11:33/67	| 07:38 16:29-17:23/54 13:10-15:51/161	| 06:37 12:58-15:49/171	| 06:30 19:17-20:28/71 15:10-16:21/71	| 05:42 19:55-20:42/47	| 05:31 20:09-20:41/32 07:18-08:47/89
| 17:24 11:55-15:26/211	| 18:19 12:41-12:58/17 09:44-12:17/153	| 19:07 09:28-12:16/168	| 20:58 07:01-08:43/102 10:35-12:03/88	| 21:43 06:09-08:45/156	| 22:05 06:08-07:17/69
27 | 08:31 15:51-16:34/43 10:23-11:35/72	| 07:36 16:30-17:23/53 09:42-12:17/155	| 06:34 18:27-18:41/14 09:28-12:15/167	| 06:28 19:20-20:31/71 15:14-16:19/65	| 05:41 19:55-20:42/47	| 05:32 20:08-20:41/33
| 17:26 11:55-15:26/211	| 18:21 13:09-15:50/161	| 19:09 12:59-15:49/170	| 21:00 06:53-08:43/110 10:36-12:00/84	| 21:44 06:08-08:45/157	| 22:05 06:09-08:47/158
28 | 08:29 15:52-16:34/42 10:21-11:37/76	| 07:34 16:30-17:22/52 09:42-12:17/155	| 06:32 18:22-18:43/21 09:27-12:14/167	| 06:26 19:33-20:32/59 15:18-16:17/59	| 05:40 19:56-20:41/45	| 05:32 20:09-20:42/33
| 17:28 11:55-15:26/211	| 18:23 13:08-15:51/163	| 19:10 12:58-15:48/170	| 21:01 06:49-08:44/115 10:37-11:56/79	| 21:46 06:07-08:45/158	| 22:04 06:08-08:48/160
29 | 08:28 15:52-16:34/42 10:19-11:39/80		| 07:30 19:19-19:46/27 10:27-13:13/166	| 06:24 19:35-20:35/60 15:23-16:16/53	| 05:39 19:57-20:42/45	| 05:33 20:08-20:42/34
| 17:29 11:55-15:25/210		| 20:12 13:59-16:48/169	| 21:03 06:48-08:45/117 10:38-11:54/76	| 21:47 06:07-08:45/158	| 22:04 06:09-08:48/159
30 | 08:27 15:53-16:34/41 10:17-11:42/85		| 07:28 19:17-19:48/31 10:27-13:12/165	| 06:22 19:35-20:36/61 15:27-16:13/46	| 05:38 19:57-20:42/45	| 05:33 20:08-20:43/35
| 17:31 11:56-15:25/209		| 20:14 14:00-16:47/167	| 21:04 06:46-08:45/119 10:39-11:50/71	| 21:48 06:06-08:45/159	| 22:04 06:09-08:48/159
31 | 08:25 15:53-16:33/40 10:15-11:44/89		| 07:25 19:16-19:50/34 10:27-13:11/164		| 05:37 19:58-20:41/43	
| 17:33 11:56-15:25/209		| 20:15 14:00-16:47/167		| 21:49 06:05-08:45/160	
Potential sun hours | 262	| 279	| 367	| 414	| 482	| 494
Sum of minutes with flicker 8617	10852	11000	10857	6522	5826

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT163 - Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 20:09-20:44/35	06:09 20:03-20:53/50	06:57 19:05-20:07/62 14:15-16:38/143	07:44 13:40-16:32/172	07:36 16:06-16:46/40 11:32-15:08/216	08:26 15:31-16:07/36 11:32-13:47/135
	22:04 06:09-08:49/160	21:33 06:37-08:57/140	20:33 07:49-08:20/31 10:27-12:51/144	19:25 10:13-13:00/167	17:21 15:37-15:52/15 09:31-11:30/119	16:42 13:48-15:05/77
2	05:34 20:08-20:44/36	06:11 20:02-20:53/51	06:59 19:04-20:04/60 14:12-16:38/146	07:46 17:26-17:43/17 10:13-13:00/167	07:38 16:07-16:45/38 11:30-15:06/216	08:27 15:32-16:07/35 11:27-13:47/140
	22:04 06:09-08:49/160	21:32 06:39-08:57/138	20:31 07:54-08:13/19 10:26-12:52/146	19:23 13:40-16:32/172	17:19 15:34-15:55/21 09:31-11:28/117	16:41 13:48-15:04/76
3	05:35 20:08-20:45/37	06:12 19:57-20:52/55	07:00 19:04-20:03/59 10:25-12:54/149	07:48 17:21-17:45/24 10:12-12:58/166	07:40 16:09-16:43/34 11:30-15:05/215	08:29 15:33-16:07/34
	22:03 06:09-08:49/160	21:30 06:40-08:57/137	20:29 14:09-16:39/150	19:21 13:40-16:31/171	17:17 15:32-15:57/25 09:32-11:27/115	16:41 11:24-15:05/221
4	05:36 20:08-20:45/37	06:14 19:54-20:52/58 11:08-11:24/16	07:02 19:04-20:00/56 10:24-12:55/151	07:49 17:19-17:48/29 10:13-12:58/165	07:42 16:10-16:42/32 11:29-15:04/215	08:30 15:34-16:07/33 11:22-13:48/146
	22:03 06:10-08:50/160	21:28 06:44-08:56/132	20:26 14:06-16:38/152	19:19 13:40-16:31/171	17:16 15:30-15:58/28 09:34-11:25/111	16:40 13:49-15:05/76
5	05:37 20:07-20:45/38	06:15 19:53-20:52/59 11:04-11:31/27	07:03 19:04-19:58/54 10:24-12:57/153	07:51 17:15-17:49/34 10:13-12:58/165	07:43 16:13-16:40/27 11:29-15:03/214	08:31 15:35-16:07/32 11:22-13:49/147
	22:02 06:10-08:50/160	21:27 06:47-08:57/130	20:24 14:04-16:39/155	19:16 13:40-16:30/170	17:14 15:29-16:00/31 09:36-11:24/108	16:40 13:50-15:06/76
6	05:38 20:07-20:46/39	06:17 19:50-20:51/61 11:00-11:35/35	07:05 19:04-19:55/51 10:23-12:58/155	07:52 17:13-17:51/38 10:13-12:56/163	07:45 16:15-16:38/23 11:29-15:02/213	08:32 15:36-16:06/30 11:21-13:49/148
	22:02 06:10-08:50/160	21:25 06:47-08:56/129	20:22 14:02-16:38/156	19:14 13:39-16:29/170	17:12 15:28-16:01/33 09:37-11:23/106	16:39 13:50-15:06/76
7	05:38 20:07-20:46/39	06:18 19:50-20:51/61 10:58-11:40/42	07:06 19:04-19:54/50 10:22-12:59/157	07:54 17:12-17:52/40 10:13-12:56/163	07:47 16:18-16:35/17 11:28-15:01/213	08:34 15:36-16:06/30
	22:01 06:10-08:51/161	21:23 06:48-08:56/128	20:20 14:00-16:39/159	19:12 13:40-16:29/169	17:11 15:27-16:02/35 09:39-11:21/102	16:39 11:20-15:06/226
8	05:39 20:07-20:47/40	06:20 19:48-20:49/61 10:55-11:43/48	07:08 19:04-19:48/44 10:21-13:00/159	07:56 17:10-17:53/43 10:14-12:56/162	07:49 16:26-16:28/2 11:28-14:59/211	08:35 15:38-16:06/28
	22:01 06:11-08:51/160	21:22 06:48-08:55/127	20:18 13:58-16:39/161	19:10 13:40-16:28/168	17:09 15:26-16:03/37 09:41-11:20/99	16:39 11:20-15:07/227
9	05:40 20:07-20:48/41	06:21 19:46-20:48/62 10:54-11:47/53	07:10 19:05-19:46/41 10:21-13:01/160	07:57 17:08-17:53/45 10:13-12:54/161	07:50 15:26-16:04/38 09:43-11:18/95	08:36 15:39-16:05/26
	22:00 06:11-08:52/161	21:20 06:49-08:56/127	20:15 13:57-16:39/162	19:08 13:40-16:27/167	17:07 11:28-14:58/210	16:39 11:20-15:08/228
10	05:41 20:07-20:48/41	06:23 19:45-20:48/63 15:51-16:12/21	07:11 19:05-19:44/39 10:20-13:01/161	07:59 17:07-17:54/47 10:14-12:54/160	07:52 15:24-16:04/40 09:44-11:16/92	08:37 15:39-16:05/26 11:19-13:51/152
	21:59 06:12-08:52/160	21:18 06:50-08:55/125 10:52-11:50/58	20:13 13:55-16:38/163	19:05 13:40-16:27/167	17:06 11:27-14:56/209	16:38 13:52-15:08/76
11	05:42 20:07-20:49/42	06:24 19:44-20:46/62 15:44-16:16/32	07:13 19:06-19:43/37 10:20-13:03/163	08:01 17:06-17:55/49 10:14-12:53/159	07:54 15:24-16:04/40 09:46-11:14/88	08:38 15:40-16:05/25
	21:59 06:12-08:53/161	21:16 06:51-08:54/123 10:50-11:52/62	20:11 13:54-16:39/165	19:03 13:41-16:26/165	17:04 11:27-14:55/208	16:38 11:19-15:08/229
12	05:43 20:06-20:49/43	06:26 19:44-20:45/61 15:39-16:19/40	07:14 19:07-19:41/34 10:19-13:03/164	08:02 17:04-17:55/51 10:14-12:51/157	07:55 15:24-16:05/41 09:48-11:13/85	08:39 15:41-16:04/23 11:19-13:52/153
	21:58 06:13-08:53/160	21:14 06:53-08:54/121 10:49-11:56/67	20:09 13:52-16:38/166	19:01 13:40-16:25/165	17:03 11:27-14:56/209	16:38 13:53-15:08/75
13	05:44 20:06-20:50/44	06:27 19:42-20:43/61 15:34-16:21/47	07:16 19:08-19:39/31 10:19-13:03/164	08:04 17:04-17:55/51 10:15-12:51/156	07:57 15:24-16:06/42 09:51-11:11/80	08:40 15:42-16:04/22
	21:57 06:14-08:53/159	21:12 06:54-08:53/119 10:47-11:59/72	20:06 13:51-16:39/168	18:59 13:41-16:24/163	17:01 11:27-14:57/210	16:38 11:19-15:09/230
14	05:45 20:06-20:50/44	06:29 19:42-20:42/60 15:30-16:24/54	07:17 19:09-19:37/28 10:18-13:03/165	08:06 17:03-17:56/53 10:15-12:50/155	07:59 15:24-16:06/42 09:53-11:09/76	08:41 15:43-16:04/21 11:19-13:53/154
	21:56 06:15-08:54/159	21:10 06:56-08:52/116 10:46-12:02/76	20:04 13:49-16:38/169	18:57 13:41-16:24/163	17:00 11:27-14:58/211	16:38 13:54-15:09/75
15	05:46 20:05-20:51/46	06:30 19:41-20:40/59 15:25-16:25/60	07:19 19:12-19:34/22 10:18-13:04/166	08:07 17:03-17:56/53 10:16-12:49/153	08:01 15:24-16:07/43 09:56-11:07/71	08:42 15:44-16:04/20
	21:55 06:16-08:54/158	21:08 06:57-08:51/114 10:44-12:05/81	20:02 13:49-16:38/169	18:55 13:42-16:23/161	16:59 11:27-14:58/211	16:38 11:19-15:10/231
16	05:48 20:05-20:51/46	06:32 19:27-20:38/71 15:21-16:27/66	07:21 19:14-19:30/16 10:17-13:04/167	08:09 17:01-17:55/54 13:42-16:22/160	08:02 15:24-16:07/43 09:59-11:06/67	08:43 15:45-16:05/20 11:20-13:54/154
	21:54 06:17-08:54/157	21:07 07:02-08:51/109 10:43-12:08/85	19:59 13:47-16:38/171	18:52 13:08-13:34/26 10:16-12:48/152	16:57 11:28-14:59/211	16:38 13:55-15:10/75
17	05:49 20:05-20:51/46	06:34 19:23-20:34/71 15:16-16:28/72	07:22 13:47-16:38/171	08:11 17:01-17:56/55 13:42-16:21/159	08:04 15:24-16:06/42 10:01-11:03/62	08:44 15:45-16:04/19 11:19-13:54/155
	21:53 06:18-08:54/156	21:05 07:07-08:49/102 10:41-12:10/89	19:57 10:17-13:04/167	18:50 13:01-13:41/40 10:16-12:47/151	16:56 11:27-14:59/212	16:39 13:55-15:10/75
18	05:50 20:04-20:51/47	06:35 19:21-20:30/69 15:12-16:29/77	07:24 13:45-16:37/172	08:12 17:01-17:56/55 10:17-12:46/149	08:06 15:24-16:07/43 10:04-11:00/56	08:44 15:46-16:05/19 11:20-13:55/155
	21:52 06:19-08:55/156	21:03 07:07-08:49/102 10:41-12:14/93	19:55 10:16-13:04/168	18:48 12:56-16:21/205	16:55 11:27-15:00/213	16:39 13:56-15:11/75
19	05:51 20:04-20:52/48	06:37 19:18-20:22/64 15:07-16:30/83	07:25 13:45-16:37/172	08:14 17:01-17:56/55 10:18-12:45/147	08:07 15:25-16:07/42 10:07-10:58/51	08:45 15:47-16:05/18
	21:51 06:20-08:55/155	21:01 07:07-08:47/100 10:39-12:17/98	19:53 10:16-13:04/168	18:46 12:53-16:20/207	16:53 11:28-15:00/212	16:39 11:20-15:11/231
20	05:53 20:05-20:53/48	06:38 19:17-20:22/65 15:04-16:31/87	07:27 13:44-16:36/172	08:16 17:00-17:55/55 10:18-12:44/146	08:09 15:25-16:08/43 10:10-10:55/45	08:46 15:47-16:05/18
	21:50 06:22-08:56/154	20:59 07:07-08:47/100 10:39-12:20/101	19:50 10:15-13:04/169	18:44 12:49-16:18/209	16:52 11:28-15:01/213	16:39 11:20-15:11/231
21	05:54 20:04-20:53/49	06:40 19:15-20:21/66 14:59-16:32/93	07:28 13:44-16:36/172	08:17 17:00-17:55/55 10:19-12:43/144	08:11 15:26-16:08/42 10:14-10:52/38	08:46 15:48-16:06/18
	21:49 06:23-08:56/153	20:56 07:06-08:45/99 10:37-12:23/106	19:48 10:15-13:04/169	18:42 12:46-16:18/212	16:51 11:29-15:01/212	16:40 11:21-15:12/231
22	05:55 20:04-20:53/49	06:41 19:14-20:21/67 14:55-16:33/98	07:30 13:44-16:37/173	08:19 17:00-17:54/54 10:20-12:42/142	08:12 15:25-16:07/42 10:18-10:48/30	08:47 15:48-16:06/18
	21:48 06:24-08:56/152	20:54 07:08-08:44/96 10:36-12:26/110	19:46 10:15-13:04/169	18:40 12:44-16:17/213	16:50 11:28-15:01/213	16:40 11:21-15:12/231
23	05:56 20:03-20:53/50	06:43 19:12-20:20/68 14:50-16:33/103	07:32 13:42-16:36/174	08:21 17:01-17:54/53 10:21-12:41/140	08:14 15:26-16:08/42 10:24-10:42/18	08:47 15:49-16:07/18
	21:46 06:25-08:56/151	20:52 07:09-08:42/93 10:35-12:28/113	19:43 10:14-13:03/169	18:38 12:42-16:16/214	16:49 11:29-15:02/213	16:41 11:22-15:13/231
24	05:58 20:03-20:53/50	06:44 19:11-20:20/69 14:46-16:34/108	07:33 13:42-16:36/174	08:22 17:01-17:54/53 10:22-12:40/138	08:15 15:27-16:08/41	08:48 15:49-16:07/18
	21:45 06:27-08:57/150	20:50 07:11-08:41/90 10:34-12:32/118	19:41 10:14-13:03/169	18:36 12:41-16:15/214	16:48 11:29-15:02/213	16:41 11:22-15:13/231
25	05:59 20:04-20:54/50	06:46 19:10-20:19/69 14:41-16:35/114	07:35 13:41-16:35/174	07:24 16:00-16:52/52	08:17 15:27-16:07/40	08:48 15:49-16:07/18 11:23-13:58/155
	21:44 06:28-08:57/149	20:48 07:12-08:39/87 10:33-12:34/121	19:39 10:13-13:03/170	17:34 09:23-15:14/351	16:47 11:29-15:02/213	16:42 13:59-15:14/75
26	06:00 20:03-20:53/50	06:48 19:09-20:18/69 07:36-08:37/61 10:32-12:37/125	07:36 13:41-16:35/174	07:26 16:01-16:52/51	08:18 15:28-16:07/39	08:48 15:50-16:09/19 11:24-13:59/155
	21:42 06:29-08:57/148	20:46 07:14-07:34/20 14:37-16:36/119	19:37 10:13-13:03/170	17:32 09:23-15:13/350	16:46 11:30-15:03/213	16:43 14:00-15:15/75
27	06:02 20:03-20:53/50	06:49 19:08-20:17/69 07:37-08:35/58 10:31-12:39/128	07:38 13:40-16:34/174	07:28 16:02-16:51/49	08:20 15:29-16:08/39	08:49 15:50-16:09/19 11:25-13:59/154
	21:41 06:30-08:57/147	20:44 07:15-07:32/17 14:32-16:36/124	19:34 10:14-13:02/168	17:30 09:24-15:12/348	16:45 11:30-15:04/214	16:43 14:00-15:15/75
28	06:03 20:04-20:54/50	06:51 19:07-20:15/68 07:39-08:33/54 10:30-12:42/132	07:40 13:41-16:34/173	07:29 16:03-16:51/48	08:21 15:29-16:07/38	08:49 15:50-16:10/20
	21:39 06:32-08:57/145	20:42 07:17-07:31/14 14:29-16:37/128	19:32 10:13-13:01/168	17:28 09:25-15:11/346	16:44 11:30-15:03/213	16:44 11:25-15:16/231
29	06:05 20:03-20:53/50	06:52 19:06-20:13/67 07:40-08:30/50 10:29-12:44/135	07:41 13:41-16:33/172	07:31 16:03-16:50/47	08:23 15:30-16:07/37	08:49 15:50-16:11/21 11:26-14:00/154
	21:38 06:33-08:57/144	20:40 07:18-07:29/11 14:25-16:37/132	19:30 10:13-13:01/168	17:26 09:26-15:10/344	16:44 11:31-15:04/213	16:45 14:01-15:16/75
30	06:06 20:03-20:53/50	06:54 19:06-20:11/65 07:43-08:27/44 10:29-12:47/138	07:43 13:40-16:32/172	07:33 16:04-16:49/45 09:28-11:32/124	08:24 15:30-16:07/37	08:49 15:50-16:12/22
	21:36 06:34-08:57/143	20:37 07:20-07:26/6 14:22-16:37/135	19:28 10:12-13:00/168	17:25 11:33-15:09/216	16:43 11:31-15:04/213	16:46 11:27-15:17/230
31	06:08 20:04-20:53/49	06:55 19:05-20:08/63 14:18-16:37/139		07:35 16:05-16:48/43 11:32-15:09/217		08:49 15:50-16:13/23 11:28-14:01/153
	21:35 06:36-08:57/141	20:35 07:45-08:23/38 10:27-12:48/141		17:23 15:43-15:47/4 09:29-11:31/122		16:47 14:02-15:17/75
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	6184	9623	10592	11921	9537	7785

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: GC&T WT1 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 16:12-16:14/2 16:48	08:24 17:35	07:32 17:35-17:59/24 18:25	07:23 19:45-19:51/6 18:54-19:34/40 20:17 16:09-17:26/77	06:20 19:17-20:09/52 21:06 15:20-18:02/162	05:37 15:29-18:11/162 21:50
2	08:49 16:12-16:16/4 16:49	08:22 17:37	07:30 17:43-18:01/18 18:26	07:21 19:45-19:53/8 18:53-19:35/42 20:19 16:06-17:29/83	06:18 19:17-20:07/50 21:08 15:20-18:02/162	05:36 15:30-18:12/162 21:51
3	08:49 16:12-16:16/4 16:50	08:21 17:08-17:09/1 17:38	07:28 17:44-18:03/19 18:28	07:19 19:45-19:55/10 18:52-19:36/44 20:20 16:03-17:31/88	06:17 19:19-20:07/48 21:09 15:20-18:03/163	05:35 15:31-18:11/160 21:52
4	08:49 16:12-16:18/6 16:51	08:19 17:07-17:11/4 17:40	07:26 17:43-18:05/22 18:30	07:17 19:46-19:57/11 18:51-19:36/45 20:22 16:00-17:33/93	06:15 19:19-20:05/46 21:11 15:19-18:04/165	05:34 15:31-18:11/160 21:53
5	08:49 16:13-16:19/6 16:53	08:18 17:07-17:13/6 17:42	07:24 17:41-18:05/24 18:32	07:14 19:46-19:56/10 18:51-19:37/46 20:24 15:58-17:36/98	06:13 19:19-20:02/43 21:13 15:19-18:04/165	05:34 15:32-18:12/160 21:54
6	08:49 16:13-16:20/7 16:54	08:16 17:06-17:15/9 17:44	07:21 17:41-18:05/24 18:33	07:12 19:48-19:54/6 18:49-19:36/47 20:25 15:54-17:37/103	06:11 19:20-20:00/40 21:14 15:19-18:05/166	05:33 15:32-18:12/160 21:55
7	08:48 16:13-16:22/9 16:55	08:14 17:06-17:17/11 17:45	07:19 17:40-18:05/25 18:35	07:10 19:59-20:01/2 18:49-19:36/47 20:27 15:52-17:39/107	06:09 15:18-18:05/167 21:16 19:21-19:59/38	05:32 15:33-18:12/159 21:56
8	08:48 16:13-16:23/10 16:56	08:13 17:06-17:18/12 17:47	07:17 17:40-18:05/25 18:37	07:08 19:55-20:03/8 18:49-19:36/47 20:28 15:50-17:40/110	06:08 15:18-18:05/167 21:17 19:21-19:58/37	05:32 15:34-18:13/159 21:57
9	08:47 16:13-16:24/11 16:58	08:11 17:07-17:21/14 17:49	07:15 17:39-18:04/25 18:39	07:05 19:54-20:04/10 18:48-19:36/48 20:30 15:48-17:42/114	06:06 15:19-18:06/167 21:19 19:23-19:57/34	05:32 15:34-18:13/159 21:58
10	08:47 16:14-16:26/12 16:59	08:09 17:07-17:23/16 17:51	07:13 17:40-18:04/24 18:40	07:03 19:52-20:06/14 18:48-19:36/48 20:32 15:46-17:44/118	06:04 15:18-18:05/167 21:20 19:24-19:56/32	05:31 15:35-18:13/158 21:59
11	08:46 16:14-16:27/13 17:00	08:07 17:08-17:25/17 17:53	07:10 17:40-18:03/23 18:42	07:01 18:48-20:07/79 20:33 15:44-17:46/122	06:03 15:19-18:06/167 21:22 19:25-19:55/30	05:31 15:36-18:14/158 21:59
12	08:46 16:14-16:29/15 17:02	08:06 17:10-17:27/17 17:55	07:08 17:41-18:03/22 18:44	06:59 18:48-20:09/81 20:35 15:41-17:46/125	06:01 15:18-18:06/168 21:23 19:26-19:54/28	05:30 15:36-18:13/157 22:00
13	08:45 16:14-16:30/16 17:03	08:04 17:12-17:29/17 17:56	07:06 18:18-18:20/2 18:45 17:42-18:00/18	06:57 18:48-20:10/82 20:37 15:40-17:48/128	06:00 15:19-18:07/168 21:25 19:28-19:53/25	05:30 15:36-18:13/157 22:01
14	08:44 16:16-16:32/16 17:05	08:02 17:13-17:30/17 17:58	07:04 18:18-18:22/4 18:47 17:44-17:59/15	06:55 18:48-20:12/84 20:38 15:38-17:49/131	05:58 15:19-18:06/167 21:27 19:29-19:50/21	05:30 15:37-18:14/157 22:01
15	08:44 16:16-16:32/16 17:06	08:00 17:14-17:32/18 18:00	07:02 18:18-18:24/6 18:49 17:46-17:57/11	06:52 18:49-20:14/85 20:40 15:36-17:50/134	05:56 15:19-18:07/168 21:28 19:31-19:49/18	05:30 15:37-18:14/157 22:02
16	08:43 16:17-16:32/15 17:08	07:58 17:15-17:29/14 18:02	06:59 18:19-18:26/7 18:50	06:50 18:49-20:15/86 20:42 15:35-17:52/137	05:55 15:20-18:08/168 21:29 19:35-19:46/11	05:30 15:38-18:14/156 22:02
17	08:42 16:18-16:32/14 17:09	07:56 17:17-17:26/9 18:04	06:57 18:22-18:23/1 18:52	06:48 18:50-20:17/87 20:43 15:34-17:53/139	05:54 15:20-18:07/167 21:31	05:30 15:38-18:15/157 22:03
18	08:41 16:38-16:39/1 17:11 16:19-16:32/13	07:54 17:20-17:23/3 18:05 17:34-17:38/4	06:55 18:27-18:29/2 18:54	06:46 18:51-20:18/87 20:45 15:32-17:54/142	05:52 15:20-18:08/168 21:32	05:30 15:39-18:15/156 22:03
19	08:40 16:37-16:40/3 17:12 16:19-16:31/12	07:53 17:32-17:40/8 18:07	06:53 18:27-18:31/4 18:55	06:44 18:52-20:17/85 20:47 15:31-17:55/144	05:51 15:21-18:08/167 21:34	05:30 15:39-18:15/156 22:04
20	08:39 16:37-16:42/5 17:14 16:21-16:30/9	07:51 17:31-17:42/11 18:09	06:50 18:27-18:32/5 18:57	06:42 18:53-20:13/80 20:48 15:30-17:55/145	05:49 15:22-18:09/167 21:35	05:30 15:39-18:15/156 22:04
21	08:38 16:37-16:44/7 17:16 16:23-16:29/6	07:49 17:30-17:44/14 18:11	06:48 18:29-18:33/4 18:59	06:40 18:54-20:13/79 20:50 15:29-17:56/147	05:48 15:23-18:09/166 21:37	05:30 15:40-18:16/156 22:04
22	08:37 16:37-16:46/9 17:17	07:47 17:30-17:46/16 18:12	06:46 18:30-18:35/5 19:00	06:38 18:55-20:14/79 20:51 15:27-17:57/150	05:47 15:22-18:08/166 21:38	05:30 15:40-18:16/156 22:04
23	08:36 16:38-16:48/10 17:19	07:45 17:30-17:48/18 18:14	06:44 18:34-18:37/3 19:02	06:36 18:57-20:13/76 20:53 15:26-17:58/152	05:46 15:23-18:09/166 21:39	05:30 15:40-18:16/156 22:05
24	08:35 16:37-16:49/12 17:21	07:43 17:30-17:50/20 18:16	06:41 18:33-18:38/5 19:04	06:34 18:59-20:13/74 20:55 15:25-17:58/153	05:45 15:24-18:09/165 21:41	05:31 15:40-18:16/156 22:05
25	08:33 16:38-16:52/14 17:22	07:40 17:30-17:52/22 18:18	06:39 18:34-18:40/6 19:05 18:13-18:18/5	06:32 19:02-20:13/71 20:56 15:24-17:59/155	05:43 15:24-18:09/165 21:42	05:31 15:40-18:17/157 22:05
26	08:32 16:39-16:54/15 17:24	07:38 17:31-17:54/23 18:19	06:37 18:35-18:42/7 19:07 18:07-18:25/18	06:30 19:17-20:12/55 19:07-19:11/4 20:58 15:23-17:59/156	05:42 15:25-18:09/164 21:43	05:31 15:40-18:16/156 22:05
27	08:31 16:39-16:53/14 17:26	07:36 17:31-17:55/24 18:21	06:35 18:37-18:41/4 18:04-18:28/24 19:09 15:37-16:05/28	06:28 19:17-20:12/55 21:00 15:23-18:00/157	05:41 15:26-18:10/164 21:44	05:32 15:41-18:17/156 22:05
28	08:30 16:40-16:53/13 17:28	07:34 17:33-17:56/23 18:23	06:32 15:28-16:11/43 19:10 18:01-18:29/28	06:26 19:17-20:11/54 21:01 15:22-18:00/158	05:40 15:26-18:10/164 21:46	05:32 15:40-18:17/157 22:05
29	08:28 16:41-16:52/11 17:29		07:30 16:23-17:16/53 20:12 18:59-19:31/32	06:24 19:17-20:11/54 21:03 15:22-18:02/160	05:39 15:28-18:11/163 21:47	05:33 15:41-18:18/157 22:04
30	08:27 16:44-16:52/8 17:31		07:28 16:18-17:20/62 20:14 18:57-19:32/35	06:22 19:17-20:10/53 21:05 15:21-18:02/161	05:38 15:28-18:11/163 21:48	05:33 15:40-18:17/157 22:04
31	08:25 17:33		07:25 19:47-19:50/3 18:56-19:34/38 20:15 16:14-17:24/70		05:37 15:29-18:11/162 21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	338	368	823	5916	5687	4730

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: GC&T WT1 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 15:40-18:18/158 22:04	06:09 15:29-18:16/167 21:33 19:36-20:05/29	06:57 18:47-20:07/80 20:33 15:43-17:45/122	07:44 18:21-18:41/20 19:25	07:36 16:37-16:52/15 17:21	08:26 15:56-16:10/14 16:42
2	05:35 15:40-18:17/157 22:04	06:11 15:29-18:17/168 21:32 19:35-20:06/31	06:59 19:50-20:04/14 18:46-19:34/48 20:31 15:44-17:42/118	07:46 18:20-18:42/22 19:23	07:38 16:36-16:50/14 17:19	08:27 15:57-16:09/12 16:42
3	05:35 15:40-18:18/158 22:03	06:12 15:28-18:16/168 21:30 19:34-20:07/33	07:00 19:52-20:03/11 18:46-19:34/48 20:29 15:46-17:40/114	07:48 18:18-18:42/24 19:21	07:40 16:36-16:48/12 17:17	08:29 15:57-16:08/11 16:41
4	05:36 15:40-18:18/158 22:03	06:14 15:28-18:15/167 21:29 19:32-20:07/35	07:02 19:52-20:00/8 18:46-19:33/47 20:27 15:47-17:38/111	07:49 18:17-18:42/25 19:19	07:42 16:36-16:46/10 17:16	08:30 15:57-16:07/10 16:40
5	05:37 15:40-18:19/159 22:02	06:15 15:28-18:15/167 21:27 19:31-20:09/38	07:03 19:55-19:58/3 18:46-19:33/47 20:24 15:49-17:36/107	07:51 18:17-18:42/25 19:16	07:43 16:36-16:44/8 17:14	08:31 15:58-16:07/9 16:40
6	05:38 15:39-18:18/159 22:02	06:17 15:28-18:14/166 21:25 19:30-20:09/39	07:05 19:44-19:50/6 18:45-19:32/47 20:22 15:50-17:33/103	07:52 18:16-18:41/25 19:14	07:45 16:37-16:43/6 17:12	08:32 15:59-16:06/7 16:40
7	05:38 15:39-18:18/159 22:01	06:18 19:30-20:10/40 21:23 15:29-18:14/165	07:07 19:42-19:52/10 18:46-19:32/46 20:20 15:53-17:31/98	07:54 18:16-18:41/25 19:12	07:47 16:38-16:41/3 17:11	08:34 15:59-16:06/7 16:39
8	05:39 15:39-18:19/160 22:01	06:20 19:28-20:12/44 21:22 15:28-18:13/165	07:08 19:40-19:51/11 18:45-19:30/45 20:18 15:54-17:28/94	07:56 18:17-18:41/24 19:10	07:49 16:39-16:40/1 17:09	08:35 16:00-16:06/6 16:39
9	05:40 15:38-18:19/161 22:00	06:21 19:28-20:15/47 21:20 15:29-18:13/164	07:10 19:39-19:49/10 18:46-19:30/44 20:15 15:57-17:26/89	07:57 18:16-18:39/23 19:08	07:50 17:07	08:36 16:01-16:05/4 16:39
10	05:41 15:38-18:19/161 21:59	06:23 19:27-20:15/48 21:18 15:28-18:12/164	07:11 19:38-19:46/8 18:46-19:28/42 20:13 15:59-17:22/83	07:59 18:17-18:38/21 19:05	07:52 17:06	08:37 16:01-16:05/4 16:38
11	05:42 15:38-18:19/161 21:59	06:24 19:26-20:16/50 21:16 15:28-18:11/163	07:13 19:39-19:45/6 18:47-19:27/40 20:11 16:02-17:19/77	08:01 18:18-18:36/18 19:03	07:54 16:17-16:19/2 17:04	08:38 16:02-16:05/3 16:38
12	05:43 15:37-18:19/162 21:58	06:26 19:26-20:17/51 21:14 15:29-18:11/162	07:14 19:38-19:42/4 18:47-19:25/38 20:09 16:05-17:16/71	08:02 18:15-18:33/18 19:01	07:55 16:14-16:23/9 17:03	08:39 16:03-16:04/1 16:38
13	05:44 15:37-18:19/162 21:57	06:27 19:25-20:18/53 21:12 15:29-18:09/160	07:16 19:39-19:40/1 18:48-19:24/36 20:06 16:09-17:12/63	08:04 18:07-18:31/24 18:59	07:57 16:13-16:24/11 17:01	08:40 16:38
14	05:45 15:36-18:19/163 21:56	06:29 19:25-20:19/54 21:10 15:30-18:09/159	07:17 16:12-17:07/55 20:04 18:49-19:21/32	08:06 18:05-18:29/24 18:57	07:59 16:12-16:25/13 17:00	08:41 16:38
15	05:47 15:36-18:19/163 21:55	06:30 19:24-20:19/55 21:09 15:29-18:08/159	07:19 16:17-17:02/45 20:02 18:51-19:19/28	08:07 18:04-18:27/23 18:55	08:01 16:12-16:26/14 16:59	08:42 16:38
16	05:48 15:35-18:19/164 21:54	06:32 19:24-20:19/55 21:07 15:30-18:07/157	07:21 19:27-19:28/1 18:52-19:16/24 19:59 16:23-16:55/32	08:09 18:02-18:24/22 18:53	08:02 16:12-16:27/15 16:57	08:43 16:38
17	05:49 15:35-18:19/164 21:53	06:34 19:24-20:19/55 19:12-19:20/8 21:05 15:30-18:06/156	07:22 19:24-19:31/7 19:57 18:55-19:14/19	08:11 18:01-18:22/21 18:50	08:04 16:11-16:25/14 16:56	08:44 16:39
18	05:50 15:34-18:19/165 21:52	06:35 19:08-20:19/71 21:03 15:31-18:05/154	07:24 19:21-19:28/7 19:55 18:58-19:08/10	08:12 18:01-18:21/20 18:48	08:06 16:11-16:23/12 16:55	08:44 16:39
19	05:51 15:34-18:19/165 21:51	06:37 19:04-20:19/75 21:01 15:31-18:04/153	07:25 19:21-19:26/5 19:53	08:14 18:01-18:19/18 18:46	08:07 16:12-16:22/10 16:53	08:45 16:39
20	05:53 15:34-18:19/165 21:50	06:38 19:02-20:19/77 20:59 15:32-18:03/151	07:27 19:20-19:23/3 19:50	08:16 18:01-18:16/15 18:44	08:09 16:12-16:21/9 16:52	08:46 16:40
21	05:54 15:33-18:19/166 21:49	06:40 19:00-20:18/78 20:57 15:32-18:02/150	07:28 19:16-19:21/5 19:48	08:17 18:01-18:14/13 18:42	08:11 16:13-16:20/7 16:51 15:59-16:05/6	08:46 16:40
22	05:55 15:33-18:19/166 21:48	06:41 18:59-20:18/79 20:54 15:33-18:01/148	07:30 19:14-19:20/6 19:46	08:19 18:02-18:12/10 18:40	08:12 16:13-16:18/5 16:50 15:57-16:06/9	08:47 16:40
23	05:56 15:32-18:18/166 21:46	06:43 18:56-20:17/81 20:52 15:34-17:59/145	07:32 19:12-19:17/5 19:44	08:21 18:03-18:10/7 18:38	08:14 16:14-16:17/3 16:49 15:56-16:08/12	08:47 16:41
24	05:58 15:32-18:19/167 21:45	06:45 18:55-20:21/86 20:50 15:35-17:58/143	07:33 19:11-19:15/4 19:41	08:23 17:49-17:55/6 18:36 18:05-18:08/3	08:15 16:15-16:16/1 16:48 15:56-16:09/13	08:48 16:41
25	05:59 15:31-18:19/168 21:44	06:46 18:53-20:21/88 20:48 15:35-17:56/141	07:35 19:09-19:12/3 19:39	07:24 16:47-16:57/10 17:34	08:17 15:56-16:10/14 16:47	08:48 16:42
26	06:01 15:31-18:18/167 21:42	06:48 18:53-20:19/86 20:46 15:37-17:55/138	07:36 19:37	07:26 16:44-16:58/14 17:32	08:18 15:55-16:10/15 16:46	08:49 16:43
27	06:02 15:30-18:18/168 21:41 19:47-19:54/7	06:49 18:51-20:17/86 20:44 15:37-17:53/136	07:38 19:01-19:07/6 19:34	07:28 16:43-17:01/18 17:30	08:20 15:55-16:11/16 16:45	08:49 16:44
28	06:03 15:30-18:18/168 21:40 19:44-19:58/14	06:51 18:50-20:15/85 20:42 15:38-17:52/134	07:40 18:59-19:05/6 19:32 18:28-18:36/8	07:29 16:43-17:00/17 17:28	08:22 15:55-16:11/16 16:44	08:49 16:44
29	06:05 15:30-18:17/167 21:38 19:41-20:00/19	06:52 18:49-20:13/84 20:40 15:39-17:50/131	07:41 18:59-19:03/4 19:30 18:25-18:39/14	07:31 16:41-16:58/17 17:27	08:23 15:56-16:11/15 16:44	08:49 16:45
30	06:06 15:29-18:17/168 21:37 19:39-20:02/23	06:54 18:49-20:11/82 20:38 15:41-17:49/128	07:43 18:57-19:00/3 19:28 18:22-18:40/18	07:33 16:39-16:56/17 17:25	08:24 15:56-16:11/15 16:43	08:49 16:11-16:12/1 16:46
31	06:08 15:29-18:17/168 21:35 19:38-20:04/26	06:56 18:47-20:08/81 20:35 15:41-17:46/125	 	07:35 16:38-16:54/16 17:23	 	08:49 16:12-16:13/1 16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	5152	6658	2300	585	325	90

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: GC&T WT2 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49	08:24 16:32-16:55/23	07:32 17:32-17:59/27	07:23 19:43-19:51/8	06:20 20:23-20:38/15	05:37 21:03-21:18/15
	16:48	17:35	18:25	20:17	21:06 19:37-20:10/33	21:50
2	08:49	08:22 17:03-17:07/4	07:30 17:33-18:01/28	07:21 19:43-19:53/10	06:18 20:24-20:37/13	05:36 21:03-21:20/17
	16:49	17:36 16:34-16:55/21	18:26	20:19	21:08 19:37-20:09/32	21:51
3	08:49	08:21 17:01-17:09/8	07:28 17:35-18:03/28	07:19 19:45-19:55/10	06:16 20:24-20:36/12	05:35 21:02-21:21/19
	16:50	17:38 16:34-16:54/20	18:28	20:20	21:09 19:38-20:09/31	21:52
4	08:49	08:19 17:00-17:11/11	07:26 17:36-18:05/29	07:17 19:52-19:57/5	06:15 20:27-20:35/8	05:34 21:02-21:21/19
	16:51	17:40 16:35-16:53/18	18:30	20:22 19:48-19:51/3	21:11 19:39-20:08/29	21:53
5	08:49	08:18 17:00-17:13/13	07:24 17:41-18:04/23	07:14 19:51-19:57/6	06:13 19:40-20:06/26	05:34 21:02-21:22/20
	16:53	17:42 16:37-16:53/16	18:32	20:24	21:13	21:54
6	08:49	08:16 16:59-17:15/16	07:21 17:41-18:04/23	07:12 19:52-19:59/7	06:11 19:41-20:05/24	05:33 21:02-21:23/21
	16:54	17:44 16:39-16:51/12	18:33	20:25	21:14	21:55
7	08:48	08:14 16:58-17:17/19	07:19 17:42-18:04/22	07:10 19:53-20:01/8	06:09 19:43-20:04/21	05:32 21:02-21:24/22
	16:55	17:45 16:41-16:49/8	18:35	20:27	21:16	21:56
8	08:48	08:13 16:58-17:18/20	07:17 18:11-18:12/1	07:08 19:55-20:03/8	06:08 19:44-20:02/18	05:32 21:03-21:25/22
	16:56	17:47	18:37 17:42-18:03/21	20:28	21:17	21:57
9	08:47	08:11 16:59-17:20/21	07:15 18:09-18:13/4	07:05 19:56-20:04/8	06:06 19:47-20:00/13	05:31 21:02-21:25/23
	16:58	17:49	18:39 17:42-18:01/19	20:30	21:19	21:58
10	08:47	08:09 16:59-17:20/21	07:13 18:08-18:15/7	07:03 20:05-20:06/1	06:04 19:51-19:55/4	05:31 21:02-21:26/24
	16:59	17:51	18:40 17:43-18:00/17	20:32	21:20	21:59
11	08:46	08:07 16:59-17:20/21	07:10 18:08-18:17/9	07:01 20:03-20:07/4	06:03 20:50-20:53/3	05:31 21:03-21:27/24
	17:00	17:53	18:42 17:45-17:59/14	20:33	21:22	21:59
12	08:46	08:06 16:59-17:19/20	07:08 18:08-18:19/11	06:59 20:02-20:09/7	06:01 20:49-20:54/5	05:30 21:02-21:26/24
	17:02	17:55	18:44 17:48-17:56/8	20:35	21:23	22:00
13	08:45	08:04 17:00-17:19/19	07:06 18:08-18:20/12	06:57 19:49-20:10/21	06:00 20:49-20:56/7	05:30 21:02-21:27/25
	17:03	17:56	18:45	20:37	21:25	22:01
14	08:44	08:02 17:01-17:18/17	07:04 18:09-18:20/11	06:55 19:46-20:12/26	05:58 20:48-20:57/9	05:30 21:03-21:27/24
	17:05	17:58	18:47	20:38	21:27	22:01
15	08:44	08:00 17:02-17:16/14	07:02 18:10-18:18/8	06:52 19:44-20:14/30	05:56 20:49-20:58/9	05:30 21:03-21:28/25
	17:06	18:00	18:49 18:19-18:22/3	20:40	21:28	22:02
16	08:43	07:58 17:04-17:15/11	06:59 18:14-18:26/12	06:50 19:42-20:12/30	05:55 20:49-21:00/11	05:30 21:03-21:28/25
	17:08	18:02	18:50	20:42	21:29	22:02
17	08:42	07:56 17:08-17:11/3	06:57 18:11-18:27/16	06:48 19:41-20:10/29	05:54 20:49-21:01/12	05:30 21:03-21:28/25
	17:09	18:03	18:52	20:43	21:31	22:03
18	08:41 16:38-16:39/1	07:54	06:55 18:10-18:29/19	06:46 19:40-20:11/31	05:52 20:50-21:02/12	05:30 21:03-21:28/25
	17:11	18:05	18:54	20:45	21:32	22:03
19	08:40 16:35-16:40/5	07:53	06:53 18:09-18:31/22	06:44 19:39-20:12/33	05:51 20:50-21:03/13	05:30 21:04-21:28/24
	17:12	18:07	18:55	20:47	21:34	22:04
20	08:39 16:34-16:42/8	07:51 17:38-17:42/4	06:50 18:08-18:33/25	06:42 19:38-20:12/34	05:49 20:51-21:02/11	05:30 21:04-21:28/24
	17:14	18:09	18:57	20:48	21:35	22:04
21	08:38 16:33-16:44/11	07:49 17:36-17:44/8	06:48 18:06-18:33/27	06:40 19:37-20:12/35	05:48 20:52-21:01/9	05:30 21:04-21:28/24
	17:16	18:11	18:59	20:50	21:37	22:04
22	08:37 16:33-16:46/13	07:47 17:34-17:46/12	06:46 18:06-18:34/28	06:38 19:37-20:13/36	05:47 20:53-21:00/7	05:30 21:05-21:29/24
	17:17	18:12	19:00	20:51	21:38	22:04
23	08:36 16:33-16:48/15	07:45 17:33-17:48/15	06:44 18:06-18:34/28	06:36 19:36-20:13/37	05:46	05:30 21:05-21:29/24
	17:19	18:14	19:02	20:53	21:39	22:05
24	08:35 16:32-16:49/17	07:42 17:33-17:50/17	06:41 18:05-18:32/27	06:34 20:27-20:28/1	05:44	05:31 21:04-21:29/25
	17:21	18:16	19:04	20:55 19:36-20:13/37	21:41	22:05
25	08:33 16:32-16:52/20	07:40 17:32-17:52/20	06:39 18:05-18:32/27	06:32 20:25-20:29/4	05:43	05:31 21:05-21:30/25
	17:22	18:18	19:05	20:56 19:35-20:12/37	21:42	22:05
26	08:32 16:32-16:54/22	07:38 17:32-17:54/22	06:37 18:06-18:31/25	06:30 20:24-20:30/6	05:42 21:08-21:12/4	05:31 21:05-21:30/25
	17:24	18:19	19:07	20:58 19:35-20:12/37	21:43	22:05
27	08:31 16:31-16:54/23	07:36 17:31-17:55/24	06:34 18:07-18:29/22	06:28 20:23-20:32/9	05:41 21:06-21:13/7	05:32 21:06-21:31/25
	17:26	18:21	19:09	21:00 19:35-20:12/37	21:44	22:05
28	08:30 16:32-16:55/23	07:34 17:32-17:57/25	06:32 18:07-18:27/20	06:26 20:23-20:33/10	05:40 21:05-21:14/9	05:32 21:06-21:30/24
	17:28	18:23	19:10	21:01 19:35-20:11/36	21:46	22:05
29	08:28 16:32-16:55/23		07:30 19:45-19:47/2	06:24 20:23-20:36/13	05:39 21:05-21:16/11	05:33 21:06-21:31/25
	17:29		20:12 19:08-19:25/17	21:03 19:36-20:12/36	21:47	22:04
30	08:27 16:32-16:56/24		07:28 19:44-19:48/4	06:22 20:23-20:37/14	05:38 21:04-21:17/13	05:33 21:06-21:30/24
	17:31		20:14 19:10-19:23/13	21:04 19:36-20:11/35	21:48	22:04
31	08:25 16:32-16:55/23		07:25 19:44-19:50/6		05:37 21:03-21:18/15	
	17:33		20:15 19:14-19:19/5		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	228	503	670	739	446	692

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: GC&T WT2 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 21:07-21:31/24 22:04	06:09 21:00-21:04/4 21:33	06:57 20:03-20:07/4 20:33	07:44 18:47-18:58/11 19:25 18:29-18:32/3	07:36 16:28-16:50/22 17:21	08:26 16:42
2	05:35 21:07-21:30/23 22:04	06:11 21:01-21:03/2 21:32	06:59 20:03-20:04/1 20:31	07:46 18:47-18:57/10 19:23 18:25-18:36/11	07:38 16:27-16:49/22 17:19	08:27 16:42
3	05:35 21:07-21:31/24 22:03	06:12 19:59-20:08/9 21:30	07:00 19:54-20:02/8 20:29	07:48 18:46-18:54/8 19:21 18:22-18:37/15	07:40 16:28-16:48/20 17:17	08:29 16:41
4	05:36 21:08-21:31/23 22:03	06:14 19:55-20:10/15 21:29	07:02 19:52-20:00/8 20:27	07:49 18:46-18:52/6 19:19 18:20-18:39/19	07:42 16:28-16:46/18 17:16 16:10-16:19/9	08:30 16:40
5	05:37 21:08-21:31/23 22:02	06:15 19:54-20:13/19 21:27	07:03 19:50-19:58/8 20:24	07:51 18:46-18:49/3 19:16 18:19-18:40/21	07:43 16:29-16:44/15 17:14 16:08-16:21/13	08:31 16:40
6	05:38 21:08-21:29/21 22:02	06:17 19:52-20:14/22 21:25	07:05 19:48-19:55/7 20:22	07:52 18:18-18:39/21 19:14	07:45 16:30-16:43/13 17:12 16:07-16:23/16	08:32 16:40
7	05:38 21:09-21:29/20 22:01	06:18 19:51-20:15/24 21:23	07:07 19:47-19:54/7 20:20	07:54 18:17-18:40/23 19:12	07:47 16:31-16:41/10 17:11 16:06-16:24/18	08:34 16:39
8	05:39 21:09-21:29/20 22:01	06:20 20:37-20:42/5 21:22 19:49-20:16/27	07:08 19:46-19:51/5 20:18 19:42-19:44/2	07:56 18:17-18:40/23 19:10	07:49 16:32-16:40/8 17:09 16:05-16:25/20	08:35 16:39
9	05:40 21:10-21:28/18 22:00	06:21 20:35-20:44/9 21:20 19:48-20:17/29	07:10 19:39-19:49/10 20:15	07:57 18:13-18:39/26 19:08	07:50 16:34-16:38/4 17:07 16:05-16:26/21	08:36 16:39
10	05:41 21:10-21:28/18 21:59	06:23 20:34-20:45/11 21:18 19:47-20:18/31	07:11 19:37-19:46/9 20:13	07:59 18:10-18:38/28 19:05	07:52 16:03-16:26/23 17:06	08:37 16:38
11	05:42 21:11-21:27/16 21:59	06:24 20:32-20:46/14 21:16 19:45-20:18/33	07:13 19:36-19:45/9 20:11	08:01 18:08-18:36/28 19:03	07:54 16:03-16:26/23 17:04	08:38 16:38
12	05:43 21:12-21:26/14 21:58	06:26 20:32-20:46/14 21:14 19:45-20:19/34	07:14 19:35-19:42/7 20:09 19:06-19:10/4	08:02 18:06-18:33/27 19:01	07:55 16:03-16:27/24 17:03	08:39 16:38
13	05:44 21:12-21:26/14 21:57	06:27 20:31-20:44/13 21:12 19:44-20:18/34	07:16 19:35-19:40/5 20:06 19:02-19:14/12	08:04 18:05-18:31/26 18:59	07:57 16:04-16:27/23 17:01	08:40 16:38
14	05:45 21:13-21:25/12 21:56	06:29 20:31-20:43/12 21:10 19:44-20:19/35	07:17 19:35-19:37/2 20:04 18:59-19:15/16	08:06 18:05-18:29/24 18:57	07:59 16:04-16:27/23 17:00	08:41 16:38
15	05:47 21:14-21:24/10 21:55	06:30 20:30-20:40/10 21:09 19:43-20:19/36	07:19 18:57-19:17/20 20:02	08:07 18:05-18:27/22 18:55	08:01 16:04-16:27/23 16:59	08:42 16:38
16	05:48 21:15-21:23/8 21:54	06:32 20:31-20:39/8 21:07 19:43-20:19/36	07:21 18:55-19:17/22 19:59	08:09 18:04-18:24/20 18:52	08:02 16:05-16:27/22 16:57	08:43 16:38
17	05:49 21:17-21:22/5 21:53	06:34 20:31-20:37/6 21:05 19:42-20:19/37	07:22 18:54-19:19/25 19:57	08:11 18:04-18:22/18 18:50	08:04 16:05-16:25/20 16:56	08:44 16:39
18	05:50 21:52	06:35 20:32-20:35/3 21:03 19:42-20:19/37	07:24 18:53-19:19/26 19:55	08:12 18:04-18:21/17 18:48	08:06 16:06-16:23/17 16:55	08:44 16:39
19	05:51 21:51	06:37 19:41-20:18/37 21:01	07:25 18:53-19:20/27 19:53	08:14 18:05-18:19/14 18:46	08:07 16:07-16:22/15 16:53	08:45 16:39
20	05:53 21:50	06:38 19:42-20:18/36 20:59	07:27 18:51-19:19/28 19:50	08:16 18:05-18:16/11 18:44	08:09 16:08-16:21/13 16:52	08:46 16:39
21	05:54 21:05-21:09/4 21:49	06:40 19:41-20:17/36 20:57	07:28 18:51-19:19/28 19:48	08:17 18:06-18:14/8 18:42	08:11 16:09-16:20/11 16:51	08:46 16:40
22	05:55 21:03-21:11/8 21:48	06:41 19:42-20:17/35 20:54	07:30 18:52-19:19/27 19:46	08:19 18:09-18:12/3 18:40	08:12 16:10-16:18/8 16:50	08:47 16:40
23	05:56 21:02-21:12/10 21:46	06:43 19:42-20:16/34 20:52	07:32 18:51-19:17/26 19:44	08:21 18:38	08:14 16:12-16:17/5 16:49	08:47 16:41
24	05:58 21:00-21:12/12 21:45	06:45 19:43-20:15/32 20:50	07:33 18:52-19:15/23 19:41	08:23 18:36	08:15 16:15-16:16/1 16:48	08:48 16:41
25	05:59 21:01-21:14/13 21:44	06:46 19:43-20:14/31 20:48	07:35 18:52-19:12/20 19:39	07:24 16:37-16:43/6 17:34	08:17 16:47	08:48 16:42
26	06:01 21:00-21:12/12 21:42	06:48 19:44-20:13/29 20:46	07:36 18:53-19:10/17 19:37	07:26 16:33-16:45/12 17:32	08:18 16:46	08:49 16:43
27	06:02 20:59-21:11/12 21:41	06:49 19:44-20:14/30 20:44	07:38 18:55-19:08/13 19:34	07:28 16:31-16:46/15 17:30	08:20 16:45	08:49 16:44
28	06:03 21:00-21:10/10 21:40	06:51 19:46-20:15/29 20:42	07:40 18:52-19:05/13 19:32	07:29 16:30-16:47/17 17:28	08:22 16:44	08:49 16:44
29	06:05 20:59-21:08/9 21:38	06:52 19:47-20:13/26 20:40	07:41 18:50-19:00/10 19:30	07:31 16:29-16:48/19 17:26	08:23 16:44	08:49 16:45
30	06:06 20:59-21:06/7 21:37	06:54 19:50-20:11/21 20:38	07:43 18:48-19:00/12 19:28	07:33 16:29-16:49/20 17:25	08:24 16:43	08:49 16:46
31	06:08 21:00-21:06/6 21:35	06:56 20:02-20:08/6 20:35		07:35 16:28-16:49/21 17:23		08:49 16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	396	951	461	556	480	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: GC&T WT3 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 16:04-16:09/5	08:24 16:54-17:05/11	07:32 17:47-17:59/12	07:23	06:20	05:37
	16:48 15:11-15:50/39	17:35 15:27-15:56/29	18:25 17:13-17:38/25	20:17	21:06	21:50
2	08:49 16:05-16:09/4	08:22 17:01-17:07/6	07:30 17:45-18:01/16	07:21	06:18	05:36
	16:49 15:12-15:51/39	17:37 15:29-15:55/26	18:26 17:14-17:37/23	20:19	21:08	21:51
3	08:49 15:11-15:51/40	08:21 15:31-15:53/22	07:28 17:37-18:03/26	07:19	06:17	05:35
	16:50	17:38 17:01-17:09/8	18:28 17:16-17:36/20	20:20	21:09	21:52
4	08:49 16:16-16:18/2	08:19 15:34-15:51/17	07:26 17:18-18:05/47	07:17	06:15	05:34
	16:52 15:12-15:52/40	17:40 17:01-17:11/10	18:30	20:22	21:11	21:53
5	08:49 16:17-16:19/2	08:18 15:39-15:48/9	07:24 17:31-18:05/34	07:14	06:13	05:34
	16:53 15:13-15:53/40	17:42 17:02-17:13/11	18:32 17:20-17:30/10	20:24	21:13	21:54
6	08:49 16:17-16:20/3	08:16 16:59-17:15/16	07:21 17:29-18:05/36	07:12	06:11	05:33
	16:54 15:12-15:53/41	17:44	18:33	20:25	21:14	21:55
7	08:48 16:18-16:22/4	08:14 16:58-17:17/19	07:19 17:28-18:05/37	07:10	06:09	05:33
	16:55 15:13-15:54/41	17:46	18:35 18:09-18:10/1	20:27	21:16	21:56
8	08:48 16:18-16:23/5	08:13 16:56-17:18/22	07:17 17:27-18:05/38	07:08	06:08	05:32
	16:56 15:13-15:55/42	17:47	18:37 18:09-18:12/3	20:28	21:17	21:57
9	08:47 16:18-16:24/6	08:11 16:56-17:21/25	07:15 17:25-18:03/38	07:06	06:06	05:32
	16:58 15:13-15:55/42	17:49	18:39 18:09-18:13/4	20:30	21:19	21:58
10	08:47 16:19-16:26/7	08:09 16:55-17:23/28	07:13 17:24-18:03/39	07:03	06:04	05:31
	16:59 15:14-15:56/42	17:51	18:40 18:08-18:15/7	20:32	21:20	21:59
11	08:46 16:20-16:27/7	08:08 16:55-17:25/30	07:10 17:24-18:02/38	07:01	06:03	05:31
	17:00 15:13-15:56/43	17:53	18:42 18:07-18:17/10	20:33	21:22	21:59
12	08:46 16:20-16:29/9	08:06 16:54-17:27/33	07:08 17:23-18:02/39	06:59	06:01	05:30
	17:02 15:14-15:57/43	17:55	18:44 18:07-18:19/12	20:35	21:23	22:00
13	08:45 16:21-16:30/9	08:04 17:25-17:29/4	07:06 17:22-18:01/39	06:57	06:00	05:30
	17:03 15:14-15:57/43	17:56 16:54-17:23/29	18:45 18:06-18:20/14	20:37	21:25	22:01
14	08:44 16:23-16:31/8	08:02 16:53-17:21/28	07:04 18:06-18:22/16	06:55	05:58	05:30
	17:05 15:15-15:58/43	17:58	18:47 17:22-18:02/40	20:38	21:27	22:01
15	08:44 16:25-16:30/5	08:00 17:23-17:29/6	07:02 18:06-18:24/18	06:53	05:57	05:30
	17:06 15:15-15:59/44	18:00 16:53-17:21/28	18:49 17:22-18:02/40	20:40	21:28	22:02
16	08:43 15:15-15:59/44	07:58 16:54-17:33/39	06:59 18:07-18:23/16	06:50	05:55	05:30
	17:08	18:02	18:50 17:22-18:02/40	20:42	21:29	22:02
17	08:42 15:16-15:59/43	07:56 16:54-17:35/41	06:57 18:08-18:19/11	06:48	05:54	05:30
	17:09	18:04	18:52 17:21-18:00/39	20:43	21:31	22:03
18	08:41 15:16-16:00/44	07:54 16:54-17:37/43	06:55 18:11-18:16/5	06:46	05:52	05:30
	17:11	18:05	18:54 17:22-18:00/38	20:45	21:32	22:03
19	08:40 15:17-16:00/43	07:53 16:55-17:38/43	06:53 17:22-17:59/37	06:44	05:51	05:30
	17:13	18:07	18:55	20:47	21:34	22:04
20	08:39 15:16-15:59/43	07:51 16:56-17:39/43	06:50 17:23-17:59/36	06:42	05:49	05:30
	17:14	18:09	18:57	20:48	21:35	22:04
21	08:38 15:17-16:00/43	07:49 16:57-17:40/43	06:48 17:23-17:57/34	06:40	05:48	05:30
	17:16	18:11	18:59	20:50	21:37	22:04
22	08:37 16:44-16:46/2	07:47 16:59-17:40/41	06:46 17:24-17:56/32	06:38	05:47	05:30
	17:17 15:18-16:00/42	18:12	19:00	20:51	21:38	22:04
23	08:36 16:44-16:48/4	07:45 17:01-17:40/39	06:44 18:35-18:37/2	06:36	05:46	05:30
	17:19 15:19-16:00/41	18:14	19:02 17:26-17:55/29	20:53	21:39	22:05
24	08:35 16:44-16:49/5	07:43 17:12-17:41/29	06:41 18:34-18:38/4	06:34	05:45	05:31
	17:21 15:19-16:00/41	18:16 17:05-17:10/5	19:04 17:27-17:52/25	20:55	21:41	22:05
25	08:33 16:45-16:52/7	07:40 17:12-17:41/29	06:39 18:34-18:40/6	06:32	05:43	05:31
	17:23 15:20-16:00/40	18:18	19:05 17:29-17:50/21	20:56	21:42	22:05
26	08:32 16:46-16:54/8	07:38 17:12-17:40/28	06:37 18:35-18:42/7	06:30	05:42	05:31
	17:24 15:21-16:00/39	18:20	19:07 17:32-17:47/15	20:58	21:43	22:05
27	08:31 16:46-16:55/9	07:36 17:12-17:39/27	06:35 18:37-18:43/6	06:28	05:41	05:32
	17:26 15:21-15:59/38	18:21	19:09 17:37-17:42/5	21:00	21:44	22:05
28	08:30 16:49-16:58/9	07:34 17:49-17:57/8	06:32	06:26	05:40	05:32
	17:28 15:22-15:59/37	18:23 17:12-17:39/27	19:10	21:01	21:46	22:05
29	08:28 16:50-16:59/9		07:30	06:24	05:39	05:33
	17:29 15:23-15:58/35		20:12	21:03	21:47	22:04
30	08:27 16:51-17:02/11		07:28	06:22	05:38	05:33
	17:31 15:25-15:58/33		20:14	21:05	21:48	22:04
31	08:25 16:52-17:03/11		07:26		05:37	
	17:33 15:26-15:57/31		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	1410	902	1090	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: GC&T WT3 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September		October		November		December	
1	05:34	06:09	06:57		07:44	18:02-18:41/39	07:36	16:25-16:52/27	08:26	16:02-16:10/8
	22:04	21:33	20:33		19:25	18:46-18:58/12	17:21		16:42	14:56-15:38/42
2	05:35	06:11	06:59		07:46	18:02-18:41/39	07:38	16:25-16:50/25	08:27	16:02-16:09/7
	22:04	21:32	20:31		19:23	18:46-18:57/11	17:19		16:42	14:57-15:39/42
3	05:35	06:12	07:00		07:48	18:02-18:40/38	07:40	16:26-16:48/22	08:29	16:02-16:08/6
	22:03	21:30	20:29		19:21	18:46-18:54/8	17:17		16:41	14:57-15:39/42
4	05:36	06:14	07:02		07:49	18:03-18:41/38	07:42	16:27-16:46/19	08:30	16:02-16:07/5
	22:03	21:29	20:27		19:19	18:47-18:52/5	17:16		16:40	14:57-15:39/42
5	05:37	06:15	07:03		07:51	18:03-18:42/39	07:43	16:29-16:44/15	08:31	16:03-16:07/4
	22:02	21:27	20:24		19:16	18:46-18:50/4	17:14		16:40	14:58-15:40/42
6	05:38	06:17	07:05		07:52	18:03-18:41/38	07:45	15:08-15:18/10	08:32	16:03-16:06/3
	22:02	21:25	20:22		19:14	18:45-18:47/2	17:12	16:32-16:43/11	16:40	14:58-15:39/41
7	05:39	06:18	07:07		07:54	18:05-18:41/36	07:47	15:04-15:22/18	08:34	16:03-16:06/3
	22:01	21:23	20:20		19:12		17:11	16:32-16:41/9	16:39	14:59-15:39/40
8	05:39	06:20	07:08		07:56	18:06-18:41/35	07:49	15:02-15:24/22	08:35	16:04-16:06/2
	22:01	21:22	20:18		19:10	17:58-18:04/6	17:09	16:32-16:40/8	16:39	15:00-15:40/40
9	05:40	06:21	07:10		07:57	17:53-18:40/47	07:50	16:31-16:38/7	08:36	15:00-15:40/40
	22:00	21:20	20:15		19:08		17:08	15:00-15:26/26	16:39	
10	05:41	06:23	07:11		07:59	17:51-18:38/47	07:52	16:25-16:35/10	08:37	15:54-15:58/4
	21:59	21:18	20:13		19:05		17:06	14:59-15:28/29	16:38	15:01-15:40/39
11	05:42	06:24	07:13		08:01	18:13-18:36/23	07:54	16:23-16:34/11	08:38	15:54-15:59/5
	21:59	21:16	20:11		19:03	17:49-18:10/21	17:04	14:56-15:28/32	16:38	15:01-15:41/40
12	05:43	06:26	07:14		08:02	18:19-18:33/14	07:55	16:22-16:32/10	08:39	15:54-16:00/6
	21:58	21:14	20:09		19:01	17:47-18:10/23	17:03	14:56-15:29/33	16:38	15:02-15:41/39
13	05:44	06:27	07:16		08:04	18:21-18:31/10	07:57	16:22-16:31/9	08:40	15:53-16:01/8
	21:57	21:12	20:06		18:59	17:46-18:11/25	17:01	14:55-15:30/35	16:38	15:03-15:41/38
14	05:45	06:29	07:17		08:06	18:23-18:29/6	07:59	16:20-16:30/10	08:41	15:54-16:02/8
	21:56	21:10	20:04		18:57	17:45-18:12/27	17:00	14:54-15:31/37	16:38	15:03-15:41/38
15	05:47	06:31	07:19		08:07	17:45-18:12/27	08:01	16:19-16:28/9	08:42	15:54-16:03/9
	21:55	21:09	20:02		18:55		16:59	14:54-15:32/38	16:38	15:04-15:42/38
16	05:48	06:32	07:21	19:26-19:31/5	08:09	17:43-18:12/29	08:02	16:19-16:27/8	08:43	15:54-16:04/10
	21:54	21:07	19:59		18:53		16:57	14:54-15:33/39	16:38	15:05-15:42/37
17	05:49	06:34	07:22	19:24-19:31/7	08:11	17:43-18:12/29	08:04	16:18-16:25/7	08:44	15:54-16:04/10
	21:53	21:05	19:57	18:21-18:35/14	18:50		16:56	14:53-15:33/40	16:39	15:04-15:42/38
18	05:50	06:35	07:24	19:22-19:28/6	08:12	17:35-18:12/37	08:06	16:18-16:23/5	08:44	15:54-16:04/10
	21:52	21:03	19:55	18:17-18:37/20	18:48		16:55	14:52-15:34/42	16:39	15:05-15:43/38
19	05:51	06:37	07:25	19:22-19:26/4	08:14	17:32-18:12/40	08:07	16:18-16:22/4	08:45	15:55-16:05/10
	21:51	21:01	19:53	18:15-18:39/24	18:46		16:54	14:53-15:34/41	16:39	15:06-15:43/37
20	05:53	06:38	07:27	19:21-19:23/2	08:16	17:29-18:10/41	08:09	16:19-16:21/2	08:46	15:55-16:05/10
	21:50	20:59	19:50	18:13-18:41/28	18:44		16:52	14:53-15:35/42	16:40	15:06-15:43/37
21	05:54	06:40	07:28	18:10-18:41/31	08:17	17:27-18:10/43	08:11	14:53-15:36/43	08:46	15:56-16:06/10
	21:49	20:57	19:48		18:42		16:51		16:40	15:07-15:44/37
22	05:55	06:41	07:30	18:09-18:42/33	08:19	17:26-18:09/43	08:12	14:52-15:35/43	08:47	15:56-16:06/10
	21:48	20:54	19:46		18:40		16:50		16:40	15:07-15:44/37
23	05:57	06:43	07:32	18:07-18:42/35	08:21	17:25-18:08/43	08:14	14:53-15:36/43	08:47	15:57-16:07/10
	21:46	20:52	19:44		18:38		16:49		16:41	15:08-15:45/37
24	05:58	06:45	07:33	18:06-18:43/37	08:23	17:25-18:07/42	08:15	14:53-15:37/44	08:48	15:57-16:07/10
	21:45	20:50	19:41		18:36		16:48		16:42	15:08-15:45/37
25	05:59	06:46	07:35	18:05-18:42/37	07:24	16:24-17:05/41	08:17	14:54-15:37/43	08:48	15:57-16:07/10
	21:44	20:48	19:39		17:34		16:47		16:42	15:08-15:45/37
26	06:01	06:48	07:36	18:51-19:01/10	07:26	16:23-17:02/39	08:18	14:53-15:37/44	08:49	15:59-16:08/9
	21:42	20:46	19:37	18:04-18:43/39	17:32		16:46		16:43	15:09-15:47/38
27	06:02	06:49	07:38	18:50-19:02/12	07:28	16:55-16:56/1	08:20	16:04-16:09/5	08:49	15:59-16:09/10
	21:41	20:44	19:34	18:04-18:43/39	17:30	16:23-16:51/28	16:45	14:54-15:38/44	16:44	15:10-15:47/37
28	06:03	06:51	07:40	18:48-19:05/17	07:29	16:57-16:58/1	08:22	16:02-16:10/8	08:49	16:00-16:09/9
	21:40	20:42	19:32	18:03-18:42/39	17:28	16:23-16:51/28	16:44	14:54-15:37/43	16:44	15:10-15:48/38
29	06:05	06:52	07:41	18:47-19:03/16	07:31	16:54-16:58/4	08:23	16:02-16:11/9	08:49	16:00-16:09/9
	21:38	20:40	19:30	18:03-18:42/39	17:27	16:23-16:53/30	16:44	14:55-15:38/43	16:45	15:10-15:48/38
30	06:06	06:54	07:43	18:02-18:41/39	07:33	16:24-16:56/32	08:24	16:02-16:11/9	08:49	16:01-16:09/8
	21:37	20:38	19:28	18:46-19:00/14	17:25		16:43	14:56-15:39/43	16:46	15:10-15:49/39
31	06:08	06:56			07:35	16:24-16:54/30			08:49	16:02-16:09/7
	21:35	20:35			17:23				16:47	15:11-15:50/39
Potential sun hours	498	451	380		333		269		248	
Sum of minutes with flicker	0	0	547		1201		1176		1434	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: MV 2 - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 164,0 m (TOT: 238,5 m) (126)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	05:36	05:34	06:09	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	05:36	05:34	06:10	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:41
3	08:49	08:21	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:16	06:15	05:34	05:36	06:13	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19	17:16	16:40
5	08:49	08:18	07:23	07:14	06:13	05:33	05:37	06:15	07:03	07:51	07:43	08:31
	16:52	17:42	18:32	20:23	21:12	21:54	22:02	21:27	20:24	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12	06:11	05:33	05:37	06:16	07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:39
7	08:48	08:14	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28	21:17	21:57	22:01	21:22	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:38	20:30	21:19	21:58	22:00	21:20	20:15	19:07	17:07	16:38
10	08:47	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02	07:55	08:39
	17:02	17:54	18:44	20:35	21:23	22:00	21:58	21:14	20:08	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	05:59	05:30	05:44	06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57	17:00	16:38
15	08:43	08:00	07:01	06:52	05:56	05:30	05:46	06:30	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	21:28	22:02	21:55	21:08	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:29	22:02	21:54	21:07	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	05:53	05:29	05:49	06:33	07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50	16:56	16:38
18	08:41	07:54	06:55	06:46	05:52	05:29	05:50	06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39
19	08:40	07:52	06:52	06:44	05:51	05:29	05:51	06:37	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:46	21:34	22:04	21:51	21:01	19:53	18:46	16:53	16:39
20	08:39	07:50	06:50	06:42	05:49	05:30	05:52	06:38	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52	16:39
21	08:38	07:48	06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17	08:11	08:46
	17:16	18:11	18:59	20:50	21:37	22:04	21:49	20:56	19:48	18:42	16:51	16:40
22	08:37	07:46	06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40	16:50	16:40
23	08:36	07:44	06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39	22:04	21:46	20:52	19:43	18:38	16:49	16:41
24	08:35	07:42	06:41	06:34	05:44	05:30	05:58	06:44	07:33	08:22	08:15	08:48
	17:21	18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42	05:31	06:00	06:48	07:36	07:26	08:18	08:49
	17:24	18:19	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30	16:45	16:43
28	08:29	07:34	06:32	06:26	05:40	05:32	06:03	06:51	07:39	07:29	08:21	08:49
	17:28	18:23	19:10	21:01	21:46	22:05	21:39	20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26	16:43	16:45
30	08:27		07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:04	21:48	22:04	21:36	20:37	19:28	17:25	16:43	16:46
31	08:25		07:25		05:37		06:08	06:55		07:35		08:49
	17:33		20:15		21:49		21:35	20:35		17:23		16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: MV Zuid WT1 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (244)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April		May		June	
1	08:49	08:24	07:32		07:23	18:59-19:28/29	06:20	08:55-10:45/110	05:36	20:22-20:53/31
	16:48	17:35	18:25		20:17	09:20-10:45/85	21:06		21:50	09:04-10:19/75
2	08:49	08:22	07:30		07:21	18:57-19:30/33	06:18	08:55-10:44/109	05:36	20:22-20:54/32
	16:49	17:36	18:26		20:19	09:18-10:46/88	21:08		21:51	09:05-10:20/75
3	08:49	08:21	07:28		07:19	18:56-19:31/35	06:16	08:55-10:43/108	05:35	20:22-20:55/33
	16:50	17:38	18:28		20:20	09:17-10:47/90	21:09		21:52	09:05-10:19/74
4	08:49	08:19	07:26		07:16	18:54-19:32/38	06:15	08:55-10:43/108	05:34	20:21-20:55/34 09:05-10:18/73
	16:51	17:40	18:30		20:22	09:15-10:48/93	21:11		21:53	10:47-11:08/21
5	08:49	08:18	07:23		07:14	18:52-19:32/40	06:13	08:55-10:41/106	05:34	20:21-20:56/35 09:07-10:18/71
	16:53	17:42	18:32		20:23	09:14-10:49/95	21:12		21:54	10:43-11:13/30
6	08:48	08:16	07:21		07:12	18:51-19:33/42	06:11	08:55-10:40/105	05:33	20:20-20:57/37 09:07-10:17/70
	16:54	17:44	18:33		20:25	09:12-10:49/97	21:14		21:55	10:40-11:17/37
7	08:48	08:14	07:19		07:10	18:51-19:34/43	06:09	08:56-10:40/104	05:32	20:20-20:58/38 09:07-10:17/70
	16:55	17:45	18:35		20:27	09:10-10:50/100	21:16		21:56	10:38-11:20/42
8	08:48	08:13	07:17		07:08	18:50-19:34/44	06:08	08:55-10:39/104	05:32	20:20-20:58/38 09:08-10:17/69
	16:56	17:47	18:37		20:28	09:09-10:50/101	21:17		21:57	10:36-11:23/47
9	08:47	08:11	07:15		07:05	18:50-19:35/45	06:06	08:56-10:38/102	05:31	20:20-20:59/39 09:08-10:16/68
	16:58	17:49	18:38		20:30	09:08-10:51/103	21:19		21:58	10:34-11:24/50
10	08:47	08:09	07:13		07:03	18:49-19:35/46	06:04	08:56-10:37/101	05:31	20:20-20:59/39 09:09-10:16/67
	16:59	17:51	18:40		20:32	09:07-10:52/105	21:20		21:59	10:33-11:26/53
11	08:46	08:07	07:10		07:01	18:48-19:34/46	06:03	08:56-10:37/101	05:31	20:20-21:00/40 09:10-10:16/66
	17:00	17:53	18:42		20:33	09:05-10:51/106	21:22		21:59	10:32-11:28/56
12	08:46	08:06	07:08		06:59	18:48-19:34/46	06:01	08:56-10:35/99	05:30	20:19-21:00/41 09:09-10:15/66
	17:02	17:54	18:44		20:35	09:05-10:51/106	21:23		22:00	10:31-11:29/58
13	08:45	08:04	07:06		06:57	18:48-19:34/46	05:59	08:57-10:35/98	05:30	20:20-21:00/40 09:10-10:15/65
	17:03	17:56	18:45		20:37	09:04-10:51/107	21:25		22:01	10:30-11:31/61
14	08:44	08:02	07:04		06:55	18:48-19:34/46	05:58	08:56-10:33/97	05:30	20:20-21:01/41 09:11-10:15/64
	17:05	17:58	18:47		20:38	09:03-10:52/109	21:26		22:01	10:29-11:32/63
15	08:43	08:00	07:01		06:52	18:48-19:33/45	05:56	08:57-10:33/96	05:30	20:20-21:01/41 09:11-10:15/64
	17:06	18:00	18:49		20:40	09:02-10:52/110	21:28		22:02	10:29-11:33/64
16	08:43	07:58	06:59		06:50	18:48-19:33/45	05:55	08:58-10:32/94	05:30	20:20-21:02/42 09:11-10:15/64
	17:08	18:02	18:50		20:42	09:02-10:52/110	21:29		22:02	10:29-11:34/65
17	08:42	07:56	06:57		06:48	18:48-19:32/44	05:53	08:57-10:31/94	05:29	20:20-21:02/42 09:12-10:15/63
	17:09	18:03	18:52		20:43	09:01-10:52/111	21:31		22:03	10:28-11:35/67
18	08:41	07:54	06:55		06:46	18:49-19:32/43	05:52	08:58-10:30/92	05:29	20:20-21:02/42 09:12-10:15/63
	17:11	18:05	18:54		20:45	09:00-10:52/112	21:32		22:03	10:28-11:35/67
19	08:40	07:52	06:52		06:44	18:49-19:31/42	05:51	08:58-10:30/92	05:30	20:20-21:03/43 09:12-10:15/63
	17:12	18:07	18:55		20:46	09:00-10:51/111	21:34		22:04	10:28-11:36/68
20	08:39	07:50	06:50		06:42	18:50-19:30/40	05:49	08:59-10:29/90	05:30	20:20-21:03/43 09:12-10:15/63
	17:14	18:09	18:57		20:48	08:59-10:51/112	21:35		22:04	10:28-11:36/68
21	08:38	07:48	06:48	08:54-09:18/24	06:40	18:50-19:29/39	05:48	08:59-10:27/88	05:30	20:20-21:03/43 09:12-10:15/63
	17:16	18:11	18:59		20:50	08:59-10:51/112	21:37		22:04	10:28-11:36/68
22	08:37	07:46	06:46	08:48-09:24/36	06:38	18:51-19:28/37	05:47	08:59-10:27/88	05:30	20:21-21:04/43 09:13-10:16/63
	17:17	18:12	19:00		20:51	08:58-10:50/112	21:38		22:04	10:29-11:37/68
23	08:36	07:44	06:43	08:44-09:28/44	06:36	18:52-19:27/35	05:46	09:00-10:26/86	05:30	20:21-21:04/43 09:13-10:16/63
	17:19	18:14	19:02		20:53	08:58-10:50/112	21:39		22:04	10:29-11:37/68
24	08:35	07:42	06:41	08:39-09:31/52	06:34	18:54-19:25/31	05:44	09:00-10:25/85	05:30	20:21-21:03/42 09:13-10:16/63
	17:21	18:16	19:04		20:55	08:57-10:49/112	21:41		22:05	10:29-11:36/67
25	08:33	07:40	06:39	08:36-09:34/58	06:32	18:55-19:23/28	05:43	20:33-20:41/8	05:31	20:22-21:04/42 09:14-10:17/63
	17:22	18:18	19:05		20:56	08:57-10:49/112	21:42	09:01-10:24/83	22:05	10:30-11:37/67
26	08:32	07:38	06:37	08:34-09:36/62	06:30	18:56-19:22/26	05:42	20:29-20:44/15	05:31	20:22-21:04/42 09:14-10:17/63
	17:24	18:19	19:07		20:58	08:56-10:48/112	21:43	09:01-10:23/82	22:05	10:31-11:36/65
27	08:31	07:36	06:34	08:32-09:39/67	06:28	18:58-19:19/21	05:41	20:27-20:46/19	05:32	20:22-21:04/42 09:13-10:17/64
	17:26	18:21	19:09		21:00	08:56-10:47/111	21:44	09:01-10:23/82	22:05	10:31-11:35/64
28	08:29	07:34	06:32	08:28-09:40/72	06:26	19:01-19:16/15	05:40	20:26-20:48/22	05:32	20:23-21:04/41 09:14-10:18/64
	17:28	18:23	19:10		21:01	08:56-10:46/110	21:46	09:02-10:22/80	22:05	10:32-11:35/63
29	08:28		07:30	19:09-19:21/12	06:24	19:07-19:12/5	05:39	20:25-20:50/25	05:33	20:23-21:04/41 09:13-10:18/65
	17:29		20:12	09:26-10:41/75	21:03	08:56-10:47/111	21:47	09:03-10:22/79	22:04	10:33-11:34/61
30	08:27		07:28	19:05-19:25/20	06:22	08:56-10:46/110	05:38	20:24-20:51/27	05:33	20:24-21:04/40 09:14-10:19/65
	17:31		20:14	09:24-10:43/79	21:04		21:48	09:04-10:21/77	22:04	10:34-11:34/60
31	08:25		07:25	19:02-19:27/25			05:37	20:23-20:52/29		
	17:33		20:15	09:22-10:45/83			21:49	09:04-10:20/76		
Potential sun hours	262	279	367		414		482		494	
Sum of minutes with flicker	0	0	709		4240		3061		4747	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: MV Zuid WT1 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (244)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 20:24-21:04/40 09:14-10:20/66	06:09 09:06-10:46/100	06:57 18:48-19:34/46	07:44	07:36	08:26
	22:04 10:36-11:33/57	21:33	20:33 09:05-10:51/106	19:25	17:21	16:42
2	05:34 20:24-21:04/40 09:13-10:20/67	06:11 09:07-10:48/101	06:59 18:47-19:33/46	07:46	07:38	08:27
	22:04 10:37-11:31/54	21:32	20:31 09:05-10:49/104	19:23	17:19	16:41
3	05:35 20:25-21:04/39 09:14-10:21/67	06:12 09:06-10:48/102	07:00 18:48-19:33/45	07:48	07:40	08:29
	22:03 10:39-11:30/51	21:30	20:29 09:06-10:49/103	19:21	17:17	16:41
4	05:36 20:26-21:04/38 09:14-10:22/68	06:13 09:05-10:48/103	07:02 18:47-19:31/44	07:49	07:42	08:30
	22:03 10:41-11:29/48	21:28	20:26 09:06-10:47/101	19:19	17:16	16:40
5	05:37 20:26-21:03/37 09:13-10:22/69	06:15 09:06-10:50/104	07:03 18:48-19:31/43	07:51	07:43	08:31
	22:02 10:42-11:26/44	21:27	20:24 09:07-10:47/100	19:16	17:14	16:40
6	05:37 20:26-21:03/37 09:13-10:23/70	06:17 09:05-10:50/105	07:05 18:47-19:29/42	07:52	07:45	08:32
	22:02 10:45-11:24/39	21:25	20:22 09:08-10:45/97	19:14	17:12	16:39
7	05:38 20:27-21:03/36 09:13-10:24/71	06:18 09:05-10:51/106	07:06 18:48-19:29/41	07:54	07:47	08:34
	22:01 10:48-11:21/33	21:23	20:20 09:09-10:44/95	19:12	17:11	16:39
8	05:39 20:28-21:03/35 09:13-10:25/72	06:20 09:05-10:51/106	07:08 18:48-19:27/39	07:56	07:49	08:35
	22:01 10:52-11:18/26	21:22	20:18 09:09-10:42/93	19:10	17:09	16:39
9	05:40 20:29-21:02/33 09:13-10:26/73	06:21 09:04-10:51/107	07:10 18:50-19:26/36	07:57	07:50	08:36
	22:00 10:59-11:11/12	21:20	20:15 09:11-10:42/91	19:07	17:07	16:39
10	05:41 20:29-21:02/33	06:23 09:04-10:52/108	07:11 18:50-19:23/33	07:59	07:52	08:37
	21:59 09:13-10:27/74	21:18	20:13 09:11-10:39/88	19:05	17:06	16:38
11	05:42 20:30-21:01/31	06:24 09:04-10:52/108	07:13 18:52-19:22/30	08:01	07:54	08:38
	21:59 09:13-10:27/74	21:16	20:11 09:13-10:38/85	19:03	17:04	16:38
12	05:43 20:31-21:01/30	06:26 09:04-10:53/109	07:14 18:53-19:19/26	08:02	07:55	08:39
	21:58 09:12-10:28/76	21:14	20:09 09:13-10:36/83	19:01	17:03	16:38
13	05:44 20:32-21:00/28	06:27 09:03-10:53/110	07:16 18:55-19:16/21	08:04	07:57	08:40
	21:57 09:12-10:29/77	21:12	20:06 09:15-10:35/80	18:59	17:01	16:38
14	05:45 20:33-20:59/26	06:29 19:12-19:21/9	07:17 18:58-19:12/14	08:06	07:59	08:41
	21:56 09:12-10:30/78	21:10 09:04-10:54/110	20:04 09:16-10:32/76	18:57	17:00	16:38
15	05:46 20:35-20:58/23	06:30 19:08-19:25/17	07:19 09:18-10:30/72	08:07	08:01	08:42
	21:55 09:12-10:31/79	21:08 09:03-10:54/111	20:02	18:55	16:59	16:38
16	05:48 20:36-20:57/21	06:32 19:05-19:27/22	07:21 09:19-10:27/68	08:09	08:02	08:43
	21:54 09:11-10:32/81	21:07 09:04-10:55/111	19:59	18:52	16:57	16:38
17	05:49 20:38-20:55/17	06:33 19:03-19:29/26	07:22 09:22-10:25/63	08:11	08:04	08:44
	21:53 09:11-10:33/82	21:05 09:03-10:55/112	19:57	18:50	16:56	16:38
18	05:50 20:40-20:52/12	06:35 19:01-19:30/29	07:24 09:23-10:22/59	08:12	08:06	08:44
	21:52 09:10-10:33/83	21:03 09:03-10:55/112	19:55	18:48	16:55	16:39
19	05:51 09:10-10:34/84	06:37 18:59-19:31/32	07:25 09:26-10:19/53	08:14	08:07	08:45
	21:51	21:01 09:03-10:55/112	19:53	18:46	16:53	16:39
20	05:52 09:10-10:36/86	06:38 18:58-19:32/34	07:27 09:28-10:15/47	08:16	08:09	08:46
	21:50	20:59 09:03-10:55/112	19:50	18:44	16:52	16:39
21	05:54 09:10-10:37/87	06:40 18:56-19:33/37	07:28 09:32-10:11/39	08:17	08:11	08:46
	21:49	20:56 09:03-10:55/112	19:48	18:42	16:51	16:40
22	05:55 09:09-10:37/88	06:41 18:55-19:34/39	07:30 09:37-10:06/29	08:19	08:12	08:47
	21:48	20:54 09:03-10:55/112	19:46	18:40	16:50	16:40
23	05:56 09:09-10:38/89	06:43 18:53-19:34/41	07:32 09:45-09:56/11	08:21	08:14	08:47
	21:46	20:52 09:03-10:55/112	19:43	18:38	16:49	16:41
24	05:58 09:08-10:39/91	06:44 18:53-19:35/42	07:33	08:22	08:15	08:48
	21:45	20:50 09:04-10:55/111	19:41	18:36	16:48	16:41
25	05:59 09:09-10:40/91	06:46 18:51-19:34/43	07:35	07:24	08:17	08:48
	21:44	20:48 09:03-10:54/111	19:39	17:34	16:47	16:42
26	06:00 09:08-10:41/93	06:48 18:51-19:35/44	07:36	07:26	08:18	08:49
	21:42	20:46 09:04-10:54/110	19:37	17:32	16:46	16:43
27	06:02 09:08-10:42/94	06:49 18:50-19:35/45	07:38	07:28	08:20	08:49
	21:41	20:44 09:04-10:54/110	19:34	17:30	16:45	16:43
28	06:03 09:08-10:43/95	06:51 18:50-19:35/45	07:40	07:29	08:21	08:49
	21:39	20:42 09:04-10:54/110	19:32	17:28	16:44	16:44
29	06:05 09:07-10:44/97	06:52 18:48-19:34/46	07:41	07:31	08:23	08:49
	21:38	20:40 09:04-10:52/108	19:30	17:26	16:43	16:45
30	06:06 09:07-10:44/97	06:54 18:49-19:35/46	07:43	07:33	08:24	08:49
	21:36	20:37 09:05-10:52/107	19:28	17:25	16:43	16:46
31	06:08 09:07-10:46/99	06:55 18:48-19:34/46		07:35		08:49
	21:35	20:35 09:05-10:51/106		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	3438	4001	2249	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: MV Zuid WT2 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (243)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April		May		June	
1	08:49	08:24	07:32		07:23	08:13-08:54/41	06:20	18:14-19:28/74	05:36	18:07-19:40/93 06:04-06:20/16
	16:48	17:35	18:25		20:17		21:06	07:37-08:45/68	21:50	07:42-08:34/52
2	08:49	08:22	07:30		07:21	08:11-08:55/44	06:18	18:13-19:29/76	05:36	18:08-19:41/93 06:04-06:20/16
	16:49	17:36	18:26		20:19		21:08	07:36-08:45/69	21:51	07:44-08:35/51
3	08:49	08:21	07:28		07:19	08:10-08:56/46	06:16	18:11-19:29/78	05:35	18:08-19:41/93 06:03-06:20/17
	16:50	17:38	18:28		20:20		21:09	07:35-08:45/70	21:52	07:44-08:34/50
4	08:49	08:19	07:26		07:16	08:09-08:56/47	06:15	18:11-19:31/80	05:34	18:08-19:41/93 06:03-06:20/17
	16:51	17:40	18:30		20:22		21:11	07:36-08:45/69	21:53	07:44-08:33/49
5	08:49	08:18	07:23		07:14	08:08-08:57/49	06:13	18:10-19:31/81	05:34	18:09-19:42/93 06:03-06:21/18
	16:53	17:42	18:32		20:23		21:12	07:35-08:45/70	21:54	07:45-08:33/48
6	08:48	08:16	07:21		07:12	08:06-08:56/50	06:11	18:09-19:32/83	05:33	18:09-19:41/92 06:03-06:20/17
	16:54	17:44	18:33		20:25		21:14	07:35-08:44/69	21:55	07:45-08:32/47
7	08:48	08:14	07:19		07:10	08:06-08:57/51	06:09	18:09-19:33/84	05:32	18:09-19:42/93 06:04-06:21/17
	16:55	17:45	18:35		20:27		21:16	07:35-08:45/70	21:56	07:46-08:32/46
8	08:48	08:13	07:17		07:08	08:05-08:57/52	06:08	18:08-19:33/85	05:32	18:09-19:41/92 06:04-06:21/17
	16:56	17:47	18:37		20:28		21:17	07:35-08:44/69	21:57	07:47-08:33/46
9	08:47	08:11	07:15		07:05	08:05-08:57/52	06:06	18:08-19:34/86	05:31	18:10-19:42/92 06:04-06:21/17
	16:58	17:49	18:38		20:30		21:19	07:35-08:45/70	21:58	07:47-08:32/45
10	08:47	08:09	07:13		07:03	08:04-08:57/53	06:04	18:07-19:34/87	05:31	18:10-19:42/92 06:05-06:21/16
	16:59	17:51	18:40		20:32		21:20	07:35-08:44/69	21:59	07:48-08:32/44
11	08:46	08:07	07:10		07:01	08:03-08:56/53	06:03	18:07-19:35/88	05:31	18:11-19:43/92 06:05-06:21/16
	17:00	17:53	18:42		20:33		21:22	07:35-08:44/69	21:59	07:49-08:32/43
12	08:46	08:06	07:08		06:59	08:03-08:56/53	06:01	18:06-19:35/89	05:30	18:10-19:42/92 06:05-06:21/16
	17:02	17:54	18:44		20:35		21:23	07:35-08:43/68	22:00	07:49-08:31/42
13	08:45	08:04	07:06		06:57	08:03-08:55/52	05:59	18:07-19:36/89	05:30	18:11-19:43/92 06:05-06:21/16
	17:03	17:56	18:45		20:37		21:25	07:35-08:43/68	22:01	07:49-08:31/42
14	08:44	08:02	07:04		06:55	07:59-08:55/56	05:58	18:06-19:36/90	05:30	18:11-19:43/92 06:06-06:21/15
	17:05	17:58	18:47		20:38		21:26	07:35-08:42/67	22:01	07:50-08:31/41
15	08:43	08:00	07:01		06:52	07:57-08:54/57	05:56	18:06-19:37/91	05:30	18:12-19:43/91 06:06-06:21/15
	17:06	18:00	18:49		20:40		21:28	07:35-08:42/67	22:02	07:50-08:31/41
16	08:43	07:58	06:59		06:50	07:54-08:54/60	05:55	18:06-19:37/91	05:30	18:12-19:44/92 06:07-06:21/14
	17:08	18:02	18:50		20:42		21:29	07:36-08:42/66	22:02	07:51-08:31/40
17	08:42	07:56	06:57		06:48	07:52-08:53/61	05:53	18:05-19:37/92	05:29	18:12-19:44/92 06:07-06:22/15
	17:09	18:03	18:52		20:43		21:31	07:36-08:41/65	22:03	07:51-08:31/40
18	08:41	07:54	06:55		06:46	18:50-18:57/7	05:52	18:05-19:38/93	05:29	18:12-19:44/92 06:07-06:22/15
	17:11	18:05	18:54		20:45	07:50-08:52/62	21:32	07:36-08:41/65	22:03	07:52-08:31/39
19	08:40	07:52	06:52		06:44	18:41-19:05/24	05:51	18:06-19:38/92	05:30	18:13-19:44/91 06:07-06:22/15
	17:12	18:07	18:55		20:46	07:49-08:51/62	21:34	07:37-08:41/64	22:04	07:52-08:31/39
20	08:39	07:50	06:50		06:42	18:36-19:09/33	05:49	18:06-19:39/93	05:30	18:13-19:44/91 06:07-06:22/15
	17:14	18:09	18:57		20:48	07:47-08:50/63	21:35	07:37-08:41/64	22:04	07:52-08:31/39
21	08:38	07:48	06:48		06:40	18:33-19:12/39	05:48	18:05-19:38/93	05:30	18:13-19:44/91 06:08-06:23/15
	17:16	18:11	18:59		20:50	07:46-08:49/63	21:37	07:37-08:39/62	22:04	07:52-08:31/39
22	08:37	07:46	06:46		06:38	18:30-19:15/45	05:47	18:05-19:38/93	05:30	18:14-19:45/91 06:08-06:23/15
	17:17	18:12	19:00		20:51	07:44-08:48/64	21:38	07:37-08:39/62	22:04	07:53-08:32/39
23	08:36	07:44	06:43		06:36	18:27-19:17/50	05:46	18:05-19:39/94 06:12-06:14/2	05:30	18:14-19:45/91 06:08-06:23/15
	17:19	18:14	19:02		20:53	07:43-08:46/63	21:39	07:38-08:39/61	22:04	07:53-08:32/39
24	08:35	07:42	06:41		06:34	18:25-19:19/54	05:44	18:06-19:39/93 06:11-06:16/5	05:30	18:14-19:45/91 06:08-06:23/15
	17:21	18:16	19:04		20:55	07:42-08:45/63	21:41	07:38-08:38/60	22:05	07:53-08:32/39
25	08:33	07:40	06:39		06:32	18:23-19:20/57	05:43	18:06-19:39/93 06:10-06:17/7	05:31	18:14-19:46/92 06:09-06:24/15
	17:22	18:18	19:05		20:56	07:41-08:44/63	21:42	07:39-08:38/59	22:05	07:53-08:33/40
26	08:32	07:38	06:37	07:30-07:41/11	06:30	18:21-19:22/61	05:42	18:06-19:39/93 06:09-06:17/8	05:31	18:14-19:46/92 06:09-06:23/14
	17:24	18:19	19:07		20:58	07:40-08:44/64	21:43	07:39-08:37/58	22:05	07:53-08:33/40
27	08:31	07:36	06:34	07:25-07:46/21	06:28	18:19-19:23/64	05:41	18:06-19:39/93 06:08-06:18/10	05:32	18:14-19:45/91 06:09-06:24/15
	17:26	18:21	19:09		21:00	07:39-08:44/65	21:44	07:40-08:37/57	22:05	07:53-08:33/40
28	08:29	07:34	06:32	07:21-07:48/27	06:26	18:17-19:24/67	05:40	18:06-19:40/94 06:07-06:18/11	05:32	18:15-19:46/91 06:09-06:24/15
	17:28	18:23	19:10		21:01	07:38-08:44/66	21:46	07:40-08:36/56	22:05	07:53-08:34/41
29	08:28		07:30	08:19-08:50/31	06:24	18:17-19:26/69	05:39	18:07-19:41/94 06:07-06:19/12	05:33	18:14-19:46/92 06:10-06:25/15
	17:29		20:12		21:03	07:38-08:45/67	21:47	07:41-08:36/55	22:04	07:53-08:34/41
30	08:27		07:28	08:17-08:52/35	06:22	18:15-19:27/72	05:38	18:07-19:41/94 06:06-06:20/14	05:33	18:15-19:47/92 06:09-06:25/16
	17:31		20:14		21:04	07:38-08:45/67	21:48	07:42-08:36/54	22:04	07:53-08:35/42
31	08:25		07:25	08:15-08:53/38			05:37	18:07-19:41/94 06:05-06:20/15		
	17:33		20:15				21:49	07:42-08:35/53		
Potential sun hours	262	279	367		414		482		494	
Sum of minutes with flicker	0	0	163		2351		4827		4511	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: MV Zuid WT2 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (243)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 18:15-19:47/92 06:10-06:25/15	06:09 18:17-19:45/88	06:57 08:03-08:56/53	07:44	07:36	08:26
	22:04 07:53-08:36/43	21:33 07:45-08:54/69	20:33	19:25	17:21	16:42
2	05:34 18:15-19:47/92 06:09-06:25/16	06:10 18:17-19:45/88	06:59 08:02-08:55/53	07:46	07:38	08:27
	22:04 07:52-08:36/44	21:32 07:46-08:55/69	20:31	19:23	17:19	16:41
3	05:35 18:15-19:47/92 06:09-06:26/17	06:12 18:18-19:45/87	07:00 08:03-08:55/52	07:48	07:40	08:29
	22:03 07:53-08:37/44	21:30 07:45-08:54/69	20:29	19:21	17:17	16:41
4	05:36 18:15-19:48/93 06:10-06:26/16	06:13 18:18-19:43/85	07:02 08:02-08:54/52	07:49	07:42	08:30
	22:03 07:53-08:38/45	21:28 07:45-08:54/69	20:26	19:19	17:16	16:40
5	05:37 18:15-19:47/92 06:10-06:27/17	06:15 18:19-19:43/84	07:03 08:03-08:54/51	07:51	07:43	08:31
	22:02 07:52-08:37/45	21:27 07:45-08:55/70	20:24	19:16	17:14	16:40
6	05:37 18:15-19:48/93 06:09-06:26/17	06:16 18:19-19:42/83	07:05 08:02-08:52/50	07:52	07:45	08:32
	22:02 07:52-08:38/46	21:25 07:45-08:54/69	20:22	19:14	17:12	16:39
7	05:38 18:15-19:48/93 06:10-06:27/17	06:18 18:20-19:42/82	07:06 08:03-08:52/49	07:54	07:47	08:34
	22:01 07:52-08:39/47	21:23 07:45-08:55/70	20:20	19:12	17:11	16:39
8	05:39 18:15-19:48/93 06:10-06:27/17	06:20 18:20-19:41/81	07:08 08:03-08:51/48	07:56	07:49	08:35
	22:01 07:52-08:40/48	21:22 07:45-08:54/69	20:18	19:10	17:09	16:39
9	05:40 18:16-19:48/92 06:10-06:28/18	06:21 18:20-19:39/79	07:10 08:04-08:50/46	07:57	07:50	08:36
	22:00 07:52-08:41/49	21:20 07:44-08:54/70	20:15	19:07	17:07	16:39
10	05:41 18:16-19:49/93 06:11-06:28/17	06:23 18:21-19:39/78	07:11 08:04-08:48/44	07:59	07:52	08:37
	21:59 07:51-08:42/51	21:18 07:45-08:54/69	20:13	19:05	17:06	16:38
11	05:42 18:16-19:49/93 06:12-06:28/16	06:24 18:21-19:37/76	07:13 08:06-08:47/41	08:01	07:54	08:38
	21:59 07:51-08:42/51	21:16 07:45-08:54/69	20:11	19:03	17:04	16:38
12	05:43 18:16-19:49/93 06:13-06:28/15	06:26 18:23-19:36/73	07:14 08:06-08:45/39	08:02	07:55	08:39
	21:58 07:51-08:43/52	21:14 07:45-08:54/69	20:08	19:01	17:03	16:38
13	05:44 18:16-19:49/93 06:14-06:28/14	06:27 18:23-19:34/71	07:16 08:08-08:43/35	08:04	07:57	08:40
	21:57 07:50-08:44/54	21:12 07:45-08:53/68	20:06	18:59	17:01	16:38
14	05:45 18:16-19:49/93 06:15-06:28/13	06:29 18:25-19:33/68	07:17 08:09-08:41/32	08:06	07:59	08:41
	21:56 07:50-08:45/55	21:10 07:46-08:53/67	20:04	18:57	17:00	16:38
15	05:46 18:16-19:49/93 06:16-06:28/12	06:30 18:25-19:31/66	07:19 08:11-08:39/28	08:07	08:01	08:42
	21:55 07:50-08:45/55	21:08 07:46-08:52/66	20:02	18:55	16:59	16:38
16	05:48 18:16-19:49/93 06:17-06:27/10	06:32 18:27-19:30/63	07:21 08:13-08:35/22	08:09	08:02	08:43
	21:54 07:49-08:46/57	21:07 07:47-08:52/65	19:59	18:52	16:57	16:38
17	05:49 18:16-19:49/93 06:18-06:27/9	06:33 18:28-19:28/60	07:22 08:17-08:31/14	08:11	08:04	08:44
	21:53 07:49-08:46/57	21:05 07:47-08:51/64	19:57	18:50	16:56	16:38
18	05:50 18:15-19:49/94 06:19-06:26/7	06:35 18:30-19:27/57	07:24	08:12	08:06	08:44
	21:52 07:49-08:47/58	21:03 07:48-08:50/62	19:55	18:48	16:55	16:39
19	05:51 18:15-19:49/94 06:20-06:26/6	06:37 18:31-19:24/53	07:25	08:14	08:07	08:45
	21:51 07:48-08:48/60	21:01 07:48-08:51/63	19:53	18:46	16:53	16:39
20	05:52 18:15-19:48/93 06:22-06:26/4	06:38 18:33-19:22/49	07:27	08:16	08:09	08:46
	21:50 07:49-08:49/60	20:59 07:49-08:52/63	19:50	18:44	16:52	16:39
21	05:54 18:16-19:49/93 06:23-06:24/1	06:40 18:35-19:19/44	07:28	08:17	08:11	08:46
	21:49 07:48-08:49/61	20:56 07:49-08:53/64	19:48	18:42	16:51	16:40
22	05:55 18:16-19:49/93	06:41 18:38-19:17/39	07:30	08:19	08:12	08:47
	21:48 07:48-08:50/62	20:54 07:51-08:54/63	19:46	18:40	16:50	16:40
23	05:56 18:16-19:48/92	06:43 18:40-19:12/32	07:32	08:21	08:14	08:47
	21:46 07:47-08:50/63	20:52 07:51-08:54/63	19:43	18:38	16:49	16:41
24	05:58 18:15-19:48/93	06:44 18:45-19:08/23	07:33	08:22	08:15	08:48
	21:45 07:47-08:50/63	20:50 07:53-08:55/62	19:41	18:36	16:48	16:41
25	05:59 18:16-19:48/92	06:46 07:53-08:55/62	07:35	07:24	08:17	08:48
	21:44 07:47-08:52/65	20:48	19:39	17:34	16:47	16:42
26	06:00 18:16-19:48/92	06:48 07:55-08:56/61	07:36	07:26	08:18	08:48
	21:42 07:46-08:52/66	20:46	19:37	17:32	16:46	16:43
27	06:02 18:16-19:47/91	06:49 07:56-08:56/60	07:38	07:28	08:20	08:49
	21:41 07:46-08:52/66	20:44	19:34	17:30	16:45	16:43
28	06:03 18:17-19:48/91	06:51 07:59-08:56/57	07:39	07:29	08:21	08:49
	21:39 07:46-08:53/67	20:42	19:32	17:28	16:44	16:44
29	06:05 18:16-19:47/91	06:52 08:00-08:56/56	07:41	07:31	08:23	08:49
	21:38 07:46-08:53/67	20:40	19:30	17:26	16:43	16:45
30	06:06 18:16-19:46/90	06:54 08:03-08:56/53	07:43	07:33	08:24	08:49
	21:36 07:45-08:53/68	20:37	19:28	17:25	16:43	16:46
31	06:08 18:17-19:46/89	06:55 08:03-08:56/53		07:35		08:49
	21:35 07:46-08:54/68	20:35		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	4875	3612	709	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Marc Vranken / marc.vranken@encon.eu
Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: MX WT1 - SENVION 3.4M104 3400 104.0 !O! hub: 100,0 m (TOT: 152,0 m) (91)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June		July		August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	05:36		05:34	21:31-21:32/1	06:09	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06	21:50		22:04		21:33	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	05:36		05:34		06:11	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:19	21:08	21:51		22:04		21:32	20:31	19:23	17:19	16:41
3	08:49	08:21	07:28	07:19	06:16	05:35		05:35		06:12	07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20	21:09	21:53		22:03		21:30	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:17	06:15	05:34		05:36		06:14	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11	21:54		22:03		21:29	20:27	19:19	17:16	16:40
5	08:49	08:18	07:24	07:14	06:13	05:34		05:37		06:15	07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:24	21:13	21:54		22:03		21:27	20:24	19:16	17:14	16:40
6	08:49	08:16	07:21	07:12	06:11	05:33		05:37		06:17	07:05	07:52	07:45	08:33
	16:54	17:44	18:33	20:25	21:14	21:55		22:02		21:25	20:22	19:14	17:12	16:39
7	08:48	08:14	07:19	07:10	06:09	05:32		05:38		06:18	07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16	21:56		22:02		21:23	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08	05:32		05:39		06:20	07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28	21:17	21:57		22:01		21:22	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	06:06	05:31		05:40		06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:39	20:30	21:19	21:58		22:00		21:20	20:15	19:08	17:07	16:39
10	08:47	08:09	07:13	07:03	06:04	05:31		05:41		06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20	21:59		22:00		21:18	20:13	19:05	17:06	16:38
11	08:46	08:08	07:10	07:01	06:03	05:31		05:42		06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22	21:59		21:59		21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01	05:30	21:26-21:27/1	05:43		06:26	07:14	08:02	07:56	08:39
	17:02	17:54	18:44	20:35	21:24	22:00		21:58		21:14	20:09	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	05:59	05:30	21:27-21:28/1	05:44		06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25	22:01		21:57		21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58	05:30	21:27-21:29/2	05:45		06:29	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:27	22:01		21:56		21:11	20:04	18:57	17:00	16:38
15	08:44	08:00	07:02	06:52	05:56	05:30	21:27-21:29/2	05:46		06:30	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	21:28	22:02		21:55		21:09	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55	05:30	21:27-21:30/3	05:48		06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:30	22:02		21:54		21:07	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	05:53	05:29	21:27-21:30/3	05:49		06:34	07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43	21:31	22:03		21:53		21:05	19:57	18:50	16:56	16:38
18	08:41	07:54	06:55	06:46	05:52	05:29	21:27-21:31/4	05:50		06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32	22:03		21:52		21:03	19:55	18:48	16:55	16:39
19	08:40	07:53	06:53	06:44	05:51	05:30	21:27-21:31/4	05:51		06:37	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:47	21:34	22:04		21:51		21:01	19:53	18:46	16:53	16:39
20	08:39	07:51	06:50	06:42	05:49	05:30	21:28-21:31/3	05:52		06:38	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	21:35	22:04		21:50		20:59	19:50	18:44	16:52	16:39
21	08:38	07:49	06:48	06:40	05:48	05:30	21:28-21:31/3	05:54		06:40	07:28	08:17	08:11	08:46
	17:16	18:11	18:59	20:50	21:37	22:04		21:49		20:57	19:48	18:42	16:51	16:40
22	08:37	07:47	06:46	06:38	05:47	05:30	21:29-21:32/3	05:55		06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38	22:04		21:48		20:55	19:46	18:40	16:50	16:40
23	08:36	07:45	06:44	06:36	05:46	05:30	21:29-21:32/3	05:56		06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39	22:05		21:46		20:52	19:43	18:38	16:49	16:41
24	08:35	07:43	06:41	06:34	05:44	05:30	21:28-21:32/4	05:58		06:44	07:33	08:23	08:15	08:48
	17:21	18:16	19:04	20:55	21:41	22:05		21:45		20:50	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	05:43	05:31	21:29-21:32/3	05:59		06:46	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	21:42	22:05		21:44		20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42	05:31	21:29-21:32/3	06:00		06:48	07:36	07:26	08:19	08:49
	17:24	18:19	19:07	20:58	21:43	22:05		21:42		20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	05:41	05:32	21:29-21:31/2	06:02		06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:45	22:05		21:41		20:44	19:34	17:30	16:45	16:43
28	08:30	07:34	06:32	06:26	05:40	05:32	21:30-21:32/2	06:03		06:51	07:40	07:29	08:22	08:49
	17:28	18:23	19:10	21:01	21:46	22:05		21:40		20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39	05:33	21:30-21:31/1	06:05		06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47	22:04		21:38		20:40	19:30	17:26	16:44	16:45
30	08:27		07:28	06:22	05:38	05:33	21:30-21:32/2	06:06		06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:05	21:48	22:04		21:37		20:38	19:28	17:25	16:43	16:46
31	08:25		07:25		05:37			06:08		06:55		07:35		08:49
	17:33		20:15		21:49			21:35		20:35		17:23		16:47
Potential sun hours	262	279	367	414	482	494		498		451	380	333	269	248
Sum of minutes with flicker	0	0	0	0	0	49		1		0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WT1 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (235)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 15:50-16:15/25 15:04-15:21/17	08:24 16:42-17:00/18	07:32	07:23	06:20	05:37
	16:48 12:18-12:56/38 15:26-15:28/2	17:35	18:25	20:17	21:06	21:50
2	08:49 15:50-16:15/25 15:05-15:21/16	08:22 16:44-17:00/16	07:30	07:21	06:18	05:36
	16:49 12:20-12:57/37	17:37	18:27	20:19	21:08	21:51
3	08:49 15:50-16:16/26 15:06-15:20/14	08:21 16:44-16:59/15	07:28	07:19	06:17	05:35
	16:50 12:20-12:56/36	17:38	18:28	20:20	21:09	21:52
4	08:49 15:51-16:16/25 15:07-15:20/13	08:19 16:45-16:58/13	07:26	07:17	06:15	05:34
	16:52 12:21-12:56/35	17:40	18:30	20:22	21:11	21:53
5	08:49 15:51-16:17/26 15:09-15:20/11	08:18 16:48-16:57/9	07:24	07:14	06:13	05:34
	16:53 12:22-12:56/34	17:42	18:32	20:24	21:13	21:54
6	08:48 15:51-16:17/26 15:11-15:19/8	08:16 16:50-16:54/4	07:21	07:12	06:11	05:33
	16:54 12:23-12:56/33	17:44	18:33	20:25	21:14	21:55
7	08:48 15:52-16:17/25 15:15-15:17/2	08:14 17:14-17:17/3	07:19	07:10	06:09	05:33
	16:55 12:25-12:56/31	17:46	18:35	20:27	21:16	21:56
8	08:48 15:52-16:16/24	08:13 17:13-17:19/6	07:17	07:08	06:08	05:32
	16:56 12:25-12:55/30	17:47	18:37	20:28	21:17	21:57
9	08:47 15:52-16:16/24	08:11 17:14-17:21/7	07:15	07:06	06:06	05:32
	16:58 12:26-12:54/28	17:49	18:39	20:30	21:19	21:58
10	08:47 15:53-16:15/22	08:09 17:14-17:23/9	07:13	07:03	06:04	05:31
	16:59 12:29-12:54/25	17:51	18:40	20:32	21:20	21:59
11	08:46 15:54-16:15/21	08:07 17:14-17:25/11	07:10	07:01	06:03	05:31
	17:00 12:30-12:52/22	17:53	18:42	20:33	21:22	21:59
12	08:46 15:54-16:15/21	08:06 17:14-17:26/12	07:08	06:59	06:01	05:31
	17:02 12:32-12:50/18	17:55	18:44	20:35	21:23	22:00
13	08:45 15:54-16:15/21	08:04 17:15-17:25/10	07:06	06:57	06:00	05:30
	17:03 12:35-12:48/13	17:56	18:45	20:37	21:25	22:01
14	08:44 15:56-16:16/20	08:02 17:17-17:24/7	07:04	06:55	05:58	05:30
	17:05	17:58	18:47	20:38	21:26	22:01
15	08:44 15:57-16:16/19	08:00	07:02	06:53	05:57	05:30
	17:06	18:00	18:49	20:40	21:28	22:02
16	08:43 15:57-16:16/19	07:58	06:59	06:50	05:55	05:30
	17:08	18:02	18:50	20:42	21:29	22:02
17	08:42 15:58-16:15/17	07:56	06:57	06:48	05:54	05:30
	17:09	18:04	18:52	20:43	21:31	22:03
18	08:41 16:00-16:15/15	07:54 17:35-17:38/3	06:55	06:46	05:52	05:30
	17:11	18:05	18:54	20:45	21:32	22:03
19	08:40 16:00-16:13/13	07:53 17:34-17:40/6	06:53	06:44	05:51	05:30
	17:13	18:07	18:55	20:47	21:34	22:04
20	08:39 16:02-16:13/11	07:51 17:34-17:42/8	06:50	06:42	05:50	05:30
	17:14	18:09	18:57	20:48	21:35	22:04
21	08:38 16:05-16:11/6	07:49 17:34-17:44/10	06:48	06:40	05:48	05:30
	17:16	18:11	18:59	20:50	21:37	22:04
22	08:37	07:47 17:34-17:46/12	06:46	06:38	05:47	05:30
	17:17	18:12	19:00	20:51	21:38	22:04
23	08:36 16:45-16:48/3	07:45 17:35-17:46/11	06:44	06:36	05:46	05:30
	17:19	18:14	19:02	20:53	21:39	22:04
24	08:35 16:43-16:50/7	07:42 17:36-17:45/9	06:41	06:34	05:45	05:31
	17:21	18:16	19:04	20:55	21:41	22:05
25	08:33 16:43-16:52/9	07:40 17:39-17:43/4	06:39	06:32	05:43	05:31
	17:23	18:18	19:05	20:56	21:42	22:05
26	08:32 16:42-16:53/11	07:38	06:37	06:30	05:42	05:31
	17:24	18:20	19:07	20:58	21:43	22:05
27	08:31 16:42-16:55/13	07:36	06:35	06:28	05:41	05:32
	17:26	18:21	19:09	21:00	21:44	22:05
28	08:30 16:42-16:58/16	07:34	06:32	06:26	05:40	05:32
	17:28	18:23	19:10	21:01	21:46	22:05
29	08:28 16:42-16:59/17		07:30	06:24	05:39	05:33
	17:29		20:12	21:03	21:47	22:04
30	08:27 16:43-17:00/17		07:28	06:22	05:38	05:33
	17:31		20:14	21:04	21:48	22:04
31	08:25 16:42-17:00/18		07:26		05:37	
	17:33		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	1005	203	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WT1 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (235)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October		November		December	
1	05:34	06:09	06:57	07:44		07:36	16:42-16:51/9	08:26	15:36-15:57/21
	22:04	21:33	20:33	19:25		17:21		16:42	12:13-12:34/21
2	05:35	06:11	06:59	07:46		07:38	16:43-16:50/7	08:27	15:35-15:57/22
	22:04	21:32	20:31	19:23		17:19		16:42	12:12-12:37/25
3	05:35	06:12	07:00	07:48		07:40	16:43-16:48/5	08:29	15:36-16:00/24
	22:03	21:30	20:29	19:21		17:18		16:41	12:11-12:38/27
4	05:36	06:14	07:02	07:49		07:42	16:44-16:46/2	08:30	15:36-16:00/24
	22:03	21:29	20:27	19:19		17:16		16:41	12:10-12:39/29
5	05:37	06:15	07:03	07:51		07:43	16:19-16:25/6	08:31	15:37-16:02/25
	22:02	21:27	20:24	19:16		17:14		16:40	12:10-12:41/31
6	05:38	06:17	07:05	07:52		07:45	16:17-16:27/10	08:32	15:37-16:03/26 14:57-15:05/8
	22:02	21:25	20:22	19:14		17:12		16:40	12:09-12:42/33
7	05:39	06:18	07:07	07:54		07:47	16:16-16:29/13	08:34	15:37-16:03/26 14:56-15:06/10
	22:01	21:23	20:20	19:12		17:11		16:39	12:09-12:42/33
8	05:39	06:20	07:08	07:56		07:49	16:15-16:30/15	08:35	15:39-16:05/26 14:56-15:08/12
	22:01	21:22	20:18	19:10		17:09		16:39	12:09-12:44/35
9	05:40	06:21	07:10	07:57		07:50	16:15-16:31/16	08:36	15:39-16:05/26 14:55-15:09/14
	22:00	21:20	20:15	19:08		17:08		16:39	12:09-12:45/36
10	05:41	06:23	07:11	07:59		07:52	16:13-16:30/17	08:37	15:39-16:05/26 14:54-15:10/16
	21:59	21:18	20:13	19:05		17:06		16:39	12:09-12:46/37
11	05:42	06:24	07:13	08:01		07:54	16:13-16:31/18	08:38	15:40-16:05/25 14:54-15:11/17
	21:59	21:16	20:11	19:03		17:04		16:38	12:09-12:46/37
12	05:43	06:26	07:14	08:02		07:55	16:13-16:31/18	08:39	15:40-16:04/24 14:54-15:12/18
	21:58	21:14	20:09	19:01		17:03		16:38	12:09-12:47/38 15:15-15:20/5
13	05:44	06:27	07:16	08:04		07:57	16:14-16:31/17	08:40	15:41-16:04/23 14:54-15:13/19
	21:57	21:12	20:06	18:59		17:02		16:38	12:09-12:48/39 15:14-15:22/8
14	05:46	06:29	07:18	08:06		07:59	16:14-16:30/16	08:41	15:41-16:04/23 14:54-15:23/29
	21:56	21:10	20:04	18:57		17:00		16:38	12:09-12:49/40
15	05:47	06:31	07:19	08:07		08:01	16:15-16:28/13	08:42	15:42-16:05/23 14:54-15:24/30
	21:55	21:09	20:02	18:55		16:59		16:38	12:09-12:50/41 15:38-15:40/2
16	05:48	06:32	07:21	08:09		08:02	16:16-16:27/11	08:43	15:43-16:05/22 14:55-15:25/30
	21:54	21:07	19:59	18:53		16:57		16:38	12:10-12:50/40 15:37-15:42/5
17	05:49	06:34	07:22	08:11	18:09-18:15/6	08:04	16:16-16:25/9	08:44	15:43-16:04/21 14:54-15:25/31
	21:53	21:05	19:57	18:50		16:56		16:39	12:09-12:50/41 15:36-15:42/6
18	05:50	06:35	07:24	08:12	18:07-18:17/10	08:06	16:17-16:24/7	08:44	15:37-16:05/28 14:55-15:26/31
	21:52	21:03	19:55	18:48		16:55		16:39	12:10-12:51/41
19	05:51	06:37	07:25	08:14	18:06-18:18/12	08:07	16:19-16:22/3	08:45	15:37-16:05/28 14:56-15:27/31
	21:51	21:01	19:53	18:46		16:54		16:39	12:11-12:52/41
20	05:53	06:38	07:27	08:16	18:04-18:16/12	08:09		08:46	15:37-16:05/28 14:55-15:27/32
	21:50	20:59	19:50	18:44		16:52		16:40	12:11-12:52/41
21	05:54	06:40	07:28	08:17	18:04-18:14/10	08:11	15:41-15:47/6	08:46	15:38-16:06/28 14:56-15:28/32
	21:49	20:57	19:48	18:42		16:51		16:40	12:11-12:53/42
22	05:55	06:41	07:30	08:19	18:04-18:12/8	08:12	15:38-15:49/11	08:47	15:38-16:06/28 14:56-15:28/32
	21:48	20:54	19:46	18:40		16:50		16:40	12:11-12:53/42
23	05:57	06:43	07:32	08:21	18:05-18:10/5	08:14	15:37-15:50/13	08:47	15:39-16:07/28 14:57-15:29/32
	21:46	20:52	19:44	18:38		16:49		16:41	12:12-12:54/42
24	05:58	06:45	07:33	08:23	18:06-18:08/2	08:15	15:37-15:52/15	08:48	15:39-16:07/28 14:58-15:29/31
	21:45	20:50	19:41	18:36		16:48		16:42	12:13-12:54/41
25	05:59	06:46	07:35	07:24		08:17	15:36-15:52/16	08:48	15:40-16:07/27 14:58-15:29/31
	21:44	20:48	19:39	17:34		16:47		16:42	12:13-12:54/41
26	06:01	06:48	07:36	07:26		08:18	15:36-15:54/18	08:49	15:48-16:09/21 14:59-15:30/31
	21:42	20:46	19:37	17:32		16:46		16:43	12:14-12:55/41 15:41-15:47/6
27	06:02	06:49	07:38	07:28		08:20	15:36-15:55/19	08:49	15:48-16:10/22 15:00-15:30/30
	21:41	20:44	19:34	17:30		16:45		16:44	12:15-12:55/40 15:42-15:47/5
28	06:03	06:51	07:40	07:29	16:46-16:54/8	08:21	15:35-15:55/20	08:49	15:48-16:10/22 15:00-15:30/30
	21:39	20:42	19:32	17:28		16:44		16:44	12:15-12:55/40 15:43-15:46/3
29	06:05	06:52	07:41	07:31	16:45-16:55/10	08:23	15:35-15:56/21	08:49	15:48-16:11/23 15:01-15:30/29
	21:38	20:40	19:30	17:27		16:44	12:17-12:29/12	16:45	12:16-12:56/40
30	06:06	06:54	07:43	07:33	16:44-16:56/12	08:24	15:35-15:56/21	08:49	15:49-16:12/23 15:02-15:21/19
	21:37	20:38	19:28	17:25		16:43	12:15-12:32/17	16:46	12:17-12:56/39 15:22-15:30/8
31	06:08	06:56		07:35	16:43-16:54/11			08:49	15:49-16:13/24 15:03-15:21/18
	21:35	20:35		17:23				16:47	12:17-12:56/39 15:23-15:30/7
Potential sun hours	498	451	380	333		269		248	
Sum of minutes with flicker	0	0	0	106		401		2616	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WT2 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (232)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 14:49-16:15/86	08:24 16:10-16:32/22	07:32 17:51-17:59/8	07:23	06:20	05:37
	16:48 10:35-10:57/22	17:35 10:18-11:31/73	18:25 10:32-11:10/38	20:17	21:06	21:50
2	08:49 14:50-16:15/85	08:22 16:12-16:31/19	07:30 17:51-18:01/10	07:21	06:18	05:36
	16:49 10:35-10:59/24	17:37 10:19-11:32/73	18:26 10:34-11:06/32	20:19	21:08	21:51
3	08:49 14:49-16:16/87	08:21 16:14-16:30/16	07:28 17:50-18:03/13	07:19	06:17	05:35
	16:50 10:33-11:00/27	17:38 10:18-11:32/74	18:28 10:38-11:02/24	20:20	21:09	21:52
4	08:49 14:50-16:18/88	08:19 16:16-16:28/12 10:18-11:32/74	07:26 17:49-18:04/15	07:17	06:15	05:34
	16:52 10:33-11:02/29	17:40 17:04-17:11/7	18:30 10:45-10:55/10	20:22	21:11	21:53
5	08:49 14:51-16:19/88	08:18 16:21-16:24/3 10:19-11:33/74	07:24 17:50-18:04/14	07:14	06:13	05:34
	16:53 10:32-11:03/31	17:42 17:02-17:13/11	18:32	20:24	21:13	21:54
6	08:48 14:51-16:20/89	08:16 17:01-17:15/14	07:21 17:51-18:04/13	07:12	06:11	05:33
	16:54 10:31-11:04/33	17:44 10:18-11:33/75	18:33	20:25	21:14	21:55
7	08:48 14:52-16:22/90	08:14 17:00-17:17/17	07:19 17:52-18:02/10	07:10	06:09	05:33
	16:55 10:31-11:06/35	17:46 10:18-11:33/75	18:35	20:27	21:16	21:56
8	08:48 14:52-16:23/91	08:13 16:59-17:18/19	07:17 17:54-18:00/6	07:08	06:08	05:32
	16:56 10:30-11:07/37	17:47 10:18-11:33/75	18:37	20:28	21:17	21:57
9	08:47 15:47-16:24/37 14:52-15:46/54	08:11 16:59-17:19/20	07:15	07:06	06:06	05:32
	16:58 10:29-11:08/39	17:49 10:19-11:34/75	18:39	20:30	21:19	21:58
10	08:47 15:48-16:26/38 14:53-15:47/54	08:09 16:59-17:20/21	07:13	07:03	06:04	05:31
	16:59 10:29-11:10/41	17:51 10:19-11:33/74	18:40	20:32	21:20	21:59
11	08:46 15:49-16:27/38 14:53-15:47/54	08:07 16:59-17:20/21	07:10	07:01	06:03	05:31
	17:00 10:28-11:11/43	17:53 10:19-11:33/74	18:42	20:33	21:22	21:59
12	08:46 15:50-16:29/39 14:54-15:47/53	08:06 16:59-17:20/21	07:08	06:59	06:01	05:30
	17:02 10:27-11:12/45	17:55 10:19-11:33/74	18:44	20:35	21:23	22:00
13	08:45 16:06-16:29/23 14:54-15:47/53	08:04 16:59-17:19/20	07:06	06:57	06:00	05:30
	17:03 10:26-11:13/47 15:52-16:02/10	17:56 10:19-11:33/74	18:45	20:37	21:25	22:01
14	08:44 16:07-16:30/23 14:56-15:47/51	08:02 16:59-17:19/20 10:19-11:32/73	07:04	06:55	05:58	05:30
	17:05 10:26-11:16/50 15:55-16:02/7	17:58 17:29-17:31/2	18:47	20:38	21:26	22:01
15	08:44 16:06-16:30/24 14:56-15:47/51	08:00 17:00-17:18/18 10:19-11:32/73	07:02	06:53	05:57	05:30
	17:06 10:26-11:17/51	18:00 17:28-17:32/4	18:49	20:40	21:28	22:02
16	08:43 16:06-16:30/24 14:57-15:47/50	07:58 17:01-17:17/16 10:19-11:31/72	06:59	06:50	05:55	05:30
	17:08 10:25-11:18/53	18:02 17:28-17:34/6	18:50	20:42	21:29	22:02
17	08:42 16:06-16:30/24 14:57-15:46/49	07:56 17:02-17:16/14 10:20-11:30/70	06:57	06:48	05:54	05:30
	17:09 10:25-11:19/54	18:04 17:28-17:36/8	18:52	20:43	21:31	22:03
18	08:41 16:06-16:31/25 14:58-15:46/48	07:54 17:05-17:14/9 10:20-11:30/70	06:55	06:46	05:52	05:30
	17:11 10:24-11:20/56	18:05 17:28-17:38/10	18:54	20:45	21:32	22:03
19	08:40 16:05-16:30/25 14:58-15:44/46	07:53 17:28-17:40/12	06:53	06:44	05:51	05:30
	17:13 10:23-11:20/57	18:07 10:21-11:29/68	18:55	20:47	21:34	22:04
20	08:39 16:05-16:31/26 14:59-15:42/43	07:51 17:28-17:42/14	06:50	06:42	05:50	05:30
	17:14 10:23-11:22/59	18:09 10:21-11:28/67	18:57	20:48	21:35	22:04
21	08:38 16:05-16:32/27 15:01-15:34/33	07:49 17:28-17:43/15	06:48	06:40	05:48	05:30
	17:16 10:22-11:23/61 15:35-15:39/4	18:11 10:22-11:27/65	18:59	20:50	21:37	22:04
22	08:37 16:06-16:33/27 15:02-15:34/32	07:47 17:29-17:42/13	06:46	06:38	05:47	05:30
	17:17 10:22-11:24/62	18:12 10:23-11:26/63	19:00	20:51	21:38	22:04
23	08:36 16:06-16:33/27 15:03-15:33/30	07:45 17:30-17:41/11	06:44	06:36	05:46	05:30
	17:19 10:22-11:25/63	18:14 10:24-11:24/60	19:02	20:53	21:39	22:04
24	08:35 16:05-16:33/28 15:04-15:32/28	07:42 17:32-17:39/7	06:41	06:34	05:45	05:31
	17:21 10:21-11:25/64	18:16 10:25-11:23/58	19:04	20:55	21:41	22:05
25	08:33 16:06-16:34/28 15:06-15:32/26	07:40 10:26-11:21/55	06:39	06:32	05:43	05:31
	17:23 10:21-11:27/66	18:18	19:05	20:56	21:42	22:05
26	08:32 16:07-16:34/27 15:08-15:31/23	07:38 10:27-11:19/52	06:37	06:30	05:42	05:31
	17:24 10:21-11:28/67	18:20	19:07	20:58	21:43	22:05
27	08:31 16:07-16:34/27 15:10-15:29/19	07:36 10:28-11:16/48	06:35	06:28	05:41	05:32
	17:26 10:20-11:28/68	18:21	19:09	21:00	21:44	22:05
28	08:30 16:08-16:34/26 15:14-15:27/13	07:34 17:53-17:57/4	06:32	06:26	05:40	05:32
	17:28 10:20-11:29/69	18:23 10:30-11:13/43	19:10	21:01	21:46	22:05
29	08:28 16:08-16:33/25		07:30	06:24	05:39	05:33
	17:29 10:19-11:29/70		20:12	21:03	21:47	22:04
30	08:27 16:09-16:34/25		07:28	06:22	05:38	05:33
	17:31 10:20-11:30/70		20:14	21:04	21:48	22:04
31	08:25 16:10-16:33/23		07:26		05:37	
	17:33 10:19-11:31/72		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	3736	2327	193	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WT2 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (232)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34	06:09	06:57	07:44	07:36 16:28-16:48/20	08:26 15:31-16:10/39 14:35-15:29/54
	22:04	21:33	20:33	19:25	17:21 09:48-11:03/75	16:42 10:10-10:53/43
2	05:35	06:11	06:59	07:46	07:38 16:28-16:48/20	08:27 15:31-16:08/37 14:35-15:29/54
	22:04	21:32	20:31	19:23	17:19 09:47-11:02/75	16:42 10:12-10:53/41
3	05:35	06:12	07:00	07:48	07:40 16:29-16:47/18	08:29 15:31-16:08/37 14:36-15:30/54
	22:03	21:30	20:29	19:21	17:17 09:48-11:02/74	16:41 10:13-10:52/39
4	05:36	06:14	07:02	07:49	07:42 16:30-16:46/16	08:30 14:36-16:07/91
	22:03	21:29	20:27	19:19	17:16 09:48-11:03/75	16:41 10:14-10:51/37
5	05:37	06:15	07:03	07:51	07:43 16:31-16:44/13	08:31 14:37-16:07/90
	22:02	21:27	20:24	19:16	17:14 09:48-11:03/75	16:40 10:16-10:51/35
6	05:38	06:17	07:05	07:52 18:29-18:37/8	07:45 15:50-15:55/5 09:48-11:03/75	08:32 14:37-16:06/89
	22:02	21:25	20:22	19:14	17:12 16:32-16:43/11	16:40 10:17-10:50/33
7	05:39	06:18	07:07	07:54 18:27-18:39/12	07:47 15:47-15:59/12 09:49-11:03/74	08:34 14:37-16:06/89
	22:01	21:23	20:20	19:12	17:11 16:35-16:41/6	16:39 10:18-10:50/32
8	05:39	06:20	07:08	07:56 18:25-18:39/14	07:49 15:45-16:01/16	08:35 14:38-16:06/88
	22:01	21:22	20:18	19:10	17:09 09:49-11:03/74	16:39 10:21-10:50/29
9	05:40	06:21	07:10	07:57 18:25-18:39/14	07:50 15:43-16:02/19	08:36 14:38-16:05/87
	22:00	21:20	20:15	19:08	17:08 09:50-11:03/73	16:39 10:22-10:49/27
10	05:41	06:23	07:11	07:59 18:24-18:38/14	07:52 15:41-16:03/22	08:37 14:39-16:05/86
	21:59	21:18	20:13	19:05 11:15-11:33/18	17:06 09:50-11:02/72	16:38 10:24-10:48/24
11	05:42	06:24	07:13	08:01 18:25-18:36/11	07:54 15:41-16:04/23	08:38 14:39-16:05/86
	21:59	21:16	20:11	19:03 11:10-11:38/28	17:04 09:50-11:01/71	16:38 10:25-10:47/22
12	05:43	06:26	07:14	08:02 18:24-18:33/9	07:55 15:40-16:05/25	08:39 14:40-16:04/84
	21:58	21:14	20:09	19:01 11:06-11:41/35	17:03 09:51-11:01/70	16:38 10:26-10:47/21
13	05:44	06:27	07:16	08:04 18:25-18:31/6	07:57 15:40-16:05/25	08:40 14:40-16:04/84
	21:57	21:12	20:06	18:59 11:04-11:45/41	17:01 09:51-11:01/70	16:38 10:28-10:46/18
14	05:45	06:29	07:17	08:06 18:26-18:29/3	07:59 15:40-16:06/26 14:46-14:59/13	08:41 14:41-16:04/83
	21:56	21:10	20:04	18:57 11:02-11:48/46	17:00 09:52-11:01/69	16:38 10:30-10:45/15
15	05:47	06:31	07:19	08:07 11:00-11:50/50	08:01 15:40-16:07/27 14:43-15:02/19	08:42 14:41-16:05/84
	21:55	21:09	20:02	18:55	16:59 09:53-11:01/68	16:38 10:31-10:45/14
16	05:48	06:32	07:21	08:09 10:58-11:51/53	08:02 15:40-16:07/27 14:41-15:04/23	08:43 14:42-16:05/83
	21:54	21:07	19:59	18:53	16:57 09:54-11:01/67	16:38 10:33-10:44/11
17	05:49	06:34	07:22	08:11 10:57-11:53/56	08:04 15:39-16:07/28 14:39-15:05/26	08:44 14:42-16:04/82
	21:53	21:05	19:57	18:50	16:56 09:54-11:00/66	16:39 10:34-10:42/8
18	05:50	06:35	07:24	08:12 18:03-18:11/8	08:06 15:39-16:07/28 14:38-15:06/28	08:44 14:42-16:05/83
	21:52	21:03	19:55	18:48 10:56-11:55/59	16:55 09:55-10:59/64	16:39 10:37-10:41/4
19	05:51	06:37	07:25	08:14 18:01-18:13/12	08:07 15:40-16:07/27 14:37-15:07/30	08:45 14:43-16:05/82
	21:51	21:01	19:53	18:46 10:55-11:56/61	16:54 09:56-10:59/63	16:39
20	05:53	06:38	07:27	08:16 17:59-18:13/14	08:09 15:41-16:08/27 14:37-15:09/32	08:46 14:43-16:05/82
	21:50	20:59	19:50	18:44 10:53-11:56/63	16:52 09:57-10:59/62	16:40
21	05:54	06:40	07:28	08:17 17:59-18:13/14	08:11 15:41-16:08/27 14:37-15:10/33	08:46 14:44-16:06/82
	21:49	20:57	19:48	18:42 10:52-11:58/66	16:51 09:58-10:59/61 15:11-15:15/4	16:40
22	05:55	06:41	07:30	08:19 17:58-18:12/14	08:12 15:41-16:07/26 14:35-15:18/43	08:47 14:44-16:06/82
	21:48	20:54	19:46	18:40 10:52-11:59/67	16:50 09:59-10:58/59	16:40
23	05:57	06:43	07:32	08:21 17:38-17:41/3 10:51-11:59/68	08:14 15:42-16:07/25 14:35-15:21/46	08:47 14:45-16:07/82
	21:46	20:52	19:44	18:38 17:59-18:10/11	16:49 10:00-10:57/57	16:41
24	05:58	06:45	07:33	08:23 17:34-17:45/11 10:51-12:00/69	08:15 15:43-16:08/25 14:35-15:23/48	08:48 14:45-16:07/82
	21:45	20:50	19:41	18:36 17:58-18:08/10	16:48 10:01-10:57/56	16:42
25	05:59	06:46	07:35	07:24 16:31-16:46/15 09:50-11:01/71	08:17 15:43-16:07/24 14:35-15:23/48	08:48 14:45-16:07/82
	21:44	20:48	19:39	17:34 16:57-17:05/8	16:47 10:03-10:57/54	16:42 10:41-10:43/2
26	06:01	06:48	07:36	07:26 16:30-16:47/17 09:49-11:01/72	08:18 15:44-16:08/24 14:35-15:25/50	08:49 14:46-16:09/83
	21:42	20:46	19:37	17:32 16:58-17:03/5	16:46 10:03-10:56/53	16:43 10:40-10:47/7
27	06:02	06:49	07:38	07:28 16:29-16:48/19 09:49-11:01/72	08:20 15:45-16:09/24 14:35-15:26/51	08:49 14:47-16:09/82
	21:41	20:44	19:34	17:30 16:58-17:01/3	16:45 10:05-10:56/51	16:44 10:39-10:48/9
28	06:03	06:51	07:40	07:29 16:29-16:49/20 09:48-11:02/74	08:21 15:46-16:09/23 14:35-15:26/51	08:49 14:47-16:10/83
	21:39	20:42	19:32	17:28 16:59-17:00/1	16:44 10:05-10:55/50 15:34-15:41/7	16:44 10:38-10:50/12
29	06:05	06:52	07:41	07:31 16:28-16:49/21	08:23 15:47-16:10/23 14:35-15:28/53	08:49 14:47-16:11/84
	21:38	20:40	19:30	17:27 09:48-11:02/74	16:44 10:07-10:55/48 15:33-15:43/10	16:45 10:37-10:52/15
30	06:06	06:54	07:43	07:33 16:28-16:49/21	08:24 15:32-16:10/38 14:36-15:29/53	08:49 14:48-16:12/84
	21:37	20:38	19:28	17:25 09:48-11:03/75	16:43 10:09-10:54/45	16:46 10:36-10:53/17
31	06:08	06:56		07:35 16:28-16:49/21		08:49 14:48-16:13/85
	21:35	20:35		17:23 09:48-11:03/75		16:47 10:36-10:55/19
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	0	0	0	1632	3314	3173

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WT3 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (231)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 15:36-15:59/23	08:24 16:42-16:57/15	07:32	07:23	06:20	05:37
	16:48 09:44-10:18/34	17:35	18:25	20:17	21:06	21:50
2	08:49 15:36-15:58/22	08:22 16:44-16:51/7	07:30	07:21	06:18	05:36
	16:49 09:45-10:18/33	17:37 16:53-16:55/2	18:26	20:19	21:08	21:51
3	08:49 15:37-15:59/22	08:21	07:28	07:19	06:17	05:35
	16:50 09:44-10:18/34	17:38	18:28	20:20	21:09	21:52
4	08:49 15:38-15:59/21	08:19 17:08-17:11/3	07:26	07:17	06:15	05:34
	16:52 09:45-10:19/34	17:40	18:30	20:22	21:11	21:53
5	08:49 15:38-15:59/21	08:18 17:07-17:13/6	07:24	07:14	06:13	05:34
	16:53 09:45-10:20/35	17:42	18:32	20:24	21:12	21:54
6	08:48 15:39-16:00/21	08:16 17:06-17:15/9	07:21	07:12	06:11	05:33
	16:54 09:45-10:20/35	17:44	18:33	20:25	21:14	21:55
7	08:48 15:40-16:00/20	08:14 17:05-17:17/12	07:19	07:10	06:09	05:33
	16:55 09:46-10:21/35	17:46	18:35	20:27	21:16	21:56
8	08:48 15:40-16:00/20	08:13 17:04-17:19/15	07:17	07:08	06:08	05:32
	16:56 09:46-10:21/35	17:47	18:37	20:28	21:17	21:57
9	08:47 15:41-16:00/19	08:11 17:05-17:21/16	07:15	07:05	06:06	05:32
	16:58 09:46-10:22/36	17:49	18:39	20:30	21:19	21:58
10	08:47 15:42-16:00/18	08:09 17:05-17:22/17	07:13	07:03	06:04	05:31
	16:59 09:47-10:23/36	17:51	18:40	20:32	21:20	21:59
11	08:46 15:43-16:00/17	08:07 17:05-17:22/17	07:10	07:01	06:03	05:31
	17:00 09:47-10:23/36	17:53	18:42	20:33	21:22	21:59
12	08:46 15:44-15:59/15	08:06 17:05-17:21/16	07:08	06:59	06:01	05:30
	17:02 09:47-10:23/36	17:55	18:44	20:35	21:23	22:00
13	08:45 15:45-15:59/14 09:47-10:23/36	08:04 17:06-17:21/15	07:06	06:57	06:00	05:30
	17:03 16:29-16:30/1	17:56	18:45	20:37	21:25	22:01
14	08:44 15:48-15:59/11 09:48-10:25/37	08:02 17:07-17:20/13	07:04	06:55	05:58	05:30
	17:05 16:29-16:32/3	17:58	18:47	20:38	21:26	22:01
15	08:43 15:50-15:57/7 09:48-10:25/37	08:00 17:09-17:18/9	07:02	06:52	05:57	05:30
	17:06 16:30-16:34/4	18:00	18:49	20:40	21:28	22:02
16	08:43 16:30-16:36/6	07:58 17:12-17:15/3	06:59	06:50	05:55	05:30
	17:08 09:49-10:25/36	18:02	18:50	20:42	21:29	22:02
17	08:42 16:30-16:38/8	07:56	06:57	06:48	05:54	05:30
	17:09 09:49-10:25/36	18:04	18:52	20:43	21:31	22:03
18	08:41 16:31-16:39/8	07:54	06:55	06:46	05:52	05:30
	17:11 09:50-10:26/36	18:05	18:54	20:45	21:32	22:03
19	08:40 16:30-16:40/10	07:52	06:53	06:44	05:51	05:30
	17:13 09:49-10:25/36	18:07	18:55	20:47	21:34	22:04
20	08:39 16:31-16:42/11	07:51	06:50	06:42	05:50	05:30
	17:14 09:50-10:25/35	18:09	18:57	20:48	21:35	22:04
21	08:38 16:32-16:44/12	07:49	06:48	06:40	05:48	05:30
	17:16 09:51-10:25/34	18:11	18:59	20:50	21:37	22:04
22	08:37 16:33-16:46/13	07:47	06:46	06:38	05:47	05:30
	17:17 09:52-10:25/33	18:12	19:00	20:51	21:38	22:04
23	08:36 16:35-16:48/13	07:45	06:44	06:36	05:46	05:30
	17:19 09:53-10:25/32	18:14	19:02	20:53	21:39	22:04
24	08:35 16:36-16:50/14	07:42	06:41	06:34	05:45	05:31
	17:21 09:53-10:24/31	18:16	19:04	20:55	21:41	22:05
25	08:33 16:37-16:52/15	07:40	06:39	06:32	05:43	05:31
	17:23 09:54-10:24/30	18:18	19:05	20:56	21:42	22:05
26	08:32 16:37-16:53/16	07:38	06:37	06:30	05:42	05:31
	17:24 09:56-10:24/28	18:19	19:07	20:58	21:43	22:05
27	08:31 16:38-16:55/17	07:36	06:34	06:28	05:41	05:32
	17:26 09:56-10:22/26	18:21	19:09	21:00	21:44	22:05
28	08:29 16:39-16:58/19	07:34	06:32	06:26	05:40	05:32
	17:28 09:58-10:22/24	18:23	19:10	21:01	21:46	22:04
29	08:28 16:39-16:59/20		07:30	06:24	05:39	05:33
	17:29 09:59-10:20/21		20:12	21:03	21:47	22:04
30	08:27 16:40-16:59/19		07:28	06:22	05:38	05:33
	17:31 10:02-10:18/16		20:14	21:04	21:48	22:04
31	08:25 16:41-16:58/17		07:25		05:37	
	17:33 10:04-10:15/11		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	1491	175	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WT3 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (231)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34	06:09	06:57	07:44	07:36 16:33-16:51/18	08:26 15:25-15:42/17
	22:04	21:33	20:33	19:25	17:21	16:42 09:29-10:05/36
2	05:35	06:11	06:59	07:46	07:38 16:34-16:50/16	08:27 15:24-15:42/18
	22:04	21:32	20:31	19:23	17:19	16:42 09:30-10:06/36
3	05:35	06:12	07:00	07:48	07:40 16:34-16:48/14	08:29 15:25-15:44/19
	22:03	21:30	20:29	19:21	17:17	16:41 09:30-10:06/36
4	05:36	06:14	07:02	07:49	07:42 16:35-16:46/11	08:30 15:24-15:44/20
	22:03	21:28	20:27	19:19	17:16	16:41 09:30-10:06/36
5	05:37	06:15	07:03	07:51	07:43 16:36-16:45/9	08:31 15:25-15:45/20
	22:02	21:27	20:24	19:16	17:14	16:40 09:31-10:06/35
6	05:38	06:17	07:05	07:52	07:45 16:37-16:43/6	08:32 15:25-15:46/21
	22:02	21:25	20:22	19:14	17:12	16:40 09:31-10:06/35
7	05:39	06:18	07:07	07:54	07:47 16:39-16:41/2	08:34 15:25-15:46/21
	22:01	21:23	20:20	19:12	17:11	16:39 09:31-10:06/35
8	05:39	06:20	07:08	07:56	07:49	08:35 15:25-15:46/21
	22:01	21:22	20:18	19:10	17:09	16:39 09:33-10:07/34
9	05:40	06:21	07:10	07:57	07:50 16:15-16:22/7	08:36 15:26-15:48/22
	22:00	21:20	20:15	19:08	17:08 16:23-16:26/3	16:39 09:33-10:07/34
10	05:41	06:23	07:11	07:59	07:52 16:12-16:28/16	08:37 15:26-15:48/22
	21:59	21:18	20:13	19:05	17:06	16:38 09:34-10:08/34
11	05:42	06:24	07:13	08:01	07:54 16:11-16:29/18	08:38 15:26-15:49/23
	21:59	21:16	20:11	19:03	17:04 09:35-09:46/11	16:38 09:34-10:08/34
12	05:43	06:26	07:14	08:02	07:55 16:11-16:30/19	08:39 15:27-15:49/22
	21:58	21:14	20:09	19:01	17:03 09:33-09:49/16	16:38 09:35-10:08/33
13	05:44	06:27	07:16	08:04	07:57 16:11-16:31/20	08:40 15:27-15:50/23
	21:57	21:12	20:06	18:59	17:01 09:31-09:52/21	16:38 09:35-10:08/33
14	05:45	06:29	07:17	08:06	07:59 16:10-16:30/20	08:41 15:27-15:50/23
	21:56	21:10	20:04	18:57	17:00 09:30-09:54/24	16:38 09:36-10:09/33
15	05:47	06:30	07:19	08:07	08:01 16:11-16:28/17	08:42 15:28-15:51/23
	21:55	21:08	20:02	18:55	16:59 09:29-09:55/26	16:38 09:37-10:09/32
16	05:48	06:32	07:21	08:09	08:02 16:11-16:27/16	08:43 15:28-15:51/23
	21:54	21:07	19:59	18:53	16:57 09:29-09:57/28	16:38 09:37-10:10/33
17	05:49	06:34	07:22	08:11	08:04 16:10-16:25/15	08:44 15:28-15:51/23
	21:53	21:05	19:57	18:50	16:56 09:27-09:57/30	16:39 09:37-10:09/32
18	05:50	06:35	07:24	08:12	08:06 16:10-16:24/14	08:44 15:29-15:52/23
	21:52	21:03	19:55	18:48	16:55 09:27-09:58/31	16:39 09:38-10:10/32
19	05:51	06:37	07:25	08:14	08:07 16:09-16:22/13	08:45 15:30-15:53/23
	21:51	21:01	19:53	18:46	16:54 09:27-09:59/32	16:39 09:39-10:11/32
20	05:53	06:38	07:27	08:16	08:09 16:08-16:21/13	08:46 15:30-15:53/23
	21:50	20:59	19:50	18:44	16:52 09:27-10:00/33	16:40 09:39-10:11/32
21	05:54	06:40	07:28	08:17	08:11 16:08-16:20/12	08:46 15:30-15:53/23
	21:49	20:57	19:48	18:42	16:51 09:27-10:01/34	16:40 09:40-10:11/31
22	05:55	06:41	07:30	08:19	08:12 16:07-16:18/11	08:47 15:30-15:53/23
	21:48	20:54	19:46	18:40	16:50 09:26-10:01/35	16:40 09:40-10:11/31
23	05:57	06:43	07:32	08:21	08:14 16:07-16:17/10	08:47 15:32-15:54/22
	21:46	20:52	19:44	18:38	16:49 09:26-10:02/36	16:41 09:41-10:12/31
24	05:58	06:45	07:33	08:23	08:15 16:08-16:16/8	08:48 15:32-15:55/23
	21:45	20:50	19:41	18:36	16:48 09:27-10:03/36	16:42 09:41-10:13/32
25	05:59	06:46	07:35	07:24	08:17 16:07-16:15/8	08:48 15:32-15:55/23
	21:44	20:48	19:39	17:34	16:47 09:27-10:03/36	16:42 09:41-10:13/32
26	06:01	06:48	07:36	07:26 16:40-16:46/6	08:18 16:08-16:14/6	08:48 15:33-15:56/23
	21:42	20:46	19:37	17:32	16:46 09:27-10:03/36	16:43 09:42-10:14/32
27	06:02	06:49	07:38	07:28 16:38-16:48/10	08:20 15:29-15:36/7 09:27-10:04/37	08:49 15:33-15:56/23
	21:41	20:44	19:34	17:30	16:45 16:09-16:13/4	16:44 09:42-10:15/33
28	06:03	06:51	07:40	07:29 16:36-16:50/14	08:21 15:27-15:38/11 09:27-10:04/37	08:49 15:34-15:57/23
	21:39	20:42	19:32	17:28	16:44 16:09-16:12/3	16:44 09:43-10:15/32
29	06:05	06:52	07:41	07:31 16:35-16:50/15	08:23 15:26-15:40/14 09:28-10:04/36	08:49 15:34-15:57/23
	21:38	20:40	19:30	17:27	16:44 16:10-16:11/1	16:45 09:43-10:15/32
30	06:06	06:54	07:43	07:33 16:35-16:51/16	08:24 15:25-15:40/15	08:49 15:35-15:57/22
	21:36	20:37	19:28	17:25	16:43 09:29-10:05/36	16:46 09:43-10:16/33
31	06:08	06:56		07:35 16:34-16:52/18		08:49 15:35-15:58/23
	21:35	20:35		17:23		16:47 09:44-10:17/33
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	0	0	0	79	988	1710

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WT4 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (234)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 13:38-14:09/31 10:37-11:37/60	08:24 15:46-16:13/27	07:32 17:27-17:50/23	07:23	06:20	05:37
	16:48 15:38-16:04/26	17:35 16:44-16:59/15	18:25	20:17	21:06	21:50
2	08:49 13:39-14:09/30 10:39-11:38/59	08:22 15:48-16:12/24 16:46-16:59/13	07:30 17:28-17:50/22	07:21	06:18	05:36
	16:49 15:38-16:03/25	17:36 17:04-17:07/3	18:26 08:04-08:16/12	20:19	21:08	21:51
3	08:49 13:40-14:08/28 10:40-11:37/57	08:21 15:49-16:11/22 16:47-16:58/11	07:28 17:28-17:49/21	07:19	06:16	05:35
	16:50 15:38-16:03/25	17:38 17:01-17:09/8	18:28 08:01-08:19/18	20:20	21:09	21:52
4	08:49 13:41-14:08/27 10:42-11:38/56	08:19 15:51-16:09/18 16:48-16:56/8	07:26 17:28-17:48/20	07:17	06:15	05:34
	16:51 15:38-16:03/25	17:40 16:58-17:11/13	18:30 07:59-08:21/22	20:22	21:11	21:53
5	08:49 13:43-14:08/25 10:48-11:39/51	08:18 15:54-16:07/13	07:24 17:29-17:47/18	07:14	06:13	05:34
	16:53 15:37-16:03/26	17:42 16:58-17:13/15	18:32 07:57-08:22/25	20:23	21:12	21:54
6	08:48 13:43-14:07/24 10:48-11:38/50	08:16 16:57-17:15/18	07:21 17:31-17:45/14	07:12	06:11	05:33
	16:54 15:38-16:04/26	17:44	18:33 07:55-08:23/28	20:25	21:14	21:55
7	08:48 13:45-14:07/22 10:49-11:39/50	08:14 16:56-17:17/21	07:19 17:33-17:43/10	07:10	06:09	05:32
	16:55 15:38-16:05/27	17:45	18:35 07:54-08:24/30	20:27	21:16	21:56
8	08:48 13:47-14:06/19 10:49-11:39/50	08:13 16:55-17:18/23	07:17 07:54-08:24/30	07:08	06:08	05:32
	16:56 15:38-16:06/28	17:47	18:37	20:28	21:17	21:57
9	08:47 13:49-14:04/15 10:49-11:39/50	08:11 16:55-17:19/24	07:15 07:52-08:24/32	07:05	06:06	05:32
	16:58 15:37-16:06/29	17:49	18:39	20:30	21:19	21:58
10	08:47 13:52-14:03/11 10:50-11:40/50	08:09 16:55-17:19/24	07:13 07:52-08:24/32	07:03	06:04	05:31
	16:59 15:38-16:08/30	17:51	18:40	20:32	21:20	21:59
11	08:46 15:38-16:08/30	08:07 16:55-17:18/23	07:10 07:51-08:24/33	07:01	06:03	05:31
	17:00 10:51-11:40/49	17:53	18:42	20:33	21:22	21:59
12	08:46 15:38-16:09/31	08:06 16:55-17:18/23	07:08 07:51-08:24/33	06:59	06:01	05:30
	17:02 10:51-11:40/49	17:55	18:44	20:35	21:23	22:00
13	08:45 15:37-16:09/32	08:04 16:55-17:17/22	07:06 07:50-08:23/33	06:57	06:00	05:30
	17:03 10:52-11:40/48	17:56	18:45	20:37	21:25	22:01
14	08:44 15:38-16:11/33	08:02 16:56-17:16/20	07:04 07:51-08:23/32	06:55	05:58	05:30
	17:05 10:53-11:40/47	17:58	18:47	20:38	21:26	22:01
15	08:43 15:38-16:12/34	08:00 16:57-17:15/18	07:01 07:51-08:22/31	06:52	05:56	05:30
	17:06 10:54-11:40/46	18:00	18:49	20:40	21:28	22:02
16	08:43 15:38-16:12/34	07:58 16:58-17:14/16	06:59 07:52-08:21/29	06:50	05:55	05:30
	17:08 10:54-11:40/46	18:02	18:50	20:42	21:29	22:02
17	08:42 15:39-16:13/34	07:56 16:59-17:13/14	06:57 07:51-08:19/28	06:48	05:54	05:30
	17:09 10:55-11:40/45	18:04	18:52	20:43	21:31	22:03
18	08:41 15:39-16:13/34	07:54 17:02-17:10/8	06:55 07:53-08:18/25	06:46	05:52	05:30
	17:11 10:56-11:40/44	18:05	18:54	20:45	21:32	22:03
19	08:40 15:38-16:13/35	07:52	06:53 07:54-08:16/22	06:44	05:51	05:30
	17:12 10:56-11:39/43	18:07	18:55	20:47	21:34	22:04
20	08:39 15:38-16:14/36	07:51	06:50 07:56-08:14/18	06:42	05:49	05:30
	17:14 10:57-11:38/41	18:09	18:57	20:48	21:35	22:04
21	08:38 15:39-16:14/35	07:49 17:38-17:41/3	06:48 07:57-08:11/14	06:40	05:48	05:30
	17:16 10:58-11:38/40	18:11	18:59	20:50	21:37	22:04
22	08:37 15:39-16:15/36	07:47 17:34-17:45/11	06:46	06:38	05:47	05:30
	17:17 11:00-11:38/38	18:12	19:00	20:51	21:38	22:04
23	08:36 15:40-16:15/35 11:01-11:37/36	07:44 17:32-17:47/15	06:44	06:36	05:46	05:30
	17:19 16:45-16:48/3	18:14	19:02	20:53	21:39	22:04
24	08:35 15:40-16:15/35 11:02-11:35/33	07:42 17:31-17:49/18	06:41	06:34	05:45	05:31
	17:21 16:44-16:50/6	18:16	19:04	20:55	21:41	22:05
25	08:33 15:41-16:15/34 11:04-11:34/30	07:40 17:30-17:50/20	06:39	06:32	05:43	05:31
	17:22 16:43-16:52/9	18:18	19:05	20:56	21:42	22:05
26	08:32 15:40-16:15/35 11:06-11:33/27	07:38 17:28-17:49/21	06:37	06:30	05:42	05:31
	17:24 16:42-16:53/11	18:19	19:07	20:58	21:43	22:05
27	08:31 15:41-16:15/34 11:08-11:30/22	07:36 17:28-17:50/22	06:34	06:28	05:41	05:32
	17:26 16:43-16:55/12	18:21	19:09	21:00	21:44	22:05
28	08:29 15:43-16:15/32 11:11-11:28/17	07:34 17:27-17:50/23	06:32	06:26	05:40	05:32
	17:28 16:43-16:58/15	18:23	19:10	21:01	21:46	22:04
29	08:28 15:43-16:15/32 11:16-11:22/6		07:30	06:24	05:39	05:33
	17:29 16:43-16:59/16		20:12	21:03	21:47	22:04
30	08:27 15:44-16:15/31		07:28	06:22	05:38	05:33
	17:31 16:44-17:00/16		20:14	21:04	21:48	22:04
31	08:25 15:45-16:14/29		07:25		05:37	
	17:33 16:44-16:59/15		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	2543	577	655	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WT4 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (234)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34	06:09	06:57	07:44 08:30-09:03/33	07:36 16:24-16:48/24	08:26 15:20-15:50/30
	22:04	21:33	20:33	19:25	17:21	16:42 10:33-11:22/49
2	05:35	06:11	06:59	07:46 08:30-09:03/33	07:38 16:24-16:48/24	08:27 13:35-13:45/10 10:33-11:22/49
	22:04	21:32	20:31	19:23	17:19	16:42 15:20-15:50/30
3	05:35	06:12	07:00	07:48 08:29-09:02/33	07:40 16:25-16:48/23	08:29 13:33-13:48/15 10:33-11:23/50
	22:03	21:30	20:29	19:21	17:17	16:41 15:21-15:50/29
4	05:36	06:14	07:02	07:49 08:30-09:02/32	07:42 16:25-16:46/21	08:30 13:31-13:50/19 10:33-11:23/50
	22:03	21:28	20:26	19:19	17:16	16:40 15:22-15:50/28
5	05:37	06:15	07:03	07:51 08:30-09:01/31	07:43 15:28-15:33/5	08:31 13:31-13:52/21 10:34-11:24/50
	22:02	21:27	20:24	19:16	17:14 16:26-16:44/18	16:40 15:23-15:50/27
6	05:38	06:17	07:05	07:52 18:11-18:17/6	07:45 15:24-15:37/13	08:32 13:30-13:53/23 10:34-11:25/51
	22:02	21:25	20:22	19:14 08:30-09:00/30	17:12 16:28-16:43/15	16:40 15:24-15:50/26
7	05:38	06:18	07:06	07:54 18:08-18:20/12	07:47 15:21-15:40/19 16:19-16:27/8	08:34 13:29-13:54/25 10:34-11:25/51
	22:01	21:23	20:20	19:12 08:31-08:59/28	17:11 16:29-16:41/12	16:39 15:24-15:50/26
8	05:39	06:20	07:08	07:56 18:05-18:21/16	07:49 15:20-15:42/22 16:17-16:29/12	08:35 13:29-13:56/27 10:31-11:26/55
	22:01	21:22	20:18	19:10 08:32-08:58/26	17:09 16:32-16:40/8	16:39 15:25-15:50/25
9	05:40	06:21	07:10	07:57 18:04-18:22/18	07:50 15:18-15:43/25 16:16-16:30/14	08:36 13:29-13:57/28 10:29-11:26/57
	22:00	21:20	20:15	19:08 08:32-08:56/24	17:07 16:35-16:38/3	16:39 15:27-15:52/25
10	05:41	06:23	07:11	07:59 18:03-18:23/20	07:52 15:16-15:44/28	08:37 13:28-13:58/30 10:28-11:27/59
	21:59	21:18	20:13	19:05 08:34-08:54/20	17:06 16:15-16:30/15	16:38 15:28-15:53/25
11	05:42	06:24	07:13	08:01 18:02-18:24/22	07:54 15:16-15:45/29	08:38 13:28-13:59/31 10:28-11:27/59
	21:59	21:16	20:11	19:03 08:37-08:52/15	17:04 16:15-16:30/15	16:38 15:28-15:54/26
12	05:43	06:26	07:14	08:02 18:01-18:23/22	07:55 15:15-15:46/31	08:39 13:28-13:59/31 10:27-11:28/61
	21:58	21:14	20:09	19:01 08:39-08:47/8	17:03 16:15-16:31/16	16:38 15:29-15:54/25
13	05:44	06:27	07:16	08:04 18:01-18:23/22	07:57 15:15-15:46/31 10:48-10:54/6	08:40 13:28-14:00/32 10:27-11:28/61
	21:57	21:12	20:06	18:59	17:01 16:15-16:31/16	16:38 15:30-15:55/25
14	05:45	06:29	07:17	08:06 18:01-18:23/22	07:59 15:14-15:47/33 10:43-11:00/17	08:41 13:29-14:01/32 10:27-11:29/62
	21:56	21:10	20:04	18:57	17:00 16:15-16:30/15	16:38 15:31-15:56/25
15	05:47	06:30	07:19	08:07 18:01-18:23/22	08:01 15:14-15:48/34 10:41-11:03/22	08:42 13:29-14:02/33 10:27-11:29/62
	21:55	21:08	20:02	18:55	16:59 16:16-16:28/12	16:38 15:32-15:56/24
16	05:48	06:32	07:21	08:09 18:00-18:21/21	08:02 15:14-15:49/35 10:39-11:06/27	08:43 13:29-14:03/34 10:28-11:30/62
	21:54	21:07	19:59	18:52	16:57 16:16-16:27/11	16:38 15:33-15:57/24
17	05:49	06:34	07:22	08:11 18:01-18:21/20	08:04 15:13-15:48/35 10:37-11:07/30	08:44 13:29-14:02/33 10:27-11:29/62
	21:53	21:05	19:57	18:50	16:56 16:16-16:25/9	16:39 15:33-15:57/24
18	05:50	06:35	07:24	08:12 18:02-18:20/18	08:06 15:14-15:49/35 10:36-11:09/33	08:44 13:29-14:03/34 10:28-11:30/62
	21:52	21:03	19:55	18:48	16:55 16:18-16:24/6	16:39 15:34-15:58/24
19	05:51	06:37	07:25	08:14 18:04-18:18/14	08:07 15:14-15:49/35 10:35-11:11/36	08:45 13:30-14:04/34 10:28-11:31/63
	21:51	21:01	19:53	18:46	16:53 16:19-16:22/3	16:39 15:35-15:59/24
20	05:53	06:38	07:27	08:16 18:05-18:15/10	08:09 15:14-15:50/36	08:46 13:30-14:04/34 10:28-11:31/63
	21:50	20:59	19:50	18:44	16:52 10:35-11:13/38	16:40 15:35-15:58/23
21	05:54	06:40	07:28	08:17	08:11 15:15-15:50/35	08:46 13:31-14:05/34 10:29-11:32/63
	21:49	20:56	19:48	18:42	16:51 10:35-11:14/39	16:40 15:36-15:59/23
22	05:55	06:41	07:30 08:44-08:55/11	08:19	08:12 15:14-15:50/36	08:47 13:31-14:05/34 10:29-11:32/63
	21:48	20:54	19:46	18:40	16:50 10:33-11:14/41	16:40 15:36-15:59/23
23	05:56	06:43	07:32 08:40-08:57/17	08:21	08:14 15:15-15:50/35	08:47 13:32-14:06/34 10:30-11:33/63
	21:46	20:52	19:43	18:38	16:49 10:33-11:16/43	16:41 15:37-16:00/23
24	05:58	06:45	07:33 08:38-09:00/22	08:23 17:32-17:41/9	08:15 15:16-15:51/35	08:48 13:32-14:06/34 10:30-11:33/63
	21:45	20:50	19:41	18:36	16:48 10:33-11:17/44	16:41 15:37-16:00/23
25	05:59	06:46	07:35 08:36-09:00/24	07:24 16:28-16:43/15	08:17 15:16-15:50/34	08:48 13:32-14:06/34 10:31-11:33/62
	21:44	20:48	19:39	17:34	16:47 10:32-11:17/45	16:42 15:37-16:01/24
26	06:01	06:48	07:36 08:35-09:02/27	07:26 16:27-16:44/17	08:18 15:16-15:50/34	08:48 13:34-14:07/33 10:32-11:34/62
	21:42	20:46	19:37	17:32	16:46 10:33-11:18/45	16:43 15:38-16:02/24
27	06:02	06:49	07:38 08:34-09:03/29	07:28 16:26-16:45/19	08:20 15:17-15:51/34	08:49 13:34-14:08/34 10:33-11:35/62
	21:41	20:44	19:34	17:30	16:45 10:33-11:19/46	16:44 15:38-16:02/24
28	06:03	06:51	07:40 08:32-09:03/31	07:29 16:25-16:46/21	08:21 15:17-15:50/33	08:49 13:35-14:08/33 10:33-11:35/62
	21:39	20:42	19:32	17:28	16:44 10:32-11:19/47	16:44 15:38-16:02/24
29	06:05	06:52	07:41 08:32-09:03/31	07:31 16:25-16:47/22	08:23 15:18-15:51/33	08:49 13:35-14:08/33 10:34-11:35/61
	21:38	20:40	19:30	17:27	16:44 10:33-11:21/48	16:45 15:38-16:03/25
30	06:06	06:54	07:43 08:30-09:03/33	07:33 16:25-16:48/23	08:24 15:19-15:50/31	08:49 13:36-14:08/32 10:35-11:36/61
	21:36	20:37	19:28	17:25	16:43 10:33-11:22/49	16:46 15:38-16:03/25
31	06:08	06:56		07:35 16:25-16:48/23		08:49 13:37-14:08/31 10:36-11:36/60
	21:35	20:35		17:23		16:47 15:38-16:03/25
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	0	0	225	727	1742	3490

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WTB1 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (233)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 15:50-16:15/25 16:48	08:24 16:30-16:50/20 17:35 08:54-09:15/21	07:32 18:25	07:23 20:17	06:20 21:06	05:37 21:50
2	08:49 15:50-16:15/25 16:49	08:22 16:31-16:51/20 17:37 08:54-09:16/22	07:30 18:26	07:21 20:19	06:18 21:08	05:36 21:51
3	08:49 15:51-16:16/25 16:50	08:21 16:32-16:50/18 17:38 08:53-09:17/24	07:28 18:28	07:19 20:20	06:17 21:09	05:35 21:52
4	08:49 15:51-16:18/27 16:51	08:19 16:33-16:49/16 17:40 08:52-09:17/25	07:26 18:30	07:17 20:22	06:15 21:11	05:34 21:53
5	08:49 15:51-16:18/27 16:53	08:18 16:35-16:48/13 17:42 08:53-09:18/25	07:23 18:32	07:14 20:23	06:13 21:12	05:34 21:54
6	08:48 15:52-16:20/28 16:54	08:16 16:37-16:46/9 17:44 08:52-09:18/26	07:21 18:33	07:12 20:25	06:11 21:14	05:33 21:55
7	08:48 15:53-16:22/29 16:55	08:14 08:52-09:18/26 17:45	07:19 18:35	07:10 20:27	06:09 21:16	05:33 21:56
8	08:48 15:53-16:23/30 16:56	08:13 08:52-09:18/26 17:47	07:17 18:37	07:08 20:28	06:08 21:17	05:32 21:57
9	08:47 15:53-16:24/31 16:58	08:11 08:53-09:19/26 17:49	07:15 18:39	07:05 20:30	06:06 21:19	05:32 21:58
10	08:47 15:54-16:26/32 16:59	08:09 08:53-09:18/25 17:51	07:13 18:40	07:03 20:32	06:04 21:20	05:31 21:59
11	08:46 15:55-16:27/32 17:00	08:07 08:54-09:17/23 17:53	07:10 18:42	07:01 20:33	06:03 21:22	05:31 21:59
12	08:46 15:55-16:29/34 17:02	08:06 08:54-09:16/22 17:55	07:08 18:44	06:59 20:35	06:01 21:23	05:30 22:00
13	08:45 15:56-16:30/34 17:03	08:04 08:55-09:15/20 17:56	07:06 18:45	06:57 20:37	06:00 21:25	05:30 22:01
14	08:44 15:56-16:32/36 17:05	08:02 08:57-09:14/17 17:58	07:04 18:47	06:55 20:38	05:58 21:26	05:30 22:01
15	08:43 15:58-16:34/36 17:06	08:00 08:58-09:12/14 18:00	07:01 18:49	06:52 20:40	05:57 21:28	05:30 22:02
16	08:43 15:59-16:34/35 17:08	07:58 09:01-09:09/8 18:02	06:59 18:50	06:50 20:42	05:55 21:29	05:30 22:02
17	08:42 16:01-16:34/33 17:09	07:56 18:04	06:57 18:52	06:48 20:43	05:54 21:31	05:30 22:03
18	08:41 16:34-16:38/4 16:15-16:33/18 17:11 16:02-16:13/11	07:54 18:05	06:55 18:54	06:46 20:45	05:52 21:32	05:30 22:03
19	08:40 16:15-16:40/25 17:13 16:04-16:11/7	07:52 18:07	06:53 18:55	06:44 20:46	05:51 21:34	05:30 22:03
20	08:39 16:17-16:42/25 17:14	07:50 18:09	06:50 18:57	06:42 20:48	05:49 21:35	05:30 22:04
21	08:38 16:20-16:44/24 17:16	07:49 18:11	06:48 18:59	06:40 20:50	05:48 21:37	05:30 22:04
22	08:37 16:30-16:46/16 17:17	07:46 18:12	06:46 19:00	06:38 20:51	05:47 21:38	05:30 22:04
23	08:36 16:30-16:48/18 17:19	07:44 18:14	06:43 19:02	06:36 20:53	05:46 21:39	05:30 22:04
24	08:35 16:29-16:48/19 17:21	07:42 18:16	06:41 19:04	06:34 20:55	05:45 21:41	05:31 22:05
25	08:33 16:29-16:49/20 17:22	07:40 18:18	06:39 19:05	06:32 20:56	05:43 21:42	05:31 22:05
26	08:32 16:28-16:49/21 17:24	07:38 18:19	06:37 19:07	06:30 20:58	05:42 21:43	05:31 22:05
27	08:31 16:28-16:50/22 17:26	07:36 18:21	06:34 19:09	06:28 21:00	05:41 21:44	05:32 22:05
28	08:29 16:29-16:51/22 17:28 09:00-09:09/9	07:34 18:23	06:32 19:10	06:26 21:01	05:40 21:46	05:32 22:04
29	08:28 16:29-16:51/22 17:29 08:57-09:11/14		07:30 20:12	06:24 21:03	05:39 21:47	05:33 22:04
30	08:27 16:29-16:51/22 17:31 08:57-09:13/16		07:28 20:14	06:22 21:04	05:38 21:48	05:33 22:04
31	08:25 16:29-16:51/22 17:33 08:55-09:14/19		07:25 20:15		05:37 21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	895	446	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WTB1 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (233)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October		November		December	
1	05:34	06:09	06:57	07:44		07:36	08:23-08:48/25	08:26	15:37-16:10/33
	22:04	21:33	20:33	19:25		17:21		16:42	
2	05:35	06:11	06:59	07:46		07:38	08:22-08:47/25	08:27	15:36-16:08/32
	22:04	21:32	20:31	19:23		17:19		16:42	
3	05:35	06:12	07:00	07:48		07:40	08:22-08:48/26	08:29	15:37-16:08/31
	22:03	21:30	20:29	19:21		17:17		16:41	
4	05:36	06:14	07:02	07:49		07:42	08:22-08:48/26	08:30	15:37-16:07/30
	22:03	21:28	20:26	19:19		17:16		16:40	
5	05:37	06:15	07:03	07:51		07:43	16:06-16:16/10	08:31	15:38-16:07/29
	22:02	21:27	20:24	19:16		17:14	08:22-08:48/26	16:40	
6	05:38	06:17	07:05	07:52		07:45	16:04-16:18/14	08:32	15:38-16:06/28
	22:02	21:25	20:22	19:14		17:12	08:22-08:48/26	16:40	
7	05:38	06:18	07:06	07:54		07:47	16:03-16:19/16	08:34	15:38-16:06/28
	22:01	21:23	20:20	19:12		17:11	08:23-08:48/25	16:39	
8	05:39	06:20	07:08	07:56		07:49	16:02-16:21/19	08:35	15:38-16:05/27
	22:01	21:22	20:18	19:10		17:09	08:24-08:47/23	16:39	
9	05:40	06:21	07:10	07:57		07:50	16:02-16:21/19	08:36	15:40-16:05/25
	22:00	21:20	20:15	19:08		17:07	08:25-08:47/22	16:39	
10	05:41	06:23	07:11	07:59		07:52	16:00-16:21/21	08:37	15:40-16:05/25
	21:59	21:18	20:13	19:05		17:06	08:26-08:47/21	16:38	
11	05:42	06:24	07:13	08:01		07:54	16:00-16:22/22	08:38	15:40-16:05/25
	21:59	21:16	20:11	19:03		17:04	08:26-08:45/19	16:38	
12	05:43	06:26	07:14	08:02		07:55	16:00-16:22/22	08:39	15:41-16:05/24
	21:58	21:14	20:09	19:01		17:03	08:28-08:44/16	16:38	
13	05:44	06:27	07:16	08:04		07:57	16:01-16:23/22	08:40	15:41-16:04/23
	21:57	21:12	20:06	18:59		17:01	08:29-08:43/14	16:38	
14	05:45	06:29	07:17	08:06		07:59	16:01-16:23/22	08:41	15:42-16:04/22
	21:56	21:10	20:04	18:57		17:00	08:32-08:41/9	16:38	
15	05:47	06:30	07:19	08:07		08:01	16:01-16:23/22	08:42	15:43-16:05/22
	21:55	21:08	20:02	18:55		16:59		16:38	
16	05:48	06:32	07:21	08:09		08:02	16:02-16:23/21	08:43	15:43-16:05/22
	21:54	21:07	19:59	18:52		16:57		16:38	
17	05:49	06:34	07:22	08:11		08:04	16:02-16:22/20	08:44	15:43-16:04/21
	21:53	21:05	19:57	18:50		16:56		16:39	
18	05:50	06:35	07:24	08:12		08:06	16:03-16:22/19	08:44	15:44-16:05/21
	21:52	21:03	19:55	18:48		16:55		16:39	
19	05:51	06:37	07:25	08:14		08:07	16:04-16:22/18	08:45	15:45-16:05/20
	21:51	21:01	19:53	18:46		16:53		16:39	
20	05:53	06:38	07:27	08:16		08:09	16:05-16:21/16	08:46	15:45-16:05/20
	21:50	20:59	19:50	18:44		16:52		16:40	
21	05:54	06:40	07:28	08:17		08:10	15:56-16:20/24	08:46	15:45-16:06/21
	21:49	20:56	19:48	18:42		16:51		16:40	
22	05:55	06:41	07:30	08:19		08:12	15:53-16:18/25	08:47	15:45-16:06/21
	21:48	20:54	19:46	18:40		16:50		16:40	
23	05:57	06:43	07:32	08:21		08:14	15:52-16:17/25	08:47	15:47-16:07/20
	21:46	20:52	19:43	18:38		16:49	15:41-15:48/7	16:41	
24	05:58	06:45	07:33	08:22		08:15	16:12-16:16/4 15:52-16:11/19	08:48	15:47-16:07/20
	21:45	20:50	19:41	18:36		16:48	15:40-15:50/10	16:42	
25	05:59	06:46	07:35	07:24		08:17	15:38-16:11/33	08:48	15:47-16:08/21
	21:44	20:48	19:39	17:34		16:47		16:42	
26	06:01	06:48	07:36	07:26	08:30-08:39/9	08:18	15:37-16:12/35	08:48	15:48-16:09/21
	21:42	20:46	19:37	17:32		16:46		16:43	
27	06:02	06:49	07:38	07:28	08:27-08:42/15	08:20	15:37-16:13/36	08:49	15:48-16:10/22
	21:41	20:44	19:34	17:30		16:45		16:44	
28	06:03	06:51	07:40	07:29	08:26-08:44/18	08:21	15:36-16:12/36	08:49	15:48-16:10/22
	21:39	20:42	19:32	17:28		16:44		16:44	
29	06:05	06:52	07:41	07:31	08:25-08:45/20	08:23	15:37-16:11/34	08:49	15:49-16:11/22
	21:38	20:40	19:30	17:27		16:44		16:45	
30	06:06	06:54	07:43	07:33	08:24-08:46/22	08:24	15:36-16:10/34	08:49	15:49-16:12/23
	21:36	20:37	19:28	17:25		16:43		16:46	
31	06:08	06:56		07:35	08:23-08:47/24			08:49	15:50-16:13/23
	21:35	20:35		17:23				16:47	
Potential sun hours	498	451	380	333		269		248	
Sum of minutes with flicker	0	0	0	108		928		744	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WTB2 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (230)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 15:38-16:06/28 09:48-10:15/27	08:24	07:32	07:23	06:20	05:37
	16:48 15:17-15:27/10	17:35	18:25	20:17	21:06	21:50
2	08:49 15:38-16:06/28 09:48-10:15/27	08:22	07:30	07:21	06:18	05:36
	16:49 15:17-15:25/8	17:36	18:26	20:19	21:08	21:51
3	08:49 15:39-16:08/29 09:48-10:15/27	08:21	07:28	07:19	06:16	05:35
	16:50 15:20-15:25/5	17:38	18:28	20:20	21:09	21:52
4	08:49 15:41-16:09/28	08:19	07:26	07:17	06:15	05:34
	16:51 09:49-10:16/27	17:40	18:30	20:22	21:11	21:53
5	08:49 15:41-16:09/28	08:18	07:23	07:14	06:13	05:34
	16:53 09:50-10:16/26	17:42	18:32	20:23	21:12	21:54
6	08:48 15:43-16:10/27	08:16	07:21	07:12	06:11	05:33
	16:54 09:50-10:16/26	17:44	18:33	20:25	21:14	21:55
7	08:48 15:44-16:11/27	08:14	07:19	07:10	06:09	05:32
	16:55 09:51-10:17/26	17:45	18:35	20:27	21:16	21:56
8	08:48 15:45-16:11/26	08:13	07:17	07:08	06:08	05:32
	16:56 09:51-10:16/25	17:47	18:37	20:28	21:17	21:57
9	08:47 15:45-16:12/27	08:11	07:15	07:05	06:06	05:32
	16:58 09:52-10:16/24	17:49	18:38	20:30	21:19	21:58
10	08:47 15:46-16:13/27	08:09	07:13	07:03	06:04	05:31
	16:59 09:53-10:17/24	17:51	18:40	20:32	21:20	21:59
11	08:46 15:46-16:13/27	08:07	07:10	07:01	06:03	05:31
	17:00 09:54-10:16/22	17:53	18:42	20:33	21:22	21:59
12	08:46 15:46-16:14/28	08:06	07:08	06:59	06:01	05:30
	17:02 09:55-10:16/21	17:54	18:44	20:35	21:23	22:00
13	08:45 15:46-16:14/28	08:04	07:06	06:57	06:00	05:30
	17:03 09:55-10:15/20	17:56	18:45	20:37	21:25	22:01
14	08:44 15:46-16:15/29	08:02 08:26-08:32/6	07:04	06:55	05:58	05:30
	17:05 09:57-10:16/19	17:58	18:47	20:38	21:26	22:01
15	08:43 15:47-16:16/29	08:00 08:24-08:34/10	07:01	06:52	05:56	05:30
	17:06 09:59-10:15/16	18:00	18:49	20:40	21:28	22:02
16	08:43 15:48-16:16/28	07:58 08:22-08:36/14	06:59	06:50	05:55	05:30
	17:08 10:00-10:14/14	18:02	18:50	20:42	21:29	22:02
17	08:42 15:48-16:17/29	07:56 08:20-08:37/17	06:57	06:48	05:54	05:30
	17:09 10:02-10:12/10	18:03	18:52	20:43	21:31	22:03
18	08:41 15:47-16:16/29	07:54 08:19-08:38/19	06:55	06:46	05:52	05:30
	17:11 10:06-10:09/3	18:05	18:54	20:45	21:32	22:03
19	08:40 15:48-16:16/28	07:52 08:18-08:38/20	06:52	06:44	05:51	05:30
	17:12	18:07	18:55	20:46	21:34	22:03
20	08:39 15:49-16:17/28	07:50 08:18-08:38/20	06:50	06:42	05:49	05:30
	17:14	18:09	18:57	20:48	21:35	22:04
21	08:38 15:49-16:17/28	07:48 08:18-08:38/20	06:48	06:40	05:48	05:30
	17:16	18:11	18:59	20:50	21:37	22:04
22	08:37 15:50-16:17/27	07:46 08:18-08:38/20	06:46	06:38	05:47	05:30
	17:17	18:12	19:00	20:51	21:38	22:04
23	08:36 15:51-16:17/26	07:44 08:18-08:38/20	06:43	06:36	05:46	05:30
	17:19	18:14	19:02	20:53	21:39	22:04
24	08:35 15:51-16:16/25	07:42 08:19-08:37/18	06:41	06:34	05:44	05:31
	17:21	18:16	19:04	20:55	21:41	22:05
25	08:33 15:53-16:16/23	07:40 08:20-08:36/16	06:39	06:32	05:43	05:31
	17:22	18:18	19:05	20:56	21:42	22:05
26	08:32 15:53-16:15/22	07:38 08:21-08:34/13	06:37	06:30	05:42	05:31
	17:24	18:19	19:07	20:58	21:43	22:05
27	08:31 15:55-16:15/20	07:36 08:22-08:31/9	06:34	06:28	05:41	05:32
	17:26	18:21	19:09	21:00	21:44	22:05
28	08:29 15:57-16:14/17	07:34	06:32	06:26	05:40	05:32
	17:28	18:23	19:10	21:01	21:46	22:04
29	08:28 15:59-16:12/13		07:30	06:24	05:39	05:33
	17:29		20:12	21:03	21:47	22:04
30	08:27 16:02-16:10/8		07:28	06:22	05:38	05:33
	17:31		20:14	21:04	21:48	22:04
31	08:25		07:25		05:37	
	17:33		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	1174	222	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WTB2 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (230)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October		November		December	
1	05:34	06:09	06:57	07:44		07:36		08:26	15:28-15:56/28
	22:04	21:33	20:33	19:25		17:21		16:42	09:36-09:58/22
2	05:35	06:11	06:59	07:46		07:38		08:27	15:28-15:55/27
	22:04	21:32	20:31	19:23		17:19		16:42	09:35-09:59/24
3	05:35	06:12	07:00	07:48		07:40		08:28	15:29-15:56/27
	22:03	21:30	20:29	19:21		17:17		16:41	09:36-10:00/24
4	05:36	06:14	07:02	07:49		07:42		08:30	15:30-15:56/26
	22:03	21:28	20:26	19:19		17:16		16:40	09:36-10:00/24
5	05:37	06:15	07:03	07:51		07:43		08:31	15:30-15:56/26
	22:02	21:27	20:24	19:16		17:14		16:40	09:36-10:02/26
6	05:38	06:17	07:05	07:52		07:45		08:32	15:29-15:56/27
	22:02	21:25	20:22	19:14		17:12		16:40	09:36-10:02/26
7	05:38	06:18	07:06	07:54		07:47		08:34	15:28-15:56/28
	22:01	21:23	20:20	19:12		17:11		16:39	09:36-10:02/26
8	05:39	06:20	07:08	07:56		07:48		08:35	15:28-15:56/28
	22:01	21:22	20:18	19:10		17:09		16:39	09:37-10:04/27
9	05:40	06:21	07:10	07:57		07:50		08:36	15:29-15:57/28 09:37-10:04/27
	22:00	21:20	20:15	19:08		17:07		16:39	15:09-15:13/4
10	05:41	06:23	07:11	07:59		07:52		08:37	15:29-15:57/28 09:37-10:04/27
	21:59	21:18	20:13	19:05		17:06		16:38	15:08-15:15/7
11	05:42	06:24	07:13	08:01		07:54		08:38	15:29-15:57/28 09:38-10:05/27
	21:59	21:16	20:11	19:03		17:04		16:38	15:07-15:17/10
12	05:43	06:26	07:14	08:02		07:55	15:33-15:42/9	08:39	15:29-15:57/28 09:38-10:05/27
	21:58	21:14	20:09	19:01		17:03		16:38	15:07-15:18/11
13	05:44	06:27	07:16	08:04		07:57	15:31-15:44/13	08:40	15:29-15:57/28 09:38-10:06/28
	21:57	21:12	20:06	18:59		17:01		16:38	15:06-15:19/13
14	05:45	06:29	07:17	08:06	08:58-09:01/3	07:59	15:29-15:46/17	08:41	15:29-15:57/28 09:39-10:06/27
	21:56	21:10	20:04	18:57		17:00		16:38	15:06-15:20/14
15	05:47	06:30	07:19	08:07	08:54-09:05/11	08:01	15:28-15:48/20	08:42	15:30-15:58/28 09:39-10:07/28
	21:55	21:08	20:02	18:55		16:59		16:38	15:06-15:21/15
16	05:48	06:32	07:21	08:09	08:52-09:06/14	08:02	15:27-15:49/22	08:43	15:30-15:59/29 09:40-10:08/28
	21:54	21:07	19:59	18:52		16:57		16:38	15:07-15:22/15
17	05:49	06:34	07:22	08:11	08:51-09:08/17	08:04	15:26-15:49/23	08:44	15:30-15:58/28 09:40-10:07/27
	21:53	21:05	19:57	18:50		16:56		16:39	15:06-15:22/16
18	05:50	06:35	07:24	08:12	08:50-09:09/19	08:06	15:25-15:50/25	08:44	15:31-15:59/28 09:40-10:08/28
	21:52	21:03	19:55	18:48		16:55		16:39	15:07-15:23/16
19	05:51	06:37	07:25	08:14	08:49-09:09/20	08:07	15:25-15:51/26	08:45	15:31-16:00/29 09:41-10:09/28
	21:51	21:01	19:53	18:46		16:53		16:39	15:07-15:23/16
20	05:53	06:38	07:27	08:16	08:48-09:09/21	08:09	15:25-15:52/27	08:46	15:31-16:00/29 09:41-10:09/28
	21:50	20:59	19:50	18:44		16:52		16:39	15:07-15:23/16
21	05:54	06:40	07:28	08:17	08:48-09:09/21	08:10	15:25-15:53/28	08:46	15:32-16:01/29 09:42-10:10/28
	21:49	20:56	19:48	18:42		16:51		16:40	15:08-15:24/16
22	05:55	06:41	07:30	08:19	08:48-09:09/21	08:12	15:25-15:53/28	08:47	15:32-16:01/29 09:42-10:10/28
	21:48	20:54	19:46	18:40		16:50		16:40	15:08-15:24/16
23	05:56	06:43	07:32	08:21	08:49-09:08/19	08:14	15:25-15:53/28	08:47	15:33-16:02/29 09:43-10:11/28
	21:46	20:52	19:43	18:38		16:49		16:41	15:09-15:25/16
24	05:58	06:45	07:33	08:22	08:49-09:08/19	08:15	15:25-15:54/29	08:48	15:33-16:02/29 09:43-10:11/28
	21:45	20:50	19:41	18:36		16:48	09:44-09:46/2	16:41	15:09-15:25/16
25	05:59	06:46	07:35	07:24	07:51-08:07/16	08:17	15:25-15:54/29	08:48	15:33-16:02/29 09:43-10:11/28
	21:44	20:48	19:39	17:34		16:47	09:39-09:49/10	16:42	15:10-15:25/15
26	06:01	06:48	07:36	07:26	07:52-08:05/13	08:18	15:26-15:54/28	08:48	15:35-16:03/28 09:44-10:12/28
	21:42	20:46	19:37	17:32		16:46	09:38-09:52/14	16:43	15:11-15:27/16
27	06:02	06:49	07:38	07:28	07:54-08:03/9	08:20	15:26-15:55/29	08:49	15:35-16:04/29 09:45-10:13/28
	21:41	20:44	19:34	17:30		16:45	09:38-09:54/16	16:44	15:11-15:27/16
28	06:03	06:51	07:40	07:29	07:56-08:00/4	08:21	15:26-15:55/29	08:49	15:36-16:04/28 09:45-10:13/28
	21:39	20:42	19:32	17:28		16:44	09:36-09:55/19	16:44	15:12-15:27/15
29	06:05	06:52	07:41	07:31		08:23	15:27-15:55/28	08:49	15:36-16:04/28 09:46-10:13/27
	21:38	20:40	19:30	17:26		16:44	09:36-09:56/20	16:45	15:13-15:27/14
30	06:06	06:54	07:43	07:33		08:24	15:27-15:55/28	08:49	15:37-16:05/28 09:46-10:14/28
	21:36	20:37	19:28	17:25		16:43	09:37-09:58/21	16:46	15:14-15:27/13
31	06:08	06:56		07:35				08:49	15:37-16:05/28 09:47-10:14/27
	21:35	20:35		17:23				16:47	15:15-15:27/12
Potential sun hours	498	451	380	333		269		248	
Sum of minutes with flicker	0	0	0	227		568		2023	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WTB3 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (229)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 11:35-12:04/29 16:11-16:15/4 10:33-11:06/33	08:24 16:15-16:56/41	07:32 17:02-17:22/20	07:23	06:20	05:37
	16:48 14:00-14:43/43 09:30-09:55/25	17:35 09:28-10:06/38	18:25	20:17	21:06	21:50
2	08:49 11:36-12:04/28 16:10-16:15/5 10:34-11:06/32	08:22 16:17-16:56/39	07:30 17:04-17:21/17	07:21	06:18	05:36
	16:49 14:00-14:42/42 09:31-09:56/25	17:36 09:29-10:06/37	18:26	20:19	21:08	21:51
3	08:49 11:36-12:03/27 16:10-16:16/6 10:34-11:05/31	08:21 16:17-16:55/38	07:28 17:07-17:18/11	07:19	06:16	05:35
	16:50 14:01-14:43/42 09:30-09:56/26	17:38 09:29-10:06/37	18:28	20:20	21:09	21:52
4	08:49 11:38-12:03/25 16:10-16:18/8 10:35-11:06/31	08:19 16:17-16:54/37	07:26	07:17	06:15	05:34
	16:51 14:02-14:43/41 09:31-09:57/26	17:40 09:30-10:05/35	18:30	20:22	21:11	21:53
5	08:49 11:39-12:03/24 16:09-16:18/9 10:36-11:06/30	08:18 16:19-16:52/33	07:23	07:14	06:13	05:34
	16:53 14:02-14:43/41 09:32-09:58/26	17:42 09:31-10:05/34	18:32	20:23	21:12	21:54
6	08:48 11:40-12:02/22 16:10-16:20/10 10:37-11:05/28	08:16 16:20-16:50/30	07:21	07:12	06:11	05:33
	16:54 14:03-14:43/40 09:31-09:58/27	17:44 09:31-10:04/33	18:33	20:25	21:14	21:55
7	08:48 11:42-12:01/19 16:10-16:22/12 10:38-11:06/28	08:14 16:21-16:40/19 09:32-10:03/31	07:19 07:45-07:54/9	07:10	06:09	05:32
	16:55 14:05-14:44/39 09:32-09:59/27	17:45 16:41-16:47/6	18:35	20:27	21:16	21:56
8	08:48 11:43-12:00/17 16:10-16:23/13 10:39-11:05/26	08:13 16:23-16:38/15	07:17 07:42-07:56/14	07:08	06:08	05:32
	16:56 14:05-14:43/38 09:32-09:59/27	17:47 09:33-10:02/29	18:37	20:28	21:17	21:57
9	08:47 11:45-11:57/12 16:09-16:24/15 10:39-11:04/25	08:11 16:26-16:37/11	07:15 07:39-07:57/18	07:05	06:06	05:32
	16:58 14:06-14:43/37 09:32-09:59/27	17:49 09:35-10:02/27	18:39	20:30	21:19	21:58
10	08:47 11:51-11:54/3 16:10-16:26/16 10:41-11:05/24	08:09 09:36-10:00/24	07:13 07:38-07:58/20	07:03	06:04	05:31
	16:59 14:07-14:44/37 09:33-10:00/27	17:51	18:40	20:32	21:20	21:59
11	08:46 14:08-14:43/35 09:33-10:00/27	08:07 09:38-09:57/19	07:10 07:37-07:59/22	07:01	06:03	05:31
	17:00 16:10-16:27/17 10:42-11:04/22	17:53	18:42	20:33	21:22	21:59
12	08:46 14:09-14:43/34 09:33-10:00/27	08:06 17:08-17:18/10	07:08 07:37-08:00/23	06:59	06:01	05:30
	17:02 16:10-16:28/18 10:44-11:02/18	17:54 09:40-09:55/15	18:44	20:35	21:23	22:00
13	08:45 14:10-14:42/32 09:32-10:01/29	08:04 17:05-17:20/15	07:06 07:35-07:59/24	06:57	06:00	05:30
	17:03 16:10-16:29/19 10:45-11:01/16	17:56 09:46-09:49/3	18:45	20:37	21:25	22:01
14	08:44 14:12-14:43/31 09:32-10:02/30	08:02 17:03-17:22/19	07:04 07:35-07:59/24	06:55	05:58	05:30
	17:05 16:10-16:29/19 10:48-11:00/12	17:58	18:47	20:38	21:26	22:01
15	08:43 14:13-14:42/29 09:31-10:02/31	08:00 17:02-17:24/22	07:01 07:35-07:59/24	06:52	05:56	05:30
	17:06 16:11-16:30/19 10:52-10:57/5	18:00	18:49	20:40	21:28	22:02
16	08:43 14:15-14:41/26 09:30-10:02/32	07:58 17:01-17:25/24	06:59 07:35-07:59/24	06:50	05:55	05:30
	17:08 16:11-16:31/20	18:02	18:50	20:42	21:29	22:02
17	08:42 14:17-14:40/23 09:30-10:02/32	07:56 17:00-17:26/26	06:57 07:35-07:57/22	06:48	05:54	05:30
	17:09 16:12-16:31/19	18:03	18:52	20:43	21:31	22:03
18	08:41 14:19-14:39/20 09:30-10:02/32	07:54 16:59-17:27/28	06:55 07:36-07:56/20	06:46	05:52	05:30
	17:11 16:12-16:33/21	18:05	18:54	20:45	21:32	22:03
19	08:40 14:21-14:37/16 09:28-10:02/34	07:52 16:59-17:27/28	06:52 07:37-07:55/18	06:44	05:51	05:30
	17:12 16:12-16:34/22	18:07	18:55	20:46	21:34	22:03
20	08:39 14:25-14:34/9 16:37-16:42/5	07:50 16:58-17:28/30	06:50 07:38-07:53/15	06:42	05:49	05:30
	17:14 16:13-16:36/23 09:28-10:01/33	18:09	18:57	20:48	21:35	22:04
21	08:38 16:14-16:44/30	07:48 16:58-17:28/30	06:48 07:40-07:49/9	06:40	05:48	05:30
	17:16 09:28-10:01/33	18:11	18:59	20:50	21:37	22:04
22	08:37 16:15-16:46/31	07:46 16:58-17:28/30	06:46	06:38	05:47	05:30
	17:17 09:28-10:02/34	18:12	19:00	20:51	21:38	22:04
23	08:36 16:16-16:48/32	07:44 16:58-17:28/30	06:43	06:36	05:46	05:30
	17:19 09:28-10:03/35	18:14	19:02	20:53	21:39	22:04
24	08:35 16:15-16:50/35	07:42 16:58-17:28/30	06:41	06:34	05:44	05:31
	17:21 09:27-10:03/36	18:16	19:04	20:55	21:41	22:05
25	08:33 16:15-16:52/37	07:40 16:59-17:27/28	06:39	06:32	05:43	05:31
	17:22 09:28-10:04/36	18:18	19:05	20:56	21:42	22:05
26	08:32 16:14-16:53/39	07:38 16:58-17:26/28	06:37	06:30	05:42	05:31
	17:24 09:28-10:05/37	18:19	19:07	20:58	21:43	22:05
27	08:31 16:15-16:55/40	07:36 16:59-17:25/26	06:34	06:28	05:41	05:32
	17:26 09:28-10:05/37	18:21	19:09	21:00	21:44	22:05
28	08:29 16:15-16:56/41	07:34 17:01-17:24/23	06:32	06:26	05:40	05:32
	17:28 09:28-10:06/38	18:23	19:10	21:01	21:46	22:04
29	08:28 16:15-16:56/41		07:30	06:24	05:39	05:33
	17:29 09:28-10:06/38		20:12	21:03	21:47	22:04
30	08:27 16:16-16:57/41		07:28	06:22	05:38	05:33
	17:31 09:28-10:06/38		20:14	21:04	21:48	22:04
31	08:25 16:15-16:56/41		07:25		05:37	
	17:33 09:28-10:06/38		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	2900	1058	334	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WTB3 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (229)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34	06:09	06:57	07:44 08:15-08:39/24	07:36 15:59-16:01/2	08:26 13:50-14:25/35 09:15-09:42/27
	22:04	21:33	20:33	19:25	17:21 09:06-09:30/24	16:42 15:52-16:10/18 10:24-10:46/22
2	05:35	06:11	06:59	07:46 08:16-08:38/22	07:38 15:54-16:06/12	08:27 11:34-11:35/1 15:52-16:08/16 10:23-10:47/24
	22:04	21:32	20:31	19:23	17:19 09:03-09:31/28	16:42 13:49-14:26/37 09:16-09:43/27
3	05:35	06:12	07:00	07:48 08:16-08:37/21	07:40 15:52-16:08/16	08:29 11:30-11:41/11 15:53-16:08/15 10:24-10:48/24
	22:03	21:30	20:29	19:21	17:17 09:02-09:32/30	16:41 13:50-14:27/37 09:16-09:43/27
4	05:36	06:14	07:02	07:49 08:17-08:36/19	07:42 15:50-16:18/28	08:30 11:28-11:44/16 15:54-16:07/13 10:23-10:49/26
	22:03	21:28	20:26	19:19	17:16 09:02-09:33/31	16:40 13:49-14:28/39 09:16-09:43/27
5	05:37	06:15	07:03	07:51 08:18-08:34/16	07:43 15:49-16:20/31	08:31 11:27-11:46/19 15:55-16:07/12 10:23-10:51/28
	22:02	21:27	20:24	19:16	17:14 09:01-09:34/33	16:40 13:50-14:29/39 09:17-09:44/27
6	05:38	06:17	07:05	07:52 08:19-08:31/12	07:45 15:49-16:22/33	08:32 11:26-11:48/22 15:56-16:06/10 10:23-10:51/28
	22:02	21:25	20:22	19:14	17:12 09:01-09:35/34	16:40 13:50-14:29/39 09:17-09:44/27
7	05:38	06:18	07:06	07:54 08:24-08:26/2	07:47 15:48-16:24/36	08:34 11:25-11:49/24 15:56-16:06/10 10:23-10:52/29
	22:01	21:23	20:20	19:12	17:11 09:00-09:36/36	16:39 13:49-14:30/41 09:18-09:44/26
8	05:39	06:20	07:08	07:56	07:49 15:48-16:26/38	08:35 11:26-11:51/25 15:57-16:05/8 10:23-10:54/31
	22:01	21:22	20:18	19:10	17:09 09:00-09:36/36	16:39 13:49-14:30/41 09:19-09:45/26
9	05:40	06:21	07:10	07:57	07:50 15:47-16:27/40	08:36 11:25-11:52/27 15:59-16:05/6 10:23-10:54/31
	22:00	21:20	20:15	19:08	17:07 09:00-09:37/37	16:39 13:50-14:32/42 09:19-09:45/26
10	05:41	06:23	07:11	07:59 17:44-17:49/5	07:52 15:46-16:27/41	08:37 11:25-11:53/28 16:00-16:05/5 10:23-10:55/32
	21:59	21:18	20:13	19:05	17:06 08:59-09:36/37	16:38 13:50-14:32/42 09:20-09:45/25
11	05:42	06:24	07:13	08:01 17:40-17:53/13	07:54 15:46-16:27/41	08:38 11:25-11:54/29 16:01-16:05/4 10:23-10:56/33
	21:59	21:16	20:11	19:03	17:04 08:59-09:37/38	16:38 13:50-14:33/43 09:20-09:45/25
12	05:43	06:26	07:14	08:02 17:36-17:55/19	07:55 15:47-16:28/41	08:39 11:25-11:55/30 16:02-16:04/2 10:24-10:56/32
	21:58	21:14	20:09	19:01	17:03 08:59-09:37/38	16:38 13:51-14:33/42 09:21-09:45/24
13	05:44	06:27	07:16	08:04 17:35-17:56/21	07:57 15:47-16:28/41	08:40 11:25-11:55/30 09:22-09:46/24
	21:57	21:12	20:06	18:59	17:01 09:00-09:38/38	16:38 13:51-14:34/43 10:24-10:57/33
14	05:45	06:29	07:17	08:06 17:33-17:57/24	07:59 15:47-16:28/41	08:41 11:25-11:56/31 09:22-09:46/24
	21:56	21:10	20:04	18:57	17:00 09:00-09:38/38	16:38 13:51-14:34/43 10:24-10:58/34
15	05:47	06:30	07:19	08:07 17:32-17:58/26	08:01 15:48-16:28/40	08:42 11:25-11:57/32 09:23-09:46/23
	21:55	21:08	20:02	18:55	16:59 09:00-09:38/38	16:38 13:52-14:35/43 10:25-10:58/33
16	05:48	06:32	07:21	08:09 17:30-17:58/28	08:02 15:48-16:27/39	08:43 11:26-11:58/32 09:24-09:47/23
	21:54	21:07	19:59	18:52	16:57 09:01-09:38/37	16:38 13:52-14:36/44 10:25-10:59/34
17	05:49	06:34	07:22	08:11 17:30-17:59/29	08:04 15:48-16:25/37	08:44 11:25-11:58/33 09:24-09:47/23
	21:53	21:05	19:57	18:50	16:56 09:01-09:37/36	16:39 13:52-14:35/43 10:25-10:59/34
18	05:50	06:35	07:24	08:12 17:30-17:59/29	08:06 15:49-16:24/35	08:44 11:26-11:59/33 09:24-09:47/23
	21:52	21:03	19:55	18:48	16:55 09:01-09:37/36	16:39 13:53-14:36/43 10:25-11:00/35
19	05:51	06:37	07:25	08:14 17:29-17:59/30	08:07 15:50-16:22/32	08:45 11:26-12:00/34 09:25-09:48/23
	21:51	21:01	19:53	18:46	16:53 09:02-09:37/35	16:39 13:53-14:37/44 10:26-11:01/35
20	05:53	06:38	07:27	08:16 17:28-17:58/30	08:09 15:50-16:21/31	08:46 11:26-12:00/34 09:25-09:48/23
	21:50	20:59	19:50	18:44	16:52 09:03-09:38/35	16:39 13:53-14:37/44 10:26-11:00/34
21	05:54	06:40	07:28	08:17 17:28-17:58/30	08:10 15:50-16:20/30	08:46 11:27-12:01/34 09:26-09:49/23
	21:49	20:56	19:48	18:42	16:51 09:04-09:38/34	16:40 13:54-14:38/44 10:27-11:01/34
22	05:55	06:41	07:30 08:26-08:34/8	08:19 17:29-17:58/29	08:12 14:01-14:10/9 16:13-16:18/5	08:47 11:27-12:01/34 09:26-09:49/23
	21:48	20:54	19:46	18:40	16:50 15:49-16:12/23 09:04-09:37/33	16:40 13:54-14:38/44 10:27-11:01/34
23	05:56	06:43	07:32 08:22-08:36/14	08:21 17:29-17:58/29	08:14 13:58-14:14/16 09:05-09:38/33	08:47 11:28-12:02/34 09:27-09:50/23
	21:46	20:52	19:43	18:38	16:49 15:49-16:11/22	16:41 13:55-14:39/44 10:28-11:02/34
24	05:58	06:45	07:33 08:21-08:38/17	08:22 17:30-17:57/27	08:15 13:56-14:16/20 09:07-09:39/32	08:48 11:28-12:02/34 09:27-09:50/23
	21:45	20:50	19:41	18:36	16:48 15:49-16:10/21	16:41 13:55-14:39/44 10:28-11:02/34
25	05:59	06:46	07:35 08:19-08:38/19	07:24 16:30-16:55/25	08:17 13:54-14:17/23 09:07-09:40/33	08:48 11:29-12:02/33 09:27-09:50/23
	21:44	20:48	19:39	17:34	16:47 15:49-16:08/19	16:42 13:56-14:39/43 10:28-11:03/35
26	06:01	06:48	07:36 08:18-08:39/21	07:26 16:31-16:54/23	08:18 13:53-14:19/26 09:08-09:40/32	08:48 11:30-12:03/33 09:29-09:51/22
	21:42	20:46	19:37	17:32	16:46 15:49-16:09/20	16:43 13:57-14:40/43 10:30-11:04/34
27	06:02	06:49	07:38 08:17-08:40/23	07:28 16:32-16:53/21	08:20 13:52-14:21/29 09:10-09:41/31	08:49 11:30-12:03/33 09:29-09:52/23
	21:41	20:44	19:34	17:30	16:45 15:50-16:10/20 10:32-10:35/3	16:44 13:57-14:41/44 10:30-11:04/34
28	06:03	06:51	07:40 08:16-08:40/24	07:29 16:33-16:52/19	08:21 13:51-14:22/31 09:11-09:41/30	08:49 11:31-12:03/32 09:29-09:52/23
	21:39	20:42	19:32	17:28	16:44 15:50-16:09/19 10:28-10:39/11	16:44 13:58-14:41/43 10:30-11:04/34
29	06:05	06:52	07:41 08:16-08:40/24	07:31 16:35-16:50/15	08:23 13:51-14:23/32 09:13-09:42/29	08:49 11:32-12:03/31 09:29-09:53/24
	21:38	20:40	19:30	17:26 09:13-09:21/8	16:44 15:51-16:10/19 10:26-10:42/16	16:45 13:58-14:41/43 10:31-11:04/33
30	06:06	06:54	07:43 08:15-08:39/24	07:33 16:39-16:46/7	08:24 13:50-14:24/34 09:15-09:42/27	08:49 11:32-12:03/31 09:30-09:53/23
	21:36	20:37	19:28	17:25 09:09-09:25/16	16:43 15:51-16:09/18 10:26-10:44/18	16:46 13:59-14:42/43 10:32-11:05/33
31	06:08	06:56		07:35 09:07-09:28/21		08:49 11:33-12:04/31 16:11-16:13/2 10:32-11:05/33
	21:35	20:35		17:23		16:47 13:59-14:42/43 09:30-09:54/24
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	0	0	174	640	2148	4012

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WTB4 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (249)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 14:16-15:08/52 10:35-11:09/34	08:24 14:37-15:08/31 08:49-09:07/18	07:32	07:23	06:20	05:37
	16:48 09:28-09:39/11 15:19-15:29/10	17:35 09:34-09:50/16 09:12-09:33/21	18:25	20:17	21:06	21:50
2	08:49 14:16-15:07/51 10:35-11:09/34	08:22 14:41-15:07/26 08:50-09:08/18	07:30	07:21	06:18	05:36
	16:49 09:28-09:40/12 15:20-15:27/7	17:36 09:37-09:48/11 09:14-09:33/19	18:26	20:18	21:08	21:51
3	08:49 14:17-15:08/51 10:36-11:09/33	08:21 14:43-15:04/21 09:14-09:31/17	07:28	07:19	06:16	05:35
	16:50 09:27-09:41/14 15:22-15:27/5	17:38 08:49-09:08/19	18:28	20:20	21:09	21:52
4	08:49 14:17-15:09/52 10:37-11:10/33	08:19 14:47-15:01/14 09:16-09:29/13	07:26	07:16	06:15	05:34
	16:51 09:27-09:42/15	17:40 08:49-09:07/18	18:30	20:22	21:11	21:53
5	08:49 14:17-15:09/52 10:37-11:09/32	08:18 08:51-09:08/17	07:23	07:14	06:13	05:34
	16:53 09:27-09:44/17 09:21-09:26/5	17:42 09:19-09:28/9	18:32	20:23	21:12	21:54
6	08:48 14:18-15:10/52 10:38-11:10/32	08:16 08:51-09:07/16	07:21	07:12	06:11	05:33
	16:54 09:19-09:44/25	17:44	18:33	20:25	21:14	21:55
7	08:48 14:19-15:11/52 10:40-11:10/30	08:14 08:52-09:06/14	07:19	07:10	06:09	05:32
	16:55 09:19-09:46/27	17:45 08:41-08:47/6	18:35	20:27	21:16	21:56
8	08:48 14:19-15:11/52 10:40-11:10/30	08:13 08:52-09:05/13	07:17 07:40-07:43/3	07:08	06:08	05:32
	16:56 09:18-09:46/28	17:47 08:38-08:49/11	18:37	20:28	21:17	21:57
9	08:47 14:19-15:11/52 10:41-11:09/28	08:11 08:55-09:04/9	07:15 07:37-07:44/7	07:05	06:06	05:31
	16:58 09:17-09:47/30	17:49 08:37-08:52/15	18:38	20:30	21:19	21:58
10	08:47 14:20-15:12/52 10:42-11:09/27	08:09 08:35-08:53/18	07:13 07:35-07:45/10	07:03	06:04	05:31
	16:59 09:17-09:48/31	17:51	18:40	20:32	21:20	21:59
11	08:46 14:20-15:12/52 10:43-11:09/26	08:07 08:34-08:54/20	07:10 07:33-07:46/13	07:01	06:03	05:31
	17:00 09:17-09:49/32	17:53	18:42	20:33	21:22	21:59
12	08:46 14:20-15:12/52 10:44-11:08/24	08:06 08:34-08:54/20	07:08 07:31-07:46/15	06:59	06:01	05:30
	17:02 09:16-09:49/33	17:54	18:44	20:35	21:23	22:00
13	08:45 14:20-15:12/52 10:45-11:07/22	08:04 08:33-08:55/22	07:06 07:29-07:45/16	06:57	05:59	05:30
	17:03 09:16-09:50/34	17:56	18:45	20:37	21:25	22:01
14	08:44 14:21-15:13/52 10:48-11:06/18	08:02 08:33-08:55/22	07:04 07:29-07:45/16	06:55	05:58	05:30
	17:05 09:17-09:52/35	17:58	18:47	20:38	21:26	22:01
15	08:43 14:22-15:14/52 10:50-11:05/15	08:00 08:33-08:55/22	07:01 07:30-07:44/14	06:52	05:56	05:30
	17:06 09:14-09:52/38	18:00	18:49	20:40	21:28	22:02
16	08:43 14:22-15:14/52 10:53-11:02/9	07:58 08:33-08:55/22	06:59 07:31-07:42/11	06:50	05:55	05:30
	17:08 09:13-09:53/40	18:02	18:50	20:42	21:29	22:02
17	08:42 14:23-15:14/51	07:56 08:33-08:54/21	06:57 07:32-07:39/7	06:48	05:54	05:30
	17:09 09:12-09:53/41	18:03	18:52	20:43	21:31	22:03
18	08:41 14:23-15:13/50	07:54 08:33-08:54/21	06:55	06:46	05:52	05:30
	17:11 09:12-09:54/42	18:05	18:54	20:45	21:32	22:03
19	08:40 14:23-15:14/51	07:52 08:34-08:53/19	06:52	06:44	05:51	05:30
	17:12 09:10-09:54/44	18:07	18:55	20:46	21:34	22:03
20	08:39 14:24-15:14/50	07:50 08:35-08:52/17	06:50	06:42	05:49	05:30
	17:14 09:10-09:54/44	18:09	18:57	20:48	21:35	22:04
21	08:38 14:25-15:14/49	07:48 08:37-08:50/13	06:48	06:40	05:48	05:30
	17:16 09:10-09:55/45	18:11	18:59	20:50	21:36	22:04
22	08:37 14:26-15:14/48	07:46 08:39-08:47/8	06:46	06:38	05:47	05:30
	17:17 09:10-09:55/45	18:12	19:00	20:51	21:38	22:04
23	08:36 14:27-15:14/47	07:44	06:43	06:36	05:46	05:30
	17:19 09:10-09:56/46	18:14	19:02	20:53	21:39	22:04
24	08:34 14:27-15:14/47	07:42	06:41	06:34	05:44	05:31
	17:21 09:09-09:55/46	18:16	19:04	20:55	21:41	22:04
25	08:33 14:28-15:14/46	07:40	06:39	06:32	05:43	05:31
	17:22 09:10-09:55/45	18:18	19:05	20:56	21:42	22:05
26	08:32 14:29-15:13/44	07:38	06:37	06:30	05:42	05:31
	17:24 09:10-09:55/45	18:19	19:07	20:58	21:43	22:05
27	08:31 14:30-15:13/43 08:57-09:02/5	07:36	06:34	06:28	05:41	05:32
	17:26 09:10-09:55/45	18:21	19:09	21:00	21:44	22:05
28	08:29 14:32-15:13/41 08:56-09:04/8	07:34	06:32	06:26	05:40	05:32
	17:28 09:10-09:55/45	18:23	19:10	21:01	21:46	22:04
29	08:28 14:33-15:11/38 08:54-09:05/11		07:30	06:24	05:39	05:33
	17:29 09:10-09:54/44		20:12	21:03	21:47	22:04
30	08:27 14:35-15:11/36 08:53-09:06/13		07:28	06:22	05:38	05:33
	17:31 09:11-09:53/42		20:14	21:04	21:48	22:04
31	08:25 14:36-15:10/34 08:51-09:07/16		07:25		05:37	
	17:33 09:12-09:52/40		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	3093	617	112	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: Skalden WTB4 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (249)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34	06:09	06:57	07:44 08:09-08:25/16	07:36 08:28-08:30/2	08:26 14:02-14:54/52 10:25-10:51/26
	22:04	21:33	20:33	19:25	17:21 08:05-08:22/17	16:42 08:59-09:31/32
2	05:35	06:11	06:59	07:46 08:11-08:25/14	07:38 08:23-08:33/10	08:27 14:02-14:54/52 10:24-10:51/27
	22:04	21:32	20:31	19:23	17:19 08:06-08:20/14	16:42 09:00-09:30/30
3	05:35	06:12	07:00	07:48 08:12-08:23/11	07:40 08:22-08:35/13	08:28 14:03-14:55/52 10:25-10:53/28
	22:03	21:30	20:29	19:21	17:17 08:08-08:19/11	16:41 09:01-09:31/30
4	05:36	06:14	07:02	07:49 08:14-08:23/9	07:42 08:21-08:36/15	08:30 14:03-14:55/52 10:24-10:54/30
	22:03	21:28	20:26	19:19	17:16 08:11-08:15/4	16:40 09:02-09:30/28
5	05:37	06:15	07:03	07:51 08:16-08:21/5	07:43 08:21-08:37/16	08:31 14:04-14:56/52 10:25-10:55/30
	22:02	21:27	20:24	19:16	17:14	16:40 09:04-09:31/27
6	05:38	06:17	07:05	07:52	07:45 08:20-08:38/18	08:32 14:04-14:56/52 10:24-10:56/32
	22:02	21:25	20:22	19:14	17:12 08:48-08:58/10	16:40 09:05-09:30/25
7	05:38	06:18	07:06	07:54	07:47 14:17-14:32/15 08:46-09:00/14	08:34 14:04-14:56/52 10:24-10:56/32
	22:01	21:23	20:20	19:12	17:11 08:20-08:38/18	16:39 09:06-09:30/24
8	05:39	06:20	07:08	07:56	07:48 14:14-14:35/21 08:45-09:02/17	08:35 14:04-14:56/52 10:24-10:57/33
	22:01	21:21	20:18	19:10	17:09 08:20-08:39/19	16:39 09:15-09:30/15
9	05:40	06:21	07:10	07:57	07:50 14:11-14:38/27 08:21-08:39/18	08:36 14:06-14:57/51 10:25-10:58/33
	22:00	21:20	20:15	19:08	17:07 09:08-09:19/11 08:44-09:04/20	16:39 09:16-09:30/14 15:12-15:15/3
10	05:41	06:23	07:11	07:59	07:52 14:08-14:39/31 08:21-08:39/18	08:37 14:06-14:57/51 10:25-10:59/34
	21:59	21:18	20:13	19:05	17:06 09:05-09:21/16 08:43-09:04/21	16:38 09:17-09:29/12 15:10-15:17/7
11	05:42	06:24	07:13	08:01	07:54 14:07-14:41/34 08:22-08:38/16	08:38 14:06-14:58/52 10:25-11:00/35
	21:59	21:16	20:11	19:03	17:04 08:42-09:23/41	16:38 09:18-09:29/11 15:10-15:19/9
12	05:43	06:26	07:14	08:02	07:55 14:05-14:42/37 08:24-08:37/13	08:39 14:07-14:58/51 10:25-11:00/35
	21:58	21:14	20:08	19:01	17:03 08:42-09:24/42	16:38 09:19-09:28/9 15:09-15:20/11
13	05:44	06:27	07:16	08:04	07:57 14:04-14:43/39 08:26-08:37/11	08:40 14:07-14:58/51 10:26-11:01/35
	21:57	21:12	20:06	18:59	17:01 08:42-09:25/43	16:38 09:21-09:28/7 15:06-15:21/15
14	05:45	06:29	07:17	08:06	07:59 14:04-14:45/41 08:28-08:36/8	08:41 14:08-14:59/51 10:26-11:01/35
	21:56	21:10	20:04	18:57	17:00 08:42-09:27/45	16:38 09:22-09:27/5 15:05-15:22/17
15	05:47	06:30	07:19	08:07	08:00 14:03-14:46/43 08:30-08:35/5	08:42 14:09-14:59/50 15:04-15:23/19
	21:55	21:08	20:02	18:55	16:59 08:43-09:28/45	16:38 10:26-11:02/36
16	05:48	06:32	07:21	08:09	08:02 14:03-14:47/44	08:43 14:09-15:00/51 15:05-15:24/19
	21:54	21:06	19:59	18:52	16:57 08:43-09:28/45	16:38 10:27-11:03/36
17	05:49	06:34	07:22	08:11	08:04 14:01-14:47/46	08:44 14:09-15:00/51 15:04-15:24/20
	21:53	21:05	19:57	18:50	16:56 08:43-09:28/45	16:39 10:26-11:03/37
18	05:50	06:35	07:24	08:12	08:06 14:01-14:48/47	08:44 14:10-15:00/50 15:04-15:25/21
	21:52	21:03	19:55	18:48	16:55 08:43-09:29/46	16:39 10:27-11:03/36
19	05:51	06:37	07:25	08:14	08:07 14:01-14:48/47	08:45 14:11-15:01/50 15:05-15:26/21
	21:51	21:01	19:53	18:46	16:53 08:44-09:30/46	16:39 10:28-11:04/36
20	05:53	06:38	07:27	08:16 09:08-09:19/11	08:09 14:01-14:49/48	08:46 14:11-15:01/50 15:04-15:26/22
	21:50	20:58	19:50	18:44	16:52 08:45-09:30/45	16:39 10:28-11:04/36
21	05:54	06:40	07:28	08:17 09:06-09:21/15	08:10 14:01-14:50/49	08:46 14:11-15:02/51 15:05-15:27/22
	21:49	20:56	19:48	18:42	16:51 08:46-09:31/45	16:40 10:29-11:05/36
22	05:55	06:41	07:30	08:19 09:05-09:23/18	08:12 14:00-14:50/50	08:47 14:11-15:02/51 15:05-15:26/21
	21:48	20:54	19:46	18:40	16:50 08:46-09:30/44	16:40 10:29-11:05/36
23	05:56	06:43	07:32	08:21 09:04-09:24/20	08:14 14:00-14:51/51	08:47 14:12-15:03/51 15:06-15:28/22
	21:46	20:52	19:43	18:38	16:49 08:47-09:31/44	16:41 10:30-11:06/36
24	05:58	06:44	07:33	08:22 09:04-09:24/20	08:15 14:01-14:52/51	08:48 14:13-15:03/50 15:07-15:28/21
	21:45	20:50	19:41	18:36	16:48 08:49-09:31/42	16:41 10:30-11:06/36
25	05:59	06:46	07:35	07:24 08:03-08:25/22	08:17 14:00-14:51/51	08:48 14:13-15:03/50 15:07-15:28/21
	21:44	20:48	19:39	17:34	16:47 08:49-09:30/41	16:42 10:30-11:06/36
26	06:01	06:48	07:36 08:17-08:20/3	07:26 08:02-08:24/22	08:18 14:01-14:52/51 10:31-10:40/9	08:48 14:14-15:05/51 15:08-15:29/21
	21:42	20:46	19:37	17:32	16:46 08:51-09:31/40	16:43 10:31-11:08/37
27	06:02	06:49	07:38 08:14-08:23/9	07:28 08:02-08:24/22	08:20 14:01-14:53/52 10:29-10:43/14	08:49 14:14-15:05/51 15:09-15:29/20
	21:41	20:44	19:34	17:30	16:45 08:53-09:31/38	16:43 10:32-11:08/36
28	06:03	06:51	07:39 08:11-08:24/13	07:29 08:02-08:24/22	08:21 14:01-14:53/52 10:27-10:45/18	08:49 14:14-15:05/51 15:10-15:29/19
	21:39	20:42	19:32	17:28	16:44 08:55-09:31/36	16:44 10:32-11:08/36
29	06:05	06:52	07:41 08:10-08:25/15	07:31 08:03-08:24/21	08:23 14:01-14:54/53 10:27-10:48/21	08:49 14:15-15:06/51 10:33-11:08/35
	21:38	20:40	19:30	17:26	16:44 08:57-09:31/34	16:45 09:30-09:33/3 15:11-15:29/18
30	06:06	06:54	07:43 08:09-08:25/16	07:33 08:03-08:24/21	08:24 14:01-14:53/52 10:25-10:49/24	08:49 14:15-15:06/51 10:33-11:09/36
	21:36	20:37	19:28	17:25	16:43 08:58-09:30/32	16:46 09:29-09:35/6 15:13-15:29/16
31	06:08	06:55		07:35 08:04-08:23/19		08:49 14:16-15:07/51 10:34-11:09/35
	21:35	20:35		17:23		16:47 09:28-09:37/9 15:18-15:29/11
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	0	0	56	288	2312	3324

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: VC WT3 - SENVION MM92 2050 92.5 !O! hub: 100,0 m (TOT: 146,3 m) (122)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:49	08:24	07:32	07:23	06:20	05:37	05:34	06:09	06:57	07:44	07:36	08:26	
	16:48	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42	
2	08:49	08:22	07:30	07:21	06:18	05:36	05:35	06:11	06:59	07:46	07:38	08:27	
	16:49	17:37	18:27	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:42	
3	08:49	08:21	07:28	07:19	06:17	05:35	05:35	06:12	07:00	07:48	07:40	08:29	
	16:51	17:38	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:18	16:41	
4	08:49	08:19	07:26	07:17	06:15	05:34	05:36	06:14	07:02	07:49	07:42	08:30	
	16:52	17:40	18:30	20:22	21:11	21:53	22:03	21:29	20:27	19:19	17:16	16:41	
5	08:49	08:18	07:24	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43	08:31	
	16:53	17:42	18:32	20:24	21:13	21:54	22:02	21:27	20:24	19:17	17:14	16:40	
6	08:49	08:16	07:21	07:12	06:11	05:33	05:38	06:17	07:05	07:53	07:45	08:32	
	16:54	17:44	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:40	
7	08:48	08:14	07:19	07:10	06:10	05:33	05:39	06:18	07:07	07:54	07:47	08:34	
	16:55	17:46	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11	16:39	
8	08:48	08:13	07:17	07:08	06:08	05:32	05:40	06:20	07:08	07:56	07:49	08:35	
	16:57	17:47	18:37	20:29	21:17	21:57	22:01	21:22	20:18	19:10	17:09	16:39	
9	08:47	08:11	07:15	07:06	06:06	05:32	05:40	06:21	07:10	07:57	07:50	08:36	
	16:58	17:49	18:39	20:30	21:19	21:58	22:00	21:20	20:15	19:08	17:08	16:39	
10	08:47	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52	08:37	
	16:59	17:51	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06	16:39	
11	08:46	08:08	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54	08:38	
	17:01	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:05	16:38	
12	08:46	08:06	07:08	06:59	06:01	05:31	05:43	06:26	07:14	08:02	07:56	08:39	
	17:02	17:55	18:44	20:35	21:23	22:00	21:58	21:14	20:09	19:01	17:03	16:38	
13	08:45	08:04	07:06	06:57	06:00	05:30	05:45	06:28	07:16	08:04	07:57	08:40	
	17:03	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:02	16:38	
14	08:44	08:02	07:04	06:55	05:58	05:30	05:46	06:29	07:18	08:06	07:59	08:41	
	17:05	17:58	18:47	20:38	21:27	22:01	21:56	21:11	20:04	18:57	17:00	16:38	
15	08:44	08:00	07:02	06:53	05:57	05:30	05:47	06:31	07:19	08:07	08:01	08:42	16:02-16:03/1
	17:06	18:00	18:49	20:40	21:28	22:02	21:55	21:09	20:02	18:55	16:59	16:38	
16	08:43	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02	08:43	16:02-16:05/3
	17:08	18:02	18:50	20:42	21:29	22:02	21:54	21:07	20:00	18:53	16:57	16:39	
17	08:42	07:56	06:57	06:48	05:54	05:30	05:49	06:34	07:22	08:11	08:04	08:44	16:01-16:04/3
	17:09	18:04	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:51	16:56	16:39	
18	08:41	07:55	06:55	06:46	05:52	05:30	05:50	06:35	07:24	08:12	08:06	08:44	16:01-16:05/4
	17:11	18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39	
19	08:40	07:53	06:53	06:44	05:51	05:30	05:52	06:37	07:25	08:14	08:07	08:45	16:02-16:05/3
	17:13	18:07	18:55	20:47	21:34	22:04	21:51	21:01	19:53	18:46	16:54	16:39	
20	08:39	07:51	06:50	06:42	05:50	05:30	05:53	06:38	07:27	08:16	08:09	08:46	16:02-16:05/3
	17:14	18:09	18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52	16:40	
21	08:38	07:49	06:48	06:40	05:48	05:30	05:54	06:40	07:29	08:17	08:11	08:46	16:03-16:06/3
	17:16	18:11	18:59	20:50	21:37	22:04	21:49	20:57	19:48	18:42	16:51	16:40	
22	08:37	07:47	06:46	06:38	05:47	05:30	05:55	06:42	07:30	08:19	08:12	08:47	16:03-16:06/3
	17:18	18:13	19:00	20:52	21:38	22:04	21:48	20:55	19:46	18:40	16:50	16:41	
23	08:36	07:45	06:44	06:36	05:46	05:30	05:57	06:43	07:32	08:21	08:14	08:47	16:04-16:07/3
	17:19	18:14	19:02	20:53	21:39	22:04	21:46	20:52	19:44	18:38	16:49	16:41	
24	08:35	07:43	06:41	06:34	05:45	05:31	05:58	06:45	07:33	08:23	08:15	08:48	16:04-16:07/3
	17:21	18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:42	
25	08:33	07:41	06:39	06:32	05:44	05:31	05:59	06:46	07:35	07:24	08:17	08:48	16:04-16:08/4
	17:23	18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42	
26	08:32	07:38	06:37	06:30	05:42	05:31	06:01	06:48	07:36	07:26	08:18	08:49	16:06-16:09/3
	17:24	18:20	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43	
27	08:31	07:36	06:35	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20	08:49	16:06-16:10/4
	17:26	18:21	19:09	21:00	21:44	22:05	21:41	20:44	19:35	17:30	16:45	16:44	
28	08:30	07:34	06:32	06:26	05:40	05:32	06:04	06:51	07:40	07:29	08:22	08:49	16:07-16:09/2
	17:28	18:23	19:10	21:01	21:46	22:05	21:40	20:42	19:32	17:29	16:45	16:44	
29	08:28		07:30	06:24	05:39	05:33	06:05	06:53	07:41	07:31	08:23	08:49	
	17:30		20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:27	16:44	16:45	
30	08:27		07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24	08:49	
	17:31		20:14	21:05	21:48	22:04	21:37	20:38	19:28	17:25	16:43	16:46	
31	08:25		07:26		05:38		06:08	06:56		07:35		08:49	
	17:33		20:15		21:49		21:35	20:35		17:23		16:47	
Potential sun hours	263	279	367	414	482	494	498	451	380	333	269	248	
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	42	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT-ATS - NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 16:48	08:24 17:35	07:32 17:41-17:59/18 18:25	07:23 19:35-19:51/16 20:17	06:20 19:56-20:29/33 21:06	05:37 20:35-21:01/26 21:50
2	08:49 16:49	08:22 17:37	07:30 17:42-18:01/19 18:27	07:21 19:35-19:53/18 20:19	06:18 19:55-20:29/34 21:08	05:36 20:36-21:01/25 21:51
3	08:49 16:50	08:21 17:38	07:28 17:43-18:03/20 18:28	07:19 19:35-19:54/19 20:20	06:17 19:55-20:29/34 21:09	05:35 20:36-21:01/25 21:53
4	08:49 16:52	08:19 17:40	07:26 17:46-18:05/19 18:30	07:17 19:35-19:54/19 20:22	06:15 19:55-20:29/34 21:11	05:34 20:36-21:01/25 21:54
5	08:49 16:53	08:18 17:42	07:24 17:50-18:04/14 18:32	07:14 19:35-19:53/18 20:24	06:13 19:54-20:28/34 21:13	05:34 20:37-21:01/24 21:54
6	08:49 16:54	08:16 17:44	07:21 17:51-18:03/12 18:33	07:12 19:35-19:51/16 20:25	06:11 19:55-20:29/34 21:14	05:33 20:37-21:00/23 21:55
7	08:48 16:55	08:14 17:46	07:19 18:08-18:10/2 18:35 17:52-18:01/9	07:10 19:36-19:50/14 20:27	06:09 19:54-20:29/35 21:16	05:33 20:38-21:01/23 21:56
8	08:48 16:56	08:13 17:47	07:17 18:06-18:12/6 18:37	07:08 19:37-19:49/12 20:29	06:08 19:54-20:28/34 21:17	05:32 20:39-21:01/22 21:57
9	08:47 16:58	08:11 17:49	07:15 18:05-18:13/8 18:39	07:06 19:40-19:46/6 20:30	06:06 19:55-20:28/33 21:19	05:32 20:39-21:00/21 21:58
10	08:47 16:59	08:09 17:51	07:13 18:04-18:15/11 18:40	07:03 20:32	06:04 19:54-20:28/34 21:20	05:31 20:40-21:01/21 21:59
11	08:46 17:00	08:08 17:53	07:10 18:04-18:17/13 18:42	07:01 20:33	06:03 19:55-20:28/33 21:22 20:44-20:50/6	05:31 20:40-21:01/21 21:59
12	08:46 17:02	08:06 17:55	07:08 18:04-18:19/15 18:44	06:59 20:35	06:01 19:55-20:27/32 21:24 20:40-20:52/12	05:30 20:40-21:00/20 22:00
13	08:45 17:03	08:04 17:56	07:06 18:04-18:20/16 18:45	06:57 20:37	06:00 19:56-20:27/31 21:25 20:39-20:55/16	05:30 20:41-21:00/19 22:01
14	08:44 17:05	08:02 17:58	07:04 18:06-18:22/16 18:47	06:55 20:38	05:58 19:56-20:26/30 21:27 20:37-20:55/18	05:30 20:41-21:00/19 22:01
15	08:44 17:06	08:00 18:00	07:02 18:08-18:24/16 18:49	06:53 20:07-20:11/4 20:40	05:57 19:57-20:26/29 21:28 20:37-20:57/20	05:30 20:42-21:00/18 22:02
16	08:43 17:08	07:58 18:02	06:59 18:10-18:25/15 18:50	06:50 20:03-20:15/12 20:42	05:55 19:58-20:25/27 21:30 20:36-20:58/22	05:30 20:42-21:00/18 22:02
17	08:42 17:09	07:56 18:04	06:57 18:10-18:23/13 18:52	06:48 20:01-20:17/16 20:43	05:54 19:58-20:24/26 21:31 20:35-20:58/23	05:30 20:43-21:00/17 22:03
18	08:41 17:11	07:55 18:05	06:55 18:11-18:22/11 18:54 18:28-18:29/1	06:46 19:59-20:18/19 20:45	05:52 20:00-20:23/23 21:32 20:34-20:59/25	05:30 20:43-21:00/17 22:03
19	08:40 17:13	07:53 18:07	06:53 18:13-18:20/7 18:55 18:26-18:31/5	06:44 19:58-20:20/22 20:47	05:51 20:01-20:23/22 21:34 20:34-21:00/26	05:30 20:43-21:00/17 22:04
20	08:39 17:14	07:51 18:09	06:50 18:25-18:33/8 18:57	06:42 19:57-20:22/25 20:48	05:50 20:02-20:22/20 21:35 20:34-21:00/26	05:30 20:43-21:01/18 22:04
21	08:38 17:16	07:49 18:11	06:48 18:23-18:33/10 18:59	06:40 19:56-20:23/27 20:50	05:48 20:04-20:21/17 21:37 20:34-21:01/27	05:30 20:44-21:02/18 22:04
22	08:37 17:17	07:47 18:12	06:46 18:22-18:35/13 19:00	06:38 19:56-20:25/29 20:52	05:47 20:05-20:18/13 21:38 20:33-21:00/27	05:30 20:44-21:02/18 22:04
23	08:36 17:19	07:45 17:44-17:48/4 18:14	06:44 18:22-18:37/15 19:02	06:36 19:55-20:26/31 20:53	05:46 20:07-20:16/9 21:39 20:33-21:00/27	05:30 20:44-21:02/18 22:05
24	08:35 17:21	07:43 17:43-17:50/7 18:16	06:41 18:21-18:38/17 19:04	06:34 19:55-20:28/33 20:55	05:45 20:33-21:01/28 21:41	05:31 20:44-21:01/17 22:05
25	08:33 17:23	07:41 17:42-17:52/10 18:18	06:39 18:22-18:37/15 19:05	06:32 19:55-20:29/34 20:56	05:43 20:33-21:01/28 21:42	05:31 20:45-21:02/17 22:05
26	08:32 17:24	07:38 17:42-17:54/12 18:20	06:37 18:23-18:36/13 19:07	06:30 19:55-20:30/35 20:58	05:42 20:33-21:01/28 21:43	05:31 20:44-21:02/18 22:05
27	08:31 17:26	07:36 17:40-17:55/15 18:21	06:35 18:24-18:34/10 19:09	06:28 19:55-20:30/35 21:00	05:41 20:34-21:01/27 21:45	05:32 20:45-21:03/18 22:05
28	08:30 17:28	07:34 17:41-17:57/16 18:23	06:32 18:44-18:45/1 19:10 18:26-18:30/4	06:26 19:56-20:30/34 21:01	05:40 20:34-21:01/27 21:46	05:32 20:44-21:03/19 22:05
29	08:28 17:29		07:30 19:40-19:47/7 20:12	06:24 19:57-20:30/33 21:03	05:39 20:35-21:02/27 21:47	05:33 20:45-21:04/19 22:04
30	08:27 17:31		07:28 19:38-19:48/10 20:14	06:22 19:57-20:30/33 21:05	05:38 20:35-21:01/26 21:48	05:33 20:44-21:04/20 22:04
31	08:25 17:33		07:26 19:37-19:50/13 20:15		05:37 20:35-21:01/26 21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	0	64	402	560	1143	601

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT-ATS - NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 20:45-21:05/20 22:04	06:09 20:05-20:38/33 21:33 20:52-21:02/10	06:57 20:33	07:44 18:44-18:58/14 19:25	07:36 17:21	08:26 16:42
2	05:35 20:44-21:05/21 22:04	06:11 20:06-20:38/32 21:32	06:59 20:31	07:46 18:43-18:57/14 19:23	07:38 17:19	08:27 16:42
3	05:35 20:44-21:05/21 22:03	06:12 20:05-20:38/33 21:30	07:00 19:38-19:44/6 20:29	07:48 18:42-18:54/12 19:21	07:40 17:18	08:29 16:41
4	05:36 20:44-21:06/22 22:03	06:14 20:04-20:38/34 21:29	07:02 19:34-19:46/12 20:27	07:49 18:42-18:52/10 19:19	07:42 17:16	08:30 16:41
5	05:37 20:44-21:07/23 22:03	06:15 20:04-20:39/35 21:27	07:03 19:33-19:47/14 20:24	07:51 18:43-18:50/7 19:16	07:43 17:14	08:31 16:40
6	05:38 20:43-21:07/24 22:02	06:17 20:04-20:38/34 21:25	07:05 19:31-19:47/16 20:22	07:53 18:43-18:47/4 19:14 18:30-18:36/6	07:45 17:12	08:33 16:40
7	05:39 20:44-21:07/23 22:01	06:18 20:04-20:39/35 21:23	07:07 19:30-19:48/18 20:20	07:54 18:27-18:38/11 19:12	07:47 17:11	08:34 16:39
8	05:39 20:44-21:08/24 22:01	06:20 20:04-20:38/34 21:22	07:08 19:29-19:48/19 20:18	07:56 18:26-18:39/13 19:10	07:49 17:09	08:35 16:39
9	05:40 20:44-21:08/24 22:00	06:21 20:04-20:38/34 21:20	07:10 19:29-19:48/19 20:15	07:57 18:24-18:39/15 19:08	07:50 17:08	08:36 16:39
10	05:41 20:44-21:09/25 22:00	06:23 20:04-20:37/33 21:18	07:11 19:28-19:46/18 20:13	07:59 18:19-18:38/19 19:05	07:52 17:06	08:37 16:38
11	05:42 20:43-21:09/26 21:59	06:24 20:04-20:37/33 21:16	07:13 19:28-19:45/17 20:11	08:01 18:17-18:36/19 19:03	07:54 17:04	08:38 16:38
12	05:43 20:43-21:10/27 21:58	06:26 20:05-20:38/33 21:14	07:14 19:28-19:42/14 20:09	08:02 18:15-18:33/18 19:01	07:56 17:03	08:39 16:38
13	05:44 20:43-21:10/27 21:57	06:27 20:05-20:37/32 21:12	07:16 19:29-19:40/11 20:06	08:04 18:14-18:31/17 18:59	07:57 17:01	08:40 16:38
14	05:45 20:43-21:10/27 21:56	06:29 20:04-20:38/34 21:11	07:18 19:30-19:37/7 20:04	08:06 18:14-18:29/15 18:57	07:59 17:00	08:41 16:38
15	05:47 20:43-21:10/27 21:55	06:31 20:03-20:37/34 21:09	07:19 19:33-19:35/2 20:02	08:07 18:14-18:27/13 18:55	08:01 16:59	08:42 16:38
16	05:48 20:43-21:10/27 21:54	06:32 20:03-20:37/34 21:07	07:21 19:13-19:22/9 20:00	08:09 18:13-18:24/11 18:53	08:02 16:57	08:43 16:38
17	05:49 20:43-21:10/27 21:53	06:34 20:02-20:37/35 21:05	07:22 19:11-19:24/13 19:57	08:11 18:14-18:22/8 18:50	08:04 16:56	08:44 16:39
18	05:50 20:43-21:10/27 21:52	06:35 20:02-20:35/33 21:03	07:24 19:09-19:24/15 19:55	08:12 18:14-18:21/7 18:48	08:06 16:55	08:44 16:39
19	05:51 20:43-21:10/27 21:51	06:37 20:01-20:33/32 21:01	07:25 19:09-19:25/16 19:53	08:14 18:16-18:19/3 18:46	08:07 16:54	08:45 16:39
20	05:53 20:20-20:25/5 21:50 20:44-21:11/27	06:38 20:01-20:32/31 20:59	07:27 19:08-19:23/15 19:50	08:16 18:44	08:09 16:52	08:46 16:40
21	05:54 20:16-20:28/12 21:49 20:44-21:11/27	06:40 20:01-20:29/28 20:57	07:29 19:08-19:21/13 19:48	08:17 18:42	08:11 16:51	08:46 16:40
22	05:55 20:14-20:30/16 21:48 20:44-21:10/26	06:41 20:01-20:28/27 20:55	07:30 19:08-19:20/12 19:46	08:19 18:40	08:12 16:50	08:47 16:40
23	05:57 20:13-20:31/18 21:46 20:44-21:10/26	06:43 20:01-20:25/24 20:52	07:32 19:08-19:17/9 19:44	08:21 18:38	08:14 16:49	08:47 16:41
24	05:58 20:12-20:33/21 21:45 20:45-21:11/26	06:45 20:02-20:24/22 20:50	07:33 18:58-19:02/4 19:41 19:09-19:15/6	08:23 18:36	08:15 16:48	08:48 16:42
25	05:59 20:11-20:34/23 21:44 20:45-21:10/25	06:46 20:02-20:21/19 20:48	07:35 18:54-19:04/10 19:39 19:10-19:12/2	07:24 17:34	08:17 16:47	08:48 16:42
26	06:01 20:10-20:34/24 21:42 20:45-21:09/24	06:48 20:04-20:20/16 20:46	07:36 18:53-19:06/13 19:37	07:26 17:32	08:19 16:46	08:49 16:43
27	06:02 20:08-20:35/27 21:41 20:45-21:08/23	06:49 20:05-20:17/12 20:44	07:38 18:52-19:07/15 19:34	07:28 17:30	08:20 16:45	08:49 16:44
28	06:03 20:08-20:36/28 21:40 20:47-21:08/21	06:51 20:10-20:13/3 20:42	07:40 18:51-19:05/14 19:32	07:30 17:28	08:22 16:44	08:49 16:44
29	06:05 20:07-20:36/29 21:38 20:47-21:07/20	06:52 20:40	07:41 18:47-19:03/16 19:30	07:31 17:27	08:23 16:44	08:49 16:45
30	06:06 20:06-20:37/31 21:37 20:48-21:05/17	06:54 20:38	07:43 18:44-19:00/16 19:28	07:33 17:25	08:24 16:43	08:49 16:46
31	06:08 20:06-20:38/32 21:35 20:50-21:04/14	06:56 20:35		07:35 17:23		08:49 16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	1011	829	371	236	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT-MER - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (239)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 15:30-15:58/28	08:24 15:38-17:05/87	07:32	07:23	06:20	05:37
	16:48	17:35	18:25	20:17	21:06	21:50
2	08:49 15:30-15:59/29	08:22 15:39-17:07/88	07:30	07:21	06:18	05:36
	16:49	17:37	18:27	20:19	21:08	21:51
3	08:49 15:30-15:58/28	08:21 16:31-17:09/38	07:28	07:19	06:17	05:35
	16:50	17:38 15:38-16:30/52	18:28	20:20	21:09	21:52
4	08:49 15:31-15:59/28	08:19 15:38-17:11/93	07:26	07:17	06:15	05:34
	16:52	17:40	18:30	20:22	21:11	21:53
5	08:49 15:32-16:00/28	08:18 15:39-17:13/94	07:24	07:14	06:13	05:34
	16:53	17:42	18:32	20:24	21:13	21:54
6	08:49 15:32-15:59/27	08:16 16:32-17:15/43	07:21	07:12	06:11	05:33
	16:54	17:44 15:39-16:30/51	18:33	20:25	21:14	21:55
7	08:48 15:33-16:00/27	08:14 16:32-17:15/43	07:19	07:10	06:09	05:33
	16:55	17:46 15:39-16:30/51	18:35	20:27	21:16	21:56
8	08:48 15:33-16:00/27	08:13 16:32-17:15/43	07:17	07:08	06:08	05:32
	16:56	17:47 15:39-16:30/51	18:37	20:29	21:17	21:57
9	08:47 15:33-16:00/27	08:11 16:34-17:16/42	07:15	07:06	06:06	05:32
	16:58	17:49 15:41-16:30/49	18:39	20:30	21:19	21:58
10	08:47 15:35-16:03/28	08:09 16:35-17:15/40	07:13	07:03	06:04	05:31
	16:59	17:51 15:41-16:30/49	18:40	20:32	21:20	21:59
11	08:46 15:35-16:06/31	08:08 16:36-17:15/39 15:41-16:29/48	07:10	07:01	06:03	05:31
	17:01 16:24-16:27/3	17:53 17:24-17:25/1	18:42	20:33	21:22	21:59
12	08:46 15:36-16:08/32	08:06 16:56-17:14/18 15:42-16:29/47	07:08	06:59	06:01	05:31
	17:02 16:22-16:29/7	17:55 17:22-17:27/5 16:38-16:53/15	18:44	20:35	21:23	22:00
13	08:45 15:37-16:09/32	08:04 16:57-17:13/16 15:43-16:28/45	07:06	06:57	06:00	05:30
	17:03 16:22-16:30/8	17:56 17:21-17:29/8 16:41-16:51/10	18:45	20:37	21:25	22:01
14	08:44 15:38-16:12/34	08:02 16:58-17:11/13 15:43-16:27/44	07:04	06:55	05:58	05:30
	17:05 16:22-16:33/11	17:58 17:20-17:31/11	18:47	20:38	21:27	22:01
15	08:44 15:39-16:13/34	08:00 17:01-17:09/8 15:44-16:26/42	07:02	06:53	05:57	05:30
	17:06 16:21-16:34/13	18:00 17:19-17:32/13	18:49	20:40	21:28	22:02
16	08:43 15:41-16:15/34	07:58 17:19-17:34/15	06:59	06:50	05:55	05:30
	17:08 16:21-16:36/15	18:02 15:46-16:25/39	18:50	20:42	21:29	22:02
17	08:42 15:42-16:17/35	07:56 17:19-17:36/17	06:57	06:48	05:54	05:30
	17:09 16:21-16:38/17	18:04 15:47-16:24/37	18:52	20:43	21:31	22:03
18	08:41 15:43-16:18/35	07:54 17:19-17:37/18	06:55	06:46	05:52	05:30
	17:11 16:21-16:39/18	18:05 15:49-16:23/34	18:54	20:45	21:32	22:03
19	08:40 15:42-16:18/36	07:53 17:20-17:36/16	06:53	06:44	05:51	05:30
	17:13 16:20-16:40/20	18:07 15:51-16:21/30	18:55	20:47	21:34	22:04
20	08:39 15:41-16:42/61	07:51 17:20-17:36/16	06:50	06:42	05:50	05:30
	17:14	18:09 15:53-16:19/26	18:57	20:48	21:35	22:04
21	08:38 15:41-16:44/63	07:49 17:22-17:35/13	06:48	06:40	05:48	05:30
	17:16	18:11 15:56-16:16/20	18:59	20:50	21:37	22:04
22	08:37 15:41-16:46/65	07:47 17:24-17:33/9	06:46	06:38	05:47	05:30
	17:17	18:12 16:01-16:12/11	19:00	20:51	21:38	22:04
23	08:36 15:41-16:48/67	07:45	06:44	06:36	05:46	05:30
	17:19	18:14	19:02	20:53	21:39	22:05
24	08:35 15:40-16:50/70	07:43	06:41	06:34	05:45	05:31
	17:21	18:16	19:04	20:55	21:41	22:05
25	08:33 15:40-16:52/72	07:40	06:39	06:32	05:43	05:31
	17:23	18:18	19:05	20:56	21:42	22:05
26	08:32 15:40-16:54/74	07:38	06:37	06:30	05:42	05:31
	17:24	18:20	19:07	20:58	21:43	22:05
27	08:31 15:39-16:54/75	07:36	06:35	06:28	05:41	05:32
	17:26	18:21	19:09	21:00	21:44	22:05
28	08:30 15:39-16:56/77	07:34	06:32	06:26	05:40	05:32
	17:28	18:23	19:10	21:01	21:46	22:05
29	08:28 15:39-16:56/77		07:30	06:24	05:39	05:33
	17:29		20:12	21:03	21:47	22:04
30	08:27 17:01-17:02/1		07:28	06:22	05:38	05:33
	17:31 15:39-16:57/78		20:14	21:05	21:48	22:04
31	08:25 15:39-17:03/84		07:26		05:37	
	17:33		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	1556	1598	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT-MER - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (239)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October		November		December	
1	05:34	06:09	06:57	07:44		07:36	16:05-16:45/40	08:26	15:17-15:48/31
	22:04	21:33	20:33	19:25		17:21	15:11-16:00/49	16:42	16:06-16:10/4
2	05:35	06:11	06:59	07:46		07:38	16:03-16:44/41	08:27	15:18-15:47/29
	22:04	21:32	20:31	19:23		17:19	15:09-15:59/50	16:42	
3	05:35	06:12	07:00	07:48		07:40	16:02-16:45/43	08:29	15:18-15:44/26
	22:03	21:30	20:29	19:21		17:18	15:09-15:59/50	16:41	
4	05:36	06:14	07:02	07:49		07:42	16:02-16:45/43	08:30	15:17-15:44/27
	22:03	21:29	20:27	19:19		17:16	15:09-16:00/51	16:41	
5	05:37	06:15	07:03	07:51		07:43	16:01-16:44/43	08:31	15:18-15:45/27
	22:02	21:27	20:24	19:16		17:14	15:09-16:00/51	16:40	
6	05:38	06:17	07:05	07:53		07:45	16:01-16:43/42	08:32	15:18-15:45/27
	22:02	21:25	20:22	19:14		17:12	15:09-16:00/51	16:40	
7	05:39	06:18	07:07	07:54		07:47	16:01-16:41/40	08:34	15:18-15:46/28
	22:01	21:23	20:20	19:12		17:11	15:09-16:00/51	16:39	
8	05:39	06:20	07:08	07:56		07:49	15:09-16:40/91	08:35	15:19-15:47/28
	22:01	21:22	20:18	19:10		17:09		16:39	
9	05:40	06:21	07:10	07:57		07:50	15:10-16:38/88	08:36	15:19-15:47/28
	22:00	21:20	20:15	19:08		17:08		16:39	
10	05:41	06:23	07:11	07:59		07:52	15:10-16:35/85	08:37	15:19-15:48/29
	21:59	21:18	20:13	19:05		17:06		16:39	
11	05:42	06:24	07:13	08:01		07:54	16:29-16:34/5	08:38	15:20-15:48/28
	21:59	21:16	20:11	19:03		17:04	15:09-16:28/79	16:38	
12	05:43	06:26	07:14	08:02		07:56	15:10-16:28/78	08:39	15:20-15:48/28
	21:58	21:14	20:09	19:01		17:03		16:38	
13	05:44	06:27	07:16	08:04		07:57	15:11-16:28/77	08:40	15:21-15:49/28
	21:57	21:12	20:06	18:59		17:02		16:38	
14	05:46	06:29	07:18	08:06		07:59	15:11-16:28/77	08:41	15:21-15:49/28
	21:56	21:10	20:04	18:57		17:00		16:38	
15	05:47	06:31	07:19	08:07		08:01	15:12-16:27/75	08:42	15:22-15:50/28
	21:55	21:09	20:02	18:55		16:59		16:38	
16	05:48	06:32	07:21	08:09		08:02	15:13-16:27/74	08:43	15:22-15:51/29
	21:54	21:07	20:00	18:53		16:57		16:39	
17	05:49	06:34	07:22	08:11		08:04	15:13-16:25/72	08:44	15:22-15:50/28
	21:53	21:05	19:57	18:50		16:56		16:39	
18	05:50	06:35	07:24	08:12		08:06	15:14-16:24/70	08:44	15:23-15:51/28
	21:52	21:03	19:55	18:48		16:55		16:39	
19	05:51	06:37	07:25	08:14	17:57-18:02/5	08:07	15:15-16:22/67	08:45	15:23-15:52/29
	21:51	21:01	19:53	18:46		16:54		16:39	
20	05:53	06:38	07:27	08:16	17:53-18:04/11	08:09	15:16-16:21/65	08:46	15:23-15:52/29
	21:50	20:59	19:50	18:44	16:29-16:44/15	16:52		16:40	
21	05:54	06:40	07:29	08:17	17:52-18:05/13	08:11	15:17-16:20/63	08:46	15:24-15:53/29
	21:49	20:57	19:48	18:42	16:26-16:48/22	16:51		16:40	
22	05:55	06:41	07:30	08:19	17:51-18:06/15	08:12	15:17-16:18/61	08:47	15:24-15:53/29
	21:48	20:55	19:46	18:40	16:23-16:50/27	16:50		16:40	
23	05:57	06:43	07:32	08:21	17:50-18:07/17	08:14	15:19-15:55/36	08:47	15:25-15:54/29
	21:46	20:52	19:44	18:38	16:20-16:52/32	16:49	15:57-16:17/20	16:41	
24	05:58	06:45	07:33	08:23	17:50-18:07/17	08:15	15:20-15:55/35	08:48	15:25-15:54/29
	21:45	20:50	19:41	18:36	16:19-16:54/35	16:48	15:58-16:16/18	16:42	
25	05:59	06:46	07:35	07:24	16:48-17:05/17	08:17	15:20-15:55/35	08:48	15:26-15:54/28
	21:44	20:48	19:39	17:34	15:17-15:55/38	16:47	15:58-16:15/17	16:42	
26	06:01	06:48	07:36	07:26	16:49-17:03/14	08:18	15:19-15:53/34	08:49	15:27-15:55/28
	21:42	20:46	19:37	17:32	15:15-15:55/40	16:46	15:59-16:14/15	16:43	
27	06:02	06:49	07:38	07:28	16:30-16:39/9 15:14-15:56/42	08:20	15:18-15:53/35	08:49	15:27-15:55/28
	21:41	20:44	19:34	17:30	16:49-17:01/12	16:45	16:00-16:13/13	16:44	
28	06:03	06:51	07:40	07:29	16:28-16:41/13 15:13-15:57/44	08:22	15:17-15:51/34	08:49	15:27-15:56/29
	21:40	20:42	19:32	17:28	16:50-17:00/10	16:44	16:01-16:12/11	16:44	
29	06:05	06:52	07:41	07:31	16:26-16:43/17 15:12-15:58/46	08:23	15:18-15:50/32	08:49	15:28-15:56/28
	21:38	20:40	19:30	17:27	16:51-16:58/7 16:10-16:21/11	16:44	16:03-16:11/8	16:45	
30	06:06	06:54	07:43	07:33	16:25-16:44/19 15:11-15:59/48	08:24	15:18-15:50/32	08:49	15:28-15:57/29
	21:37	20:38	19:28	17:25	16:52-16:56/4 16:07-16:23/16	16:43	16:04-16:11/7	16:46	
31	06:08	06:56		07:35	16:06-16:44/38			08:49	15:29-15:57/28
	21:35	20:35		17:23	15:11-15:59/48			16:47	
Potential sun hours	498	451	380	333		269		248	
Sum of minutes with flicker	0	0	0	702		2154		881	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT01-VLS - ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (246)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 16:48	08:24 17:35	07:32 17:13-17:24/11 18:25 17:37-17:59/22	07:23 20:17	06:20 19:39-20:30/51 21:06	05:37 19:36-20:36/60 21:50
2	08:49 16:49	08:22 17:37	07:30 17:37-18:01/24 18:27	07:21 20:19	06:18 19:38-20:31/53 21:08	05:36 19:37-20:37/60 21:51
3	08:49 16:50	08:21 17:38	07:28 17:37-18:03/26 18:28	07:19 20:20	06:17 19:38-20:32/54 21:09	05:35 19:37-20:36/59 21:52
4	08:49 16:52	08:19 17:40	07:26 17:38-18:05/27 18:30	07:17 20:22	06:15 19:37-20:33/56 21:11	05:34 19:38-20:37/59 21:53
5	08:49 16:53	08:18 17:42	07:24 17:38-18:06/28 18:32	07:14 20:24	06:13 19:36-20:33/57 21:13	05:34 19:38-20:36/58 21:54
6	08:49 16:54	08:16 17:44	07:21 17:40-18:08/28 18:33	07:12 20:25	06:11 19:36-20:34/58 21:14	05:33 19:39-20:37/58 21:55
7	08:48 16:55	08:14 17:46	07:19 17:42-18:10/28 18:35	07:10 20:27	06:09 19:35-20:34/59 21:16	05:33 19:39-20:36/57 21:56
8	08:48 16:56	08:13 17:13-17:18/5 17:47	07:17 17:45-18:12/27 18:37	07:08 20:29	06:08 19:34-20:34/60 21:17	05:32 19:40-20:37/57 21:57
9	08:47 16:58	08:11 17:11-17:21/10 17:49	07:15 17:47-18:13/26 18:39	07:06 20:30	06:06 19:34-20:35/61 21:19	05:32 19:39-20:36/57 21:58
10	08:47 16:59	08:09 17:09-17:23/14 17:51	07:13 17:48-18:15/27 18:40	07:03 20:32	06:04 19:33-20:35/62 21:20	05:31 19:40-20:36/56 21:59
11	08:46 17:00	08:08 17:08-17:25/17 17:53	07:10 17:49-18:17/28 18:42	07:01 20:33	06:03 19:33-20:36/63 21:22	05:31 19:41-20:37/56 21:59
12	08:46 17:02	08:06 17:07-17:27/20 17:55	07:08 17:51-18:19/28 18:44	06:59 20:35	06:01 19:33-20:35/62 21:24	05:30 19:40-20:36/56 22:00
13	08:45 17:03	08:04 17:06-17:29/23 17:56	07:06 17:52-18:20/28 18:45	06:57 20:37	06:00 19:33-20:36/63 21:25	05:30 19:41-20:36/55 22:01
14	08:44 17:05	08:02 17:05-17:31/26 17:58	07:04 18:02-18:22/20 18:47 17:56-18:00/4	06:55 20:38	05:58 19:32-20:36/64 21:27	05:30 19:41-20:36/55 22:01
15	08:44 17:06	08:00 17:04-17:32/28 18:00	07:02 18:02-18:24/22 18:49	06:53 20:40	05:57 19:32-20:36/64 21:28	05:30 19:42-20:37/55 22:02
16	08:43 17:08	07:58 17:04-17:34/30 18:02	06:59 18:01-18:26/25 18:50	06:50 20:42	05:55 19:33-20:37/64 21:30	05:30 19:42-20:37/55 22:02
17	08:42 17:09	07:56 17:03-17:36/33 18:04	06:57 18:00-18:27/27 18:52	06:48 20:43	05:54 19:32-20:36/64 21:31	05:30 19:43-20:37/54 22:03
18	08:41 17:11	07:55 17:03-17:38/35 18:05	06:55 18:00-18:29/29 18:54	06:46 20:45	05:52 19:32-20:36/64 21:32	05:30 19:43-20:37/54 22:03
19	08:40 17:13	07:53 17:03-17:40/37 18:07	06:53 18:00-18:29/29 18:55	06:44 20:47	05:51 19:33-20:37/64 21:34	05:30 19:43-20:37/54 22:04
20	08:39 17:14	07:51 17:03-17:42/39 18:09	06:50 18:00-18:28/28 18:57	06:42 20:48	05:50 19:33-20:37/64 21:35	05:30 19:43-20:37/54 22:04
21	08:38 16:42-16:44/2 17:16	07:49 17:03-17:44/41 18:11	06:48 17:59-18:26/27 18:59	06:40 20:50	05:48 19:33-20:37/64 21:37	05:30 19:44-20:38/54 22:04
22	08:37 16:43-16:46/3 17:17	07:47 17:04-17:46/42 18:12	06:46 18:00-18:26/26 19:00	06:38 19:59-20:13/14 20:52	05:47 19:33-20:36/63 21:38	05:30 19:44-20:38/54 22:04
23	08:36 16:43-16:48/5 17:19	07:45 17:04-17:48/44 18:14	06:44 18:01-18:25/24 19:02	06:36 19:55-20:17/22 20:53	05:46 19:33-20:36/63 21:39	05:30 19:44-20:38/54 22:05
24	08:35 16:43-16:49/6 17:21	07:43 17:05-17:33/28 18:16 17:35-17:50/15	06:41 18:01-18:23/22 19:04	06:34 19:51-20:20/29 20:55	05:45 19:33-20:36/63 21:41	05:31 19:44-20:38/54 22:05
25	08:33 16:44-16:52/8 17:23	07:40 17:06-17:33/27 18:18 17:36-17:52/16	06:39 18:03-18:21/18 19:05	06:32 19:49-20:22/33 20:56	05:43 19:34-20:36/62 21:42	05:31 19:45-20:39/54 22:05
26	08:32 16:46-16:54/8 17:24	07:38 17:07-17:31/24 18:20 17:38-17:54/16	06:37 18:05-18:19/14 19:07	06:30 19:47-20:24/37 20:58	05:42 19:34-20:36/62 21:43	05:31 19:44-20:39/55 22:05
27	08:31 16:46-16:55/9 17:26	07:36 17:08-17:29/21 18:21 17:37-17:55/18	06:35 18:09-18:15/6 19:09	06:28 19:45-20:25/40 21:00	05:41 19:34-20:36/62 21:45	05:32 19:45-20:40/55 22:05
28	08:30 16:49-16:55/6 17:28	07:34 17:10-17:27/17 18:23 17:37-17:57/20	06:32 19:10	06:26 19:44-20:27/43 21:01	05:40 19:35-20:37/62 21:46	05:32 19:45-20:39/54 22:05
29	08:28 17:29		07:30 20:12	06:24 19:42-20:28/46 21:03	05:39 19:35-20:37/62 21:47	05:33 19:45-20:40/55 22:04
30	08:27 17:31		07:28 20:14	06:22 19:41-20:29/48 21:05	05:38 19:36-20:37/61 21:48	05:33 19:45-20:40/55 22:04
31	08:25 17:33		07:26 20:15		05:37 19:36-20:36/60 21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	47	646	679	312	1891	1673

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT01-VLS - ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (246)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 19:45-20:41/56	06:09 19:43-20:46/63	06:57	07:44 18:30-18:58/28	07:36 16:39-16:52/13	08:26
	22:04	21:33	20:33	19:25	17:21	16:42
2	05:35 19:44-20:40/56	06:11 19:44-20:46/62	06:59	07:46 18:29-18:57/28	07:38 16:40-16:50/10	08:27
	22:04	21:32	20:31	19:23	17:19	16:42
3	05:35 19:45-20:41/56	06:12 19:44-20:45/61	07:00	07:48 18:26-18:54/28	07:40 16:44-16:48/4	08:29
	22:03	21:30	20:29	19:21	17:18	16:41
4	05:36 19:45-20:42/57	06:14 19:44-20:44/60	07:02	07:49 18:26-18:52/26	07:42	08:30
	22:03	21:29	20:27	19:19	17:16	16:41
5	05:37 19:45-20:42/57	06:15 19:45-20:44/59	07:03	07:51 18:25-18:50/25	07:43	08:31
	22:03	21:27	20:24	19:16	17:14	16:40
6	05:38 19:44-20:42/58	06:17 19:44-20:43/59	07:05	07:53 18:19-18:47/28	07:45	08:33
	22:02	21:25	20:22	19:14	17:12	16:40
7	05:39 19:44-20:42/58	06:18 19:45-20:43/58	07:07	07:54 18:17-18:45/28	07:47	08:34
	22:01	21:23	20:20	19:12	17:11	16:39
8	05:39 19:44-20:43/59	06:20 19:45-20:42/57	07:08	07:56 18:15-18:43/28	07:49	08:35
	22:01	21:22	20:18	19:10	17:09	16:39
9	05:40 19:44-20:43/59	06:21 19:47-20:42/55	07:10	07:57 18:13-18:40/27	07:50	08:36
	22:00	21:20	20:15	19:08	17:08	16:39
10	05:41 19:44-20:44/60	06:23 19:47-20:40/53	07:11	07:59 18:12-18:38/26	07:52	08:37
	22:00	21:18	20:13	19:05	17:06	16:39
11	05:42 19:44-20:44/60	06:24 19:48-20:40/52	07:13	08:01 18:11-18:36/25	07:54	08:38
	21:59	21:16	20:11	19:03	17:04	16:38
12	05:43 19:44-20:45/61	06:26 19:48-20:38/50	07:14	08:02 17:50-17:53/3	07:56	08:39
	21:58	21:14	20:09	19:01 18:10-18:33/23	17:03	16:38
13	05:44 19:44-20:45/61	06:27 19:49-20:37/48	07:16	08:04 17:45-17:59/14	07:57	08:40
	21:57	21:12	20:06	18:59 18:10-18:31/21	17:02	16:38
14	05:46 19:44-20:45/61	06:29 19:50-20:36/46	07:18	08:06 17:42-18:01/19	07:59 16:21-16:27/6	08:41
	21:56	21:11	20:04	18:57 18:10-18:29/19	17:00	16:38
15	05:47 19:44-20:45/61	06:31 19:51-20:34/43	07:19	08:07 17:41-18:03/22	08:01 16:19-16:28/9	08:42
	21:55	21:09	20:02	18:55 18:10-18:27/17	16:59	16:38
16	05:48 19:44-20:46/62	06:32 19:53-20:32/39	07:21 18:59-19:01/2	08:09 17:38-18:03/25	08:02 16:19-16:27/8	08:43
	21:54	21:07	20:00	18:53 18:08-18:24/16	16:57	16:38
17	05:49 19:43-20:46/63	06:34 19:54-20:30/36	07:22 18:54-19:07/13	08:11 17:37-18:04/27	08:04 16:17-16:25/8	08:44
	21:53	21:05	19:57	18:50 18:07-18:22/15	16:56	16:39
18	05:50 19:43-20:46/63	06:35 19:56-20:28/32	07:24 18:51-19:08/17	08:12 17:36-18:05/29	08:06 16:17-16:23/6	08:44
	21:52	21:03	19:55	18:48 18:06-18:21/15	16:55	16:39
19	05:51 19:43-20:46/63	06:37 19:58-20:25/27	07:25 18:49-19:10/21	08:14 17:35-18:19/44	08:07 16:17-16:22/5	08:45
	21:51	21:01	19:53	18:46	16:54	16:39
20	05:53 19:44-20:47/63	06:38 20:01-20:22/21	07:27 18:48-19:11/23	08:16 17:34-18:16/42	08:09 16:18-16:21/3	08:46
	21:50	20:59	19:50	18:44	16:52	16:40
21	05:54 19:43-20:47/64	06:40 20:05-20:17/12	07:29 18:46-19:11/25	08:17 17:34-18:14/40	08:11 16:18-16:20/2	08:46
	21:49	20:57	19:48	18:42	16:51	16:40
22	05:55 19:43-20:47/64	06:41	07:30 18:45-19:12/27	08:19 17:33-18:12/39	08:12	08:47
	21:48	20:55	19:46	18:40	16:50	16:40
23	05:57 19:43-20:46/63	06:43	07:32 18:44-19:11/27	08:21 17:33-18:10/37	08:14	08:47
	21:46	20:52	19:44	18:38	16:49	16:41
24	05:58 19:43-20:47/64	06:45	07:33 18:43-19:13/30	08:23 17:34-18:08/34	08:15	08:48
	21:45	20:50	19:41	18:36	16:48	16:42
25	05:59 19:43-20:47/64	06:46	07:35 18:42-19:12/30	07:24 16:34-17:06/32	08:17	08:48
	21:44	20:48	19:39	17:34	16:47	16:42
26	06:01 19:43-20:47/64	06:48	07:36 18:42-19:10/28	07:26 16:33-17:03/30	08:19	08:49
	21:42	20:46	19:37	17:32	16:46	16:43
27	06:02 19:43-20:46/63	06:49	07:38 18:43-19:08/25	07:28 16:34-17:01/27	08:20	08:49
	21:41	20:44	19:34	17:30	16:45	16:44
28	06:03 19:43-20:47/64	06:51	07:40 18:42-19:05/23	07:29 16:35-17:00/25	08:22	08:49
	21:40	20:42	19:32	17:28	16:44	16:44
29	06:05 19:43-20:46/63	06:52	07:41 18:43-19:03/20	07:31 16:35-16:58/23	08:23	08:49
	21:38	20:40	19:30	17:27	16:44	16:45
30	06:06 19:44-20:47/63	06:54	07:43 18:33-19:00/27	07:33 16:36-16:56/20	08:24	08:49
	21:37	20:38	19:28	17:25	16:43	16:46
31	06:08 19:43-20:46/63	06:56		07:35 16:38-16:54/16		08:49
	21:35	20:35		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	1893	993	338	971	74	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT06_AB - ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (227)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May		June	
1	08:49	08:24	07:32	07:23		06:20	20:08-20:38/30	05:37	21:00-21:18/18
	16:48	17:35	18:25	20:17		21:06		21:50	
2	08:49	08:22	07:30	07:21		06:18	20:09-20:39/30	05:36	21:01-21:20/19
	16:49	17:36	18:26	20:19		21:08		21:51	
3	08:49	08:21	07:28	07:19		06:16	20:10-20:41/31	05:35	21:01-21:21/20
	16:50	17:38	18:28	20:20		21:09		21:53	
4	08:49	08:19	07:26	07:17		06:15	20:12-20:43/31	05:34	21:01-21:21/20
	16:51	17:40	18:30	20:22		21:11		21:54	
5	08:49	08:18	07:24	07:14		06:13	20:26-20:44/18 20:15-20:18/3	05:34	21:02-21:23/21
	16:53	17:42	18:32	20:24		21:13	20:19-20:24/5	21:54	
6	08:49	08:16	07:21	07:12		06:11	20:26-20:45/19	05:33	21:02-21:23/21
	16:54	17:44	18:33	20:25		21:14		21:55	
7	08:48	08:14	07:19	07:10		06:09	20:28-20:46/18	05:32	21:03-21:24/21
	16:55	17:45	18:35	20:27		21:16		21:56	
8	08:48	08:13	07:17	07:08		06:08	20:29-20:46/17	05:32	21:05-21:25/20
	16:56	17:47	18:37	20:29		21:17		21:57	
9	08:47	08:11	07:15	07:05		06:06	20:30-20:46/16	05:31	21:05-21:25/20
	16:58	17:49	18:39	20:30		21:19		21:58	
10	08:47	08:09	07:13	07:03		06:04	20:47-20:51/4	05:31	21:06-21:26/20
	16:59	17:51	18:40	20:32		21:20	20:30-20:45/15	21:59	
11	08:46	08:08	07:10	07:01		06:03	20:46-20:53/7	05:31	21:07-21:27/20
	17:00	17:53	18:42	20:33		21:22	20:31-20:45/14	21:59	
12	08:46	08:06	07:08	06:59	20:07-20:09/2	06:01	20:45-20:54/9	05:30	21:07-21:12/5
	17:02	17:55	18:44	20:35		21:24	20:32-20:44/12	22:00	21:13-21:27/14
13	08:45	08:04	07:06	06:57	20:06-20:10/4	06:00	20:44-20:56/12	05:30	21:08-21:11/3
	17:03	17:56	18:45	20:37		21:25	20:33-20:43/10	22:01	21:13-21:28/15
14	08:44	08:02	07:04	06:55	20:05-20:12/7	05:58	20:43-20:57/14	05:30	21:13-21:29/16
	17:05	17:58	18:47	20:38		21:27	20:34-20:41/7	22:01	
15	08:44	08:00	07:02	06:52	20:05-20:14/9	05:56	20:43-20:58/15	05:30	21:13-21:29/16
	17:06	18:00	18:49	20:40		21:28		22:02	
16	08:43	07:58	06:59	06:50	20:05-20:15/10	05:55	20:43-21:00/17	05:30	21:14-21:30/16
	17:08	18:02	18:50	20:42		21:30		22:02	
17	08:42	07:56	06:57	06:48	20:05-20:16/11	05:54	20:43-21:00/17	05:30	21:14-21:30/16
	17:09	18:04	18:52	20:43		21:31		22:03	
18	08:41	07:55	06:55	06:46	20:07-20:14/7	05:52	20:43-21:00/17	05:30	21:14-21:30/16
	17:11	18:05	18:54	20:45		21:32		22:03	
19	08:40	07:53	06:53	06:44	20:09-20:11/2	05:51	20:43-21:00/17	05:30	21:14-21:31/17
	17:12	18:07	18:55	20:47		21:34	21:03-21:04/1	22:04	
20	08:39	07:51	06:50	06:42	20:17-20:21/4	05:49	20:44-21:00/16	05:30	21:14-21:31/17
	17:14	18:09	18:57	20:48		21:35	21:02-21:05/3	22:04	
21	08:38	07:49	06:48	06:40	20:13-20:23/10	05:48	20:43-20:59/16	05:30	21:14-21:31/17
	17:16	18:11	18:59	20:50		21:37	21:00-21:06/6	22:04	
22	08:37	07:47	06:46	06:38	20:11-20:25/14	05:47	20:44-20:59/15	05:30	21:15-21:32/17
	17:17	18:12	19:00	20:52		21:38	21:00-21:07/7	22:04	
23	08:36	07:45	06:44	06:36	20:10-20:26/16	05:46	20:45-21:08/23	05:30	21:15-21:32/17
	17:19	18:14	19:02	20:53		21:39		22:05	
24	08:35	07:43	06:41	06:34	20:09-20:28/19	05:44	20:46-20:58/12	05:31	21:15-21:32/17
	17:21	18:16	19:04	20:55		21:41	20:59-21:10/11	22:05	
25	08:33	07:40	06:39	06:32	20:08-20:29/21	05:43	20:47-20:57/10	05:31	21:16-21:32/16
	17:22	18:18	19:05	20:56		21:42	20:59-21:11/12	22:05	
26	08:32	07:38	06:37	06:30	20:08-20:31/23	05:42	20:48-20:56/8	05:31	21:16-21:32/16
	17:24	18:19	19:07	20:58		21:43	20:59-21:12/13	22:05	
27	08:31	07:36	06:35	06:28	20:07-20:32/25	05:41	20:50-20:55/5	05:32	21:16-21:31/15
	17:26	18:21	19:09	21:00		21:45	20:59-21:13/14	22:05	
28	08:30	07:34	06:32	06:26	20:07-20:33/26	05:40	20:59-21:14/15	05:32	21:16-21:32/16
	17:28	18:23	19:10	21:01		21:46		22:05	
29	08:28		07:30	06:24	20:08-20:36/28	05:39	21:00-21:15/15	05:33	21:12-21:14/2
	17:29		20:12	21:03		21:47		22:04	21:16-21:31/15
30	08:27		07:28	06:22	20:08-20:37/29	05:38	21:00-21:15/15	05:33	21:11-21:16/5
	17:31		20:14	21:05		21:48		22:04	21:17-21:32/15
31	08:25		07:25			05:37	21:00-21:15/15		
	17:33		20:15			21:49	21:16-21:18/2		
Potential sun hours	262	279	367	414		482		494	
Sum of minutes with flicker	0	0	0	267		639		539	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT06_AB - ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (227)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 21:11-21:32/21	06:09 20:42-21:04/22	06:57	07:44	07:36	08:26
	22:04	21:33	20:33	19:25	17:21	16:42
2	05:35 21:10-21:31/21	06:11 20:57-21:03/6	06:59	07:46	07:38	08:27
	22:04	21:32 20:41-20:56/15	20:31	19:23	17:19	16:42
3	05:35 21:10-21:31/21	06:12 20:59-21:01/2	07:00	07:48	07:40	08:29
	22:03	21:30 20:40-20:56/16	20:29	19:21	17:17	16:41
4	05:36 21:10-21:31/21	06:14 20:39-20:56/17	07:02	07:49	07:42	08:30
	22:03	21:29	20:27	19:19	17:16	16:40
5	05:37 21:09-21:30/21	06:15 20:40-20:56/16	07:03	07:51	07:43	08:31
	22:03	21:27	20:24	19:16	17:14	16:40
6	05:38 21:09-21:29/20	06:17 20:37-20:56/19	07:05	07:53	07:45	08:33
	22:02	21:25	20:22	19:14	17:12	16:40
7	05:38 21:09-21:29/20	06:18 20:37-20:55/18	07:07	07:54	07:47	08:34
	22:02	21:23	20:20	19:12	17:11	16:39
8	05:39 21:09-21:29/20	06:20 20:35-20:53/18	07:08	07:56	07:49	08:35
	22:01	21:22 20:23-20:34/11	20:18	19:10	17:09	16:39
9	05:40 21:09-21:28/19	06:21 20:20-20:51/31	07:10	07:57	07:50	08:36
	22:00	21:20	20:15	19:08	17:07	16:39
10	05:41 21:09-21:28/19	06:23 20:19-20:50/31	07:11	07:59	07:52	08:37
	22:00	21:18	20:13	19:05	17:06	16:38
11	05:42 21:08-21:27/19	06:24 20:17-20:48/31	07:13	08:01	07:54	08:38
	21:59	21:16	20:11	19:03	17:04	16:38
12	05:43 21:08-21:23/15	06:26 20:17-20:46/29	07:14	08:02	07:56	08:39
	21:58 21:24-21:26/2	21:14	20:09	19:01	17:03	16:38
13	05:44 21:08-21:24/16	06:27 20:15-20:44/29	07:16	08:04	07:57	08:40
	21:57	21:12	20:06	18:59	17:01	16:38
14	05:45 21:08-21:24/16	06:29 20:15-20:43/28	07:17	08:06	07:59	08:41
	21:56	21:11	20:04	18:57	17:00	16:38
15	05:47 21:08-21:24/16	06:30 20:15-20:40/25	07:19	08:07	08:01	08:42
	21:55	21:09	20:02	18:55	16:59	16:38
16	05:48 21:01-21:03/2	06:32 20:15-20:39/24	07:21	08:09	08:02	08:43
	21:54 21:08-21:23/15	21:07	20:00	18:53	16:57	16:38
17	05:49 20:58-21:05/7	06:34 20:14-20:37/23	07:22	08:11	08:04	08:44
	21:53 21:08-21:22/14	21:05	19:57	18:50	16:56	16:39
18	05:50 20:57-21:06/9	06:35 20:15-20:35/20	07:24	08:12	08:06	08:44
	21:52 21:08-21:21/13	21:03	19:55	18:48	16:55	16:39
19	05:51 20:56-21:07/11	06:37 20:15-20:33/18	07:25	08:14	08:07	08:45
	21:51 21:09-21:20/11	21:01	19:53	18:46	16:53	16:39
20	05:53 20:56-21:09/13	06:38 20:16-20:32/16	07:27	08:16	08:09	08:46
	21:50 21:10-21:20/10	20:59	19:50	18:44	16:52	16:39
21	05:54 20:55-21:09/14	06:40 20:16-20:29/13	07:28	08:17	08:11	08:46
	21:49 21:10-21:18/8	20:57	19:48	18:42	16:51	16:40
22	05:55 20:54-21:17/23	06:41 20:18-20:28/10	07:30	08:19	08:12	08:47
	21:48	20:55	19:46	18:40	16:50	16:40
23	05:56 20:54-21:10/16	06:43	07:32	08:21	08:14	08:47
	21:46 21:11-21:16/5	20:52	19:44	18:38	16:49	16:41
24	05:58 20:53-21:10/17	06:45 20:12-20:16/4	07:33	08:23	08:15	08:48
	21:45 21:12-21:14/2	20:50	19:41	18:36	16:48	16:41
25	05:59 20:54-21:11/17	06:46 20:09-20:17/8	07:35	07:24	08:17	08:48
	21:44	20:48	19:39	17:34	16:47	16:42
26	06:01 20:53-21:11/18	06:48 20:08-20:19/11	07:36	07:26	08:19	08:49
	21:42	20:46	19:37	17:32	16:46	16:43
27	06:02 20:53-21:10/17	06:49 20:07-20:17/10	07:38	07:28	08:20	08:49
	21:41	20:44	19:34	17:30	16:45	16:43
28	06:03 20:54-21:10/16	06:51 20:07-20:15/8	07:40	07:29	08:22	08:49
	21:40	20:42	19:32	17:28	16:44	16:44
29	06:05 20:54-21:08/14	06:52 20:06-20:13/7	07:41	07:31	08:23	08:49
	21:38 20:47-20:50/3	20:40	19:30	17:27	16:44	16:45
30	06:06 20:54-21:07/13	06:54 20:07-20:11/4	07:43	07:33	08:24	08:49
	21:37 20:44-20:52/8	20:38	19:28	17:25	16:43	16:46
31	06:08 20:55-21:06/11	06:56 20:07-20:09/2		07:35		08:49
	21:35 20:43-20:54/11	20:35		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	605	542	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT07_Sadaci - NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (248)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April		May	June	
1	08:49	08:24	07:32		07:23	19:45-19:51/6	06:20	05:37	
	16:48	17:35	18:25		20:17		21:06	21:50	
2	08:49	08:22	07:30		07:21	19:43-19:53/10	06:18	05:36	
	16:49	17:37	18:27		20:19		21:08	21:51	
3	08:49	08:21	07:28		07:19	19:41-19:55/14	06:17	05:35	
	16:50	17:38	18:28		20:20		21:09	21:53	
4	08:49	08:19	07:26		07:17	19:40-19:57/17	06:15	05:34	
	16:52	17:40	18:30		20:22		21:11	21:54	
5	08:49	08:18	07:24		07:14	19:40-19:58/18	06:13	05:34	21:17-21:22/5
	16:53	17:42	18:32		20:24		21:13	21:54	
6	08:49	08:16	07:21		07:12	19:38-19:59/21	06:11	05:33	21:16-21:24/8
	16:54	17:44	18:33		20:25		21:14	21:55	
7	08:48	08:14	07:19		07:10	19:38-20:01/23	06:09	05:33	21:15-21:24/9
	16:55	17:46	18:35		20:27		21:16	21:56	
8	08:48	08:13	07:17		07:08	19:38-20:03/25	06:08	05:32	21:15-21:25/10
	16:56	17:47	18:37		20:29		21:17	21:57	
9	08:47	08:11	07:15		07:06	19:38-20:04/26	06:06	05:32	21:14-21:25/11
	16:58	17:49	18:39		20:30		21:19	21:58	
10	08:47	08:09	07:13		07:03	19:39-20:06/27	06:04	05:31	21:14-21:26/12
	16:59	17:51	18:40		20:32		21:20	21:59	
11	08:46	08:08	07:11		07:01	19:40-20:08/28	06:03	05:31	21:14-21:27/13
	17:00	17:53	18:42		20:33		21:22	21:59	
12	08:46	08:06	07:08		06:59	19:40-20:07/27	06:01	05:31	21:13-21:27/14
	17:02	17:55	18:44		20:35		21:24	22:00	
13	08:45	08:04	07:06		06:57	19:42-20:06/24	06:00	05:30	21:13-21:28/15
	17:03	17:56	18:45		20:37		21:25	22:01	
14	08:44	08:02	07:04		06:55	19:59-20:03/4	05:58	05:30	21:13-21:29/16
	17:05	17:58	18:47		20:38	19:56-19:58/2	21:27	22:01	
15	08:44	08:00	07:02		06:53		05:57	05:30	21:13-21:29/16
	17:06	18:00	18:49		20:40		21:28	22:02	
16	08:43	07:58	06:59		06:50	20:11-20:15/4	05:55	05:30	21:13-21:30/17
	17:08	18:02	18:50		20:42		21:30	22:02	
17	08:42	07:56	06:57		06:48	20:09-20:17/8	05:54	05:30	21:13-21:30/17
	17:09	18:04	18:52		20:43		21:31	22:03	
18	08:41	07:55	06:55		06:46	20:08-20:18/10	05:52	05:30	21:13-21:30/17
	17:11	18:05	18:54		20:45		21:32	22:03	
19	08:40	07:53	06:53		06:44	20:07-20:20/13	05:51	05:30	21:13-21:31/18
	17:13	18:07	18:55		20:47		21:34	22:04	
20	08:39	07:51	06:50		06:42	20:07-20:22/15	05:50	05:30	21:13-21:31/18
	17:14	18:09	18:57		20:48		21:35	22:04	
21	08:38	07:49	06:48	18:30-18:33/3	06:40	20:06-20:23/17	05:48	05:30	21:14-21:32/18
	17:16	18:11	18:59		20:50		21:37	22:04	
22	08:37	07:47	06:46	18:30-18:35/5	06:38	20:06-20:24/18	05:47	05:30	21:14-21:32/18
	17:17	18:13	19:00		20:52		21:38	22:04	
23	08:36	07:45	06:44	18:30-18:37/7	06:36	20:06-20:24/18	05:46	05:30	21:14-21:32/18
	17:19	18:14	19:02		20:53		21:39	22:05	
24	08:35	07:43	06:41	18:29-18:38/9	06:34	20:07-20:23/16	05:45	05:31	21:14-21:31/17
	17:21	18:16	19:04		20:55		21:41	22:05	
25	08:33	07:41	06:39	18:29-18:40/11	06:32	20:07-20:22/15	05:43	05:31	21:15-21:32/17
	17:23	18:18	19:05		20:56		21:42	22:05	
26	08:32	07:38	06:37	18:31-18:40/9	06:30	20:08-20:20/12	05:42	05:31	21:15-21:32/17
	17:24	18:20	19:07		20:58		21:43	22:05	
27	08:31	07:36	06:35	18:33-18:38/5	06:28	20:10-20:18/8	05:41	05:32	21:16-21:32/16
	17:26	18:21	19:09		21:00		21:45	22:05	
28	08:30	07:34	06:32		06:26		05:40	05:32	21:16-21:32/16
	17:28	18:23	19:10		21:01		21:46	22:05	
29	08:28		07:30		06:24		05:39	05:33	21:17-21:32/15
	17:29		20:12		21:03		21:47	22:04	
30	08:27		07:28		06:22		05:38	05:33	21:17-21:31/14
	17:31		20:14		21:05		21:48	22:04	
31	08:25		07:26	19:48-19:50/2			05:37		
	17:33		20:15				21:49		
Potential sun hours	262	279	367		414		482	494	
Sum of minutes with flicker	0	0	51		426		0	382	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT07_Sadaci - NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (248)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 21:18-21:32/14	06:09	06:57 19:39-20:07/28	07:44	07:36	08:26
	22:04	21:34	20:33	19:25	17:21	16:42
2	05:35 21:18-21:31/13	06:11	06:59 19:37-20:04/27	07:46	07:38	08:27
	22:04	21:32	20:31	19:23	17:19	16:42
3	05:35 21:19-21:31/12	06:12	07:00 19:36-20:03/27	07:48	07:40	08:29
	22:03	21:30	20:29	19:21	17:18	16:41
4	05:36 21:20-21:31/11	06:14	07:02 19:35-20:00/25	07:49	07:42	08:30
	22:03	21:29	20:27	19:19	17:16	16:41
5	05:37 21:21-21:31/10	06:15	07:03 19:35-19:58/23	07:51	07:43	08:31
	22:03	21:27	20:24	19:16	17:14	16:40
6	05:38 21:21-21:29/8	06:17	07:05 19:34-19:55/21	07:53	07:45	08:33
	22:02	21:25	20:22	19:14	17:12	16:40
7	05:39 21:22-21:29/7	06:18	07:07 19:35-19:54/19	07:54	07:47	08:34
	22:02	21:23	20:20	19:12	17:11	16:39
8	05:39 21:24-21:29/5	06:20	07:08 19:34-19:51/17	07:56	07:49	08:35
	22:01	21:22	20:18	19:10	17:09	16:39
9	05:40	06:21	07:10 19:35-19:49/14	07:57	07:50	08:36
	22:00	21:20	20:15	19:08	17:08	16:39
10	05:41	06:23	07:11 19:36-19:46/10	07:59	07:52	08:37
	22:00	21:18	20:13	19:05	17:06	16:39
11	05:42	06:24	07:13 19:37-19:45/8	08:01	07:54	08:38
	21:59	21:16	20:11	19:03	17:04	16:38
12	05:43	06:26	07:14 19:39-19:42/3	08:02	07:56	08:39
	21:58	21:14	20:09	19:01	17:03	16:38
13	05:44	06:27	07:16	08:04	07:57	08:40
	21:57	21:12	20:06	18:59	17:02	16:38
14	05:46	06:29	07:18	08:06	07:59	08:41
	21:56	21:11	20:04	18:57	17:00	16:38
15	05:47	06:31 20:20-20:22/2	07:19	08:07	08:01	08:42
	21:55	21:09	20:02	18:55	16:59	16:38
16	05:48	06:32 20:17-20:26/9	07:21 19:23-19:25/2	08:09	08:02	08:43
	21:54	21:07	20:00	18:53	16:57	16:38
17	05:49	06:34 20:15-20:27/12	07:22 19:19-19:28/9	08:11	08:04	08:44
	21:53	21:05	19:57	18:50	16:56	16:39
18	05:50	06:35 20:14-20:29/15	07:24 19:17-19:28/11	08:12	08:06	08:44
	21:52	21:03	19:55	18:48	16:55	16:39
19	05:51	06:37 20:12-20:29/17	07:25 19:16-19:26/10	08:14	08:07	08:45
	21:51	21:01	19:53	18:46	16:54	16:39
20	05:53	06:38 20:12-20:29/17	07:27 19:16-19:24/8	08:16	08:09	08:46
	21:50	20:59	19:50	18:44	16:52	16:40
21	05:54	06:40 20:11-20:29/18	07:29 19:15-19:21/6	08:18	08:11	08:46
	21:49	20:57	19:48	18:42	16:51	16:40
22	05:55	06:41 20:11-20:28/17	07:30 19:16-19:20/4	08:19	08:12	08:47
	21:48	20:55	19:46	18:40	16:50	16:40
23	05:57	06:43 20:11-20:25/14	07:32 19:16-19:17/1	08:21	08:14	08:47
	21:46	20:52	19:44	18:38	16:49	16:41
24	05:58	06:45 20:11-20:24/13	07:33	08:23	08:15	08:48
	21:45	20:50	19:41	18:36	16:48	16:42
25	05:59	06:46 20:11-20:21/10	07:35	07:24	08:17	08:48
	21:44	20:48	19:39	17:34	16:47	16:42
26	06:01	06:48 20:12-20:20/8	07:36	07:26	08:19	08:49
	21:42	20:46	19:37	17:32	16:46	16:43
27	06:02	06:49 20:13-20:17/4	07:38	07:28	08:20	08:49
	21:41	20:44	19:34	17:30	16:45	16:44
28	06:03	06:51	07:40	07:30	08:22	08:49
	21:40	20:42	19:32	17:28	16:44	16:44
29	06:05	06:52 19:56-20:04/8	07:41	07:31	08:23	08:49
	21:38	20:40	19:30	17:27	16:44	16:45
30	06:06	06:54 19:43-20:07/24	07:43	07:33	08:25	08:49
	21:37	20:38	19:28	17:25	16:43	16:46
31	06:08	06:56 19:40-20:07/27		07:35		08:49
	21:35	20:35		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	80	215	273	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT1_RH_E - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May		June	
1	08:49	08:24	07:32	07:23		06:20	19:55-20:38/43	05:36	20:45-21:18/33
	16:48	17:35	18:25	20:17		21:06		21:50	
2	08:49	08:22	07:30	07:21		06:18	19:55-20:39/44	05:36	20:46-21:20/34
	16:49	17:36	18:26	20:19		21:08		21:51	
3	08:49	08:21	07:28	07:19		06:16	19:55-20:41/46	05:35	20:46-21:21/35
	16:50	17:38	18:28	20:20		21:09		21:52	
4	08:49	08:19	07:26	07:17		06:15	19:56-20:43/47	05:34	20:46-21:21/35
	16:51	17:40	18:30	20:22		21:11		21:53	
5	08:49	08:18	07:24	07:14		06:13	19:56-20:44/48	05:34	20:47-21:23/36
	16:53	17:42	18:32	20:24		21:13		21:54	
6	08:49	08:16	07:21	07:12		06:11	19:56-20:45/49	05:33	20:47-21:23/36
	16:54	17:44	18:33	20:25		21:14		21:55	
7	08:48	08:14	07:19	07:10		06:09	19:57-20:47/50	05:32	20:47-21:24/37
	16:55	17:45	18:35	20:27		21:16		21:56	
8	08:48	08:13	07:17	07:08		06:08	19:58-20:48/50	05:32	20:48-21:25/37
	16:56	17:47	18:37	20:28		21:17		21:57	
9	08:47	08:11	07:15	07:05	20:02-20:05/3	06:06	19:59-20:50/51	05:31	20:48-21:25/37
	16:58	17:49	18:39	20:30		21:19		21:58	
10	08:47	08:09	07:13	07:03	20:01-20:06/5	06:04	20:00-20:51/51	05:31	20:49-21:26/37
	16:59	17:51	18:40	20:32		21:20		21:59	
11	08:46	08:08	07:10	07:01	19:59-20:07/8	06:03	20:02-20:53/51	05:31	20:49-21:27/38
	17:00	17:53	18:42	20:33		21:22		21:59	
12	08:46	08:06	07:08	06:59	19:58-20:09/11	06:01	20:03-20:54/51	05:30	20:49-21:27/38
	17:02	17:54	18:44	20:35		21:24		22:00	
13	08:45	08:04	07:06	06:57	19:57-20:10/13	05:59	20:26-20:56/30	05:30	20:50-21:28/38
	17:03	17:56	18:45	20:37		21:25	20:05-20:22/17	22:01	
14	08:44	08:02	07:04	06:55	19:57-20:12/15	05:58	20:26-20:57/31	05:30	20:50-21:29/39
	17:05	17:58	18:47	20:38		21:27	20:08-20:14/6	22:01	
15	08:44	08:00	07:02	06:52	19:57-20:14/17	05:56	20:27-20:58/31	05:30	20:50-21:29/39
	17:06	18:00	18:49	20:40		21:28		22:02	
16	08:43	07:58	06:59	06:50	19:58-20:15/17	05:55	20:27-21:00/33	05:30	20:51-21:30/39
	17:08	18:02	18:50	20:42		21:30		22:02	
17	08:42	07:56	06:57	06:48	19:58-20:16/18	05:54	20:27-21:01/34	05:30	20:51-21:30/39
	17:09	18:03	18:52	20:43		21:31		22:03	
18	08:41	07:54	06:55	06:46	19:59-20:18/19	05:52	20:28-21:02/34	05:30	20:51-21:30/39
	17:11	18:05	18:54	20:45		21:32		22:03	
19	08:40	07:53	06:53	06:44	20:01-20:20/19	05:51	20:28-21:04/36	05:30	20:52-21:31/39
	17:12	18:07	18:55	20:47		21:34		22:04	
20	08:39	07:51	06:50	06:42	20:03-20:22/19	05:49	20:29-21:05/36	05:30	20:52-21:31/39
	17:14	18:09	18:57	20:48		21:35		22:04	
21	08:38	07:49	06:48	06:40	20:01-20:23/22	05:48	20:29-21:06/37	05:30	20:52-21:31/39
	17:16	18:11	18:59	20:50		21:37		22:04	
22	08:37	07:47	06:46	06:38	20:00-20:25/25	05:47	20:30-21:07/37	05:30	20:53-21:32/39
	17:17	18:12	19:00	20:51		21:38		22:04	
23	08:36	07:45	06:44	06:36	19:59-20:26/27	05:46	20:31-21:08/37	05:30	20:53-21:32/39
	17:19	18:14	19:02	20:53		21:39		22:05	
24	08:35	07:43	06:41	06:34	19:58-20:28/30	05:44	20:33-21:10/37	05:31	20:53-21:32/39
	17:21	18:16	19:04	20:55		21:41		22:05	
25	08:33	07:40	06:39	06:32	19:57-20:29/32	05:43	20:34-21:11/37	05:31	20:53-21:32/39
	17:22	18:18	19:05	20:56		21:42		22:05	
26	08:32	07:38	06:37	06:30	19:56-20:31/35	05:42	20:35-21:12/37	05:31	20:53-21:32/39
	17:24	18:19	19:07	20:58		21:43		22:05	
27	08:31	07:36	06:34	06:28	19:55-20:32/37	05:41	20:44-21:13/29	05:32	20:53-21:31/38
	17:26	18:21	19:09	21:00		21:45	20:38-20:43/5	22:05	
28	08:30	07:34	06:32	06:26	19:55-20:33/38	05:40	20:44-21:14/30	05:32	20:53-21:32/39
	17:28	18:23	19:10	21:01		21:46		22:05	
29	08:28		07:30	06:24	19:56-20:36/40	05:39	20:45-21:16/31	05:33	20:53-21:31/38
	17:29		20:12	21:03		21:47		22:04	
30	08:27		07:28	06:22	19:55-20:37/42	05:38	20:45-21:17/32	05:33	20:53-21:32/39
	17:31		20:14	21:05		21:48		22:04	
31	08:25		07:25			05:37	20:45-21:18/33		
	17:33		20:15			21:49			
Potential sun hours	262	279	367	414		482		494	
Sum of minutes with flicker	0	0	0	492		1251		1132	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT1_RH_E - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 20:54-21:32/38 22:04	06:09 20:13-21:04/51 21:33	06:57 19:59-20:07/8 20:33	07:44 19:25	07:36 17:21	08:26 16:42
2	05:35 20:53-21:31/38 22:04	06:11 20:12-21:03/51 21:32	06:59 19:59-20:04/5 20:31	07:46 19:23	07:38 17:19	08:27 16:42
3	05:35 20:53-21:31/38 22:03	06:12 20:10-21:01/51 21:30	07:00 20:00-20:03/3 20:29	07:48 19:21	07:40 17:17	08:29 16:41
4	05:36 20:54-21:31/37 22:03	06:14 20:08-20:59/51 21:29	07:02 20:27	07:49 19:19	07:42 17:16	08:30 16:40
5	05:37 20:53-21:30/37 22:03	06:15 20:08-20:58/50 21:27	07:03 20:24	07:51 19:16	07:43 17:14	08:31 16:40
6	05:38 20:53-21:29/36 22:02	06:17 20:07-20:56/49 21:25	07:05 20:22	07:52 19:14	07:45 17:12	08:33 16:40
7	05:38 20:53-21:29/36 22:01	06:18 20:06-20:55/49 21:23	07:06 20:20	07:54 19:12	07:47 17:11	08:34 16:39
8	05:39 20:53-21:29/36 22:01	06:20 20:05-20:53/48 21:22	07:08 20:18	07:56 19:10	07:49 17:09	08:35 16:39
9	05:40 20:53-21:28/35 22:00	06:21 20:04-20:51/47 21:20	07:10 20:15	07:57 19:08	07:50 17:07	08:36 16:39
10	05:41 20:53-21:28/35 22:00	06:23 20:04-20:50/46 21:18	07:11 20:13	07:59 19:05	07:52 17:06	08:37 16:38
11	05:42 20:53-21:27/34 21:59	06:24 20:03-20:48/45 21:16	07:13 20:11	08:01 19:03	07:54 17:04	08:38 16:38
12	05:43 20:54-21:26/32 21:58	06:26 20:04-20:46/42 21:14	07:14 20:09	08:02 19:01	07:56 17:03	08:39 16:38
13	05:44 20:54-21:26/32 21:57	06:27 20:03-20:44/41 21:12	07:16 20:06	08:04 18:59	07:57 17:01	08:40 16:38
14	05:45 20:54-21:25/31 21:56	06:29 20:03-20:43/40 21:11	07:17 20:04	08:06 18:57	07:59 17:00	08:41 16:38
15	05:47 20:54-21:24/30 21:55	06:30 20:03-20:40/37 21:09	07:19 20:02	08:07 18:55	08:01 16:59	08:42 16:38
16	05:48 20:54-21:23/29 21:54	06:32 20:03-20:39/36 21:07	07:21 19:59	08:09 18:52	08:02 16:57	08:43 16:38
17	05:49 20:46-21:22/36 21:53	06:34 20:03-20:37/34 21:05	07:22 19:57	08:11 18:50	08:04 16:56	08:44 16:39
18	05:50 20:44-21:21/37 21:52	06:35 20:04-20:35/31 21:03	07:24 19:55	08:12 18:48	08:06 16:55	08:44 16:39
19	05:51 20:43-21:20/37 21:51	06:37 20:03-20:33/30 21:01	07:25 19:53	08:14 18:46	08:07 16:53	08:45 16:39
20	05:53 20:42-21:20/38 21:50	06:38 20:04-20:32/28 20:59	07:27 19:50	08:16 18:44	08:09 16:52	08:46 16:39
21	05:54 20:41-21:18/37 21:49	06:40 20:05-20:29/24 20:57	07:28 19:48	08:17 18:42	08:11 16:51	08:46 16:40
22	05:55 20:40-21:17/37 21:48	06:41 20:06-20:28/22 20:55	07:30 19:46	08:19 18:40	08:12 16:50	08:47 16:40
23	05:56 20:39-21:16/37 21:46	06:43 20:07-20:25/18 20:52	07:32 19:44	08:21 18:38	08:14 16:49	08:47 16:41
24	05:58 20:38-21:14/36 21:45	06:45 20:04-20:24/20 20:50	07:33 19:41	08:23 18:36	08:15 16:48	08:48 16:41
25	05:59 20:39-21:14/35 21:44	06:46 20:02-20:21/19 20:48	07:35 19:39	07:24 17:34	08:17 16:47	08:48 16:42
26	06:01 20:38-21:12/34 21:42	06:48 20:01-20:17/16 20:46	07:36 19:37	07:26 17:32	08:19 16:46	08:49 16:43
27	06:02 20:37-21:11/34 21:41	06:49 19:59-20:17/18 20:44	07:38 19:34	07:28 17:30	08:20 16:45	08:49 16:43
28	06:03 20:38-21:10/32 21:40	06:51 19:59-20:15/16 20:42	07:40 19:32	07:29 17:28	08:22 16:44	08:49 16:44
29	06:05 20:37-21:08/31 21:38	06:52 19:58-20:13/15 20:40	07:41 19:30	07:31 17:26	08:23 16:44	08:49 16:45
30	06:06 20:36-21:07/31 21:37 20:17-20:26/9	06:54 19:58-20:11/13 20:38	07:43 19:28	07:33 17:25	08:24 16:43	08:49 16:46
31	06:08 20:35-21:06/31 21:35 20:15-20:34/19	06:56 19:58-20:09/11 20:35		07:35 17:23		08:49 16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	1105	1049	16	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT2_RH_E - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (237)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49 16:48	08:24 17:35	07:32 18:25	07:23 20:17	06:20 20:23-20:38/15 21:06	05:36 21:05-21:18/13 21:50	05:34 21:10-21:32/22 22:04	06:09 20:32-20:55/23 21:33	06:57 20:33	07:44 19:25	07:36 17:21	08:26 16:42
2	08:49 16:49	08:22 17:36	07:30 18:26	07:21 20:19	06:18 20:22-20:39/17 21:08	05:36 21:06-21:20/14 21:51	05:34 21:09-21:31/22 22:04	06:11 20:31-20:55/24 21:32	06:59 20:31	07:46 19:23	07:38 17:19	08:27 16:41
3	08:49 16:50	08:21 17:38	07:28 18:28	07:19 20:20	06:16 20:21-20:41/20 21:09	05:35 21:05-21:21/16 21:52	05:35 21:10-21:31/21 22:03	06:12 20:31-20:56/25 21:30	07:00 20:29	07:48 19:21	07:40 17:17	08:29 16:41
4	08:49 16:51	08:19 17:40	07:26 18:30	07:16 20:22	06:15 20:21-20:43/22 21:11	05:34 21:05-21:21/16 21:53	05:36 21:11-21:31/20 22:03	06:14 20:30-20:56/26 21:29	07:02 20:27	07:49 19:19	07:42 17:16	08:30 16:40
5	08:49 16:53	08:18 17:42	07:24 18:32	07:14 20:24	06:13 20:21-20:44/23 21:13	05:34 21:05-21:23/18 21:54	05:37 21:10-21:30/20 22:03	06:15 20:31-20:56/25 21:27	07:03 20:24	07:51 19:16	07:43 17:14	08:31 16:40
6	08:49 16:54	08:16 17:44	07:21 18:33	07:12 20:25	06:11 20:20-20:45/25 21:14	05:33 21:05-21:23/18 21:55	05:38 21:11-21:29/18 22:02	06:17 20:30-20:56/26 21:25	07:05 20:22	07:52 19:14	07:45 17:12	08:32 16:39
7	08:48 16:55	08:14 17:45	07:19 18:35	07:10 20:27	06:09 20:21-20:46/25 21:16	05:32 21:05-21:24/19 21:56	05:38 21:11-21:29/18 22:01	06:18 20:31-20:55/24 21:23	07:06 20:20	07:54 19:12	07:47 17:11	08:34 16:39
8	08:48 16:56	08:13 17:47	07:17 18:37	07:08 20:28	06:08 20:20-20:46/26 21:17	05:32 21:04-21:24/20 21:57	05:39 21:12-21:29/17 22:01	06:20 20:30-20:53/23 21:22	07:08 20:18	07:56 19:10	07:49 17:09	08:35 16:39
9	08:47 16:58	08:11 17:49	07:15 18:38	07:05 20:30	06:06 20:21-20:46/25 21:19	05:31 21:05-21:25/20 21:58	05:40 21:12-21:28/16 22:00	06:21 20:30-20:51/21 21:20	07:10 20:15	07:57 19:08	07:50 17:07	08:36 16:39
10	08:47 16:59	08:09 17:51	07:13 18:40	07:03 20:32	06:04 20:21-20:45/24 21:20	05:31 21:05-21:26/21 21:59	05:41 21:13-21:28/15 22:00	06:23 20:31-20:50/19 21:18	07:11 20:13	07:59 19:05	07:52 17:06	08:37 16:38
11	08:46 17:00	08:07 17:53	07:10 18:42	07:01 20:33	06:03 20:21-20:45/24 21:22	05:31 21:06-21:27/21 21:59	05:42 21:13-21:27/14 21:59	06:24 20:31-20:48/17 21:16	07:13 20:11	08:01 19:03	07:54 17:04	08:38 16:38
12	08:46 17:02	08:06 17:54	07:08 18:44	06:59 20:35	06:01 20:21-20:44/23 21:23	05:30 21:05-21:27/22 22:00	05:43 21:14-21:27/13 21:58	06:26 20:32-20:46/14 21:14	07:14 20:09	08:02 19:01	07:55 17:03	08:39 16:38
13	08:45 17:03	08:04 17:56	07:06 18:45	06:57 20:37	05:59 20:22-20:44/22 21:25	05:30 21:05-21:28/23 22:01	05:44 21:15-21:26/11 21:57	06:27 20:32-20:44/12 21:12	07:16 20:06	08:04 18:59	07:57 17:01	08:40 16:38
14	08:44 17:05	08:02 17:58	07:04 18:47	06:55 20:38	05:58 20:23-20:43/20 21:27	05:30 21:06-21:29/23 22:01	05:45 21:15-21:25/10 21:56	06:29 20:34-20:43/9 21:10	07:17 20:04	08:06 18:57	07:59 17:00	08:41 16:38
15	08:44 17:06	08:00 18:00	07:01 18:49	06:52 20:40	05:56 20:24-20:43/19 21:28	05:30 21:06-21:29/23 22:02	05:46 21:16-21:24/8 21:55	06:30 20:35-20:40/5 21:09	07:19 20:02	08:07 18:55	08:01 16:59	08:42 16:38
16	08:43 17:08	07:58 18:02	06:59 18:50	06:50 20:42	05:55 20:25-20:42/17 21:29	05:30 21:06-21:30/24 22:02	05:48 21:17-21:23/6 21:54	06:32 21:07	07:21 19:59	08:09 18:52	08:02 16:57	08:43 16:38
17	08:42 17:09	07:56 18:03	06:57 18:52	06:48 20:43	05:53 20:26-20:40/14 21:31	05:30 21:06-21:30/24 22:03	05:49 21:18-21:22/4 21:53	06:34 21:05	07:22 19:57	08:11 18:50	08:04 16:56	08:44 16:38
18	08:41 17:11	07:54 18:05	06:55 18:54	06:46 20:45	05:52 20:28-20:39/11 21:32	05:30 21:07-21:30/23 22:03	05:50 21:19-21:21/2 21:52	06:35 21:03	07:24 19:55	08:12 18:48	08:06 16:55	08:44 16:39
19	08:40 17:12	07:53 18:07	06:53 18:55	06:44 20:47	05:51 20:31-20:36/5 21:34	05:30 21:07-21:31/24 22:04	05:51 21:51	06:37 21:01	07:25 19:53	08:14 18:46	08:07 16:53	08:45 16:39
20	08:39 17:14	07:51 18:09	06:50 18:57	06:42 20:48	05:49 21:35	05:30 21:07-21:31/24 22:04	05:52 21:50	06:38 20:59	07:27 19:50	08:16 18:44	08:09 16:52	08:46 16:39
21	08:38 17:16	07:49 18:11	06:48 18:59	06:40 20:50	05:48 21:37	05:30 21:07-21:31/24 22:04	05:54 21:49	06:40 20:57	07:28 19:48	08:17 18:42	08:11 16:51	08:46 16:40
22	08:37 17:17	07:47 18:12	06:46 19:00	06:38 20:51	05:47 21:38	05:30 21:08-21:32/24 22:04	05:55 21:48	06:41 20:54	07:30 19:46	08:19 18:40	08:12 16:50	08:47 16:40
23	08:36 17:19	07:45 18:14	06:43 19:02	06:36 20:53	05:46 21:39	05:30 21:08-21:32/24 22:05	05:56 21:46	06:43 20:52	07:32 19:43	08:21 18:38	08:14 16:49	08:47 16:41
24	08:35 17:21	07:42 18:16	06:41 19:04	06:34 20:55	05:44 21:41	05:30 21:08-21:32/24 22:05	05:58 21:45	06:44 20:50	07:33 19:41	08:23 18:36	08:15 16:48	08:48 16:41
25	08:33 17:22	07:40 18:18	06:39 19:05	06:32 20:56	05:43 21:10-21:11/1 21:42	05:31 21:08-21:32/24 22:05	05:59 20:40-20:48/8 21:44	06:46 20:48	07:35 19:39	07:24 17:34	08:17 16:47	08:48 16:42
26	08:32 17:24	07:38 18:19	06:37 19:07	06:30 20:58	05:42 21:09-21:12/3 21:43	05:31 21:08-21:32/24 22:05	06:00 20:38-20:50/12 21:42	06:48 20:46	07:36 19:37	07:26 17:32	08:19 16:46	08:49 16:43
27	08:31 17:26	07:36 18:21	06:34 19:09	06:28 20:30-20:32/2 21:00	05:41 21:08-21:13/5 21:45	05:32 21:08-21:31/23 22:05	06:02 20:36-20:51/15 21:41	06:49 20:44	07:38 19:34	07:28 17:30	08:20 16:45	08:49 16:43
28	08:30 17:28	07:34 18:23	06:32 19:10	06:26 20:27-20:33/6 21:01	05:40 21:07-21:14/7 21:46	05:32 21:09-21:32/23 22:05	06:03 20:35-20:53/18 21:40	06:51 20:42	07:40 19:32	07:29 17:28	08:22 16:44	08:49 16:44
29	08:28 17:29		07:30 20:12	06:24 20:26-20:36/10 21:03	05:39 21:07-21:16/9 21:47	05:33 21:09-21:31/22 22:04	06:05 20:34-20:53/19 21:38	06:52 20:40	07:41 19:30	07:31 17:26	08:23 16:44	08:49 16:45
30	08:27 17:31		07:28 20:14	06:22 20:24-20:37/13 21:05	05:38 21:06-21:17/11 21:48	05:33 21:09-21:32/23 22:04	06:06 20:33-20:54/21 21:37	06:54 20:38	07:43 19:28	07:33 17:25	08:24 16:43	08:49 16:46
31	08:25 17:33		07:25 20:15		05:37 21:06-21:18/12 21:49		06:08 20:33-20:55/22 21:35	06:55 20:35		07:35 17:23		08:49 16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Sum of minutes with flicker	0	0	0	31	425	641	372	293	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT3_RH_E - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (236)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49	08:24	07:32	07:23 19:36-19:51/15	06:20 18:31-20:38/127	05:36 20:04-21:18/74
	16:48	17:35	18:25	20:17	21:06	21:50 18:48-20:00/72
2	08:49	08:22	07:30	07:21 19:35-19:53/18	06:18 18:31-20:38/127	05:36 20:05-21:20/75
	16:49	17:36	18:26	20:19	21:08	21:51 18:49-20:00/71
3	08:49	08:21	07:28	07:19 19:34-19:55/21	06:16 18:31-20:38/127	05:35 20:05-21:21/76
	16:50	17:38	18:28	20:20 19:08-19:27/19	21:09	21:52 18:50-19:59/69
4	08:49	08:19	07:26	07:16 19:33-19:57/24	06:15 18:31-20:39/128	05:34 20:04-21:21/77
	16:51	17:40	18:30	20:22 19:03-19:32/29	21:11	21:53 18:50-19:58/68
5	08:49	08:18	07:24	07:14 18:59-19:57/58	06:13 18:31-20:38/127	05:34 20:05-21:23/78
	16:53	17:42	18:32	20:24	21:13	21:54 18:51-19:58/67
6	08:49	08:16	07:21	07:12 18:55-19:58/63	06:11 18:31-20:39/128	05:33 20:05-21:23/78
	16:54	17:44	18:33	20:25	21:14	21:55 18:52-19:57/65
7	08:48	08:14	07:19	07:10 18:53-19:58/65	06:09 18:32-20:42/130	05:32 20:05-21:24/79
	16:55	17:45	18:35	20:27	21:16	21:56 18:53-19:57/64
8	08:48	08:13	07:17	07:08 18:51-19:58/67	06:08 18:32-20:43/131	05:32 20:06-21:24/78
	16:56	17:47	18:37	20:28	21:17	21:57 18:54-19:56/62
9	08:47	08:11	07:15	07:05 18:49-19:58/69	06:06 18:33-20:45/132	05:31 20:06-21:25/79
	16:58	17:49	18:38	20:30	21:19	21:58 18:54-19:55/61
10	08:47	08:09	07:13	07:03 18:47-19:57/70	06:04 18:33-20:46/133	05:31 20:06-21:26/80
	16:59	17:51	18:40	20:32	21:20	21:59 18:55-19:54/59
11	08:46	08:07	07:10	07:01 18:45-19:56/71	06:03 18:34-20:48/134	05:31 20:07-21:26/79
	17:00	17:53	18:42	20:33	21:22	21:59 18:56-19:54/58
12	08:46	08:06	07:08	06:59 18:43-19:55/72	06:01 18:34-20:48/134	05:30 20:06-21:25/79
	17:02	17:54	18:44	20:35	21:23	22:00 18:56-19:52/56
13	08:45	08:04	07:06	06:57 18:42-19:58/76	05:59 18:34-20:50/136	05:30 20:07-21:26/79
	17:03	17:56	18:45	20:37	21:25	22:01 18:57-19:51/54
14	08:44	08:02	07:04	06:55 18:41-20:01/80	05:58 18:34-20:50/136	05:30 20:07-21:26/79 18:57-19:40/43
	17:05	17:58	18:47	20:38	21:27	22:01 19:42-19:50/8
15	08:44	08:00	07:01	06:52 18:39-20:03/84	05:56 20:56-20:58/2	05:30 20:07-21:26/79 18:58-19:40/42
	17:06	18:00	18:49	20:40	21:28 18:35-20:51/136	22:02 19:44-19:49/5
16	08:43	07:58	06:59	06:50 18:38-20:04/86	05:55 20:55-21:00/5	05:30 21:29-21:30/1 18:59-19:40/41
	17:08	18:02	18:50	20:42	21:29 18:36-20:52/136	22:02 20:08-21:26/78
17	08:42	07:56	06:57	06:48 18:37-20:06/89	05:54 20:54-21:01/7	05:30 21:29-21:30/1 18:59-19:40/41
	17:09	18:03	18:52	20:43	21:31 18:36-20:52/136	22:03 20:08-21:26/78
18	08:41	07:54	06:55	06:46 18:37-20:07/90	05:52 18:37-21:02/145	05:30 21:29-21:30/1 18:59-19:40/41
	17:11	18:05	18:54	20:45	21:32	22:03 20:08-21:27/79
19	08:40	07:52	06:53	06:44 18:36-20:08/92	05:51 18:38-21:04/146	05:30 21:29-21:31/2 19:00-19:40/40
	17:12	18:07	18:55	20:47	21:34	22:04 20:08-21:27/79
20	08:39	07:51	06:50	06:42 18:35-20:09/94	05:49 18:39-21:05/146	05:30 21:29-21:31/2 19:00-19:40/40
	17:14	18:09	18:57	20:48	21:35	22:04 20:08-21:27/79
21	08:38	07:49	06:48	06:40 18:34-20:10/96	05:48 18:39-21:06/147	05:30 21:29-21:31/2 19:00-19:40/40
	17:16	18:11	18:59	20:50	21:37	22:04 20:08-21:27/79
22	08:37	07:47	06:46	06:38 18:34-20:10/96	05:47 18:40-21:07/147	05:30 21:30-21:32/2 19:01-19:41/40
	17:17	18:12	19:00	20:51	21:38	22:04 20:09-21:28/79
23	08:36	07:45	06:43	06:36 20:20-20:26/6	05:46 18:40-21:08/148	05:30 21:30-21:32/2 19:01-19:41/40
	17:19	18:14	19:02	20:53 18:33-20:11/98	21:39	22:05 20:09-21:28/79
24	08:35	07:42	06:41	06:34 20:17-20:28/11	05:44 18:41-21:10/149	05:30 21:30-21:32/2 19:00-19:41/41
	17:21	18:16	19:04	20:55 18:33-20:11/98	21:41	22:05 20:09-21:28/79
25	08:33	07:40	06:39	06:32 20:12-20:29/17	05:43 18:42-21:11/149	05:31 21:31-21:32/1 19:01-19:42/41
	17:22	18:18	19:05	20:56 18:32-20:11/99	21:42	22:05 20:10-21:28/78
26	08:32	07:38	06:37	06:30 18:32-20:30/118	05:42 18:43-21:12/149	05:31 21:31-21:32/1 19:01-19:42/41
	17:24	18:19	19:07	20:58	21:43	22:05 20:10-21:28/78
27	08:31	07:36	06:34	06:28 18:31-20:32/121	05:41 18:44-21:13/149	05:32 20:10-21:28/78 19:00-19:42/42
	17:26	18:21	19:09	21:00	21:44	22:05 19:48-19:49/1
28	08:30	07:34	06:32	06:26 18:31-20:33/122	05:40 18:44-21:14/150	05:32 20:10-21:29/79 19:01-19:43/42
	17:28	18:23	19:10	21:01	21:46	22:05 19:46-19:53/7
29	08:28		07:30	06:24 18:32-20:36/124	05:39 20:04-21:16/72	05:33 20:10-21:29/79 19:00-19:43/43
	17:29		20:12	21:03	21:47 18:46-20:03/77	22:04 19:44-19:54/10
30	08:27		07:28 19:41-19:49/8	06:22 18:31-20:37/126	05:38 20:04-21:17/73	05:33 20:11-21:29/78
	17:31		20:14	21:04	21:48 18:47-20:02/75	22:04 19:00-19:56/56
31	08:25		07:25 19:39-19:50/11		05:37 20:04-21:18/74	
	17:33		20:15		21:49 18:47-20:01/74	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	0	0	19	2484	4322	3936

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
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SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WT3_RH_E - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (236)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 20:11-21:30/79	06:09 18:44-20:58/134	06:57 18:45-19:56/71	07:44	07:36	08:26
	22:04 19:00-19:57/57	21:33	20:33	19:25	17:21	16:42
2	05:34 20:11-21:30/79	06:11 18:44-20:58/134	06:59 18:45-19:55/70	07:46	07:38	08:27
	22:04 18:59-19:58/59	21:32	20:31	19:23	17:19	16:41
3	05:35 20:11-21:30/79	06:12 18:43-20:56/133	07:00 18:47-19:56/69	07:48	07:40	08:29
	22:03 19:00-20:00/60	21:30	20:29	19:21	17:17	16:41
4	05:36 20:11-21:31/80	06:14 18:42-20:54/132	07:02 18:48-19:55/67	07:49	07:42	08:30
	22:03 18:59-20:01/62	21:29	20:27	19:19	17:16	16:40
5	05:37 20:11-21:30/79	06:15 18:42-20:53/131	07:03 18:50-19:56/66	07:51	07:43	08:31
	22:02 18:58-20:01/63	21:27	20:24	19:16	17:14	16:40
6	05:38 20:11-21:29/78	06:17 18:41-20:51/130	07:05 18:51-19:55/64	07:52	07:45	08:32
	22:02 18:58-20:03/65	21:25	20:22	19:14	17:12	16:39
7	05:38 20:11-21:29/78	06:18 18:41-20:49/128	07:06 18:54-19:54/60	07:54	07:47	08:34
	22:01 18:58-20:04/66	21:23	20:20	19:12	17:11	16:39
8	05:39 20:12-21:29/77	06:20 18:41-20:48/127	07:08 18:57-19:51/54	07:56	07:49	08:35
	22:01 18:58-20:05/67	21:22	20:18	19:10	17:09	16:39
9	05:40 20:12-21:28/76	06:21 18:40-20:47/127	07:10 19:28-19:49/21	07:57	07:50	08:36
	22:00 18:57-20:06/69	21:20	20:15 19:02-19:22/20	19:08	17:07	16:39
10	05:41 20:12-21:28/76	06:23 18:40-20:47/127	07:11 19:28-19:46/18	07:59	07:52	08:37
	21:59 18:57-20:07/70	21:18	20:13	19:05	17:06	16:38
11	05:42 20:12-21:27/75	06:24 18:39-20:47/128	07:13 19:29-19:45/16	08:01	07:54	08:38
	21:59 18:56-20:08/72	21:16	20:11	19:03	17:04	16:38
12	05:43 20:12-21:26/74	06:26 18:40-20:46/126	07:14 19:30-19:42/12	08:02	07:55	08:39
	21:58 18:56-20:09/73	21:14	20:09	19:01	17:03	16:38
13	05:44 20:13-21:26/73	06:27 18:39-20:44/125	07:16 19:32-19:40/8	08:04	07:57	08:40
	21:57 18:55-20:10/75	21:12	20:06	18:59	17:01	16:38
14	05:45 20:13-21:25/72	06:29 18:39-20:43/124	07:17 19:36-19:37/1	08:06	07:59	08:41
	21:56 18:55-20:11/76	21:10	20:04	18:57	17:00	16:38
15	05:46 20:13-21:24/71	06:30 18:38-20:40/122	07:19	08:07	08:01	08:42
	21:55 18:54-20:12/78	21:09	20:02	18:55	16:59	16:38
16	05:48 18:53-21:23/150	06:32 18:39-20:39/120	07:21	08:09	08:02	08:43
	21:54	21:07	19:59	18:52	16:57	16:38
17	05:49 18:53-21:22/149	06:34 18:38-20:37/119	07:22	08:11	08:04	08:44
	21:53	21:05	19:57	18:50	16:56	16:39
18	05:50 18:52-21:21/149	06:35 20:19-20:35/16	07:24	08:12	08:06	08:44
	21:52	21:03 18:39-20:18/99	19:55	18:48	16:55	16:39
19	05:51 18:51-21:20/149	06:37 20:23-20:33/10	07:25	08:14	08:07	08:45
	21:51	21:01 18:38-20:17/99	19:53	18:46	16:53	16:39
20	05:53 18:51-21:19/148	06:38 20:26-20:32/6	07:27	08:16	08:09	08:46
	21:50	20:59 18:39-20:16/97	19:50	18:44	16:52	16:39
21	05:54 18:51-21:18/147	06:40 18:38-20:15/97	07:28	08:17	08:11	08:46
	21:49	20:57	19:48	18:42	16:51	16:40
22	05:55 18:50-21:17/147	06:41 18:39-20:14/95	07:30	08:19	08:12	08:47
	21:48	20:54	19:46	18:40	16:50	16:40
23	05:56 18:49-21:16/147	06:43 18:39-20:12/93	07:32	08:21	08:14	08:47
	21:46	20:52	19:43	18:38	16:49	16:41
24	05:58 18:48-21:14/146	06:44 18:40-20:12/92	07:33	08:23	08:15	08:48
	21:45	20:50	19:41	18:36	16:48	16:41
25	05:59 18:48-21:14/146	06:46 18:39-20:10/91	07:35	07:24	08:17	08:48
	21:44	20:48	19:39	17:34	16:47	16:42
26	06:00 21:04-21:12/8	06:48 18:40-20:08/88	07:36	07:26	08:18	08:49
	21:42 18:47-21:03/136	20:46	19:37	17:32	16:46	16:43
27	06:02 21:04-21:11/7	06:49 18:40-20:06/86	07:38	07:28	08:20	08:49
	21:41 18:46-21:02/136	20:44	19:34	17:30	16:45	16:43
28	06:03 21:06-21:10/4	06:51 18:41-20:04/83	07:40	07:29	08:22	08:49
	21:40 18:46-21:02/136	20:42	19:32	17:28	16:44	16:44
29	06:05 18:45-21:01/136	06:52 18:41-20:01/80	07:41	07:31	08:23	08:49
	21:38	20:40	19:30	17:26	16:44	16:45
30	06:06 18:45-21:00/135	06:54 18:43-19:59/76	07:43	07:33	08:24	08:49
	21:37	20:37	19:28	17:25	16:43	16:46
31	06:08 18:45-21:00/135	06:55 18:43-19:55/72		07:35		08:49
	21:35	20:35		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	4469	3447	617	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
20/10/2023 12:02/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Gepland WTG: WTSH - Siemens SWT-DD-142 4100 142.0 !O! hub: 129,0 m (TOT: 200,0 m) (145)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	627	493	324	358	760	1 303	1 396	851	621	566	8 364

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49 16:06-16:15/9	08:24 16:33-17:04/31	07:32	07:23	06:20	05:37	05:34	06:09	06:57	07:44	07:36	08:26 15:54-16:07/13
	16:48	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42
2	08:49 16:07-16:16/9	08:22 16:35-16:51/16	07:30	07:21	06:18	05:36	05:35	06:11	06:59	07:46	07:38	08:27 15:54-16:08/14
	16:49	17:37 16:52-17:04/12	18:27	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:42
3	08:49 16:06-16:16/10	08:21 16:36-16:50/14	07:28	07:19	06:17	05:35	05:35	06:12	07:00	07:48	07:40	08:29 15:54-16:08/14
	16:51	17:38 16:53-17:03/10	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:18	16:41
4	08:49 16:07-16:18/11	08:19 16:38-16:48/10	07:26	07:17	06:15	05:34	05:36	06:14	07:02	07:49	07:42	08:30 15:53-16:07/14
	16:52	17:40 16:55-17:00/5	18:30	20:22	21:11	21:53	22:03	21:29	20:27	19:19	17:16	16:41
5	08:49 16:08-16:19/11	08:18	07:24	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43	08:31 15:54-16:07/13
	16:53	17:42	18:32	20:24	21:13	21:54	22:02	21:27	20:24	19:17	17:14	16:40
6	08:49 16:08-16:20/12	08:16	07:21	07:12	06:11	05:33	05:38	06:17	07:05	07:53	07:45 16:12-16:15/3	08:32 15:54-16:06/12
	16:54	17:44	18:34	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:40
7	08:48 16:09-16:22/13	08:14	07:19	07:10	06:10	05:33	05:39	06:18	07:07	07:54	07:47 16:08-16:19/11	08:34 15:54-16:06/12
	16:55	17:46	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11 16:26-16:31/5	16:39
8	08:48 16:09-16:23/14	08:13	07:17	07:08	06:08	05:32	05:40	06:20	07:08	07:56	07:49 16:06-16:21/15	08:35 15:55-16:06/11
	16:57	17:47	18:37	20:29	21:17	21:57	22:01	21:22	20:18	19:10	17:09 16:24-16:34/10	16:39
9	08:47 16:10-16:24/14	08:11	07:15	07:06	06:06	05:32	05:40	06:21	07:10	07:57	07:50 16:05-16:22/17	08:36 15:56-16:05/9
	16:58	17:49	18:39	20:30	21:19	21:58	22:00	21:20	20:15	19:08	17:08 16:23-16:35/12	16:39
10	08:47 16:11-16:25/14	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52 16:05-16:35/30	08:37 15:56-16:05/9
	16:59	17:51	18:40	20:32	21:20	21:59	22:00	21:18	20:13	19:05	17:06	16:39
11	08:46 16:11-16:25/14	08:08	07:11	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54 16:03-16:34/31	08:38 15:56-16:05/9
	17:01	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:05	16:38
12	08:46 16:12-16:24/12	08:06	07:08	06:59	06:01	05:31	05:43	06:26	07:14	08:02	07:56 16:03-16:32/29	08:39 15:57-16:05/8
	17:02	17:55	18:44	20:35	21:24	22:00	21:58	21:14	20:09	19:01	17:03	16:38
13	08:45 16:13-16:24/11	08:04	07:06	06:57	06:00	05:30	05:45	06:27	07:16	08:04	07:57 16:03-16:31/28	08:40 15:57-16:04/7
	17:03	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:02	16:38
14	08:44 16:15-16:24/9	08:02	07:04	06:55	05:58	05:30	05:46	06:29	07:18	08:06	07:59 16:03-16:30/27	08:41 15:58-16:04/6
	17:05	17:58	18:47	20:38	21:27	22:01	21:56	21:11	20:04	18:57	17:00	16:38
15	08:44 16:17-16:23/6	08:00	07:02	06:53	05:57	05:30	05:47	06:31	07:19	08:07	08:01 16:03-16:28/25	08:42 15:58-16:05/7
	17:06	18:00	18:49	20:40	21:28	22:02	21:55	21:09	20:02	18:55	16:59	16:38
16	08:43 16:33-16:36/3	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02 16:03-16:27/24	08:43 15:59-16:05/6
	17:08	18:02	18:50	20:42	21:30	22:02	21:54	21:07	20:00	18:53	16:57	16:39
17	08:42 16:32-16:38/6	07:56	06:57	06:48	05:54	05:30	05:49	06:34	07:22	08:11	08:04 16:03-16:25/22	08:44 15:59-16:04/5
	17:09	18:04	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:51	16:56	16:39
18	08:41 16:31-16:39/8	07:55	06:55	06:46	05:52	05:30	05:50	06:35	07:24	08:12	08:06 16:03-16:24/21	08:44 16:00-16:05/5
	17:11	18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39
19	08:40 16:30-16:40/10	07:53	06:53	06:44	05:51	05:30	05:51	06:37	07:25	08:14	08:07 16:04-16:22/18	08:45 16:00-16:05/5
	17:13	18:07	18:56	20:47	21:34	22:04	21:51	21:01	19:53	18:46	16:54	16:39
20	08:39 16:30-16:42/12	07:51	06:50	06:42	05:50	05:30	05:53	06:38	07:27	08:16	08:09 16:05-16:21/16	08:46 16:00-16:05/5
	17:14	18:09	18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52	16:40
21	08:38 16:30-16:44/14	07:49	06:48	06:40	05:48	05:30	05:54	06:40	07:29	08:17	08:11 16:06-16:20/14	08:46 16:01-16:06/5
	17:16	18:11	18:59	20:50	21:37	22:04	21:49	20:57	19:48	18:42	16:51	16:40
22	08:37 16:30-16:46/16	07:47	06:46	06:38	05:47	05:30	05:55	06:42	07:30	08:19	08:12 16:06-16:18/12	08:47 16:01-16:06/5
	17:18	18:13	19:00	20:52	21:38	22:04	21:48	20:55	19:46	18:40	16:50	16:41
23	08:36 16:30-16:48/18	07:45	06:44	06:36	05:46	05:30	05:57	06:43	07:32	08:21	08:14 16:07-16:17/10	08:47 16:02-16:07/5
	17:19	18:14	19:02	20:53	21:39	22:05	21:46	20:52	19:44	18:38	16:49	16:41
24	08:35 16:29-16:50/21	07:43	06:41	06:34	05:45	05:31	05:58	06:45	07:33	08:23	08:15 16:08-16:17/9	08:48 16:02-16:07/5
	17:21	18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:42
25	08:33 16:30-16:52/22	07:41	06:39	06:32	05:44	05:31	05:59	06:46	07:35	07:24	08:17 16:10-16:16/6	08:48 16:03-16:08/5
	17:23	18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42
26	08:32 16:30-16:54/24	07:38	06:37	06:30	05:42	05:31	06:01	06:48	07:36	07:26	08:19 16:11-16:14/3	08:49 16:04-16:09/5
	17:24	18:20	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43
27	08:31 16:30-16:55/25	07:36	06:35	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20 15:56-16:02/6	08:49 16:04-16:10/6
	17:26	18:21	19:09	21:00	21:45	22:05	21:41	20:44	19:35	17:30	16:45	16:44
28	08:30 16:31-16:58/27	07:34	06:32	06:26	05:40	05:32	06:04	06:51	07:40	07:30	08:22 15:54-16:03/9	08:49 16:04-16:10/6
	17:28	18:23	19:10	21:01	21:46	22:05	21:40	20:42	19:32	17:29	16:45	16:44
29	08:28 16:31-16:59/28		07:30	06:24	05:39	05:33	06:05	06:53	07:41	07:31	08:23 15:54-16:05/11	08:49 16:05-16:11/6
	17:30		20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:27	16:44	16:45
30	08:27 16:32-17:02/30		07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24 15:54-16:07/13	08:49 16:05-16:12/7
	17:31		20:14	21:05	21:48	22:04	21:37	20:38	19:28	17:25	16:43	16:46
31	08:25 16:32-17:03/31		07:26		05:38		06:08	06:56		07:35		08:49 16:05-16:13/8
	17:33		20:15		21:49		21:35	20:35		17:23		16:47
Potential sun hours	263	279	367	414	482	494	498	451	380	333	269	248
Sum of minutes with flicker	464	98	0	0	0	0	0	0	0	0	437	247

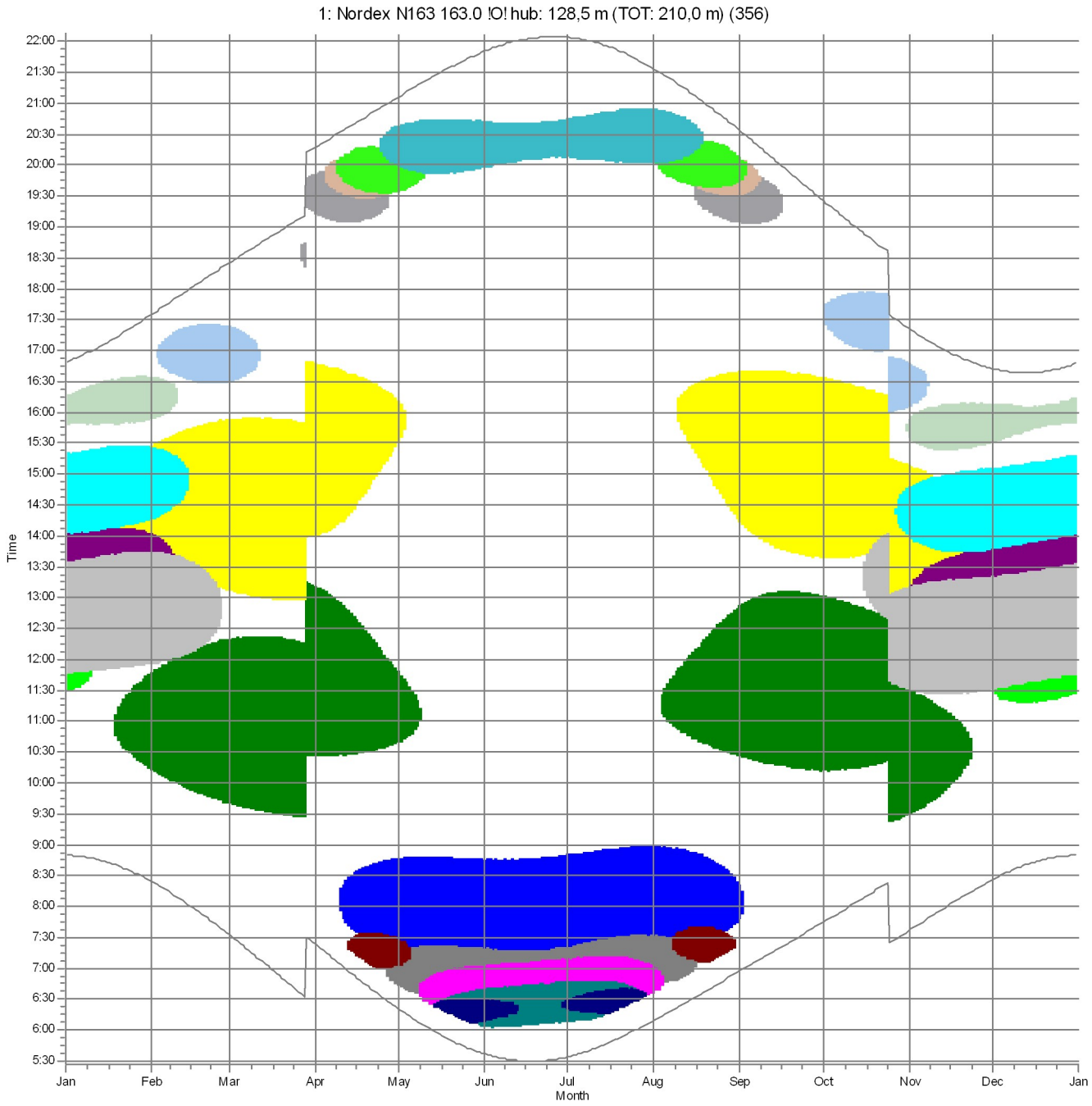
Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG, graphical

Calculation: SS OVA - EIGEN WTG: 1 - Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)



Shadow receptors

- A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)
- B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)
- C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)
- D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)
- E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)
- F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)
- G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)
- H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)
- I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)
- J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)
- K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)
- L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)
- M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)
- N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)
- O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)
- P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)
- Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)
- R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)
- S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)

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SHADOW - Calendar per WTG

Calculation: SS OVA - EIGEN WTG: 1 - Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 15:50-16:14/24 16:48 11:29-15:18/229	08:24 15:54-16:33/39 10:13-11:45/92 17:35 11:56-15:25/209	07:32 16:31-17:22/51 09:41-12:18/157 18:25 13:07-15:51/164	07:23 19:13-19:50/37 10:27-13:09/162 20:17 14:00-16:46/166	06:20 19:35-20:37/62 15:32-16:10/38 21:06 06:44-08:45/121 10:40-11:47/67	05:36 19:58-20:41/43 21:50 06:04-08:44/160
2	08:49 15:49-16:15/26 11:30-14:02/152 16:49 14:03-15:19/76	08:22 15:55-16:33/38 10:12-11:48/96 17:36 11:57-15:28/211	07:30 16:31-17:21/50 09:40-12:19/159 18:26 13:07-15:52/165	07:21 19:12-19:51/39 10:27-13:08/161 20:19 14:01-16:45/164	06:18 19:36-20:38/62 15:37-16:06/29 21:08 06:42-08:45/123 10:41-11:43/62	05:36 19:59-20:41/42 21:51 06:04-08:45/161
3	08:49 15:50-16:16/26 16:50 11:30-15:18/228	08:21 16:53-16:59/6 11:57-15:29/212 17:38 15:56-16:32/36 10:10-11:49/99	07:28 16:32-17:21/49 09:40-12:19/159 18:28 13:06-15:52/166	07:19 19:11-19:52/41 10:27-13:07/160 20:20 14:02-16:45/163	06:16 19:36-20:38/62 15:44-16:01/17 21:09 06:41-08:46/125 10:44-11:40/56	05:35 19:59-20:41/42 21:52 06:04-08:45/161
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Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	8617	10852	11000	10857	6522	5826

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

Project:

Total_Ertvelde-RE-20-64-WE-REV-20200701_v2

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu

Calculated:
20/10/2023 11:13/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - EIGEN WTG: 1 - Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
524	541	631	499	326	352	734	1 305	1 403	861	623	565	8 363

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 20:09-20:44/35	06:09 20:03-20:53/50	06:57 19:05-20:07/62 14:15-16:38/143	07:44 13:40-16:32/172	07:36 16:06-16:46/40 11:32-15:08/216	08:26 15:31-16:07/36 11:32-13:47/135
	22:04 06:09-08:49/160	21:33 06:37-08:57/140	20:33 07:49-08:20/31 10:27-12:51/144	19:25 10:13-13:00/167	17:21 15:37-15:52/15 09:31-11:30/119	16:42 13:48-15:05/77
2	05:34 20:08-20:44/36	06:11 20:02-20:53/51	06:59 19:04-20:04/60 14:12-16:38/146	07:46 17:26-17:43/17 10:13-13:00/167	07:38 16:07-16:45/38 11:30-15:06/216	08:27 15:32-16:07/35 11:27-13:47/140
	22:04 06:09-08:49/160	21:32 06:39-08:57/138	20:31 07:54-08:13/19 10:26-12:52/146	19:23 13:40-16:32/172	17:19 15:34-15:55/21 09:31-11:28/117	16:41 13:48-15:04/76
3	05:35 20:08-20:45/37	06:12 19:57-20:52/55	07:00 19:04-20:03/59 10:25-12:54/149	07:48 17:21-17:45/24 10:12-12:58/166	07:40 16:09-16:43/34 11:30-15:05/215	08:29 15:33-16:07/34
	22:03 06:09-08:49/160	21:30 06:40-08:57/137	20:29 14:09-16:39/150	19:21 13:40-16:31/171	17:17 15:32-15:57/25 09:32-11:27/115	16:41 11:24-15:05/221
4	05:36 20:08-20:45/37	06:14 19:54-20:52/58 11:08-11:24/16	07:02 19:04-20:00/56 10:24-12:55/151	07:49 17:19-17:48/29 10:13-12:58/165	07:42 16:10-16:42/32 11:29-15:04/215	08:30 15:34-16:07/33 11:22-13:48/146
	22:03 06:10-08:50/160	21:28 06:44-08:56/132	20:26 14:06-16:38/152	19:19 13:40-16:31/171	17:16 15:30-15:58/28 09:34-11:25/111	16:40 13:49-15:05/76
5	05:37 20:07-20:45/38	06:15 19:53-20:52/59 11:04-11:31/27	07:03 19:04-19:58/54 10:24-12:57/153	07:51 17:15-17:49/34 10:13-12:58/165	07:43 16:13-16:40/27 11:29-15:03/214	08:31 15:35-16:07/32 11:22-13:49/147
	22:02 06:10-08:50/160	21:27 06:47-08:57/130	20:24 14:04-16:39/155	19:16 13:40-16:30/170	17:14 15:29-16:00/31 09:36-11:24/108	16:40 13:50-15:06/76
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	22:02 06:10-08:50/160	21:25 06:47-08:56/129	20:22 14:02-16:38/156	19:14 13:39-16:29/170	17:12 15:28-16:01/33 09:37-11:23/106	16:39 13:50-15:06/76
7	05:38 20:07-20:46/39	06:18 19:50-20:51/61 10:58-11:40/42	07:06 19:04-19:54/50 10:22-12:59/157	07:54 17:12-17:52/40 10:13-12:56/163	07:47 16:18-16:35/17 11:28-15:01/213	08:34 15:36-16:06/30
	22:01 06:10-08:51/161	21:23 06:48-08:56/128	20:20 14:00-16:39/159	19:12 13:40-16:29/169	17:11 15:27-16:02/35 09:39-11:21/102	16:39 11:20-15:06/226
8	05:39 20:07-20:47/40	06:20 19:48-20:49/61 10:55-11:43/48	07:08 19:04-19:48/44 10:21-13:00/159	07:56 17:10-17:53/43 10:14-12:56/162	07:49 16:26-16:28/2 11:28-14:59/211	08:35 15:38-16:06/28
	22:01 06:11-08:51/160	21:22 06:48-08:55/127	20:18 13:58-16:39/161	19:10 13:40-16:28/168	17:09 15:26-16:03/37 09:41-11:20/99	16:39 11:20-15:07/227
9	05:40 20:07-20:48/41	06:21 19:46-20:48/62 10:54-11:47/53	07:10 19:05-19:46/41 10:21-13:01/160	07:57 17:08-17:53/45 10:13-12:54/161	07:50 15:26-16:04/38 09:43-11:18/95	08:36 15:39-16:05/26
	22:00 06:11-08:52/161	21:20 06:49-08:56/127	20:15 13:57-16:39/162	19:08 13:40-16:27/167	17:07 11:28-14:58/210	16:39 11:20-15:08/228
10	05:41 20:07-20:48/41	06:23 19:45-20:48/63 15:51-16:12/21	07:11 19:05-19:44/39 10:20-13:01/161	07:59 17:07-17:54/47 10:14-12:54/160	07:52 15:24-16:04/40 09:44-11:16/92	08:37 15:39-16:05/26 11:19-13:51/152
	21:59 06:12-08:52/160	21:18 06:50-08:55/125 10:52-11:50/58	20:13 13:55-16:38/163	19:05 13:40-16:27/167	17:06 11:27-14:56/209	16:38 13:52-15:08/76
11	05:42 20:07-20:49/42	06:24 19:44-20:46/62 15:44-16:16/32	07:13 19:06-19:43/37 10:20-13:03/163	08:01 17:06-17:55/49 10:14-12:53/159	07:54 15:24-16:04/40 09:46-11:14/88	08:38 15:40-16:05/25
	21:59 06:12-08:53/161	21:16 06:51-08:54/123 10:50-11:52/62	20:11 13:54-16:39/165	19:03 13:41-16:26/165	17:04 11:27-14:55/208	16:38 11:19-15:08/229
12	05:43 20:06-20:49/43	06:26 19:44-20:45/61 15:39-16:19/40	07:14 19:07-19:41/34 10:19-13:03/164	08:02 17:04-17:55/51 10:14-12:51/157	07:55 15:24-16:05/41 09:48-11:13/85	08:39 15:41-16:04/23 11:19-13:52/153
	21:58 06:13-08:53/160	21:14 06:53-08:54/121 10:49-11:56/67	20:09 13:52-16:38/166	19:01 13:40-16:25/165	17:03 11:27-14:56/209	16:38 13:53-15:08/75
13	05:44 20:06-20:50/44	06:27 19:42-20:43/61 15:34-16:21/47	07:16 19:08-19:39/31 10:19-13:03/164	08:04 17:04-17:55/51 10:15-12:51/156	07:57 15:24-16:06/42 09:51-11:11/80	08:40 15:42-16:04/22
	21:57 06:14-08:53/159	21:12 06:54-08:53/119 10:47-11:59/72	20:06 13:51-16:39/168	18:59 13:41-16:24/163	17:01 11:27-14:57/210	16:38 11:19-15:09/230
14	05:45 20:06-20:50/44	06:29 19:42-20:42/60 15:30-16:24/54	07:17 19:09-19:37/28 10:18-13:03/165	08:06 17:03-17:56/53 10:15-12:50/155	07:59 15:24-16:06/42 09:53-11:09/76	08:41 15:43-16:04/21 11:19-13:53/154
	21:56 06:15-08:54/159	21:10 06:56-08:52/116 10:46-12:02/76	20:04 13:49-16:38/169	18:57 13:41-16:24/163	17:00 11:27-14:58/211	16:38 13:54-15:09/75
15	05:46 20:05-20:51/46	06:30 19:41-20:40/59 15:25-16:25/60	07:19 19:12-19:34/22 10:18-13:04/166	08:07 17:03-17:56/53 10:16-12:49/153	08:01 15:24-16:07/43 09:56-11:07/71	08:42 15:44-16:04/20
	21:55 06:16-08:54/158	21:08 06:57-08:51/114 10:44-12:05/81	20:02 13:49-16:38/169	18:55 13:42-16:23/161	16:59 11:27-14:58/211	16:38 11:19-15:10/231
16	05:48 20:05-20:51/46	06:32 19:27-20:38/71 15:21-16:27/66	07:21 19:14-19:30/16 10:17-13:04/167	08:09 17:01-17:55/54 13:42-16:22/160	08:02 15:24-16:07/43 09:59-11:06/67	08:43 15:45-16:05/20 11:20-13:54/154
	21:54 06:17-08:54/157	21:07 07:02-08:51/109 10:43-12:08/85	19:59 13:47-16:38/171	18:52 13:08-13:34/26 10:16-12:48/152	16:57 11:28-14:59/211	16:38 13:55-15:10/75
17	05:49 20:05-20:51/46	06:34 19:23-20:34/71 15:16-16:28/72	07:22 13:47-16:38/171	08:11 17:01-17:56/55 13:42-16:21/159	08:04 15:24-16:06/42 10:01-11:03/62	08:44 15:45-16:04/19 11:19-13:54/155
	21:53 06:18-08:54/156	21:05 07:07-08:49/102 10:41-12:10/89	19:57 10:17-13:04/167	18:50 13:01-13:41/40 10:16-12:47/151	16:56 11:27-14:59/212	16:39 13:55-15:10/75
18	05:50 20:04-20:51/47	06:35 19:21-20:30/69 15:12-16:29/77	07:24 13:45-16:37/172	08:12 17:01-17:56/55 10:17-12:46/149	08:06 15:24-16:07/43 10:04-11:00/56	08:44 15:46-16:05/19 11:20-13:55/155
	21:52 06:19-08:55/156	21:03 07:07-08:49/102 10:41-12:14/93	19:55 10:16-13:04/168	18:48 12:56-16:21/205	16:55 11:27-15:00/213	16:39 13:56-15:11/75
19	05:51 20:04-20:52/48	06:37 19:18-20:22/64 15:07-16:30/83	07:25 13:45-16:37/172	08:14 17:01-17:56/55 10:18-12:45/147	08:07 15:25-16:07/42 10:07-10:58/51	08:45 15:47-16:05/18
	21:51 06:20-08:55/155	21:01 07:07-08:47/100 10:39-12:17/98	19:53 10:16-13:04/168	18:46 12:53-16:20/207	16:53 11:28-15:00/212	16:39 11:20-15:11/231
20	05:53 20:05-20:53/48	06:38 19:17-20:22/65 15:04-16:31/87	07:27 13:44-16:36/172	08:16 17:00-17:55/55 10:18-12:44/146	08:09 15:25-16:08/43 10:10-10:55/45	08:46 15:47-16:05/18
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21	05:54 20:04-20:53/49	06:40 19:15-20:21/66 14:59-16:32/93	07:28 13:44-16:36/172	08:17 17:00-17:55/55 10:19-12:43/144	08:11 15:26-16:08/42 10:14-10:52/38	08:46 15:48-16:06/18
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25	05:59 20:04-20:54/50	06:46 19:10-20:19/69 14:41-16:35/114	07:35 13:41-16:35/174	07:24 16:00-16:52/52	08:17 15:27-16:07/40	08:48 15:49-16:07/18 11:23-13:58/155
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	21:42 06:29-08:57/148	20:46 07:14-07:34/20 14:37-16:36/119	19:37 10:13-13:03/170	17:32 09:23-15:13/350	16:46 11:30-15:03/213	16:43 14:00-15:15/75
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	21:35 06:36-08:57/141	20:35 07:45-08:23/38 10:27-12:48/141		17:23 15:43-15:47/4 09:29-11:31/122		16:47 14:02-15:17/75
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	6184	9623	10592	11921	9537	7785

Table layout: For each day in each month the following matrix apply

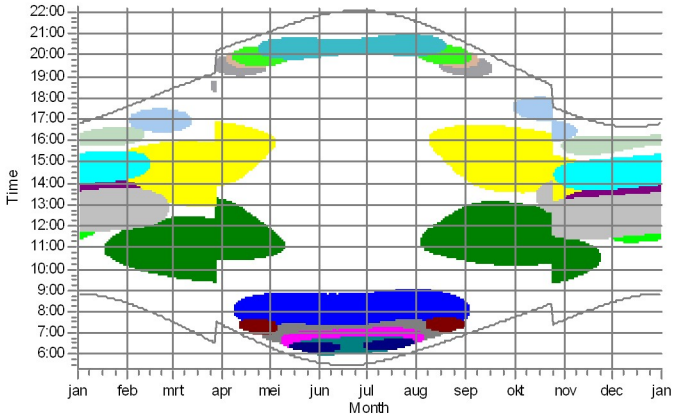
Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

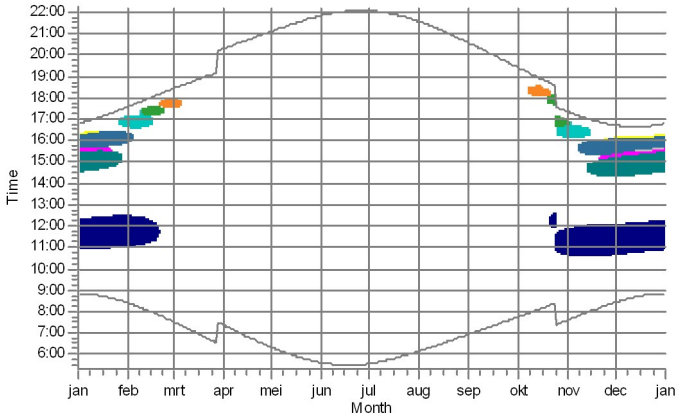
SHADOW - Calendar per WTG, graphical

Calculation: SS OVA - Ontwikkeling incl. Kronos

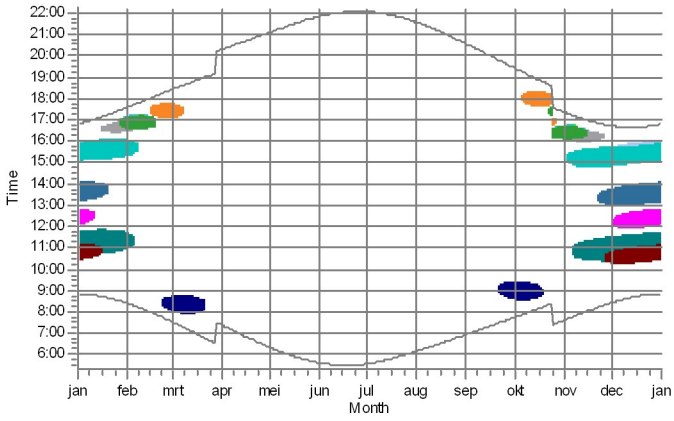
1: Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)



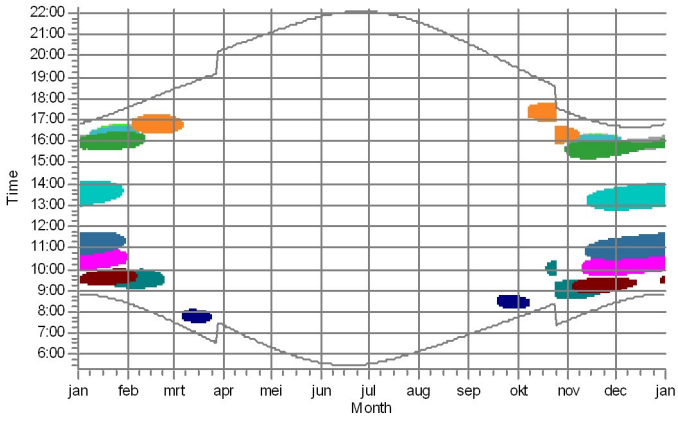
2: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0



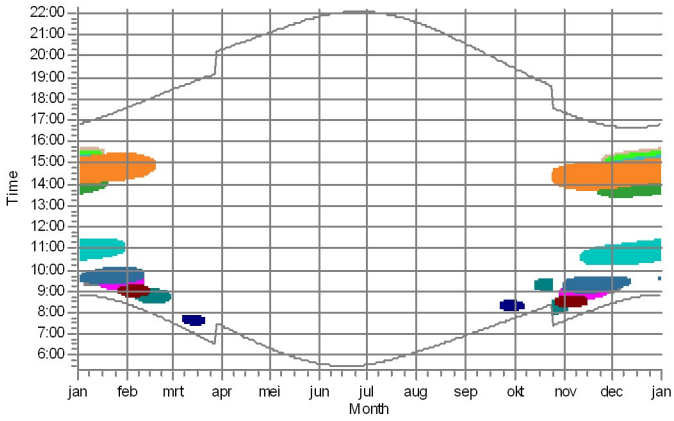
3: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0



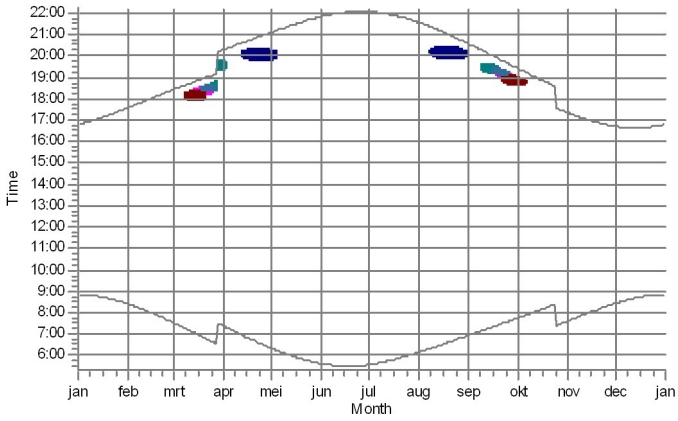
4: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0



5: Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0



6: ENERCON E-175 EP5 6000 175.0 !O! hub: 162,0 m (TOT: 249,5 m) (362)



Shadow receptors

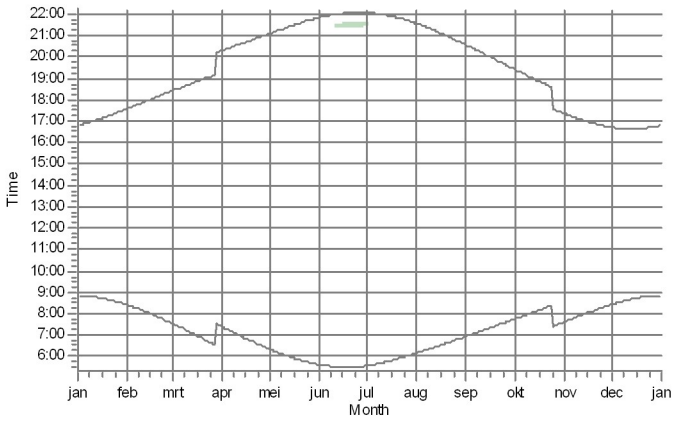
- A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)
- B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)
- C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)
- D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)
- E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)
- F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)
- G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)
- H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)
- I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)
- J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)
- K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)
- L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)
- M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)
- N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)
- O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)
- P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)
- Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)
- R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)
- S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)
- T: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)
- U: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)
- V: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)
- W: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)

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Calculated:
13/11/2023 13:30/3.6.355

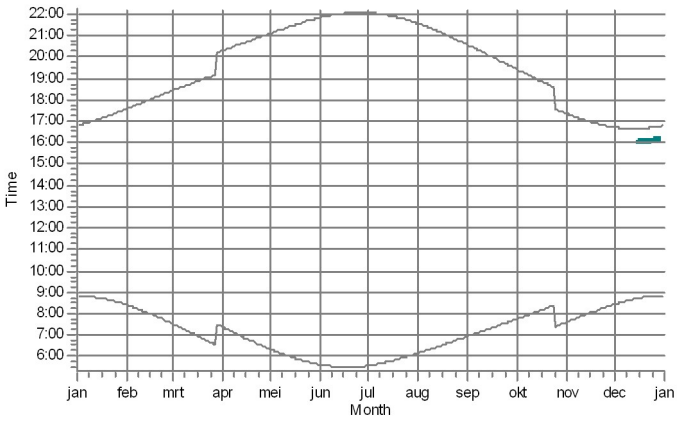
SHADOW - Calendar per WTG, graphical

Calculation: SS OVA - Ontwikkeling incl. Kronos

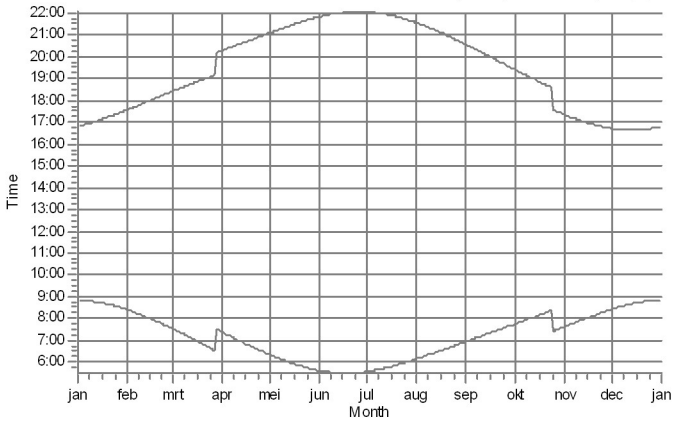
7: SENVION 3.4M104 3400 104.0 !O! hub: 100,0 m (TOT: 152,0 m) (91)



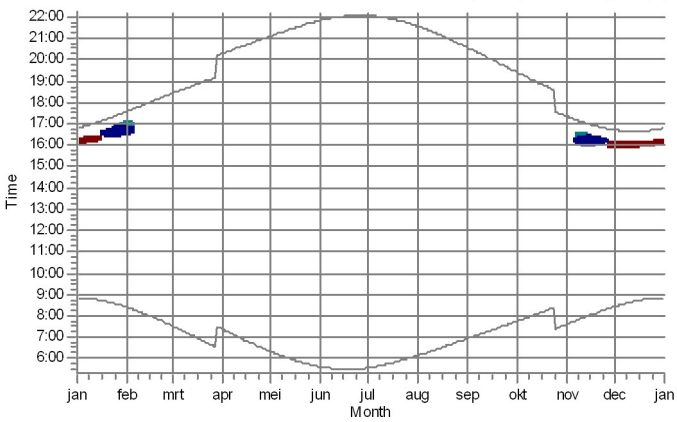
8: SENVION MM92 2050 92.5 !O! hub: 100,0 m (TOT: 146,3 m) (122)



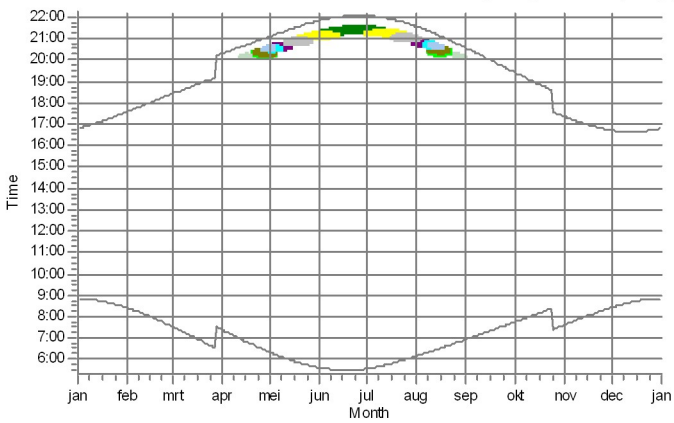
9: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 164,0 m (TOT: 238,5 m) (126



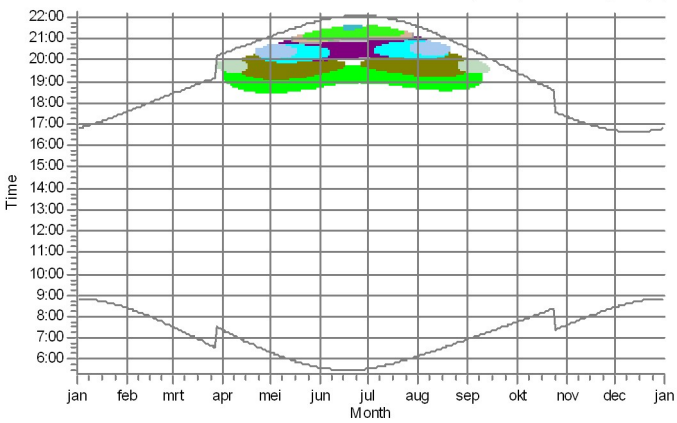
10: Siemens SWT-DD-142 4100 142.0 !O! hub: 129,0 m (TOT: 200,0 m) (14



11: ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (



12: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (23



Shadow receptors

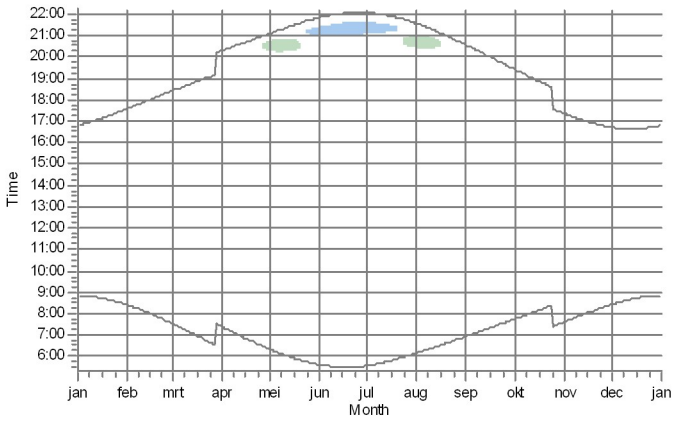
- A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)
- B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)
- F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)
- G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)
- H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)
- I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)
- J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)
- K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)
- L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)
- M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)
- N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)
- O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)
- P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)
- Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)
- R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)
- S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)

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Calculated:
13/11/2023 13:30/3.6.355

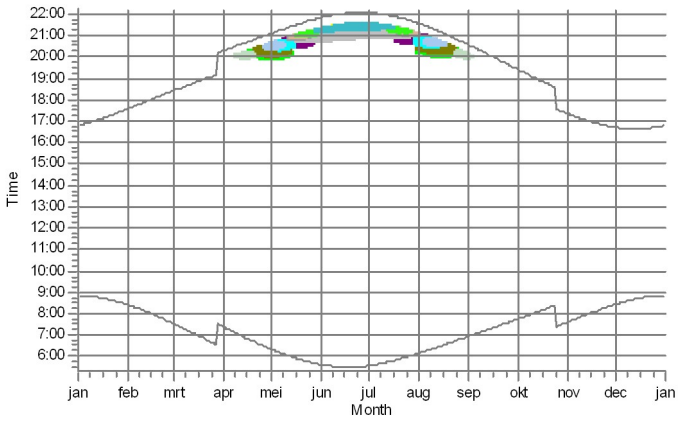
SHADOW - Calendar per WTG, graphical

Calculation: SS OVA - Ontwikkeling incl. Kronos

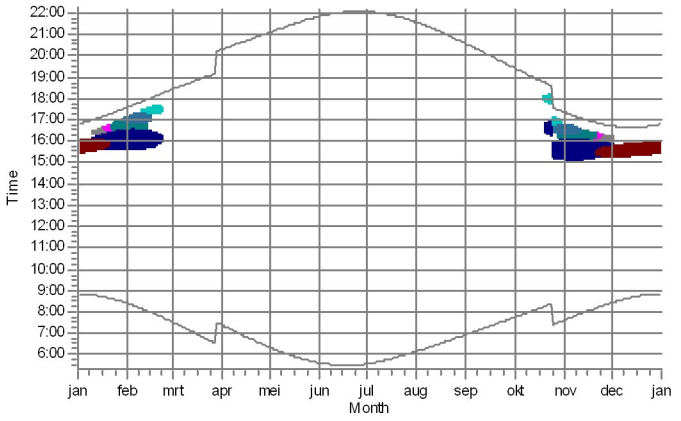
13: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (23



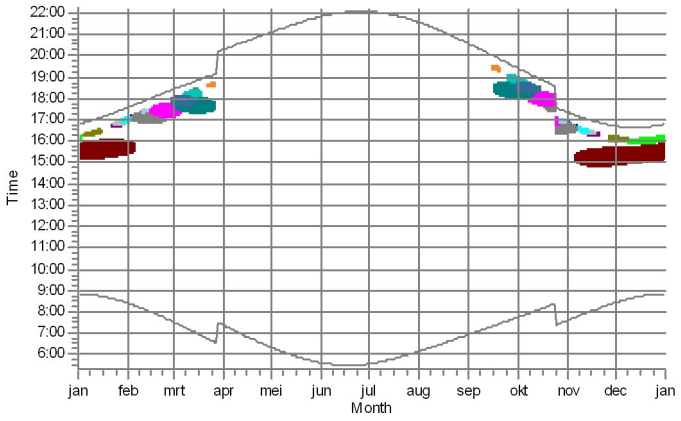
14: NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (23



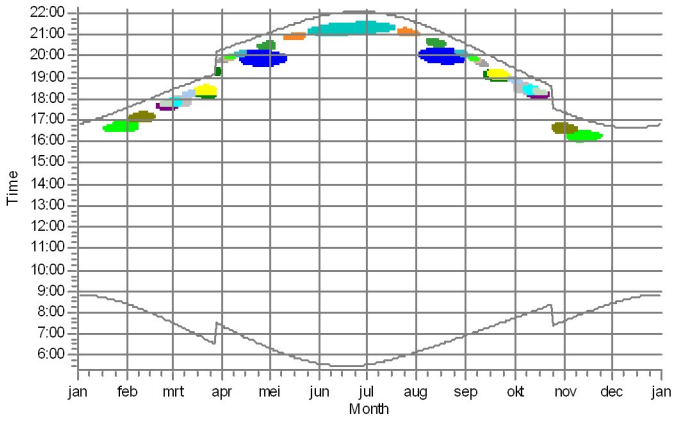
15: Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,(



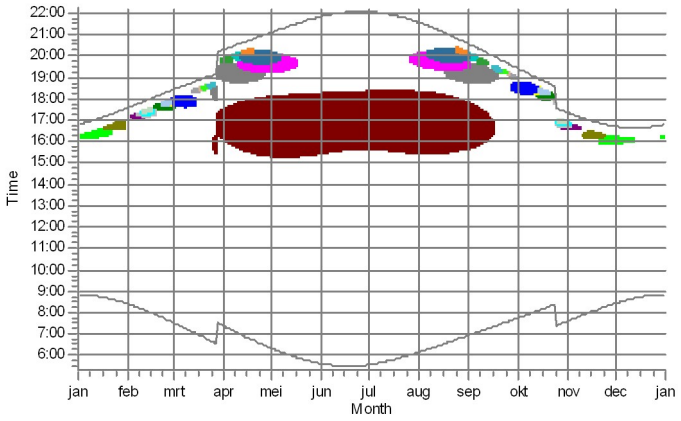
16: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)



17: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)



18: SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)



Shadow receptors

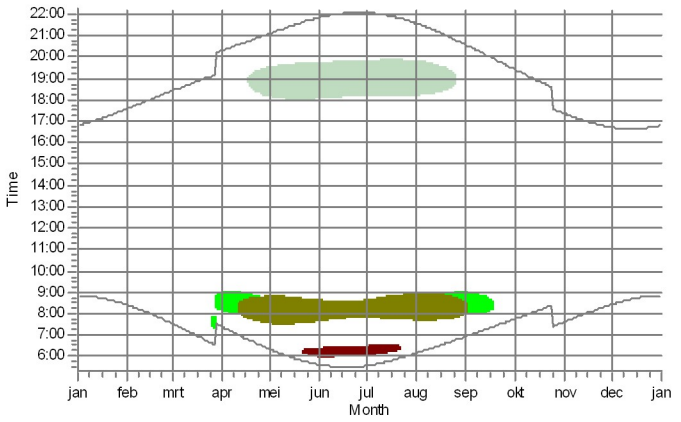
- A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)
- B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)
- C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)
- D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)
- E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)
- F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)
- G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)
- H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)
- I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)
- J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)
- K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)
- L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)
- M: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (152)
- N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)
- O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)
- P: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (155)
- Q: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (156)
- R: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (157)
- S: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (158)
- T: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (159)
- U: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)
- V: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)
- W: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (162)

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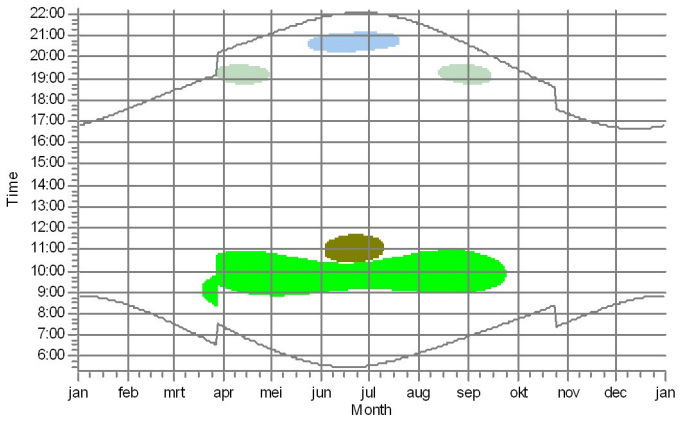
SHADOW - Calendar per WTG, graphical

Calculation: SS OVA - Ontwikkeling incl. Kronos

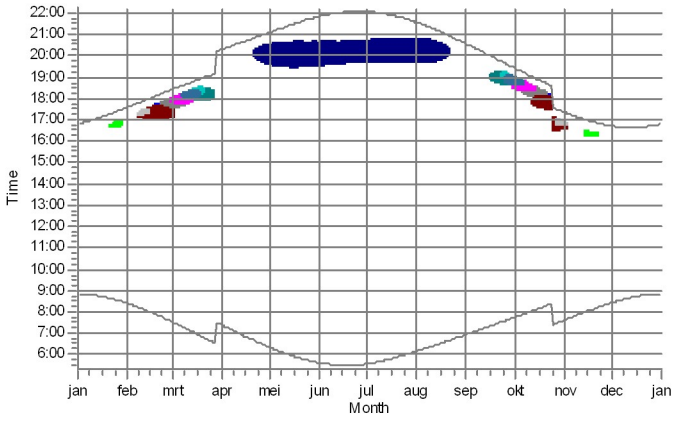
19: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (



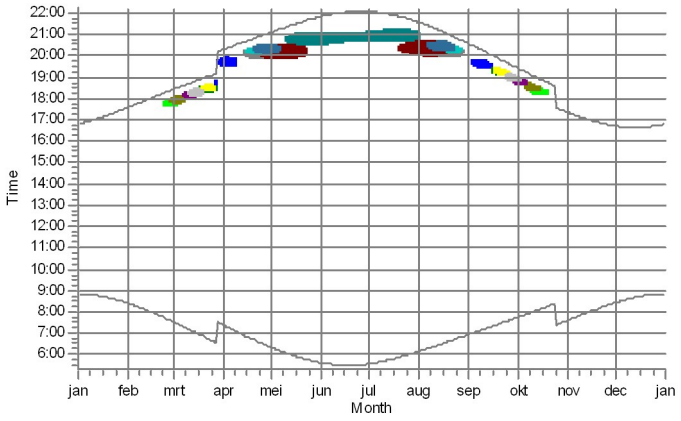
20: VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (



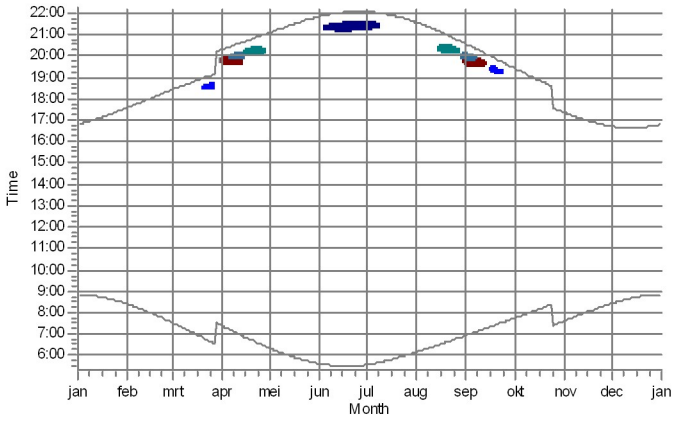
21: ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (



22: NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)



23: NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (2



Shadow receptors

- A: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (140)
- B: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (141)
- C: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (142)
- D: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (143)
- E: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (144)
- F: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (145)
- G: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (146)
- H: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (147)
- I: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (148)
- J: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (149)
- K: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (150)
- L: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (151)
- N: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (153)
- O: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (154)
- U: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (160)
- V: Shadow Receptor: 5,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (161)

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 1 - Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 15:50-16:14/24 16:48 11:29-15:18/229	08:24 15:54-16:33/39 10:13-11:45/92 17:35 11:56-15:25/209	07:32 16:31-17:22/51 09:41-12:18/157 18:25 13:07-15:51/164	07:23 19:13-19:50/37 10:27-13:09/162 20:17 14:00-16:46/166	06:20 19:35-20:37/62 15:32-16:10/38 21:06 06:44-08:45/121 10:40-11:47/67	05:36 19:58-20:41/43 21:50 06:04-08:44/160
2	08:49 15:49-16:15/26 11:30-14:02/152 16:49 14:03-15:19/76	08:22 15:55-16:33/38 10:12-11:48/96 17:36 11:57-15:28/211	07:30 16:31-17:21/50 09:40-12:19/159 18:26 13:07-15:52/165	07:21 19:12-19:51/39 10:27-13:08/161 20:19 14:01-16:45/164	06:18 19:36-20:38/62 15:37-16:06/29 21:08 06:42-08:45/123 10:41-11:43/62	05:36 19:59-20:41/42 21:51 06:04-08:45/161
3	08:49 15:50-16:16/26 16:50 11:30-15:18/228	08:21 16:53-16:59/6 11:57-15:29/212 17:38 15:56-16:32/36 10:10-11:49/99	07:28 16:32-17:21/49 09:40-12:19/159 18:28 13:06-15:52/166	07:19 19:11-19:52/41 10:27-13:07/160 20:20 14:02-16:45/163	06:16 19:36-20:38/62 15:44-16:01/17 21:09 06:41-08:46/125 10:44-11:40/56	05:35 19:59-20:41/42 21:52 06:04-08:45/161
4	08:49 15:50-16:18/28 16:51 11:32-15:19/227	08:19 16:47-17:04/17 11:58-15:30/212 17:40 15:56-16:31/35 10:08-11:51/103	07:26 16:32-17:19/47 09:39-12:20/161 18:30 13:05-15:52/167	07:16 19:10-19:53/43 10:27-13:06/159 20:22 14:04-16:44/160	06:15 19:38-20:40/62 10:45-11:36/51 21:11 06:39-08:46/127	05:34 20:00-20:40/40 21:53 06:03-08:44/161
5	08:49 15:50-16:19/29 16:53 11:34-15:20/226	08:18 16:45-17:08/23 11:59-15:32/213 17:42 15:58-16:31/33 10:07-11:53/106	07:23 16:34-17:18/44 09:38-12:19/161 18:32 13:04-15:52/168	07:14 19:08-19:57/49 10:27-13:04/157 20:23 14:04-16:43/159	06:13 19:39-20:40/61 10:47-11:32/45 21:12 06:38-08:46/128	05:34 20:01-20:40/39 21:54 06:04-08:45/161
6	08:48 15:50-16:20/30 11:34-14:03/149 16:54 14:04-15:20/76	08:16 16:43-17:10/27 11:59-15:33/214 17:44 15:59-16:30/31 10:06-11:54/108	07:21 16:35-17:17/42 09:37-12:20/163 18:33 13:04-15:53/169	07:12 19:08-19:59/51 10:27-13:02/155 20:25 14:06-16:42/156	06:11 19:40-20:40/60 10:48-11:28/40 21:14 06:38-08:46/128	05:33 20:01-20:40/39 21:55 06:04-08:44/160
7	08:48 15:50-16:22/32 11:37-14:04/147 16:55 14:05-15:21/76	08:14 16:40-17:12/32 12:00-15:34/214 17:45 16:01-16:28/27 10:04-11:56/112	07:19 16:36-17:15/39 09:37-12:20/163 18:35 13:04-15:53/169	07:10 19:07-20:01/54 10:27-13:00/153 20:27 14:07-16:42/155	06:09 19:42-20:41/59 10:52-11:24/32 21:16 06:37-08:47/130	05:32 20:02-20:40/38 21:56 06:04-08:44/160
8	08:48 15:50-16:22/32 16:56 11:38-15:21/223	08:13 16:39-17:14/35 12:00-15:35/215 17:47 16:03-16:27/24 10:03-11:57/114	07:17 16:38-17:14/36 09:37-12:21/164 18:37 13:03-15:53/170	07:08 19:07-20:03/56 10:27-12:58/151 20:28 14:09-16:41/152	06:08 19:43-20:41/58 10:55-11:19/24 21:17 06:36-08:46/130	05:32 20:02-20:39/37 21:57 06:05-08:45/160
9	08:47 15:49-16:23/34 16:58 11:40-15:21/221	08:11 16:38-17:16/39 12:02-15:37/215 17:49 16:06-16:26/20 10:02-11:59/117	07:15 16:40-17:11/31 09:35-12:20/165 18:38 13:02-15:53/171	07:05 19:06-20:04/59 10:27-12:56/149 20:30 14:11-16:41/150	06:06 19:46-20:42/56 11:02-11:11/9 21:19 06:33-08:47/134	05:31 20:03-20:39/36 21:58 06:04-08:44/160
10	08:47 15:50-16:25/35 16:59 11:44-15:22/218	08:09 16:37-17:18/41 12:02-15:38/216 17:51 16:09-16:22/13 10:01-12:01/120	07:13 16:42-17:09/27 09:35-12:20/165 18:40 13:02-15:53/171	07:03 19:06-20:06/60 14:14-16:40/146 20:32 07:56-08:16/20 10:28-12:54/146	06:04 19:48-20:42/54 21:20 06:29-08:46/137	05:31 20:04-20:40/36 21:59 06:05-08:44/159
11	08:46 15:49-16:25/36 11:50-14:05/135 17:00 14:06-15:23/77	08:07 16:36-17:19/43 09:59-12:02/123 17:53 12:03-15:39/216	07:10 16:45-17:06/21 09:34-12:21/167 18:42 13:01-15:53/172	07:01 19:05-20:07/62 14:15-16:38/143 20:33 07:49-08:20/31 10:27-12:51/144	06:03 19:53-20:43/50 21:22 06:28-08:47/139	05:31 20:04-20:40/36 21:59 06:05-08:45/160
12	08:46 15:49-16:26/37 11:50-14:05/135 17:02 14:06-15:23/77	08:06 16:35-17:20/45 09:58-12:03/125 17:54 12:04-15:40/216	07:08 16:51-17:00/9 09:34-12:21/167 18:44 13:01-15:53/172	06:59 19:05-20:09/64 14:18-16:37/139 20:35 07:45-08:24/39 10:27-12:48/141	06:01 19:53-20:42/49 21:23 06:26-08:46/140	05:30 20:04-20:39/35 22:00 06:05-08:44/159
13	08:45 15:49-16:26/37 17:03 11:50-15:23/213	08:04 16:34-17:21/47 09:57-12:04/127 17:56 12:05-15:41/216	07:06 13:00-15:52/172 18:45 09:33-12:20/167	06:57 19:05-20:10/65 07:42-08:27/45 10:28-12:46/138 20:37 07:19-07:25/6 14:21-16:36/135	05:59 19:53-20:43/50 21:25 06:25-08:47/142	05:30 20:05-20:39/34 22:01 06:05-08:44/159
14	08:44 15:50-16:28/38 17:05 11:51-15:24/213	08:02 16:33-17:21/48 09:55-12:05/130 17:58 12:06-15:42/216	07:04 13:00-15:53/173 18:47 09:32-12:20/168	06:55 19:05-20:12/67 07:39-08:29/50 10:28-12:43/135 20:38 07:17-07:28/11 14:24-16:36/132	05:58 19:52-20:43/51 21:26 06:23-08:46/143	05:30 20:05-20:39/34 22:01 06:05-08:45/160
15	08:43 15:50-16:29/39 17:06 11:51-15:24/213	08:00 16:32-17:22/50 18:00 09:54-15:43/349	07:01 13:00-15:53/173 18:49 09:32-12:21/169	06:52 19:06-20:14/68 07:37-08:31/54 10:29-12:40/131 20:40 07:15-07:29/14 14:27-16:35/128	05:56 19:53-20:43/50 21:28 06:22-08:47/145	05:30 20:06-20:39/33 07:16-08:45/89 22:02 06:06-07:15/69
16	08:43 15:50-16:29/39 17:08 11:52-15:25/213	07:58 16:31-17:23/52 18:02 09:53-15:44/351	06:59 13:00-15:53/173 18:50 09:32-12:21/169	06:50 19:06-20:15/69 07:35-08:33/58 10:29-12:37/128 20:42 07:13-07:31/18 14:31-16:34/123	05:55 19:53-20:43/50 21:29 06:21-08:47/146	05:30 20:06-20:39/33 07:16-08:45/89 22:02 06:06-07:15/69
17	08:42 15:50-16:30/40 17:09 11:52-15:25/213	07:56 16:31-17:23/52 18:03 09:52-15:44/352	06:57 12:59-15:52/173 18:52 09:31-12:20/169	06:48 19:06-20:16/70 07:33-08:35/62 10:30-12:34/124 20:43 07:11-07:32/21 14:35-16:33/118	05:53 19:52-20:43/51 21:31 06:19-08:46/147	05:30 20:07-20:39/32 07:16-08:45/89 22:03 06:06-07:15/69
18	08:41 15:50-16:31/41 17:11 11:52-15:25/213	07:54 16:30-17:24/54 09:51-12:10/139 18:05 12:11-15:45/214	06:55 12:59-15:52/173 18:54 09:31-12:20/169	06:46 19:07-20:16/69 14:39-16:32/113 20:45 07:09-08:36/87 10:30-12:31/121	05:52 19:53-20:43/50 21:32 06:18-08:46/148	05:30 20:07-20:40/33 07:16-08:45/89 22:03 06:06-07:15/69
19	08:40 15:49-16:30/41 10:47-11:05/18 17:12 11:52-15:25/213	07:52 16:30-17:24/54 09:50-12:11/141 18:07 12:13-15:46/213	06:52 12:59-15:52/173 18:55 09:31-12:20/169	06:44 19:08-20:16/68 14:42-16:31/109 20:46 07:07-08:37/90 10:31-12:27/116	05:51 19:53-20:43/50 21:34 06:17-08:46/149	05:30 20:07-20:40/33 07:17-08:45/88 22:04 06:06-07:15/69
20	08:39 15:49-16:31/42 10:42-11:12/30 17:14 11:52-15:25/213	07:50 16:30-17:24/54 09:49-12:12/143 18:09 12:14-15:47/213	06:50 12:59-15:52/173 18:57 09:30-12:20/170	06:42 19:08-20:17/69 14:46-16:29/103 20:48 07:05-08:38/93 10:31-12:24/113	05:49 19:54-20:43/49 21:35 06:16-08:46/150	05:30 20:07-20:40/33 07:17-08:45/88 22:04 06:06-07:15/69
21	08:38 15:50-16:32/42 10:38-11:16/38 17:16 11:53-15:25/212	07:48 16:30-17:24/54 09:48-12:13/145 18:11 12:17-15:47/210	06:48 12:58-15:51/173 18:59 09:29-12:19/170	06:40 19:09-20:17/68 14:51-16:28/97 20:50 07:03-08:39/96 10:32-12:21/109	05:48 19:53-20:42/49 21:37 06:15-08:45/150	05:30 20:07-20:40/33 07:17-08:45/88 22:04 06:07-07:15/68
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Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	8617	10852	11000	10857	6522	5826

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

Licensed user:
Encon
Kieleberg 41
BE-3740 Bilzen
+32 89 410 820
Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 1 - Nordex N163 163.0 !O! hub: 128,5 m (TOT: 210,0 m) (356)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 20:09-20:44/35 22:04 06:09-08:49/160	06:09 20:03-20:53/50 21:33 06:37-08:57/140	06:57 19:05-20:07/62 14:15-16:38/143 20:33 07:49-08:20/31 10:27-12:51/144	07:44 13:40-16:32/172 19:25 10:13-13:00/167	07:36 16:06-16:46/40 11:32-15:08/216 17:21 15:37-15:52/15 09:31-11:30/119	08:26 15:31-16:07/36 11:32-13:47/135 16:42 13:48-15:05/77
2	05:34 20:08-20:44/36 22:04 06:09-08:49/160	06:11 20:02-20:53/51 21:32 06:39-08:57/138	06:59 19:04-20:04/60 14:12-16:38/146 20:31 07:54-08:13/19 10:26-12:52/146	07:46 17:26-17:43/17 10:13-13:00/167 19:23 13:40-16:32/172	07:38 16:07-16:45/38 11:30-15:06/216 17:19 15:34-15:55/21 09:31-11:28/117	08:27 15:32-16:07/35 11:27-13:47/140 16:41 13:48-15:04/76
3	05:35 20:08-20:45/37 22:03 06:09-08:49/160	06:12 19:57-20:52/55 21:30 06:40-08:57/137	07:00 19:04-20:03/59 10:25-12:54/149 20:29 14:09-16:39/150	07:48 17:21-17:45/24 10:12-12:58/166 19:21 13:40-16:31/171	07:40 16:09-16:43/34 11:30-15:05/215 17:17 15:32-15:57/25 09:32-11:27/115	08:29 15:33-16:07/34 16:41 11:24-15:05/221
4	05:36 20:08-20:45/37 22:03 06:10-08:50/160	06:14 19:54-20:52/58 11:08-11:24/16 21:28 06:44-08:56/132	07:02 19:04-20:00/56 10:24-12:55/151 20:26 14:06-16:38/152	07:49 17:19-17:48/29 10:13-12:58/165 19:19 13:40-16:31/171	07:42 16:10-16:42/32 11:29-15:04/215 17:16 15:30-15:58/28 09:34-11:25/111	08:30 15:34-16:07/33 11:22-13:48/146 16:40 13:49-15:05/76
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27	06:02 20:03-20:53/50 21:41 06:30-08:57/147	06:49 19:08-20:17/69 07:37-08:35/58 10:31-12:39/128 20:44 07:15-07:32/17 14:32-16:36/124	07:38 13:40-16:34/174 19:34 10:14-13:02/168	07:28 16:02-16:51/49 17:30 09:24-15:12/348	08:20 15:29-16:08/39 16:45 11:30-15:04/214	08:49 15:50-16:09/19 11:25-13:59/154 16:43 14:00-15:15/75
28	06:03 20:04-20:54/50 21:39 06:32-08:57/145	06:51 19:07-20:15/68 07:39-08:33/54 10:30-12:42/132 20:42 07:17-07:31/14 14:29-16:37/128	07:40 13:41-16:34/173 19:32 10:13-13:01/168	07:29 16:03-16:51/48 17:28 09:25-15:11/346	08:21 15:29-16:07/38 16:44 11:30-15:03/213	08:49 15:50-16:10/20 16:44 11:25-15:16/231
29	06:05 20:03-20:53/50 21:38 06:33-08:57/144	06:52 19:06-20:13/67 07:40-08:30/50 10:29-12:44/135 20:40 07:18-07:29/11 14:25-16:37/132	07:41 13:41-16:33/172 19:30 10:13-13:01/168	07:31 16:03-16:50/47 17:26 09:26-15:10/344	08:23 15:30-16:07/37 16:44 11:31-15:04/213	08:49 15:50-16:11/21 11:26-14:00/154 16:45 14:01-15:16/75
30	06:06 20:03-20:53/50 21:36 06:34-08:57/143	06:54 19:06-20:11/65 07:43-08:27/44 10:29-12:47/138 20:37 07:20-07:26/6 14:22-16:37/135	07:43 13:40-16:32/172 19:28 10:12-13:00/168	07:33 16:04-16:49/45 09:28-11:32/124 17:25 11:33-15:09/216	08:24 15:30-16:07/37 16:43 11:31-15:04/213	08:49 15:50-16:12/22 16:46 11:27-15:17/230
31	06:08 20:04-20:53/49 21:35 06:36-08:57/141	06:55 19:05-20:08/63 14:18-16:37/139 20:35 07:45-08:23/38 10:27-12:48/141		07:35 16:05-16:48/43 11:32-15:09/217 17:23 15:43-15:47/4 09:29-11:31/122		08:49 15:50-16:13/23 11:28-14:01/153 16:47 14:02-15:17/75
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	6184	9623	10592	11921	9537	7785

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 2 - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (357)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 14:37-16:15/98	08:24 15:59-16:16/17 11:07-12:24/77	07:32 17:36-17:54/18	07:23	06:20	05:37
	16:48 10:59-12:14/75	17:35 16:42-17:04/22	18:25	20:17	21:06	21:50
2	08:49 14:38-16:15/97	08:22 16:02-16:15/13 11:08-12:25/77	07:30 17:37-17:54/17	07:21	06:18	05:36
	16:49 11:00-12:14/74	17:37 16:42-17:06/24	18:27	20:19	21:08	21:51
3	08:49 14:37-16:16/99	08:21 16:07-16:10/3 11:09-12:24/75	07:28 17:38-17:52/14	07:19	06:17	05:35
	16:50 10:59-12:14/75	17:38 16:41-17:06/25	18:28	20:20	21:09	21:52
4	08:49 14:38-16:18/100	08:19 16:41-17:06/25	07:26 17:38-17:50/12	07:17	06:15	05:34
	16:52 11:00-12:15/75	17:40 11:09-12:23/74	18:30	20:22	21:11	21:53
5	08:49 14:39-16:19/100	08:18 16:42-17:07/25	07:24 17:41-17:47/6	07:14	06:13	05:34
	16:53 11:01-12:16/75	17:42 11:10-12:23/73	18:32	20:24	21:13	21:54
6	08:48 14:39-16:20/101	08:16 16:41-17:07/26	07:21	07:12	06:11	05:33
	16:54 11:00-12:16/76	17:44 11:11-12:22/71	18:33	20:25	21:14	21:55
7	08:48 14:40-16:21/101	08:14 16:41-17:07/26	07:19	07:10	06:09	05:33
	16:55 11:01-12:17/76	17:46 11:11-12:21/70	18:35	20:27	21:16	21:56
8	08:48 14:40-16:21/101	08:13 16:41-17:07/26	07:17	07:08	06:08	05:32
	16:56 11:01-12:17/76	17:47 11:12-12:20/68	18:37	20:28	21:17	21:57
9	08:47 14:40-16:21/101	08:11 16:42-17:08/26 11:14-12:20/66	07:15	07:06	06:06	05:32
	16:58 11:01-12:18/77	17:49 17:19-17:21/2	18:39	20:30	21:19	21:58
10	08:47 14:42-16:22/100	08:09 16:43-17:07/24 11:14-12:19/65	07:13	07:03	06:04	05:31
	16:59 11:02-12:19/77	17:51 17:18-17:23/5	18:40	20:32	21:20	21:59
11	08:46 15:39-16:22/43 14:42-15:38/56	08:07 16:43-17:06/23 11:15-12:18/63	07:10	07:01	06:03	05:31
	17:00 11:02-12:19/77	17:53 17:17-17:25/8	18:42	20:33	21:22	21:59
12	08:46 15:40-16:22/42 14:43-15:38/55	08:06 16:44-17:05/21 11:16-12:16/60	07:08	06:59	06:01	05:30
	17:02 11:02-12:20/78	17:55 17:16-17:27/11	18:44	20:35	21:23	22:00
13	08:45 15:42-16:22/40 14:43-15:38/55	08:04 16:45-17:04/19 11:18-12:14/56	07:06	06:57	06:00	05:30
	17:03 11:02-12:20/78	17:56 17:15-17:29/14	18:45	20:37	21:25	22:01
14	08:44 15:45-16:23/38 14:45-15:39/54	08:02 16:47-17:03/16 11:19-12:13/54	07:04	06:55	05:58	05:30
	17:05 11:03-12:21/78	17:58 17:15-17:31/16	18:47	20:38	21:26	22:01
15	08:43 15:47-16:22/35 14:45-15:38/53	08:00 16:49-17:00/11 11:21-12:10/49	07:02	06:53	05:57	05:30
	17:06 11:03-12:22/79	18:00 17:14-17:32/18	18:49	20:40	21:28	22:02
16	08:43 15:47-16:22/35 14:46-15:38/52	07:58 17:14-17:33/19	06:59	06:50	05:55	05:30
	17:08 11:03-12:22/79	18:02 11:23-12:08/45	18:50	20:42	21:29	22:02
17	08:42 15:48-16:22/34 14:47-15:37/50	07:56 17:14-17:33/19	06:57	06:48	05:54	05:30
	17:09 11:03-12:23/80	18:04 11:25-12:05/40	18:52	20:43	21:31	22:03
18	08:41 15:48-16:21/33 14:48-15:36/48	07:54 17:15-17:33/18	06:55	06:46	05:52	05:30
	17:11 11:04-12:23/79	18:05 11:28-12:01/33	18:54	20:45	21:32	22:03
19	08:40 15:47-16:20/33 14:48-15:34/46	07:53 17:16-17:32/16	06:53	06:44	05:51	05:30
	17:13 11:03-12:23/80	18:07 11:32-11:56/24	18:55	20:47	21:34	22:04
20	08:39 15:48-16:21/33 14:49-15:32/43	07:51 17:17-17:31/14	06:50	06:42	05:50	05:30
	17:14 11:03-12:23/80	18:09 11:42-11:45/3	18:57	20:48	21:35	22:04
21	08:38 15:49-16:21/32 14:51-15:24/33	07:49 17:42-17:44/2	06:48	06:40	05:48	05:30
	17:16 11:04-12:24/80 15:26-15:28/2	18:11 17:19-17:29/10	18:59	20:50	21:37	22:04
22	08:37 15:49-16:22/33 14:52-15:24/32	07:47 17:40-17:46/6	06:46	06:38	05:47	05:30
	17:17 11:04-12:24/80	18:12 17:23-17:25/2	19:00	20:51	21:38	22:04
23	08:36 15:50-16:22/32 14:54-15:24/30	07:45 17:38-17:48/10	06:44	06:36	05:46	05:30
	17:19 11:05-12:25/80	18:14	19:02	20:53	21:39	22:04
24	08:35 15:50-16:21/31 14:55-15:22/27	07:42 17:37-17:50/13	06:41	06:34	05:45	05:31
	17:21 11:04-12:24/80	18:16	19:04	20:55	21:41	22:05
25	08:33 15:51-16:22/31 14:58-15:21/23	07:40 17:37-17:52/15	06:39	06:32	05:43	05:31
	17:23 11:05-12:25/80	18:18	19:05	20:56	21:42	22:05
26	08:32 15:52-16:22/30 15:01-15:19/18	07:38 17:35-17:53/18	06:37	06:30	05:42	05:31
	17:24 11:06-12:25/79	18:20	19:07	20:58	21:43	22:05
27	08:31 15:52-16:21/29 11:06-12:25/79	07:36 17:35-17:55/20	06:35	06:28	05:41	05:32
	17:26 16:48-16:55/7 15:04-15:16/12	18:21	19:09	21:00	21:44	22:05
28	08:30 15:54-16:21/27 11:06-12:25/79	07:34 17:35-17:55/20	06:32	06:26	05:40	05:32
	17:28 16:47-16:58/11	18:23	19:10	21:01	21:46	22:05
29	08:28 15:54-16:20/26 11:06-12:25/79		07:30	06:24	05:39	05:33
	17:29 16:45-16:59/14		20:12	21:03	21:47	22:04
30	08:27 15:56-16:20/24 11:07-12:25/78		07:28	06:22	05:38	05:33
	17:31 16:44-17:02/18		20:14	21:04	21:48	22:04
31	08:25 15:58-16:18/20 11:07-12:25/78		07:26		05:37	
	17:33 16:43-17:03/20		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	4854	1791	67	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 2 - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (357)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34	06:09	06:57	07:44	07:36 16:11-16:36/25 10:44-11:49/65	08:26 14:24-16:04/100
	22:04	21:33	20:33	19:25	17:21 16:47-16:51/4	16:42 10:44-12:01/77
2	05:35	06:11	06:59	07:46	07:38 16:11-16:36/25 10:42-11:49/67	08:27 14:24-16:04/100
	22:04	21:32	20:31	19:23	17:19 16:48-16:50/2	16:42 10:45-12:02/77
3	05:35	06:12	07:00	07:48	07:40 16:11-16:37/26	08:29 14:25-16:05/100
	22:03	21:30	20:29	19:21	17:17 10:41-11:50/69	16:41 10:45-12:02/77
4	05:36	06:14	07:02	07:49	07:42 16:11-16:37/26	08:30 14:24-16:05/101
	22:03	21:29	20:27	19:19	17:16 10:41-11:51/70	16:41 10:45-12:02/77
5	05:37	06:15	07:03	07:51	07:43 16:11-16:37/26	08:31 14:25-16:06/101
	22:02	21:27	20:24	19:16	17:14 10:40-11:52/72	16:40 10:46-12:02/76
6	05:38	06:17	07:05	07:52	07:45 16:11-16:37/26	08:32 14:25-16:06/101
	22:02	21:25	20:22	19:14	17:12 10:40-11:53/73	16:40 10:46-12:02/76
7	05:39	06:18	07:07	07:54	07:47 16:12-16:37/25	08:34 14:25-16:06/101
	22:01	21:23	20:20	19:12	17:11 10:40-11:54/74	16:39 10:47-12:02/75
8	05:39	06:20	07:08	07:56	07:49 15:37-15:42/5 10:39-11:55/76	08:35 14:26-16:06/100
	22:01	21:22	20:18	19:10	17:09 16:12-16:37/25	16:39 10:48-12:03/75
9	05:40	06:21	07:10	07:57 18:15-18:24/9	07:50 15:33-15:46/13 10:39-11:55/76	08:36 14:27-16:05/98
	22:00	21:20	20:15	19:08	17:08 16:13-16:37/24	16:39 10:48-12:03/75
10	05:41	06:23	07:11	07:59 18:13-18:26/13	07:52 15:30-15:47/17 10:39-11:56/77	08:37 14:27-16:05/98
	21:59	21:18	20:13	19:05	17:06 16:13-16:35/22	16:38 10:49-12:04/75
11	05:42	06:24	07:13	08:01 18:11-18:27/16	07:54 15:28-15:49/21 10:38-11:56/78	08:38 14:27-16:05/98
	21:59	21:16	20:11	19:03	17:04 16:14-16:34/20	16:38 10:49-12:04/75
12	05:43	06:26	07:14	08:02 18:09-18:27/18	07:55 15:27-15:51/24 10:38-11:56/78	08:39 14:27-16:04/97
	21:58	21:14	20:09	19:01	17:03 16:15-16:32/17	16:38 10:50-12:04/74
13	05:44	06:27	07:16	08:04 18:09-18:28/19	07:57 15:26-15:52/26 10:38-11:57/79	08:40 14:28-16:04/96
	21:57	21:12	20:06	18:59	17:01 16:17-16:31/14	16:38 10:51-12:04/73
14	05:46	06:29	07:17	08:06 18:08-18:28/20	07:59 15:26-15:53/27 10:38-11:57/79	08:41 14:28-16:04/96
	21:56	21:10	20:04	18:57	17:00 16:19-16:30/11	16:38 10:51-12:05/74
15	05:47	06:31	07:19	08:07 18:08-18:27/19	08:01 15:25-15:54/29 10:38-11:58/80	08:42 14:29-16:05/96
	21:55	21:09	20:02	18:55	16:59 16:21-16:28/7 14:37-14:49/12	16:38 10:52-12:05/73
16	05:48	06:32	07:21	08:09 18:08-18:24/16	08:02 15:25-15:55/30 14:34-14:53/19	08:43 14:29-16:05/96
	21:54	21:07	19:59	18:53	16:57 10:39-11:58/79	16:38 10:53-12:06/73
17	05:49	06:34	07:22	08:11 18:08-18:22/14	08:04 15:24-15:55/31 14:31-14:54/23	08:44 14:29-16:04/95
	21:53	21:05	19:57	18:50	16:56 10:38-11:58/80	16:39 10:52-12:05/73
18	05:50	06:35	07:24	08:12 18:09-18:21/12	08:06 15:24-15:55/31 14:29-14:56/27	08:44 14:30-16:05/95
	21:52	21:03	19:55	18:48	16:55 10:38-11:58/80	16:39 10:53-12:06/73
19	05:51	06:37	07:25	08:14 18:10-18:19/9	08:07 15:24-15:56/32 14:28-14:58/30	08:45 14:31-16:05/94
	21:51	21:01	19:53	18:46	16:54 10:39-11:59/80	16:39 10:54-12:07/73
20	05:53	06:38	07:27	08:16 18:11-18:16/5	08:09 15:24-15:57/33 14:27-14:59/32	08:46 14:31-16:05/94
	21:50	20:59	19:50	18:44 17:51-17:57/6	16:52 10:39-11:59/80	16:40 10:54-12:07/73
21	05:54	06:40	07:28	08:17 17:48-18:00/12	08:11 15:25-15:57/32 14:27-15:00/33	08:46 14:31-16:06/95
	21:49	20:57	19:48	18:42	16:51 10:40-12:00/80 15:02-15:04/2	16:40 10:55-12:07/72
22	05:55	06:41	07:30	08:19 17:47-18:02/15	08:12 15:24-15:57/33 14:26-15:08/42	08:47 14:31-16:06/95
	21:48	20:54	19:46	18:40 12:07-12:20/13	16:50 10:39-11:59/80	16:40 10:55-12:07/72
23	05:57	06:43	07:32	08:21 17:46-18:03/17	08:14 15:25-15:58/33 14:25-15:11/46	08:47 14:33-16:07/94
	21:46	20:52	19:44	18:38 12:01-12:28/27	16:49 10:40-12:00/80	16:41 10:56-12:09/73
24	05:58	06:45	07:33	08:23 17:45-18:03/18	08:15 15:25-15:58/33 14:25-15:13/48	08:48 14:33-16:07/94
	21:45	20:50	19:41	18:36 11:58-12:33/35	16:48 10:41-12:00/79	16:42 10:56-12:09/73
25	05:59	06:46	07:35	07:24 16:44-17:03/19	08:17 15:25-15:59/34 14:24-15:14/50	08:48 14:33-16:07/94
	21:44	20:48	19:39	17:34 10:55-11:36/41	16:47 10:41-12:01/80	16:42 10:56-12:09/73
26	06:01	06:48	07:36	07:26 16:22-16:27/5 10:52-11:38/46	08:18 15:25-16:00/35 14:24-15:16/52	08:49 14:34-16:09/95
	21:42	20:46	19:37	17:32 16:44-17:03/19	16:46 10:41-12:00/79	16:43 10:57-12:10/73
27	06:02	06:49	07:38	07:28 16:18-16:31/13 10:50-11:40/50	08:20 15:26-16:01/35 14:24-15:17/53	08:49 14:34-16:10/96
	21:41	20:44	19:34	17:30 16:44-17:01/17	16:45 10:42-12:01/79	16:44 10:57-12:11/74
28	06:03	06:51	07:40	07:29 16:16-16:33/17 10:48-11:43/55	08:21 15:24-16:02/38 14:24-15:18/54	08:49 14:35-16:10/95
	21:39	20:42	19:32	17:28 16:44-17:00/16	16:44 10:42-12:00/78	16:44 10:58-12:11/73
29	06:05	06:52	07:41	07:31 16:15-16:34/19 10:47-11:44/57	08:23 15:23-16:03/40 14:24-15:19/55	08:49 14:35-16:11/96
	21:38	20:40	19:30	17:27 16:45-16:58/13	16:44 10:43-12:01/78	16:45 10:58-12:11/73
30	06:06	06:54	07:43	07:33 16:14-16:35/21 10:46-11:46/60	08:24 15:22-16:03/41 14:25-15:20/55	08:49 14:36-16:12/96
	21:37	20:38	19:28	17:25 16:46-16:56/10	16:43 10:44-12:02/78	16:46 10:58-12:12/74
31	06:08	06:56		07:35 16:13-16:36/23 10:45-11:48/63		08:49 14:36-16:13/97
	21:35	20:35		17:23 16:47-16:54/7		16:47 10:59-12:13/74
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	0	0	0	884	3934	5302

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 3 - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (358)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 13:13-14:01/48 10:30-11:42/72	08:24 15:23-15:58/35 11:04-11:37/33	07:32 17:11-17:40/29	07:23	06:20	05:37
	16:48 15:10-15:57/47 12:10-12:43/33	17:35 16:33-17:05/32	18:25 08:07-08:41/34	20:17	21:06	21:50
2	08:49 13:14-14:02/48 10:31-11:43/72	08:22 15:25-15:58/33 11:07-11:35/28	07:30 17:11-17:39/28	07:21	06:18	05:36
	16:49 15:10-15:56/46 12:12-12:44/32	17:36 16:34-17:07/33	18:26 08:06-08:42/36	20:19	21:08	21:51
3	08:49 13:14-14:01/47 10:31-11:43/72	08:21 15:26-15:56/30 11:09-11:32/23	07:28 17:12-17:38/26	07:19	06:16	05:35
	16:50 15:10-15:57/47 12:12-12:43/31	17:38 16:35-17:09/34	18:28 08:05-08:42/37	20:20	21:09	21:52
4	08:49 13:15-14:02/47 10:32-11:43/71	08:19 15:27-15:55/28 11:13-11:27/14	07:26 17:13-17:36/23	07:17	06:15	05:34
	16:51 15:11-15:57/46 12:13-12:43/30	17:40 16:37-17:11/34	18:30 08:05-08:43/38	20:22	21:11	21:53
5	08:49 13:16-14:02/46 10:33-11:44/71	08:18 15:30-15:54/24	07:24 17:14-17:35/21	07:14	06:13	05:34
	16:53 15:11-15:56/45 12:15-12:43/28	17:42 16:39-17:12/33	18:32 08:03-08:43/40	20:23	21:12	21:54
6	08:48 13:17-14:02/45 10:34-11:44/70	08:16 15:33-15:51/18	07:21 17:16-17:33/17	07:12	06:11	05:33
	16:54 15:11-15:57/46 12:16-12:42/26	17:44 16:38-17:11/33	18:33 08:03-08:43/40	20:25	21:14	21:55
7	08:48 13:18-14:02/44 10:35-11:45/70	08:14 15:36-15:48/12	07:19 17:19-17:30/11	07:10	06:09	05:32
	16:55 15:12-15:57/45 12:18-12:41/23	17:45 16:38-17:11/33	18:35 08:02-08:43/41	20:27	21:16	21:56
8	08:48 13:19-14:02/43 10:36-11:45/69	08:13 16:38-17:11/33	07:17 08:02-08:43/41	07:08	06:08	05:32
	16:56 15:12-15:56/44 12:19-12:40/21	17:47	18:37	20:28	21:17	21:57
9	08:47 13:19-14:01/42 10:36-11:45/69	08:11 16:39-17:11/32	07:15 08:01-08:42/41	07:05	06:06	05:32
	16:58 15:11-15:55/44 12:21-12:38/17	17:49	18:39	20:30	21:19	21:58
10	08:47 13:21-14:01/40 10:38-11:46/68	08:09 16:39-17:11/32	07:13 08:01-08:42/41	07:03	06:04	05:31
	16:59 15:12-15:56/44 12:25-12:36/11	17:51	18:40	20:32	21:20	21:59
11	08:46 13:22-14:01/39 10:39-11:46/67	08:07 16:39-17:10/31	07:10 08:01-08:42/41	07:01	06:03	05:31
	17:00 15:12-15:56/44	17:53	18:42	20:33	21:22	21:59
12	08:46 13:23-14:00/37 10:41-11:46/65	08:06 16:39-17:09/30	07:08 08:02-08:42/40	06:59	06:01	05:30
	17:02 15:12-15:56/44	17:55	18:44	20:35	21:23	22:00
13	08:45 13:24-14:00/36 10:42-11:46/64	08:04 16:40-17:08/28	07:06 08:01-08:40/39	06:57	06:00	05:30
	17:03 15:12-15:57/45	17:56	18:45	20:37	21:25	22:01
14	08:44 13:26-14:00/34 10:45-11:47/62	08:02 16:41-17:06/25	07:04 08:02-08:39/37	06:55	05:58	05:30
	17:05 15:13-15:58/45	17:58	18:47	20:38	21:26	22:01
15	08:43 13:28-13:59/31 10:48-11:47/59	08:00 16:42-17:04/22	07:01 08:02-08:38/36	06:52	05:56	05:30
	17:06 15:13-15:59/46	18:00	18:49	20:40	21:28	22:02
16	08:43 13:30-13:58/28 10:49-11:47/58	07:58 17:22-17:30/8	06:59 08:03-08:37/34	06:50	05:55	05:30
	17:08 15:14-15:59/45	18:02 16:43-17:03/20	18:50	20:42	21:29	22:02
17	08:42 13:32-13:57/25 16:34-16:38/4	07:56 17:19-17:34/15	06:57 08:03-08:35/32	06:48	05:54	05:30
	17:09 15:14-16:00/46 10:49-11:47/58	18:04 16:45-17:01/16	18:52	20:43	21:31	22:03
18	08:41 13:35-13:55/20 16:33-16:39/6	07:54 17:16-17:36/20	06:55 08:05-08:33/28	06:46	05:52	05:30
	17:11 15:14-16:00/46 10:50-11:47/57	18:05 16:48-16:59/11	18:54	20:45	21:32	22:03
19	08:40 13:37-13:51/14 16:31-16:40/9	07:52 17:15-17:37/22	06:53 08:06-08:31/25	06:44	05:51	05:30
	17:12 15:14-15:59/45 10:50-11:46/56	18:07	18:55	20:47	21:34	22:04
20	08:39 15:14-16:00/46 10:51-11:46/55	07:50 17:14-17:38/24	06:50 08:08-08:29/21	06:42	05:49	05:30
	17:14 16:31-16:42/11	18:09	18:57	20:48	21:35	22:04
21	08:38 15:15-16:00/45 10:51-11:46/55	07:49 17:13-17:39/26	06:48 08:11-08:25/14	06:40	05:48	05:30
	17:16 16:31-16:44/13	18:11	18:59	20:50	21:37	22:04
22	08:37 15:16-16:01/45 10:52-11:46/54	07:47 17:12-17:40/28	06:46	06:38	05:47	05:30
	17:17 16:30-16:46/16	18:12	19:00	20:51	21:38	22:04
23	08:36 15:16-16:01/45 10:53-11:46/53	07:44 17:12-17:41/29	06:43	06:36	05:46	05:30
	17:19 16:31-16:48/17	18:14	19:02	20:53	21:39	22:04
24	08:35 15:16-16:01/45 10:54-11:45/51	07:42 17:11-17:41/30	06:41	06:34	05:45	05:31
	17:21 16:30-16:50/20	18:16 08:19-08:31/12	19:04	20:55	21:41	22:05
25	08:33 15:17-16:01/44 10:55-11:45/50	07:40 17:11-17:41/30	06:39	06:32	05:43	05:31
	17:22 16:30-16:51/21	18:18 08:16-08:35/19	19:05	20:56	21:42	22:05
26	08:32 15:17-16:00/43 10:56-11:45/49	07:38 17:10-17:40/30	06:37	06:30	05:42	05:31
	17:24 16:30-16:51/21	18:19 08:13-08:37/24	19:07	20:58	21:43	22:05
27	08:31 15:18-16:01/43 10:57-11:44/47	07:36 17:10-17:40/30	06:34	06:28	05:41	05:32
	17:26 16:30-16:52/22	18:21 08:10-08:38/28	19:09	21:00	21:44	22:05
28	08:29 15:19-16:01/42 10:58-11:43/45	07:34 17:10-17:40/30	06:32	06:26	05:40	05:32
	17:28 16:31-16:58/27	18:23 08:09-08:39/30	19:10	21:01	21:46	22:04
29	08:28 15:20-16:00/40 10:59-11:42/43		07:30	06:24	05:39	05:33
	17:29 16:31-16:59/28		20:12	21:03	21:47	22:04
30	08:27 15:21-16:00/39 11:01-11:41/40		07:28	06:22	05:38	05:33
	17:31 16:32-17:02/30		20:14	21:04	21:48	22:04
31	08:25 15:22-15:59/37 11:02-11:39/37		07:25		05:37	
	17:33 16:32-17:03/31		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	4445	1225	891	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 3 - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (358)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34	06:09	06:57	07:44 08:41-09:20/39	07:36 16:07-16:39/32	08:26 13:04-13:43/39 10:21-11:28/67
	22:04	21:33	20:33	19:25	17:21	16:42 14:54-15:38/44
2	05:35	06:11	06:59	07:46 08:40-09:21/41	07:38 16:07-16:40/33	08:27 13:03-13:44/41 10:21-11:28/67
	22:04	21:32	20:31	19:23	17:19	16:42 14:54-15:38/44 12:07-12:18/11
3	05:35	06:12	07:00	07:48 08:39-09:20/41	07:40 16:07-16:40/33	08:29 13:03-13:45/42 10:21-11:29/68
	22:03	21:30	20:29	19:21	17:17	16:41 14:55-15:39/44 12:05-12:22/17
4	05:36	06:14	07:02	07:49 08:39-09:20/41	07:42 15:05-15:18/13	08:30 13:03-13:46/43 10:20-11:29/69
	22:03	21:28	20:26	19:19	17:16 16:08-16:41/33	16:40 14:56-15:40/44 12:04-12:24/20
5	05:37	06:15	07:03	07:51 08:39-09:20/41	07:43 15:02-15:22/20	08:31 13:03-13:47/44 10:20-11:30/70
	22:02	21:27	20:24	19:16	17:14 16:08-16:41/33	16:40 14:57-15:42/45 12:03-12:26/23
6	05:38	06:17	07:05	07:52 17:58-18:04/6	07:45 15:00-15:24/24	08:32 13:03-13:48/45 10:20-11:30/70
	22:02	21:25	20:22	19:14 08:38-09:19/41	17:12 16:09-16:41/32	16:40 14:57-15:43/46 12:02-12:28/26
7	05:38	06:18	07:06	07:54 17:53-18:08/15	07:47 14:58-15:26/28 10:43-10:59/16	08:34 13:03-13:48/45 10:20-11:30/70
	22:01	21:23	20:20	19:12 08:38-09:19/41	17:11 16:08-16:41/33	16:39 14:58-15:43/45 12:01-12:29/28
8	05:39	06:20	07:08	07:56 17:50-18:09/19	07:49 14:56-15:27/31 10:39-11:03/24	08:35 13:03-13:50/47 10:20-11:31/71
	22:01	21:22	20:18	19:10 08:39-09:19/40	17:09 16:06-16:40/34	16:39 14:58-15:44/46 12:02-12:31/29
9	05:40	06:21	07:10	07:57 17:48-18:11/23	07:50 14:55-15:29/34 10:37-11:06/29	08:36 13:03-13:50/47 10:20-11:32/72
	22:00	21:20	20:15	19:08 08:38-09:18/40	17:07 16:05-16:38/33	16:39 14:59-15:46/47 12:01-12:32/31
10	05:41	06:23	07:11	07:59 17:47-18:12/25	07:52 14:53-15:29/36 10:34-11:08/34	08:37 13:03-13:51/48 10:20-11:32/72
	21:59	21:18	20:13	19:05 08:39-09:17/38	17:06 16:03-16:35/32	16:38 15:00-15:46/46 12:01-12:33/32
11	05:42	06:24	07:13	08:01 17:46-18:13/27	07:54 14:53-15:30/37 10:33-11:10/37	08:38 13:03-13:51/48 10:20-11:32/72
	21:59	21:16	20:11	19:03 08:40-09:16/36	17:04 16:03-16:34/31	16:38 15:00-15:47/47 12:01-12:33/32
12	05:43	06:26	07:14	08:02 17:44-18:12/28	07:55 14:52-15:31/39 10:32-11:12/40	08:39 13:04-13:52/48 10:21-11:33/72
	21:58	21:14	20:09	19:01 08:40-09:14/34	17:03 16:03-16:32/29	16:38 15:01-15:48/47 12:01-12:34/33
13	05:44	06:27	07:16	08:04 17:44-18:13/29	07:57 14:52-15:32/40 10:31-11:14/43	08:40 13:04-13:53/49 10:21-11:33/72
	21:57	21:12	20:06	18:59 08:41-09:13/32	17:01 16:03-16:31/28	16:38 15:02-15:48/46 12:01-12:35/34
14	05:45	06:29	07:17	08:06 17:43-18:13/30	07:59 14:51-15:33/42 10:30-11:15/45	08:41 13:04-13:53/49 10:21-11:34/73
	21:56	21:10	20:04	18:57 08:42-09:12/30	17:00 16:03-16:30/27	16:38 15:02-15:49/47 12:01-12:36/35
15	05:47	06:30	07:19	08:07 17:43-18:14/31	08:01 14:51-15:33/42 10:30-11:17/47	08:42 13:05-13:54/49 10:22-11:34/72
	21:55	21:08	20:02	18:55 08:44-09:11/27	16:59 16:03-16:25/22	16:38 15:03-15:50/47 12:01-12:37/36
16	05:48	06:32	07:21	08:09 17:42-18:13/31	08:02 14:51-15:34/43 10:29-11:18/49	08:43 13:05-13:55/50 10:22-11:35/73
	21:54	21:07	19:59	18:52 08:45-09:08/23	16:57 16:04-16:25/21	16:38 15:04-15:50/46 12:01-12:38/37
17	05:49	06:34	07:22	08:11 17:42-18:13/31	08:04 14:50-15:34/44 10:28-11:18/50	08:44 13:05-13:54/49 10:22-11:34/72
	21:53	21:05	19:57	18:50 08:48-09:05/17	16:56 16:03-16:24/21	16:39 15:04-15:50/46 12:01-12:38/37
18	05:50	06:35	07:24	08:12 17:43-18:12/29	08:06 14:50-15:35/45 10:28-11:19/51	08:44 13:05-13:55/50 10:22-11:35/73
	21:52	21:03	19:55	18:48 08:53-09:00/7	16:55 16:04-16:24/20	16:39 15:04-15:51/47 12:01-12:39/38
19	05:51	06:37	07:25	08:14 17:43-18:12/29	08:07 14:50-15:35/45 10:27-11:20/53	08:45 13:06-13:56/50 10:23-11:36/73
	21:51	21:01	19:53	18:46	16:53 16:05-16:22/17	16:39 15:05-15:52/47 12:02-12:40/38
20	05:53	06:38	07:27	08:16 17:43-18:10/27	08:09 14:51-15:36/45 10:27-11:21/54	08:46 13:06-13:56/50 10:23-11:36/73
	21:50	20:59	19:50	18:44	16:52 16:06-16:21/15	16:40 15:05-15:52/47 12:02-12:40/38
21	05:54	06:40	07:28	08:17 17:43-18:10/27	08:11 14:51-15:36/45 10:27-11:22/55	08:46 13:07-13:57/50 10:24-11:37/73
	21:49	20:56	19:48	18:42	16:51 16:07-16:20/13	16:40 15:06-15:53/47 12:03-12:41/38
22	05:55	06:41	07:30 08:57-09:09/12	08:19 17:44-18:09/25	08:12 14:50-15:36/46 10:27-11:22/55	08:47 13:07-13:57/50 10:24-11:37/73
	21:48	20:54	19:46	18:40	16:50 16:07-16:18/11	16:40 15:06-15:53/47 12:03-12:40/37
23	05:56	06:43	07:32 08:53-09:12/19	08:21 17:46-18:07/21	08:14 13:15-13:28/13 16:08-16:17/9	08:47 13:08-13:58/50 10:25-11:38/73
	21:46	20:52	19:43	18:38 17:22-17:25/3	16:49 14:51-15:36/45 10:27-11:23/56	16:41 15:07-15:54/47 12:04-12:42/38
24	05:58	06:45	07:33 08:51-09:14/23	08:23 17:47-18:06/19	08:15 13:12-13:32/20 16:10-16:16/6	08:48 13:08-13:58/50 10:25-11:38/73
	21:45	20:50	19:41	18:36 17:17-17:30/13	16:48 14:51-15:37/46 10:27-11:24/57	16:41 15:07-15:54/47 12:04-12:42/38
25	05:59	06:46	07:35 08:48-09:15/27	07:24 16:49-17:02/13	08:17 13:09-13:34/25 16:11-16:15/4	08:48 13:08-13:58/50 10:25-11:38/73
	21:44	20:48	19:39	17:34 16:14-16:31/17	16:47 14:51-15:37/46 10:26-11:24/58	16:42 15:07-15:54/47 12:04-12:42/38
26	06:01	06:48	07:36 08:46-09:17/31	07:26 16:53-16:58/5	08:18 13:08-13:36/28 10:27-11:25/58	08:48 13:09-13:59/50 10:27-11:39/72
	21:42	20:46	19:37	17:32 16:12-16:33/21	16:46 14:52-15:37/45	16:43 15:09-15:55/46 12:06-12:43/37
27	06:02	06:49	07:38 08:45-09:19/34	07:28 16:11-16:34/23	08:20 13:07-13:38/31 10:27-11:26/59	08:49 13:10-14:00/50 10:27-11:40/73
	21:41	20:44	19:34	17:30	16:45 14:53-15:38/45	16:44 15:09-15:55/46 12:06-12:43/37
28	06:03	06:51	07:40 08:43-09:19/36	07:29 16:10-16:36/26	08:21 13:05-13:39/34 10:24-11:26/62	08:49 13:10-14:00/50 10:27-11:40/73
	21:39	20:42	19:32	17:28	16:44 14:52-15:37/45	16:44 15:09-15:56/47 12:07-12:43/36
29	06:05	06:52	07:41 08:43-09:20/37	07:31 16:09-16:38/29	08:23 13:05-13:41/36 10:23-11:27/64	08:49 13:11-14:00/49 10:28-11:40/72
	21:38	20:40	19:30	17:27	16:44 14:53-15:38/45	16:45 15:09-15:56/47 12:07-12:43/36
30	06:06	06:54	07:43 08:41-09:20/39	07:33 16:09-16:39/30	08:24 13:04-13:41/37 10:23-11:28/65	08:49 13:12-14:00/48 10:29-11:41/72
	21:36	20:37	19:28	17:25	16:43 14:53-15:38/45	16:46 15:10-15:56/46 12:08-12:43/35
31	06:08	06:56		07:35 16:09-16:40/31		08:49 13:12-14:01/49 10:29-11:41/72
	21:35	20:35		17:23		16:47 15:10-15:57/47 12:09-12:43/34
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	0	0	258	1292	3048	6110

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 4 - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (359)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 10:01-11:38/97 15:44-16:10/26	08:24 15:44-16:43/59	07:32 16:31-17:05/34	07:23	06:20	05:37
	16:48 13:01-14:01/60 09:25-09:36/11	17:35 09:11-09:53/42	18:25	20:17	21:06	21:50
2	08:49 10:02-11:39/97 15:43-16:09/26	08:22 15:46-16:43/57	07:30 16:33-17:04/31	07:21	06:18	05:36
	16:49 13:01-14:01/60 09:25-09:38/13	17:36 09:11-09:53/42	18:26	20:19	21:08	21:51
3	08:49 10:01-11:38/97 15:43-16:10/27	08:21 15:46-16:41/55	07:28 16:35-17:02/27	07:19	06:16	05:35
	16:50 13:02-14:01/59 09:24-09:38/14	17:38 09:11-09:53/42	18:28	20:20	21:09	21:52
4	08:49 10:02-11:39/97 15:43-16:11/28	08:19 16:42-16:53/11 09:10-09:53/43	07:26 16:36-16:59/23	07:16	06:15	05:34
	16:51 13:03-14:02/59 09:24-09:40/16	17:40 15:47-16:40/53	18:30	20:22	21:11	21:53
5	08:49 10:03-11:40/97 15:42-16:11/29	08:18 16:39-16:58/19 09:11-09:54/43	07:23 16:40-16:56/16	07:14	06:13	05:34
	16:53 13:03-14:02/59 09:24-09:41/17	17:42 15:49-16:38/49	18:32	20:23	21:12	21:54
6	08:48 10:03-11:39/96 15:43-16:12/29	08:16 16:37-17:00/23 09:11-09:54/43	07:21 16:46-16:49/3	07:12	06:11	05:33
	16:54 13:04-14:02/58 09:23-09:42/19	17:44 15:50-16:34/44	18:33	20:25	21:14	21:55
7	08:48 10:04-11:40/96 15:43-16:13/30	08:14 16:35-17:02/27 16:20-16:31/11	07:19 07:44-07:56/12	07:10	06:09	05:32
	16:55 13:05-14:03/58 09:23-09:44/21	17:45 15:51-16:18/27 09:10-09:54/44	18:35	20:27	21:16	21:56
8	08:48 10:04-11:40/96 15:42-16:13/31	08:13 16:33-17:03/30 09:10-09:54/44	07:17 07:42-07:59/17	07:08	06:08	05:32
	16:56 13:05-14:03/58 09:22-09:44/22	17:47 15:53-16:16/23	18:37	20:28	21:17	21:57
9	08:47 10:04-11:40/96 15:42-16:13/31 09:22-09:45/23	08:11 16:33-17:05/32 09:11-09:55/44	07:15 07:39-08:00/21	07:05	06:06	05:31
	16:58 13:06-14:02/56 16:14-16:20/6	17:49 15:56-16:15/19	18:38	20:30	21:19	21:58
10	08:47 10:05-11:41/96 15:42-16:26/44	08:09 16:31-17:07/36 09:11-09:54/43	07:13 07:38-08:01/23	07:03	06:04	05:31
	16:59 13:07-14:03/56 09:22-09:46/24	17:51 15:59-16:13/14	18:40	20:32	21:20	21:59
11	08:46 10:05-11:40/95 15:42-16:27/45	08:07 16:30-17:07/37	07:10 07:37-08:02/25	07:01	06:03	05:31
	17:00 13:08-14:03/55 09:22-09:47/25	17:53 09:11-09:54/43	18:42	20:33	21:22	21:59
12	08:46 10:05-11:40/95 15:41-16:29/48	08:06 16:30-17:08/38	07:08 07:36-08:03/27	06:59	06:01	05:30
	17:02 13:08-14:03/55 09:21-09:48/27	17:54 09:12-09:53/41	18:44	20:35	21:23	22:00
13	08:45 10:06-11:40/94 15:41-16:30/49	08:04 16:29-17:09/40	07:06 07:34-08:02/28	06:57	06:00	05:30
	17:03 13:09-14:03/54 09:21-09:48/27	17:56 09:12-09:53/41	18:45	20:37	21:25	22:01
14	08:44 10:07-11:41/94 15:41-16:32/51	08:02 16:28-17:10/42	07:04 07:34-08:02/28	06:55	05:58	05:30
	17:05 13:10-14:03/53 09:22-09:50/28	17:58 09:13-09:52/39	18:47	20:38	21:26	22:01
15	08:43 10:07-11:41/94 15:42-16:34/52	08:00 16:28-17:10/42	07:01 07:34-08:03/29	06:52	05:56	05:30
	17:06 13:11-14:03/52 09:22-09:51/29	18:00 09:13-09:51/38	18:49	20:40	21:28	22:02
16	08:43 10:08-11:41/93 15:41-16:36/55	07:58 16:27-17:10/43	06:59 07:34-08:02/28	06:50	05:55	05:30
	17:08 13:12-14:03/51 09:22-09:51/29	18:02 09:14-09:50/36	18:50	20:42	21:29	22:02
17	08:42 10:54-11:41/47 15:41-16:38/57 10:09-10:52/43	07:56 16:27-17:11/44	06:57 07:33-08:01/28	06:48	05:54	05:30
	17:09 13:13-14:03/50 09:22-09:52/30	18:03 09:15-09:49/34	18:52	20:43	21:31	22:03
18	08:41 10:55-11:40/45 15:41-16:38/57 10:09-10:52/43	07:54 16:27-17:11/44	06:55 07:33-08:01/28	06:46	05:52	05:30
	17:11 13:14-14:02/48 09:22-09:53/31	18:05 09:16-09:48/32	18:54	20:45	21:32	22:03
19	08:40 10:55-11:39/44 15:41-16:39/58 10:09-10:51/42	07:52 16:27-17:11/44	06:52 07:34-08:00/26	06:44	05:51	05:30
	17:12 13:15-14:01/46 09:22-09:54/32	18:07 09:17-09:46/29	18:55	20:46	21:34	22:03
20	08:39 10:56-11:39/43 15:41-16:40/59 10:10-10:51/41	07:50 16:27-17:11/44	06:50 07:35-07:59/24	06:42	05:49	05:30
	17:14 13:16-14:01/45 09:21-09:53/32	18:09 09:19-09:44/25	18:57	20:48	21:35	22:04
21	08:38 10:57-11:38/41 15:41-16:41/60 10:11-10:51/40	07:48 16:27-17:11/44	06:48 07:35-07:57/22	06:40	05:48	05:30
	17:16 13:18-14:00/42 09:21-09:54/33	18:11 09:21-09:41/20	18:59	20:50	21:37	22:04
22	08:37 10:59-11:38/39 15:41-16:42/61 10:12-10:51/39	07:46 16:27-17:11/44	06:46 07:36-07:55/19	06:38	05:47	05:30
	17:17 13:20-13:59/39 09:20-09:54/34	18:12 09:25-09:38/13	19:00	20:51	21:38	22:04
23	08:36 11:00-11:37/37 15:42-16:43/61 10:13-10:50/37	07:44 16:27-17:10/43	06:43 07:38-07:53/15	06:36	05:46	05:30
	17:19 13:22-13:59/37 09:18-09:55/37	18:14	19:02	20:53	21:39	22:04
24	08:35 11:01-11:35/34 15:41-16:43/62 10:13-10:49/36	07:42 16:28-17:10/42	06:41 07:41-07:49/8	06:34	05:44	05:31
	17:21 13:23-13:57/34 09:17-09:55/38	18:16	19:04	20:55	21:41	22:05
25	08:33 11:03-11:34/31 15:42-16:43/61 10:15-10:49/34	07:40 16:28-17:10/42	06:39	06:32	05:43	05:31
	17:22 13:26-13:55/29 09:16-09:55/39	18:18	19:05	20:56	21:42	22:05
26	08:32 11:05-11:33/28 15:41-16:43/62 10:17-10:48/31	07:38 16:28-17:08/40	06:37	06:30	05:42	05:31
	17:24 13:28-13:53/25 09:15-09:56/41	18:19	19:07	20:58	21:43	22:05
27	08:31 11:07-11:30/23 15:42-16:44/62 10:17-10:47/30	07:36 16:29-17:07/38	06:34	06:28	05:41	05:32
	17:26 13:32-13:50/18 09:14-09:55/41	18:21	19:09	21:00	21:44	22:05
28	08:29 11:11-11:28/17 15:43-16:44/61 10:19-10:46/27	07:34 16:30-17:06/36	06:32	06:26	05:40	05:32
	17:28 13:41-13:43/2 09:14-09:55/41	18:23	19:10	21:01	21:46	22:04
29	08:28 11:15-11:22/7 09:13-09:54/41		07:30	06:24	05:39	05:33
	17:29 15:43-16:44/61 10:21-10:44/23		20:12	21:03	21:47	22:04
30	08:27 15:44-16:44/60 10:24-10:42/18		07:28	06:22	05:38	05:33
	17:31 09:13-09:55/42		20:14	21:04	21:48	22:04
31	08:25 15:44-16:43/59 10:27-10:38/11		07:25		05:37	
	17:33 09:12-09:54/42		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	6186	2157	542	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 4 - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (359)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34	06:09	06:57	07:44 08:14-08:42/28	07:36 16:00-16:35/35 08:41-09:24/43	08:26 09:47-11:23/96 15:24-16:10/46
	22:04	21:33	20:33	19:25	17:21 15:27-15:42/15	16:42 12:50-13:45/55 09:04-09:29/25
2	05:35	06:11	06:59	07:46 08:15-08:41/26	07:38 16:02-16:34/32 08:40-09:23/43	08:27 09:47-11:23/96 15:24-16:08/44
	22:04	21:32	20:31	19:23	17:19 15:24-15:44/20	16:42 12:49-13:45/56 09:05-09:30/25
3	05:35	06:12	07:00	07:48 08:15-08:39/24	07:40 16:03-16:33/30 15:54-15:56/2	08:28 09:48-11:24/96 15:26-16:04/38
	22:03	21:30	20:29	19:21	17:17 15:22-15:46/24 08:40-09:23/43	16:41 12:50-13:47/57 09:06-09:29/23
4	05:36	06:14	07:02	07:49 08:16-08:38/22	07:42 16:05-16:31/26 15:49-16:01/12	08:30 09:48-11:24/96 15:26-15:57/31
	22:03	21:28	20:26	19:19	17:16 15:20-15:48/28 08:40-09:24/44	16:40 12:49-13:47/58 09:06-09:28/22
5	05:37	06:15	07:03	07:51 08:18-08:37/19	07:43 16:07-16:29/22 08:40-09:24/44	08:31 09:49-11:25/96 15:28-15:58/30
	22:02	21:27	20:24	19:16	17:14 15:19-16:04/45	16:40 12:50-13:48/58 09:08-09:29/21
6	05:38	06:17	07:05	07:52 08:19-08:34/15	07:45 16:09-16:27/18 08:41-09:24/43	08:32 09:49-11:26/97 15:29-15:58/29
	22:02	21:25	20:22	19:14	17:12 15:18-16:08/50	16:40 12:50-13:48/58 09:09-09:28/19
7	05:38	06:18	07:06	07:54 08:22-08:30/8	07:47 16:13-16:24/11 08:41-09:24/43	08:34 09:49-11:26/97 15:29-15:58/29
	22:01	21:23	20:20	19:12	17:11 15:18-16:11/53	16:39 12:50-13:49/59 09:10-09:27/17
8	05:39	06:20	07:08	07:56 17:17-17:29/12	07:49 15:17-16:12/55	08:35 09:50-11:27/97 15:30-15:58/28
	22:01	21:22	20:18	19:10	17:09 08:42-09:24/42	16:39 12:50-13:49/59 09:12-09:28/16
9	05:40	06:21	07:10	07:57 17:13-17:33/20	07:50 15:16-16:13/57	08:36 09:50-11:27/97 15:32-15:59/27
	22:00	21:20	20:15	19:08	17:07 08:42-09:23/41	16:39 12:51-13:50/59 09:13-09:27/14
10	05:41	06:23	07:11	07:59 17:10-17:35/25	07:52 15:15-16:13/58	08:37 09:51-11:28/97 15:33-16:00/27
	21:59	21:18	20:13	19:05	17:06 08:42-09:24/42	16:38 12:51-13:51/60 09:14-09:27/13
11	05:42	06:24	07:13	08:01 17:08-17:37/29	07:54 15:15-16:14/59 09:57-10:09/12	08:38 09:51-11:28/97 15:34-16:00/26
	21:59	21:16	20:11	19:03	17:04 08:43-09:25/42	16:38 12:51-13:51/60 09:15-09:26/11
12	05:43	06:26	07:14	08:02 17:05-17:37/32	07:55 15:15-16:15/60 09:54-10:13/19	08:39 09:52-11:29/97 15:35-16:00/25
	21:58	21:14	20:09	19:01	17:03 08:44-09:26/42	16:38 12:52-13:52/60 09:17-09:25/8
13	05:44	06:27	07:16	08:04 17:04-17:39/35	07:57 10:47-10:54/7 08:45-09:26/41	08:40 09:52-11:29/97 15:36-16:00/24
	21:57	21:12	20:06	18:59	17:01 15:15-16:16/61 09:53-10:16/23	16:38 12:52-13:52/60 09:19-09:25/6
14	05:45	06:29	07:17	08:06 17:03-17:40/37	07:59 10:42-11:00/18 15:15-16:16/61 09:51-10:18/27	08:41 09:53-11:30/97 15:36-16:01/25
	21:56	21:10	20:04	18:57	17:00 13:12-13:16/4 08:46-09:27/41	16:38 12:53-13:53/60
15	05:47	06:30	07:19	08:07 17:02-17:41/39	08:01 10:40-11:03/23 15:15-16:17/62 09:50-10:20/30	08:42 09:53-11:30/97 15:37-16:01/24
	21:55	21:08	20:02	18:55	16:59 13:05-13:23/18 08:47-09:28/41	16:38 12:53-13:53/60
16	05:48	06:32	07:21	08:09 17:00-17:40/40	08:02 10:38-11:06/28 15:15-16:17/62 09:49-10:21/32	08:43 09:54-11:31/97 15:38-16:02/24
	21:54	21:07	19:59	18:52	16:57 13:02-13:27/25 08:48-09:28/40	16:38 12:54-13:54/60
17	05:49	06:34	07:22	08:11 16:59-17:41/42	08:04 10:36-11:07/31 15:15-16:16/61 09:48-10:22/34	08:44 09:54-11:31/97 15:38-16:01/23
	21:53	21:05	19:57	18:50	16:56 12:58-13:28/30 08:49-09:28/39	16:39 12:53-13:54/61
18	05:50	06:35	07:24	08:12 16:59-17:41/42	08:06 10:35-11:09/34 15:15-16:17/62 09:47-10:23/36	08:44 09:54-11:31/97 15:38-16:02/24
	21:52	21:03	19:55	18:48	16:55 12:57-13:31/34 08:51-09:29/38	16:39 12:54-13:55/61
19	05:51	06:37	07:25 08:29-08:34/5	08:14 16:58-17:42/44	08:07 10:34-11:11/37 15:16-16:17/61 09:47-10:24/37	08:45 09:55-11:32/97 15:39-16:03/24
	21:51	21:01	19:53	18:46 10:02-10:03/1	16:53 12:56-13:33/37 08:52-09:29/37	16:39 12:55-13:55/60
20	05:53	06:38	07:27 08:25-08:39/14	08:16 16:57-17:41/44	08:09 10:34-11:13/39 15:16-16:17/61 09:47-10:26/39	08:46 09:55-11:32/97 15:39-16:02/23
	21:50	20:59	19:50	18:44 09:54-10:09/15	16:52 12:55-13:34/39 08:55-09:29/34	16:39 12:55-13:55/60
21	05:54	06:40	07:28 08:22-08:40/18	08:17 16:57-17:41/44	08:10 10:33-11:14/41 15:17-16:17/60 09:47-10:27/40	08:46 09:56-11:33/97 15:40-16:03/23
	21:49	20:56	19:48	18:42 09:51-10:12/21	16:51 12:54-13:36/42 08:57-09:30/33	16:40 12:55-13:56/61
22	05:55	06:41	07:30 08:21-08:42/21	08:19 16:57-17:41/44	08:12 10:32-11:15/43 15:17-16:16/59 09:46-10:27/41	08:47 09:56-11:33/97 15:40-16:03/23
	21:48	20:54	19:46	18:40 09:49-10:15/26	16:50 12:52-13:37/45 08:57-09:29/32	16:40 12:55-13:56/61
23	05:56	06:43	07:32 08:18-08:42/24	08:21 16:57-17:41/44	08:14 10:32-11:16/44 15:18-16:16/58 09:46-10:28/42	08:47 09:57-11:34/97 15:41-16:04/23
	21:46	20:52	19:43	18:38 09:47-10:17/30	16:49 12:52-13:38/46 08:58-09:30/32	16:41 12:57-13:57/60
24	05:58	06:45	07:33 08:18-08:43/25	08:22 16:57-17:41/44	08:15 10:32-11:17/45 15:18-16:16/58 09:46-10:29/43	08:48 09:57-11:34/97 15:41-16:05/24
	21:45	20:50	19:41	18:36 09:46-10:18/32	16:48 12:52-13:39/47 08:59-09:30/31	16:41 12:57-13:57/60
25	05:59	06:46	07:35 08:16-08:43/27	07:24 15:56-16:40/44	08:17 10:31-11:18/47 15:18-16:15/57 09:46-10:29/43	08:48 09:57-11:34/97 15:41-16:05/24
	21:44	20:48	19:39	17:34 08:45-09:20/35	16:47 12:50-13:40/50 09:00-09:30/30	16:42 12:57-13:58/61
26	06:01	06:48	07:36 08:16-08:44/28	07:26 15:57-16:40/43	08:18 09:46-11:19/93 15:20-16:14/54	08:48 09:59-11:36/97 15:43-16:06/23
	21:42	20:46	19:37	17:32 08:43-09:20/37	16:46 12:50-13:41/51 09:00-09:30/30	16:43 12:58-13:59/61
27	06:02	06:49	07:38 08:15-08:44/29	07:28 15:57-16:39/42	08:20 09:47-11:20/93 15:21-16:13/52	08:49 09:59-11:36/97 15:43-16:06/23
	21:41	20:44	19:34	17:30 08:43-09:21/38	16:45 12:50-13:42/52 09:01-09:30/29	16:44 12:58-13:59/61
28	06:03	06:51	07:40 08:14-08:43/29	07:29 15:58-16:39/41	08:21 09:46-11:20/94 15:21-16:12/51	08:49 09:59-11:36/97 15:43-16:07/24
	21:39	20:42	19:32	17:28 08:42-09:22/40	16:44 12:50-13:42/52 09:01-09:29/28	16:44 12:59-13:59/60
29	06:05	06:52	07:41 08:15-08:43/28	07:31 15:58-16:38/40	08:23 09:47-11:21/94 15:22-16:11/49	08:49 10:00-11:37/97 15:43-16:07/24
	21:38	20:40	19:30	17:26 08:42-09:22/40	16:44 12:50-13:44/54 09:02-09:30/28	16:45 12:59-14:00/61
30	06:06	06:54	07:43 08:14-08:42/28	07:33 15:59-16:38/39	08:24 09:47-11:21/94 15:22-16:10/48	08:49 10:00-11:37/97 15:44-16:08/24
	21:36	20:37	19:28	17:25 08:41-09:23/42	16:43 12:49-13:44/55 09:03-09:30/27	16:46 13:00-14:00/60 09:27-09:32/5
31	06:08	06:55		07:35 16:00-16:37/37 08:41-09:24/43		08:49 10:00-11:37/97 15:44-16:09/25
	21:35	20:35		17:23 15:33-15:38/5		16:47 13:00-14:00/60 09:26-09:34/8
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	0	0	276	1450	4956	5913

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 5 - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (360)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 13:38-15:37/119 10:29-11:22/53	08:24 14:18-15:22/64	07:32	07:23	06:20	05:37
	16:48 09:32-09:41/9	17:35 08:49-10:03/74	18:25	20:17	21:06	21:50
2	08:49 13:38-15:37/119 10:29-11:21/52	08:22 14:19-15:23/64	07:30	07:21	06:18	05:36
	16:49 09:31-09:43/12	17:36 08:50-10:03/73	18:26	20:18	21:08	21:51
3	08:49 13:39-15:37/118 10:30-11:22/52	08:21 14:19-15:22/63	07:28	07:19	06:16	05:35
	16:50 09:30-09:43/13	17:38 08:49-10:03/74	18:28	20:20	21:09	21:52
4	08:49 13:40-15:38/118 10:31-11:23/52	08:19 14:20-15:21/61	07:26	07:16	06:15	05:34
	16:51 09:30-09:45/15	17:40 08:49-10:02/73	18:30	20:22	21:11	21:53
5	08:49 13:40-15:37/117 10:30-11:22/52	08:18 14:21-15:22/61	07:23	07:14	06:13	05:34
	16:53 09:30-09:47/17	17:42 08:49-10:01/72	18:32	20:23	21:12	21:54
6	08:48 13:41-15:38/117 10:31-11:23/52	08:16 14:22-15:21/59	07:21	07:12	06:11	05:33
	16:54 09:22-09:48/26	17:44 08:49-10:00/71	18:33	20:25	21:14	21:55
7	08:48 13:42-15:39/117 10:32-11:24/52	08:14 14:23-15:20/57 08:44-08:48/4	07:19	07:10	06:09	05:32
	16:55 09:21-09:50/29	17:45 08:49-09:58/69	18:35	20:27	21:16	21:56
8	08:48 13:43-15:38/115 10:32-11:24/52	08:13 14:24-15:19/55 08:40-09:13/33	07:17 07:40-07:46/6	07:08	06:08	05:32
	16:56 09:20-09:50/30	17:47 09:14-09:56/42	18:37	20:28	21:17	21:57
9	08:47 13:44-15:38/114 10:33-11:24/51	08:11 14:26-15:19/53 08:39-09:13/34	07:15 07:37-07:47/10	07:05	06:06	05:31
	16:58 09:19-09:51/32	17:49 09:38-09:55/17 09:16-09:37/21	18:38	20:30	21:19	21:58
10	08:47 13:45-15:38/113 10:34-11:25/51	08:09 14:27-15:18/51 08:37-09:12/35	07:13 07:35-07:49/14	07:03	06:04	05:31
	16:59 09:19-09:53/34	17:51 09:42-09:51/9 09:18-09:35/17	18:40	20:32	21:20	21:59
11	08:46 13:46-15:38/112 10:34-11:24/50	08:07 14:29-15:16/47 09:20-09:33/13	07:10 07:33-07:50/17	07:01	06:03	05:31
	17:00 09:18-09:54/36	17:53 08:35-09:11/36	18:42	20:33	21:22	21:59
12	08:46 13:47-15:37/110 10:34-11:24/50	08:06 14:30-15:15/45	07:08 07:31-07:50/19	06:59	06:01	05:30
	17:02 09:17-09:54/37	17:54 08:34-09:10/36	18:44	20:35	21:23	22:00
13	08:45 13:48-15:37/109 10:35-11:24/49	08:04 14:32-15:13/41	07:06 07:28-07:50/22	06:57	05:59	05:30
	17:03 09:17-09:55/38	17:56 08:33-09:08/35	18:45	20:37	21:25	22:01
14	08:44 13:50-15:36/106 10:36-11:25/49	08:02 14:35-15:11/36	07:04 07:28-07:50/22	06:55	05:58	05:30
	17:05 09:17-09:57/40	17:58 08:33-09:05/32	18:47	20:38	21:26	22:01
15	08:43 13:52-15:36/104 10:37-11:25/48	08:00 14:38-15:09/31	07:01 07:28-07:50/22	06:52	05:56	05:30
	17:06 09:17-09:58/41	18:00 08:32-09:01/29	18:49	20:40	21:28	22:02
16	08:43 13:54-15:20/86 10:38-11:25/47	07:58 14:42-15:06/24	06:59 07:29-07:49/20	06:50	05:55	05:30
	17:08 09:16-09:59/43 15:24-15:34/10	18:02 08:32-09:01/29	18:50	20:42	21:29	22:02
17	08:42 13:56-15:20/84 10:38-11:25/47	07:56 14:47-15:01/14	06:57 07:28-07:48/20	06:48	05:54	05:30
	17:09 09:14-09:59/45 15:28-15:31/3	18:03 08:32-09:01/29	18:52	20:43	21:31	22:03
18	08:41 13:59-15:20/81 10:39-11:25/46	07:54 08:31-09:01/30	06:55 07:29-07:47/18	06:46	05:52	05:30
	17:11 09:13-10:00/47	18:05	18:54	20:45	21:32	22:03
19	08:40 14:02-15:20/78 10:39-11:24/45	07:52 08:32-09:01/29	06:52 07:30-07:45/15	06:44	05:51	05:30
	17:12 09:12-10:00/48	18:07	18:55	20:46	21:34	22:03
20	08:39 14:13-15:21/68 10:40-11:23/43	07:50 08:32-09:01/29	06:50 07:32-07:43/11	06:42	05:49	05:30
	17:14 09:11-10:01/50	18:09	18:57	20:48	21:35	22:04
21	08:38 14:13-15:21/68 10:41-11:23/42	07:48 08:32-09:00/28	06:48	06:40	05:48	05:30
	17:16 09:11-10:02/51	18:11	18:59	20:50	21:36	22:04
22	08:37 14:14-15:22/68 10:43-11:23/40	07:46 08:33-08:59/26	06:46	06:38	05:47	05:30
	17:17 09:10-10:02/52	18:12	19:00	20:51	21:38	22:04
23	08:36 14:14-15:22/68 10:44-11:22/38	07:44 08:33-08:59/26	06:43	06:36	05:46	05:30
	17:19 09:10-10:03/53	18:14	19:02	20:53	21:39	22:04
24	08:34 14:14-15:22/68 10:45-11:21/36	07:42 08:35-08:57/22	06:41	06:34	05:44	05:31
	17:21 09:09-10:03/54	18:16	19:04	20:55	21:41	22:04
25	08:33 14:15-15:23/68 10:47-11:20/33	07:40 08:36-08:56/20	06:39	06:32	05:43	05:31
	17:22 09:09-10:04/55	18:18	19:05	20:56	21:42	22:05
26	08:32 14:15-15:22/67 10:48-11:18/30	07:38 08:38-08:54/16	06:37	06:30	05:42	05:31
	17:24 09:10-10:04/54	18:19	19:07	20:58	21:43	22:05
27	08:31 14:15-15:23/68 10:50-11:17/27	07:36 08:40-08:50/10	06:34	06:28	05:41	05:32
	17:26 09:09-10:04/55 08:57-09:04/7	18:21	19:09	21:00	21:44	22:05
28	08:29 14:16-15:23/67 10:52-11:15/23	07:34	06:32	06:26	05:40	05:32
	17:28 09:09-10:04/55 08:56-09:07/11	18:23	19:10	21:01	21:46	22:04
29	08:28 14:16-15:23/67 10:55-11:12/17		07:30	06:24	05:39	05:33
	17:29 09:09-10:04/55 08:54-09:08/14		20:12	21:03	21:47	22:04
30	08:27 14:17-15:23/66 11:01-11:08/7		07:28	06:22	05:38	05:33
	17:31 08:53-10:04/71		20:14	21:04	21:48	22:04
31	08:25 14:17-15:23/66		07:25		05:37	
	17:33 08:51-10:04/73		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	5447	2019	216	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 5 - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (360)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34	06:09	06:57	07:44 08:09-08:29/20	07:36 13:56-14:47/51 08:07-08:42/35	08:26 13:28-15:20/112 10:16-11:07/51
	22:04	21:33	20:33	19:25	17:21 09:10-09:22/12 08:47-09:05/18	16:42 09:00-09:36/36
2	05:35	06:11	06:59	07:46 08:11-08:29/18	07:38 13:54-14:48/54 08:08-08:42/34	08:27 13:27-15:20/113 10:16-11:07/51
	22:04	21:32	20:31	19:23	17:19 08:44-09:24/40	16:42 09:02-09:35/33
3	05:35	06:12	07:00	07:48 08:12-08:27/15	07:40 13:53-14:49/56 08:10-08:42/32	08:28 13:28-15:22/114 10:17-11:08/51
	22:03	21:30	20:29	19:21	17:17 08:43-09:26/43	16:41 09:03-09:35/32
4	05:36	06:14	07:02	07:49 08:14-08:26/12	07:42 13:52-14:50/58	08:30 13:27-15:22/115 10:17-11:08/51
	22:03	21:28	20:26	19:19	17:16 08:19-09:28/69	16:40 09:04-09:34/30
5	05:37	06:15	07:03	07:51 08:16-08:24/8	07:43 13:52-14:51/59	08:31 13:28-15:24/116 10:17-11:09/52
	22:02	21:27	20:24	19:16	17:14 08:19-09:30/71	16:40 09:06-09:35/29
6	05:38	06:17	07:05	07:52 08:17-08:19/2	07:45 13:51-14:51/60	08:32 13:27-15:24/117 10:17-11:09/52
	22:02	21:25	20:22	19:14	17:12 08:19-09:31/72	16:40 09:08-09:34/26
7	05:38	06:18	07:06	07:54	07:47 13:50-14:52/62	08:34 13:27-15:25/118 10:17-11:09/52
	22:01	21:23	20:20	19:12	17:11 08:19-09:32/73	16:39 09:16-09:33/17
8	05:39	06:20	07:08	07:56	07:48 13:50-14:53/63	08:35 13:27-15:25/118 10:18-11:10/52
	22:01	21:21	20:18	19:10	17:09 08:20-09:33/73	16:39 09:18-09:33/15
9	05:40	06:21	07:10	07:57	07:50 13:50-14:54/64	08:36 13:28-15:26/118 10:19-11:11/52
	22:00	21:20	20:15	19:08	17:07 08:20-09:34/74	16:39 09:19-09:33/14
10	05:41	06:23	07:11	07:59	07:52 13:48-14:53/65	08:37 13:28-15:27/119 10:19-11:11/52
	21:59	21:18	20:13	19:05	17:06 08:21-09:34/73	16:38 09:20-09:32/12
11	05:42	06:24	07:13	08:01	07:54 13:48-14:54/66	08:38 13:28-15:27/119 10:19-11:12/53
	21:59	21:16	20:11	19:03	17:04 08:22-09:35/73	16:38 09:22-09:31/9
12	05:43	06:26	07:14	08:02	07:55 13:48-14:54/66 10:31-10:39/8	08:39 13:28-15:28/120 10:20-11:12/52
	21:58	21:14	20:08	19:01	17:03 08:24-09:35/71	16:38 09:24-09:29/5
13	05:44	06:27	07:16	08:04	07:57 13:48-14:55/67 10:27-10:44/17	08:40 13:28-15:28/120
	21:57	21:12	20:06	18:59	17:01 08:41-09:36/55 08:26-08:40/14	16:38 10:20-11:13/53
14	05:45	06:29	07:17	08:06 09:17-09:19/2	07:59 13:48-14:55/67 10:24-10:47/23	08:41 13:29-15:29/120
	21:56	21:10	20:04	18:57	17:00 08:41-09:36/55 08:28-08:39/11	16:38 10:21-11:13/52
15	05:47	06:30	07:19	08:07 09:11-09:24/13	08:00 13:48-14:56/68 10:23-10:50/27	08:42 13:29-15:30/121
	21:55	21:08	20:02	18:55	16:59 08:42-09:37/55 08:30-08:37/7	16:38 10:21-11:14/53
16	05:48	06:32	07:21	08:09 09:08-09:26/18	08:02 13:48-14:56/68 10:21-10:52/31	08:43 13:29-15:30/121
	21:54	21:06	19:59	18:52	16:57 08:43-09:37/54	16:38 10:22-11:14/52
17	05:49	06:34	07:22	08:11 09:07-09:28/21	08:04 13:48-14:56/68 10:19-10:53/34	08:44 13:29-15:30/121
	21:53	21:05	19:57	18:50	16:56 08:42-09:37/55	16:39 10:21-11:14/53
18	05:50	06:35	07:24	08:12 09:05-09:29/24	08:06 13:48-14:56/68 10:19-10:55/36	08:44 13:30-15:31/121
	21:52	21:03	19:55	18:48	16:55 08:43-09:37/54	16:39 10:22-11:15/53
19	05:51	06:37	07:25	08:14 09:05-09:30/25	08:07 13:48-14:56/68 10:18-10:56/38	08:45 13:30-15:32/122
	21:51	21:01	19:53	18:46	16:53 08:44-09:37/53	16:39 10:23-11:16/53
20	05:53	06:38	07:27	08:16 09:03-09:30/27	08:09 13:49-14:57/68 10:18-10:58/40	08:46 13:30-15:32/122
	21:50	20:58	19:50	18:44	16:52 08:45-09:37/52	16:39 10:23-11:16/53
21	05:54	06:40	07:28	08:17 09:02-09:31/29	08:10 13:49-14:57/68 10:18-10:59/41	08:46 13:31-15:33/122
	21:49	20:56	19:48	18:42	16:51 08:47-09:38/51	16:40 10:24-11:16/52
22	05:55	06:41	07:30	08:19 09:02-09:31/29	08:12 13:49-14:57/68 10:16-10:59/43	08:47 13:31-15:33/122
	21:48	20:54	19:46	18:40	16:50 08:47-09:37/50	16:40 10:24-11:16/52
23	05:56	06:43	07:32 08:17-08:26/9	08:21 09:02-09:31/29	08:14 13:39-14:57/78 10:16-11:01/45	08:47 13:32-15:34/122
	21:46	20:52	19:43	18:38	16:49 08:49-09:37/48	16:41 10:25-11:17/52
24	05:58	06:44	07:33 08:14-08:28/14	08:22 09:02-09:32/30	08:15 13:36-14:58/82 10:16-11:02/46	08:48 13:32-15:34/122
	21:45	20:50	19:41	18:36	16:48 08:50-09:37/47	16:41 10:25-11:18/53
25	05:59	06:46	07:35 08:12-08:29/17	07:24 14:15-14:32/17	08:17 13:33-14:57/84 10:16-11:02/46	08:48 13:33-15:34/121
	21:44	20:48	19:39	17:34 08:02-08:32/30	16:47 08:51-09:37/46 15:06-15:07/1	16:42 10:25-11:18/53
26	06:01	06:48	07:36 08:11-08:30/19	07:26 14:10-14:36/26	08:18 13:32-14:58/86 10:16-11:03/47	08:48 13:34-15:35/121
	21:42	20:46	19:37	17:32 08:01-08:31/30	16:46 08:54-09:37/43 15:02-15:12/10	16:43 10:26-11:19/53
27	06:02	06:49	07:38 08:10-08:31/21	07:28 14:06-14:39/33	08:20 13:31-15:15/104 10:16-11:04/48	08:49 13:34-15:35/121
	21:41	20:44	19:34	17:30 08:02-08:30/28	16:45 08:56-09:37/41	16:43 10:27-11:19/52
28	06:03	06:51	07:39 08:09-08:30/21	07:29 14:04-14:41/37	08:21 13:30-15:16/106 10:16-11:04/48	08:49 13:35-15:36/121
	21:39	20:42	19:32	17:28 08:02-08:35/33	16:44 08:57-09:36/39	16:44 10:27-11:20/53
29	06:05	06:52	07:41 08:09-08:30/21	07:31 14:01-14:43/42	08:23 13:29-15:18/109 10:16-11:05/49	08:49 13:35-15:36/121
	21:38	20:40	19:30	17:26 08:03-08:38/35	16:44 08:58-09:36/38	16:45 10:27-11:20/53
30	06:06	06:54	07:43 08:08-08:29/21	07:33 14:00-14:45/45 08:53-08:59/6	08:24 13:28-15:18/110 10:16-11:05/49	08:49 13:36-15:36/120
	21:36	20:37	19:28	17:25 08:04-08:40/36	16:43 09:00-09:36/36	16:46 10:28-11:20/52
31	06:08	06:55		07:35 13:58-14:46/48 08:49-09:03/14		08:49 13:37-15:37/120 10:28-11:21/53
	21:35	20:35		17:23 08:05-08:41/36		16:47 09:34-09:37/3
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	0	0	143	818	4655	5582

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 6 - ENERCON E-175 EP5 6000 175.0 !O! hub: 162,0 m (TOT: 249,5 m) (362)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April		May		June
1	08:49	08:24	07:32		07:23	19:26-19:43/17	06:20	19:53-20:14/21	05:37
	16:48	17:35	18:25		20:17		21:06		21:50
2	08:49	08:22	07:30		07:21	19:28-19:42/14	06:18	19:54-20:12/18	05:36
	16:49	17:37	18:27		20:19		21:08		21:51
3	08:49	08:21	07:28		07:19	19:30-19:40/10	06:17	19:56-20:11/15	05:35
	16:50	17:38	18:28		20:20		21:09		21:53
4	08:49	08:19	07:26		07:17		06:15	19:58-20:08/10	05:34
	16:52	17:40	18:30		20:22		21:11		21:54
5	08:49	08:18	07:24		07:14		06:13		05:34
	16:53	17:42	18:32		20:24		21:13		21:54
6	08:49	08:16	07:21		07:12		06:11		05:33
	16:54	17:44	18:34		20:25		21:14		21:55
7	08:48	08:14	07:19		07:10		06:10		05:33
	16:55	17:46	18:35		20:27		21:16		21:56
8	08:48	08:13	07:17	18:07-18:12/5	07:08		06:08		05:32
	16:56	17:47	18:37		20:29		21:17		21:57
9	08:47	08:11	07:15	18:04-18:13/9	07:06		06:06		05:32
	16:58	17:49	18:39		20:30		21:19		21:58
10	08:47	08:09	07:13	18:02-18:15/13	07:03		06:04		05:31
	16:59	17:51	18:40		20:32		21:20		21:59
11	08:46	08:08	07:11	18:01-18:17/16	07:01		06:03		05:31
	17:01	17:53	18:42		20:34		21:22		21:59
12	08:46	08:06	07:08	18:00-18:19/19	06:59		06:01		05:31
	17:02	17:55	18:44		20:35		21:24		22:00
13	08:45	08:04	07:06	17:59-18:20/21	06:57	20:03-20:10/7	06:00		05:30
	17:03	17:56	18:45		20:37		21:25		22:01
14	08:44	08:02	07:04	17:59-18:22/23	06:55	19:59-20:12/13	05:58		05:30
	17:05	17:58	18:47		20:38		21:27		22:01
15	08:44	08:00	07:02	17:59-18:24/25	06:53	19:57-20:14/17	05:57		05:30
	17:06	18:00	18:49		20:40		21:28		22:02
16	08:43	07:58	06:59	17:59-18:26/27	06:50	19:55-20:15/20	05:55		05:30
	17:08	18:02	18:50		20:42		21:30		22:02
17	08:42	07:56	06:57	17:59-18:27/28	06:48	19:54-20:17/23	05:54		05:30
	17:09	18:04	18:52		20:43		21:31		22:03
18	08:41	07:55	06:55	17:59-18:29/30	06:46	19:52-20:18/26	05:52		05:30
	17:11	18:05	18:54		20:45		21:32		22:03
19	08:40	07:53	06:53	18:01-18:31/30	06:44	19:52-20:19/27	05:51		05:30
	17:13	18:07	18:56		20:47		21:34		22:04
20	08:39	07:51	06:50	18:02-18:33/31	06:42	19:51-20:19/28	05:50		05:30
	17:14	18:09	18:57		20:48		21:35		22:04
21	08:38	07:49	06:48	18:04-18:33/29	06:40	19:50-20:19/29	05:48		05:30
	17:16	18:11	18:59		20:50		21:37		22:04
22	08:37	07:47	06:46	18:15-18:35/20	06:38	19:50-20:19/29	05:47		05:30
	17:18	18:13	19:01		20:52		21:38		22:04
23	08:36	07:45	06:44	18:17-18:37/20	06:36	19:50-20:19/29	05:46		05:30
	17:19	18:14	19:02		20:53		21:39		22:05
24	08:35	07:43	06:41	18:17-18:38/21	06:34	19:49-20:19/30	05:45		05:31
	17:21	18:16	19:04		20:55		21:41		22:05
25	08:33	07:41	06:39	18:19-18:40/21	06:32	19:49-20:19/30	05:43		05:31
	17:23	18:18	19:05		20:56		21:42		22:05
26	08:32	07:38	06:37	18:23-18:42/19	06:30	19:49-20:18/29	05:42		05:31
	17:24	18:20	19:07		20:58		21:43		22:05
27	08:31	07:36	06:35	18:26-18:44/18	06:28	19:49-20:17/28	05:41		05:32
	17:26	18:21	19:09		21:00		21:45		22:05
28	08:30	07:34	06:32	18:26-18:45/19	06:26	19:51-20:17/26	05:40		05:32
	17:28	18:23	19:10		21:01		21:46		22:05
29	08:28		07:30	19:26-19:46/20	06:24	19:51-20:16/25	05:39		05:33
	17:30		20:12		21:03		21:47		22:04
30	08:27		07:28	19:26-19:46/20	06:22	19:52-20:15/23	05:38		05:33
	17:31		20:14		21:05		21:48		22:04
31	08:25		07:26	19:27-19:45/18			05:37		
	17:33		20:15				21:49		
Potential sun hours	262	279	367		414		482		494
Sum of minutes with flicker	0	0	502		480		64		0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 6 - ENERCON E-175 EP5 6000 175.0 !O! hub: 162,0 m (TOT: 249,5 m) (362)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August		September		October		November	December
1	05:34	06:09		06:57		07:44	18:39-18:58/19	07:36	08:26
	22:04	21:34		20:33		19:25		17:21	16:42
2	05:35	06:11		06:59		07:46	18:40-18:57/17	07:38	08:27
	22:04	21:32		20:31		19:23		17:19	16:42
3	05:35	06:12		07:00		07:48	18:40-18:54/14	07:40	08:29
	22:03	21:30		20:29		19:21		17:18	16:41
4	05:36	06:14		07:02		07:49	18:41-18:52/11	07:42	08:30
	22:03	21:29		20:27		19:19		17:16	16:41
5	05:37	06:15		07:03		07:51	18:43-18:50/7	07:43	08:31
	22:03	21:27		20:24		19:17		17:14	16:40
6	05:38	06:17		07:05		07:53	18:45-18:47/2	07:45	08:33
	22:02	21:25		20:22		19:14		17:12	16:40
7	05:39	06:18		07:07		07:54		07:47	08:34
	22:02	21:23		20:20		19:12		17:11	16:39
8	05:39	06:20	20:11-20:13/2	07:08		07:56		07:49	08:35
	22:01	21:22		20:18		19:10		17:09	16:39
9	05:40	06:21	20:07-20:18/11	07:10	19:24-19:34/10	07:57		07:50	08:36
	22:00	21:20		20:15		19:08		17:08	16:39
10	05:41	06:23	20:04-20:20/16	07:11	19:21-19:35/14	07:59		07:52	08:37
	22:00	21:18		20:13		19:05		17:06	16:39
11	05:42	06:24	20:03-20:22/19	07:13	19:20-19:36/16	08:01		07:54	08:38
	21:59	21:16		20:11		19:03		17:05	16:38
12	05:43	06:26	20:01-20:23/22	07:14	19:18-19:36/18	08:02		07:56	08:39
	21:58	21:14		20:09		19:01		17:03	16:38
13	05:44	06:27	19:59-20:23/24	07:16	19:17-19:37/20	08:04		07:57	08:40
	21:57	21:12		20:06		18:59		17:02	16:38
14	05:46	06:29	19:59-20:24/25	07:18	19:16-19:37/21	08:06		07:59	08:41
	21:56	21:11		20:04		18:57		17:00	16:38
15	05:47	06:31	19:57-20:24/27	07:19	19:16-19:35/19	08:07		08:01	08:42
	21:55	21:09		20:02		18:55		16:59	16:38
16	05:48	06:32	19:57-20:25/28	07:21	19:15-19:33/18	08:09		08:02	08:43
	21:54	21:07		20:00		18:53		16:57	16:39
17	05:49	06:34	19:56-20:25/29	07:22	19:13-19:31/18	08:11		08:04	08:44
	21:53	21:05		19:57		18:51		16:56	16:39
18	05:50	06:35	19:56-20:25/29	07:24	19:07-19:28/21	08:12		08:06	08:44
	21:52	21:03		19:55		18:48		16:55	16:39
19	05:51	06:37	19:55-20:25/30	07:25	19:05-19:26/21	08:14		08:07	08:45
	21:51	21:01		19:53		18:46		16:54	16:39
20	05:53	06:38	19:55-20:25/30	07:27	19:04-19:24/20	08:16		08:09	08:46
	21:50	20:59		19:50		18:44		16:52	16:40
21	05:54	06:40	19:55-20:24/29	07:29	19:02-19:21/19	08:18		08:11	08:46
	21:49	20:57		19:48		18:42		16:51	16:40
22	05:55	06:42	19:55-20:24/29	07:30	18:58-19:20/22	08:19		08:12	08:47
	21:48	20:55		19:46	18:51-18:57/6	18:40		16:50	16:40
23	05:57	06:43	19:55-20:23/28	07:32	18:47-19:17/30	08:21		08:14	08:47
	21:46	20:53		19:44		18:38		16:49	16:41
24	05:58	06:45	19:55-20:23/28	07:33	18:45-19:15/30	08:23		08:15	08:48
	21:45	20:50		19:41		18:36		16:48	16:42
25	05:59	06:46	19:55-20:21/26	07:35	18:42-19:12/30	07:24		08:17	08:48
	21:44	20:48		19:39		17:34		16:47	16:42
26	06:01	06:48	19:57-20:19/22	07:36	18:42-19:10/28	07:26		08:19	08:49
	21:42	20:46		19:37		17:32		16:46	16:43
27	06:02	06:49	19:57-20:17/20	07:38	18:41-19:08/27	07:28		08:20	08:49
	21:41	20:44		19:35		17:30		16:45	16:44
28	06:03	06:51	19:59-20:15/16	07:40	18:40-19:05/25	07:30		08:22	08:49
	21:40	20:42		19:32		17:29		16:44	16:44
29	06:05	06:53	20:00-20:13/13	07:41	18:40-19:03/23	07:31		08:23	08:49
	21:38	20:40		19:30		17:27		16:44	16:45
30	06:06	06:54	20:04-20:10/6	07:43	18:39-19:00/21	07:33		08:25	08:49
	21:37	20:38		19:28		17:25		16:43	16:46
31	06:08	06:56				07:35			08:49
	21:35	20:35				17:23			16:47
Potential sun hours	498	451		380		333		269	248
Sum of minutes with flicker	0	509		477		70		0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 7 - SENVION 3.4M104 3400 104.0 !O! hub: 100,0 m (TOT: 152,0 m) (91)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June		July		August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	05:36		05:34	21:31-21:32/1	06:09	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06	21:50		22:04		21:33	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	05:36		05:34		06:11	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:19	21:08	21:51		22:04		21:32	20:31	19:23	17:19	16:41
3	08:49	08:21	07:28	07:19	06:16	05:35		05:35		06:12	07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20	21:09	21:53		22:03		21:30	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:17	06:15	05:34		05:36		06:14	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11	21:54		22:03		21:29	20:27	19:19	17:16	16:40
5	08:49	08:18	07:24	07:14	06:13	05:34		05:37		06:15	07:03	07:51	07:43	08:31
	16:53	17:42	18:32	20:24	21:13	21:54		22:03		21:27	20:24	19:16	17:14	16:40
6	08:49	08:16	07:21	07:12	06:11	05:33		05:37		06:17	07:05	07:52	07:45	08:33
	16:54	17:44	18:33	20:25	21:14	21:55		22:02		21:25	20:22	19:14	17:12	16:39
7	08:48	08:14	07:19	07:10	06:09	05:32		05:38		06:18	07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16	21:56		22:02		21:23	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08	05:32		05:39		06:20	07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28	21:17	21:57		22:01		21:22	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	06:06	05:31		05:40		06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:39	20:30	21:19	21:58		22:00		21:20	20:15	19:08	17:07	16:39
10	08:47	08:09	07:13	07:03	06:04	05:31		05:41		06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20	21:59		22:00		21:18	20:13	19:05	17:06	16:38
11	08:46	08:08	07:10	07:01	06:03	05:31		05:42		06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22	21:59		21:59		21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01	05:30	21:26-21:27/1	05:43		06:26	07:14	08:02	07:56	08:39
	17:02	17:54	18:44	20:35	21:24	22:00		21:58		21:14	20:09	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	05:59	05:30	21:27-21:28/1	05:44		06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25	22:01		21:57		21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58	05:30	21:27-21:29/2	05:45		06:29	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:27	22:01		21:56		21:11	20:04	18:57	17:00	16:38
15	08:44	08:00	07:02	06:52	05:56	05:30	21:27-21:29/2	05:46		06:30	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	21:28	22:02		21:55		21:09	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55	05:30	21:27-21:30/3	05:48		06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:30	22:02		21:54		21:07	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	05:53	05:29	21:27-21:30/3	05:49		06:34	07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43	21:31	22:03		21:53		21:05	19:57	18:50	16:56	16:38
18	08:41	07:54	06:55	06:46	05:52	05:29	21:27-21:31/4	05:50		06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32	22:03		21:52		21:03	19:55	18:48	16:55	16:39
19	08:40	07:53	06:53	06:44	05:51	05:30	21:27-21:31/4	05:51		06:37	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:47	21:34	22:04		21:51		21:01	19:53	18:46	16:53	16:39
20	08:39	07:51	06:50	06:42	05:49	05:30	21:28-21:31/3	05:52		06:38	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	21:35	22:04		21:50		20:59	19:50	18:44	16:52	16:39
21	08:38	07:49	06:48	06:40	05:48	05:30	21:28-21:31/3	05:54		06:40	07:28	08:17	08:11	08:46
	17:16	18:11	18:59	20:50	21:37	22:04		21:49		20:57	19:48	18:42	16:51	16:40
22	08:37	07:47	06:46	06:38	05:47	05:30	21:29-21:32/3	05:55		06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38	22:04		21:48		20:55	19:46	18:40	16:50	16:40
23	08:36	07:45	06:44	06:36	05:46	05:30	21:29-21:32/3	05:56		06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39	22:05		21:46		20:52	19:43	18:38	16:49	16:41
24	08:35	07:43	06:41	06:34	05:44	05:30	21:28-21:32/4	05:58		06:44	07:33	08:23	08:15	08:48
	17:21	18:16	19:04	20:55	21:41	22:05		21:45		20:50	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	05:43	05:31	21:29-21:32/3	05:59		06:46	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	21:42	22:05		21:44		20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42	05:31	21:29-21:32/3	06:00		06:48	07:36	07:26	08:19	08:49
	17:24	18:19	19:07	20:58	21:43	22:05		21:42		20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	05:41	05:32	21:29-21:31/2	06:02		06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:45	22:05		21:41		20:44	19:34	17:30	16:45	16:43
28	08:30	07:34	06:32	06:26	05:40	05:32	21:30-21:32/2	06:03		06:51	07:40	07:29	08:22	08:49
	17:28	18:23	19:10	21:01	21:46	22:05		21:40		20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39	05:33	21:30-21:31/1	06:05		06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47	22:04		21:38		20:40	19:30	17:26	16:44	16:45
30	08:27		07:28	06:22	05:38	05:33	21:30-21:32/2	06:06		06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:05	21:48	22:04		21:37		20:38	19:28	17:25	16:43	16:46
31	08:25		07:25		05:37			06:08		06:55		07:35		08:49
	17:33		20:15		21:49			21:35		20:35		17:23		16:47
Potential sun hours	262	279	367	414	482	494		498		451	380	333	269	248
Sum of minutes with flicker	0	0	0	0	0	49		1		0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 8 - SENVION MM92 2050 92.5 !O! hub: 100,0 m (TOT: 146,3 m) (122)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:49	08:24	07:32	07:23	06:20	05:37	05:34	06:09	06:57	07:44	07:36	08:26	
	16:48	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42	
2	08:49	08:22	07:30	07:21	06:18	05:36	05:35	06:11	06:59	07:46	07:38	08:27	
	16:49	17:37	18:27	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:42	
3	08:49	08:21	07:28	07:19	06:17	05:35	05:35	06:12	07:00	07:48	07:40	08:29	
	16:51	17:38	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:18	16:41	
4	08:49	08:19	07:26	07:17	06:15	05:34	05:36	06:14	07:02	07:49	07:42	08:30	
	16:52	17:40	18:30	20:22	21:11	21:53	22:03	21:29	20:27	19:19	17:16	16:41	
5	08:49	08:18	07:24	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43	08:31	
	16:53	17:42	18:32	20:24	21:13	21:54	22:02	21:27	20:24	19:17	17:14	16:40	
6	08:49	08:16	07:21	07:12	06:11	05:33	05:38	06:17	07:05	07:53	07:45	08:32	
	16:54	17:44	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:40	
7	08:48	08:14	07:19	07:10	06:10	05:33	05:39	06:18	07:07	07:54	07:47	08:34	
	16:55	17:46	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11	16:39	
8	08:48	08:13	07:17	07:08	06:08	05:32	05:40	06:20	07:08	07:56	07:49	08:35	
	16:57	17:47	18:37	20:29	21:17	21:57	22:01	21:22	20:18	19:10	17:09	16:39	
9	08:47	08:11	07:15	07:06	06:06	05:32	05:40	06:21	07:10	07:57	07:50	08:36	
	16:58	17:49	18:39	20:30	21:19	21:58	22:00	21:20	20:15	19:08	17:08	16:39	
10	08:47	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52	08:37	
	16:59	17:51	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06	16:39	
11	08:46	08:08	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54	08:38	
	17:01	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:05	16:38	
12	08:46	08:06	07:08	06:59	06:01	05:31	05:43	06:26	07:14	08:02	07:56	08:39	
	17:02	17:55	18:44	20:35	21:23	22:00	21:58	21:14	20:09	19:01	17:03	16:38	
13	08:45	08:04	07:06	06:57	06:00	05:30	05:45	06:28	07:16	08:04	07:57	08:40	
	17:03	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:02	16:38	
14	08:44	08:02	07:04	06:55	05:58	05:30	05:46	06:29	07:18	08:06	07:59	08:41	
	17:05	17:58	18:47	20:38	21:27	22:01	21:56	21:11	20:04	18:57	17:00	16:38	
15	08:44	08:00	07:02	06:53	05:57	05:30	05:47	06:31	07:19	08:07	08:01	08:42	16:02-16:03/1
	17:06	18:00	18:49	20:40	21:28	22:02	21:55	21:09	20:02	18:55	16:59	16:38	
16	08:43	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02	08:43	16:02-16:05/3
	17:08	18:02	18:50	20:42	21:29	22:02	21:54	21:07	20:00	18:53	16:57	16:39	
17	08:42	07:56	06:57	06:48	05:54	05:30	05:49	06:34	07:22	08:11	08:04	08:44	16:01-16:04/3
	17:09	18:04	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:51	16:56	16:39	
18	08:41	07:55	06:55	06:46	05:52	05:30	05:50	06:35	07:24	08:12	08:06	08:44	16:01-16:05/4
	17:11	18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39	
19	08:40	07:53	06:53	06:44	05:51	05:30	05:52	06:37	07:25	08:14	08:07	08:45	16:02-16:05/3
	17:13	18:07	18:55	20:47	21:34	22:04	21:51	21:01	19:53	18:46	16:54	16:39	
20	08:39	07:51	06:50	06:42	05:50	05:30	05:53	06:38	07:27	08:16	08:09	08:46	16:02-16:05/3
	17:14	18:09	18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52	16:40	
21	08:38	07:49	06:48	06:40	05:48	05:30	05:54	06:40	07:29	08:17	08:11	08:46	16:03-16:06/3
	17:16	18:11	18:59	20:50	21:37	22:04	21:49	20:57	19:48	18:42	16:51	16:40	
22	08:37	07:47	06:46	06:38	05:47	05:30	05:55	06:42	07:30	08:19	08:12	08:47	16:03-16:06/3
	17:18	18:13	19:00	20:52	21:38	22:04	21:48	20:55	19:46	18:40	16:50	16:41	
23	08:36	07:45	06:44	06:36	05:46	05:30	05:57	06:43	07:32	08:21	08:14	08:47	16:04-16:07/3
	17:19	18:14	19:02	20:53	21:39	22:04	21:46	20:52	19:44	18:38	16:49	16:41	
24	08:35	07:43	06:41	06:34	05:45	05:31	05:58	06:45	07:33	08:23	08:15	08:48	16:04-16:07/3
	17:21	18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:42	
25	08:33	07:41	06:39	06:32	05:44	05:31	05:59	06:46	07:35	07:24	08:17	08:48	16:04-16:08/4
	17:23	18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42	
26	08:32	07:38	06:37	06:30	05:42	05:31	06:01	06:48	07:36	07:26	08:18	08:49	16:06-16:09/3
	17:24	18:20	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43	
27	08:31	07:36	06:35	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20	08:49	16:06-16:10/4
	17:26	18:21	19:09	21:00	21:44	22:05	21:41	20:44	19:35	17:30	16:45	16:44	
28	08:30	07:34	06:32	06:26	05:40	05:32	06:04	06:51	07:40	07:29	08:22	08:49	16:07-16:09/2
	17:28	18:23	19:10	21:01	21:46	22:05	21:40	20:42	19:32	17:29	16:45	16:44	
29	08:28		07:30	06:24	05:39	05:33	06:05	06:53	07:41	07:31	08:23	08:49	
	17:30		20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:27	16:44	16:45	
30	08:27		07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24	08:49	
	17:31		20:14	21:05	21:48	22:04	21:37	20:38	19:28	17:25	16:43	16:46	
31	08:25		07:26		05:38		06:08	06:56		07:35		08:49	
	17:33		20:15		21:49		21:35	20:35		17:23		16:47	
Potential sun hours	263	279	367	414	482	494	498	451	380	333	269	248	
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	42	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 9 - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 164,0 m (TOT: 238,5 m) (126)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49	08:24	07:32	07:23	06:20	05:36	05:34	06:09	06:57	07:44	07:36	08:26
	16:48	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42
2	08:49	08:22	07:30	07:21	06:18	05:36	05:34	06:10	06:59	07:46	07:38	08:27
	16:49	17:36	18:26	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:41
3	08:49	08:21	07:28	07:19	06:16	05:35	05:35	06:12	07:00	07:48	07:40	08:29
	16:50	17:38	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:17	16:41
4	08:49	08:19	07:26	07:16	06:15	05:34	05:36	06:13	07:02	07:49	07:42	08:30
	16:51	17:40	18:30	20:22	21:11	21:53	22:03	21:28	20:26	19:19	17:16	16:40
5	08:49	08:18	07:23	07:14	06:13	05:33	05:37	06:15	07:03	07:51	07:43	08:31
	16:52	17:42	18:32	20:23	21:12	21:54	22:02	21:27	20:24	19:16	17:14	16:40
6	08:48	08:16	07:21	07:12	06:11	05:33	05:37	06:16	07:05	07:52	07:45	08:32
	16:54	17:44	18:33	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:39
7	08:48	08:14	07:19	07:10	06:09	05:32	05:38	06:18	07:06	07:54	07:47	08:34
	16:55	17:45	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11	16:39
8	08:48	08:13	07:17	07:08	06:08	05:32	05:39	06:20	07:08	07:56	07:49	08:35
	16:56	17:47	18:37	20:28	21:17	21:57	22:01	21:22	20:18	19:10	17:09	16:39
9	08:47	08:11	07:15	07:05	06:06	05:31	05:40	06:21	07:10	07:57	07:50	08:36
	16:58	17:49	18:38	20:30	21:19	21:58	22:00	21:20	20:15	19:07	17:07	16:38
10	08:47	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52	08:37
	16:59	17:51	18:40	20:32	21:20	21:59	21:59	21:18	20:13	19:05	17:06	16:38
11	08:46	08:07	07:10	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54	08:38
	17:00	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:04	16:38
12	08:46	08:06	07:08	06:59	06:01	05:30	05:43	06:26	07:14	08:02	07:55	08:39
	17:02	17:54	18:44	20:35	21:23	22:00	21:58	21:14	20:08	19:01	17:03	16:38
13	08:45	08:04	07:06	06:57	05:59	05:30	05:44	06:27	07:16	08:04	07:57	08:40
	17:03	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:01	16:38
14	08:44	08:02	07:04	06:55	05:58	05:30	05:45	06:29	07:17	08:06	07:59	08:41
	17:05	17:58	18:47	20:38	21:26	22:01	21:56	21:10	20:04	18:57	17:00	16:38
15	08:43	08:00	07:01	06:52	05:56	05:30	05:46	06:30	07:19	08:07	08:01	08:42
	17:06	18:00	18:49	20:40	21:28	22:02	21:55	21:08	20:02	18:55	16:59	16:38
16	08:43	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02	08:43
	17:08	18:02	18:50	20:42	21:29	22:02	21:54	21:07	19:59	18:52	16:57	16:38
17	08:42	07:56	06:57	06:48	05:53	05:29	05:49	06:33	07:22	08:11	08:04	08:44
	17:09	18:03	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:50	16:56	16:38
18	08:41	07:54	06:55	06:46	05:52	05:29	05:50	06:35	07:24	08:12	08:06	08:44
	17:11	18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39
19	08:40	07:52	06:52	06:44	05:51	05:29	05:51	06:37	07:25	08:14	08:07	08:45
	17:12	18:07	18:55	20:46	21:34	22:04	21:51	21:01	19:53	18:46	16:53	16:39
20	08:39	07:50	06:50	06:42	05:49	05:30	05:52	06:38	07:27	08:16	08:09	08:46
	17:14	18:09	18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52	16:39
21	08:38	07:48	06:48	06:40	05:48	05:30	05:54	06:40	07:28	08:17	08:11	08:46
	17:16	18:11	18:59	20:50	21:37	22:04	21:49	20:56	19:48	18:42	16:51	16:40
22	08:37	07:46	06:46	06:38	05:47	05:30	05:55	06:41	07:30	08:19	08:12	08:47
	17:17	18:12	19:00	20:51	21:38	22:04	21:48	20:54	19:46	18:40	16:50	16:40
23	08:36	07:44	06:43	06:36	05:46	05:30	05:56	06:43	07:32	08:21	08:14	08:47
	17:19	18:14	19:02	20:53	21:39	22:04	21:46	20:52	19:43	18:38	16:49	16:41
24	08:35	07:42	06:41	06:34	05:44	05:30	05:58	06:44	07:33	08:22	08:15	08:48
	17:21	18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:41
25	08:33	07:40	06:39	06:32	05:43	05:31	05:59	06:46	07:35	07:24	08:17	08:48
	17:22	18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42
26	08:32	07:38	06:37	06:30	05:42	05:31	06:00	06:48	07:36	07:26	08:18	08:49
	17:24	18:19	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43
27	08:31	07:36	06:34	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20	08:49
	17:26	18:21	19:09	21:00	21:44	22:05	21:41	20:44	19:34	17:30	16:45	16:43
28	08:29	07:34	06:32	06:26	05:40	05:32	06:03	06:51	07:39	07:29	08:21	08:49
	17:28	18:23	19:10	21:01	21:46	22:05	21:39	20:42	19:32	17:28	16:44	16:44
29	08:28		07:30	06:24	05:39	05:33	06:05	06:52	07:41	07:31	08:23	08:49
	17:29		20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:26	16:43	16:45
30	08:27		07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24	08:49
	17:31		20:14	21:04	21:48	22:04	21:36	20:37	19:28	17:25	16:43	16:46
31	08:25		07:25		05:37		06:08	06:55		07:35		08:49
	17:33		20:15		21:49		21:35	20:35		17:23		16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 10 - Siemens SWT-DD-142 4100 142.0 !O! hub: 129,0 m (TOT: 200,0 m) (145)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49 16:06-16:15/9	08:24 16:33-17:04/31	07:32	07:23	06:20	05:37	05:34	06:09	06:57	07:44	07:36	08:26 15:54-16:07/13
	16:48	17:35	18:25	20:17	21:06	21:50	22:04	21:33	20:33	19:25	17:21	16:42
2	08:49 16:07-16:16/9	08:22 16:35-16:51/16	07:30	07:21	06:18	05:36	05:35	06:11	06:59	07:46	07:38	08:27 15:54-16:08/14
	16:49	17:37 16:52-17:04/12	18:27	20:19	21:08	21:51	22:04	21:32	20:31	19:23	17:19	16:42
3	08:49 16:06-16:16/10	08:21 16:36-16:50/14	07:28	07:19	06:17	05:35	05:35	06:12	07:00	07:48	07:40	08:29 15:54-16:08/14
	16:51	17:38 16:53-17:03/10	18:28	20:20	21:09	21:52	22:03	21:30	20:29	19:21	17:18	16:41
4	08:49 16:07-16:18/11	08:19 16:38-16:48/10	07:26	07:17	06:15	05:34	05:36	06:14	07:02	07:49	07:42	08:30 15:53-16:07/14
	16:52	17:40 16:55-17:00/5	18:30	20:22	21:11	21:53	22:03	21:29	20:27	19:19	17:16	16:41
5	08:49 16:08-16:19/11	08:18	07:24	07:14	06:13	05:34	05:37	06:15	07:03	07:51	07:43	08:31 15:54-16:07/13
	16:53	17:42	18:32	20:24	21:13	21:54	22:02	21:27	20:24	19:17	17:14	16:40
6	08:49 16:08-16:20/12	08:16	07:21	07:12	06:11	05:33	05:38	06:17	07:05	07:53	07:45 16:12-16:15/3	08:32 15:54-16:06/12
	16:54	17:44	18:34	20:25	21:14	21:55	22:02	21:25	20:22	19:14	17:12	16:40
7	08:48 16:09-16:22/13	08:14	07:19	07:10	06:10	05:33	05:39	06:18	07:07	07:54	07:47 16:08-16:19/11	08:34 15:54-16:06/12
	16:55	17:46	18:35	20:27	21:16	21:56	22:01	21:23	20:20	19:12	17:11 16:26-16:31/5	16:39
8	08:48 16:09-16:23/14	08:13	07:17	07:08	06:08	05:32	05:40	06:20	07:08	07:56	07:49 16:06-16:21/15	08:35 15:55-16:06/11
	16:57	17:47	18:37	20:29	21:17	21:57	22:01	21:22	20:18	19:10	17:09 16:24-16:34/10	16:39
9	08:47 16:10-16:24/14	08:11	07:15	07:06	06:06	05:32	05:40	06:21	07:10	07:57	07:50 16:05-16:22/17	08:36 15:56-16:05/9
	16:58	17:49	18:39	20:30	21:19	21:58	22:00	21:20	20:15	19:08	17:08 16:23-16:35/12	16:39
10	08:47 16:11-16:25/14	08:09	07:13	07:03	06:04	05:31	05:41	06:23	07:11	07:59	07:52 16:05-16:35/30	08:37 15:56-16:05/9
	16:59	17:51	18:40	20:32	21:20	21:59	22:00	21:18	20:13	19:05	17:06	16:39
11	08:46 16:11-16:25/14	08:08	07:11	07:01	06:03	05:31	05:42	06:24	07:13	08:01	07:54 16:03-16:34/31	08:38 15:56-16:05/9
	17:01	17:53	18:42	20:33	21:22	21:59	21:59	21:16	20:11	19:03	17:05	16:38
12	08:46 16:12-16:24/12	08:06	07:08	06:59	06:01	05:31	05:43	06:26	07:14	08:02	07:56 16:03-16:32/29	08:39 15:57-16:05/8
	17:02	17:55	18:44	20:35	21:24	22:00	21:58	21:14	20:09	19:01	17:03	16:38
13	08:45 16:13-16:24/11	08:04	07:06	06:57	06:00	05:30	05:45	06:27	07:16	08:04	07:57 16:03-16:31/28	08:40 15:57-16:04/7
	17:03	17:56	18:45	20:37	21:25	22:01	21:57	21:12	20:06	18:59	17:02	16:38
14	08:44 16:15-16:24/9	08:02	07:04	06:55	05:58	05:30	05:46	06:29	07:18	08:06	07:59 16:03-16:30/27	08:41 15:58-16:04/6
	17:05	17:58	18:47	20:38	21:27	22:01	21:56	21:11	20:04	18:57	17:00	16:38
15	08:44 16:17-16:23/6	08:00	07:02	06:53	05:57	05:30	05:47	06:31	07:19	08:07	08:01 16:03-16:28/25	08:42 15:58-16:05/7
	17:06	18:00	18:49	20:40	21:28	22:02	21:55	21:09	20:02	18:55	16:59	16:38
16	08:43 16:33-16:36/3	07:58	06:59	06:50	05:55	05:30	05:48	06:32	07:21	08:09	08:02 16:03-16:27/24	08:43 15:59-16:05/6
	17:08	18:02	18:50	20:42	21:30	22:02	21:54	21:07	20:00	18:53	16:57	16:39
17	08:42 16:32-16:38/6	07:56	06:57	06:48	05:54	05:30	05:49	06:34	07:22	08:11	08:04 16:03-16:25/22	08:44 15:59-16:04/5
	17:09	18:04	18:52	20:43	21:31	22:03	21:53	21:05	19:57	18:51	16:56	16:39
18	08:41 16:31-16:39/8	07:55	06:55	06:46	05:52	05:30	05:50	06:35	07:24	08:12	08:06 16:03-16:24/21	08:44 16:00-16:05/5
	17:11	18:05	18:54	20:45	21:32	22:03	21:52	21:03	19:55	18:48	16:55	16:39
19	08:40 16:30-16:40/10	07:53	06:53	06:44	05:51	05:30	05:51	06:37	07:25	08:14	08:07 16:04-16:22/18	08:45 16:00-16:05/5
	17:13	18:07	18:56	20:47	21:34	22:04	21:51	21:01	19:53	18:46	16:54	16:39
20	08:39 16:30-16:42/12	07:51	06:50	06:42	05:50	05:30	05:53	06:38	07:27	08:16	08:09 16:05-16:21/16	08:46 16:00-16:05/5
	17:14	18:09	18:57	20:48	21:35	22:04	21:50	20:59	19:50	18:44	16:52	16:40
21	08:38 16:30-16:44/14	07:49	06:48	06:40	05:48	05:30	05:54	06:40	07:29	08:17	08:11 16:06-16:20/14	08:46 16:01-16:06/5
	17:16	18:11	18:59	20:50	21:37	22:04	21:49	20:57	19:48	18:42	16:51	16:40
22	08:37 16:30-16:46/16	07:47	06:46	06:38	05:47	05:30	05:55	06:42	07:30	08:19	08:12 16:06-16:18/12	08:47 16:01-16:06/5
	17:18	18:13	19:00	20:52	21:38	22:04	21:48	20:55	19:46	18:40	16:50	16:41
23	08:36 16:30-16:48/18	07:45	06:44	06:36	05:46	05:30	05:57	06:43	07:32	08:21	08:14 16:07-16:17/10	08:47 16:02-16:07/5
	17:19	18:14	19:02	20:53	21:39	22:05	21:46	20:52	19:44	18:38	16:49	16:41
24	08:35 16:29-16:50/21	07:43	06:41	06:34	05:45	05:31	05:58	06:45	07:33	08:23	08:15 16:08-16:17/9	08:48 16:02-16:07/5
	17:21	18:16	19:04	20:55	21:41	22:05	21:45	20:50	19:41	18:36	16:48	16:42
25	08:33 16:30-16:52/22	07:41	06:39	06:32	05:44	05:31	05:59	06:46	07:35	07:24	08:17 16:10-16:16/6	08:48 16:03-16:08/5
	17:23	18:18	19:05	20:56	21:42	22:05	21:44	20:48	19:39	17:34	16:47	16:42
26	08:32 16:30-16:54/24	07:38	06:37	06:30	05:42	05:31	06:01	06:48	07:36	07:26	08:19 16:11-16:14/3	08:49 16:04-16:09/5
	17:24	18:20	19:07	20:58	21:43	22:05	21:42	20:46	19:37	17:32	16:46	16:43
27	08:31 16:30-16:55/25	07:36	06:35	06:28	05:41	05:32	06:02	06:49	07:38	07:28	08:20 15:56-16:02/6	08:49 16:04-16:10/6
	17:26	18:21	19:09	21:00	21:45	22:05	21:41	20:44	19:35	17:30	16:45	16:44
28	08:30 16:31-16:58/27	07:34	06:32	06:26	05:40	05:32	06:04	06:51	07:40	07:30	08:22 15:54-16:03/9	08:49 16:04-16:10/6
	17:28	18:23	19:10	21:01	21:46	22:05	21:40	20:42	19:32	17:29	16:45	16:44
29	08:28 16:31-16:59/28		07:30	06:24	05:39	05:33	06:05	06:53	07:41	07:31	08:23 15:54-16:05/11	08:49 16:05-16:11/6
	17:30		20:12	21:03	21:47	22:04	21:38	20:40	19:30	17:27	16:44	16:45
30	08:27 16:32-17:02/30		07:28	06:22	05:38	05:33	06:06	06:54	07:43	07:33	08:24 15:54-16:07/13	08:49 16:05-16:12/7
	17:31		20:14	21:05	21:48	22:04	21:37	20:38	19:28	17:25	16:43	16:46
31	08:25 16:32-17:03/31		07:26		05:38		06:08	06:56		07:35		08:49 16:05-16:13/8
	17:33		20:15		21:49		21:35	20:35		17:23		16:47
Potential sun hours	263	279	367	414	482	494	498	451	380	333	269	248
Sum of minutes with flicker	464	98	0	0	0	0	0	0	0	0	437	247

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 11 - ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (227)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May		June	
1	08:49	08:24	07:32	07:23		06:20	20:08-20:38/30	05:37	21:00-21:18/18
	16:48	17:35	18:25	20:17		21:06		21:50	
2	08:49	08:22	07:30	07:21		06:18	20:09-20:39/30	05:36	21:01-21:20/19
	16:49	17:36	18:26	20:19		21:08		21:51	
3	08:49	08:21	07:28	07:19		06:16	20:10-20:41/31	05:35	21:01-21:21/20
	16:50	17:38	18:28	20:20		21:09		21:53	
4	08:49	08:19	07:26	07:17		06:15	20:12-20:43/31	05:34	21:01-21:21/20
	16:51	17:40	18:30	20:22		21:11		21:54	
5	08:49	08:18	07:24	07:14		06:13	20:26-20:44/18 20:15-20:18/3	05:34	21:02-21:23/21
	16:53	17:42	18:32	20:24		21:13	20:19-20:24/5	21:54	
6	08:49	08:16	07:21	07:12		06:11	20:26-20:45/19	05:33	21:02-21:23/21
	16:54	17:44	18:33	20:25		21:14		21:55	
7	08:48	08:14	07:19	07:10		06:09	20:28-20:46/18	05:32	21:03-21:24/21
	16:55	17:45	18:35	20:27		21:16		21:56	
8	08:48	08:13	07:17	07:08		06:08	20:29-20:46/17	05:32	21:05-21:25/20
	16:56	17:47	18:37	20:29		21:17		21:57	
9	08:47	08:11	07:15	07:05		06:06	20:30-20:46/16	05:31	21:05-21:25/20
	16:58	17:49	18:39	20:30		21:19		21:58	
10	08:47	08:09	07:13	07:03		06:04	20:47-20:51/4	05:31	21:06-21:26/20
	16:59	17:51	18:40	20:32		21:20	20:30-20:45/15	21:59	
11	08:46	08:08	07:10	07:01		06:03	20:46-20:53/7	05:31	21:07-21:27/20
	17:00	17:53	18:42	20:33		21:22	20:31-20:45/14	21:59	
12	08:46	08:06	07:08	06:59	20:07-20:09/2	06:01	20:45-20:54/9	05:30	21:07-21:12/5
	17:02	17:55	18:44	20:35		21:24	20:32-20:44/12	22:00	21:13-21:27/14
13	08:45	08:04	07:06	06:57	20:06-20:10/4	06:00	20:44-20:56/12	05:30	21:08-21:11/3
	17:03	17:56	18:45	20:37		21:25	20:33-20:43/10	22:01	21:13-21:28/15
14	08:44	08:02	07:04	06:55	20:05-20:12/7	05:58	20:43-20:57/14	05:30	21:13-21:29/16
	17:05	17:58	18:47	20:38		21:27	20:34-20:41/7	22:01	
15	08:44	08:00	07:02	06:52	20:05-20:14/9	05:56	20:43-20:58/15	05:30	21:13-21:29/16
	17:06	18:00	18:49	20:40		21:28		22:02	
16	08:43	07:58	06:59	06:50	20:05-20:15/10	05:55	20:43-21:00/17	05:30	21:14-21:30/16
	17:08	18:02	18:50	20:42		21:30		22:02	
17	08:42	07:56	06:57	06:48	20:05-20:16/11	05:54	20:43-21:00/17	05:30	21:14-21:30/16
	17:09	18:04	18:52	20:43		21:31		22:03	
18	08:41	07:55	06:55	06:46	20:07-20:14/7	05:52	20:43-21:00/17	05:30	21:14-21:30/16
	17:11	18:05	18:54	20:45		21:32		22:03	
19	08:40	07:53	06:53	06:44	20:09-20:11/2	05:51	20:43-21:00/17	05:30	21:14-21:31/17
	17:12	18:07	18:55	20:47		21:34	21:03-21:04/1	22:04	
20	08:39	07:51	06:50	06:42	20:17-20:21/4	05:49	20:44-21:00/16	05:30	21:14-21:31/17
	17:14	18:09	18:57	20:48		21:35	21:02-21:05/3	22:04	
21	08:38	07:49	06:48	06:40	20:13-20:23/10	05:48	20:43-20:59/16	05:30	21:14-21:31/17
	17:16	18:11	18:59	20:50		21:37	21:00-21:06/6	22:04	
22	08:37	07:47	06:46	06:38	20:11-20:25/14	05:47	20:44-20:59/15	05:30	21:15-21:32/17
	17:17	18:12	19:00	20:52		21:38	21:00-21:07/7	22:04	
23	08:36	07:45	06:44	06:36	20:10-20:26/16	05:46	20:45-21:08/23	05:30	21:15-21:32/17
	17:19	18:14	19:02	20:53		21:39		22:05	
24	08:35	07:43	06:41	06:34	20:09-20:28/19	05:44	20:46-20:58/12	05:31	21:15-21:32/17
	17:21	18:16	19:04	20:55		21:41	20:59-21:10/11	22:05	
25	08:33	07:40	06:39	06:32	20:08-20:29/21	05:43	20:47-20:57/10	05:31	21:16-21:32/16
	17:22	18:18	19:05	20:56		21:42	20:59-21:11/12	22:05	
26	08:32	07:38	06:37	06:30	20:08-20:31/23	05:42	20:48-20:56/8	05:31	21:16-21:32/16
	17:24	18:19	19:07	20:58		21:43	20:59-21:12/13	22:05	
27	08:31	07:36	06:35	06:28	20:07-20:32/25	05:41	20:50-20:55/5	05:32	21:16-21:31/15
	17:26	18:21	19:09	21:00		21:45	20:59-21:13/14	22:05	
28	08:30	07:34	06:32	06:26	20:07-20:33/26	05:40	20:59-21:14/15	05:32	21:16-21:32/16
	17:28	18:23	19:10	21:01		21:46		22:05	
29	08:28		07:30	06:24	20:08-20:36/28	05:39	21:00-21:15/15	05:33	21:12-21:14/2
	17:29		20:12	21:03		21:47		22:04	21:16-21:31/15
30	08:27		07:28	06:22	20:08-20:37/29	05:38	21:00-21:15/15	05:33	21:11-21:16/5
	17:31		20:14	21:05		21:48		22:04	21:17-21:32/15
31	08:25		07:25			05:37	21:00-21:15/15		
	17:33		20:15			21:49	21:16-21:18/2		
Potential sun hours	262	279	367	414		482		494	
Sum of minutes with flicker	0	0	0	267		639		539	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 11 - ENERCON E-115 EP3 E3 4200 115.7 !O! hub: 135,0 m (TOT: 192,9 m) (227)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July		August		September	October	November	December
1	05:34	21:11-21:32/21	06:09	20:42-21:04/22	06:57	07:44	07:36	08:26
	22:04		21:33		20:33	19:25	17:21	16:42
2	05:35	21:10-21:31/21	06:11	20:57-21:03/6	06:59	07:46	07:38	08:27
	22:04		21:32	20:41-20:56/15	20:31	19:23	17:19	16:42
3	05:35	21:10-21:31/21	06:12	20:59-21:01/2	07:00	07:48	07:40	08:29
	22:03		21:30	20:40-20:56/16	20:29	19:21	17:17	16:41
4	05:36	21:10-21:31/21	06:14	20:39-20:56/17	07:02	07:49	07:42	08:30
	22:03		21:29		20:27	19:19	17:16	16:40
5	05:37	21:09-21:30/21	06:15	20:40-20:56/16	07:03	07:51	07:43	08:31
	22:03		21:27		20:24	19:16	17:14	16:40
6	05:38	21:09-21:29/20	06:17	20:37-20:56/19	07:05	07:53	07:45	08:33
	22:02		21:25		20:22	19:14	17:12	16:40
7	05:38	21:09-21:29/20	06:18	20:37-20:55/18	07:07	07:54	07:47	08:34
	22:02		21:23		20:20	19:12	17:11	16:39
8	05:39	21:09-21:29/20	06:20	20:35-20:53/18	07:08	07:56	07:49	08:35
	22:01		21:22	20:23-20:34/11	20:18	19:10	17:09	16:39
9	05:40	21:09-21:28/19	06:21	20:20-20:51/31	07:10	07:57	07:50	08:36
	22:00		21:20		20:15	19:08	17:07	16:39
10	05:41	21:09-21:28/19	06:23	20:19-20:50/31	07:11	07:59	07:52	08:37
	22:00		21:18		20:13	19:05	17:06	16:38
11	05:42	21:08-21:27/19	06:24	20:17-20:48/31	07:13	08:01	07:54	08:38
	21:59		21:16		20:11	19:03	17:04	16:38
12	05:43	21:08-21:23/15	06:26	20:17-20:46/29	07:14	08:02	07:56	08:39
	21:58	21:24-21:26/2	21:14		20:09	19:01	17:03	16:38
13	05:44	21:08-21:24/16	06:27	20:15-20:44/29	07:16	08:04	07:57	08:40
	21:57		21:12		20:06	18:59	17:01	16:38
14	05:45	21:08-21:24/16	06:29	20:15-20:43/28	07:17	08:06	07:59	08:41
	21:56		21:11		20:04	18:57	17:00	16:38
15	05:47	21:08-21:24/16	06:30	20:15-20:40/25	07:19	08:07	08:01	08:42
	21:55		21:09		20:02	18:55	16:59	16:38
16	05:48	21:01-21:03/2	06:32	20:15-20:39/24	07:21	08:09	08:02	08:43
	21:54	21:08-21:23/15	21:07		20:00	18:53	16:57	16:38
17	05:49	20:58-21:05/7	06:34	20:14-20:37/23	07:22	08:11	08:04	08:44
	21:53	21:08-21:22/14	21:05		19:57	18:50	16:56	16:39
18	05:50	20:57-21:06/9	06:35	20:15-20:35/20	07:24	08:12	08:06	08:44
	21:52	21:08-21:21/13	21:03		19:55	18:48	16:55	16:39
19	05:51	20:56-21:07/11	06:37	20:15-20:33/18	07:25	08:14	08:07	08:45
	21:51	21:09-21:20/11	21:01		19:53	18:46	16:53	16:39
20	05:53	20:56-21:09/13	06:38	20:16-20:32/16	07:27	08:16	08:09	08:46
	21:50	21:10-21:20/10	20:59		19:50	18:44	16:52	16:39
21	05:54	20:55-21:09/14	06:40	20:16-20:29/13	07:28	08:17	08:11	08:46
	21:49	21:10-21:18/8	20:57		19:48	18:42	16:51	16:40
22	05:55	20:54-21:17/23	06:41	20:18-20:28/10	07:30	08:19	08:12	08:47
	21:48		20:55		19:46	18:40	16:50	16:40
23	05:56	20:54-21:10/16	06:43		07:32	08:21	08:14	08:47
	21:46	21:11-21:16/5	20:52		19:44	18:38	16:49	16:41
24	05:58	20:53-21:10/17	06:45	20:12-20:16/4	07:33	08:23	08:15	08:48
	21:45	21:12-21:14/2	20:50		19:41	18:36	16:48	16:41
25	05:59	20:54-21:11/17	06:46	20:09-20:17/8	07:35	07:24	08:17	08:48
	21:44		20:48		19:39	17:34	16:47	16:42
26	06:01	20:53-21:11/18	06:48	20:08-20:19/11	07:36	07:26	08:19	08:49
	21:42		20:46		19:37	17:32	16:46	16:43
27	06:02	20:53-21:10/17	06:49	20:07-20:17/10	07:38	07:28	08:20	08:49
	21:41		20:44		19:34	17:30	16:45	16:43
28	06:03	20:54-21:10/16	06:51	20:07-20:15/8	07:40	07:29	08:22	08:49
	21:40		20:42		19:32	17:28	16:44	16:44
29	06:05	20:54-21:08/14	06:52	20:06-20:13/7	07:41	07:31	08:23	08:49
	21:38	20:47-20:50/3	20:40		19:30	17:27	16:44	16:45
30	06:06	20:54-21:07/13	06:54	20:07-20:11/4	07:43	07:33	08:24	08:49
	21:37	20:44-20:52/8	20:38		19:28	17:25	16:43	16:46
31	06:08	20:55-21:06/11	06:56	20:07-20:09/2		07:35		08:49
	21:35	20:43-20:54/11	20:35			17:23		16:47
Potential sun hours	498		451		380	333	269	248
Sum of minutes with flicker	605		542		0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 12 - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (236)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April		May		June	
1	08:49	08:24	07:32		07:23	19:36-19:51/15	06:20	18:31-20:38/127	05:36	20:04-21:18/74
	16:48	17:35	18:25		20:17		21:06		21:50	18:48-20:00/72
2	08:49	08:22	07:30		07:21	19:35-19:53/18	06:18	18:31-20:38/127	05:36	20:05-21:20/75
	16:49	17:36	18:26		20:19		21:08		21:51	18:49-20:00/71
3	08:49	08:21	07:28		07:19	19:34-19:55/21	06:16	18:31-20:38/127	05:35	20:05-21:21/76
	16:50	17:38	18:28		20:20	19:08-19:27/19	21:09		21:52	18:50-19:59/69
4	08:49	08:19	07:26		07:16	19:33-19:57/24	06:15	18:31-20:39/128	05:34	20:04-21:21/77
	16:51	17:40	18:30		20:22	19:03-19:32/29	21:11		21:53	18:50-19:58/68
5	08:49	08:18	07:24		07:14	18:59-19:57/58	06:13	18:31-20:38/127	05:34	20:05-21:23/78
	16:53	17:42	18:32		20:24		21:13		21:54	18:51-19:58/67
6	08:49	08:16	07:21		07:12	18:55-19:58/63	06:11	18:31-20:39/128	05:33	20:05-21:23/78
	16:54	17:44	18:33		20:25		21:14		21:55	18:52-19:57/65
7	08:48	08:14	07:19		07:10	18:53-19:58/65	06:09	18:32-20:42/130	05:32	20:05-21:24/79
	16:55	17:45	18:35		20:27		21:16		21:56	18:53-19:57/64
8	08:48	08:13	07:17		07:08	18:51-19:58/67	06:08	18:32-20:43/131	05:32	20:06-21:24/78
	16:56	17:47	18:37		20:28		21:17		21:57	18:54-19:56/62
9	08:47	08:11	07:15		07:05	18:49-19:58/69	06:06	18:33-20:45/132	05:31	20:06-21:25/79
	16:58	17:49	18:38		20:30		21:19		21:58	18:54-19:55/61
10	08:47	08:09	07:13		07:03	18:47-19:57/70	06:04	18:33-20:46/133	05:31	20:06-21:26/80
	16:59	17:51	18:40		20:32		21:20		21:59	18:55-19:54/59
11	08:46	08:07	07:10		07:01	18:45-19:56/71	06:03	18:34-20:48/134	05:31	20:07-21:26/79
	17:00	17:53	18:42		20:33		21:22		21:59	18:56-19:54/58
12	08:46	08:06	07:08		06:59	18:43-19:55/72	06:01	18:34-20:48/134	05:30	20:06-21:25/79
	17:02	17:54	18:44		20:35		21:23		22:00	18:56-19:52/56
13	08:45	08:04	07:06		06:57	18:42-19:58/76	05:59	18:34-20:50/136	05:30	20:07-21:26/79
	17:03	17:56	18:45		20:37		21:25		22:01	18:57-19:51/54
14	08:44	08:02	07:04		06:55	18:41-20:01/80	05:58	18:34-20:50/136	05:30	20:07-21:26/79 18:57-19:40/43
	17:05	17:58	18:47		20:38		21:27		22:01	19:42-19:50/8
15	08:44	08:00	07:01		06:52	18:39-20:03/84	05:56	20:56-20:58/2	05:30	20:07-21:26/79 18:58-19:40/42
	17:06	18:00	18:49		20:40		21:28	18:35-20:51/136	22:02	19:44-19:49/5
16	08:43	07:58	06:59		06:50	18:38-20:04/86	05:55	20:55-21:00/5	05:30	21:29-21:30/1 18:59-19:40/41
	17:08	18:02	18:50		20:42		21:29	18:36-20:52/136	22:02	20:08-21:26/78
17	08:42	07:56	06:57		06:48	18:37-20:06/89	05:54	20:54-21:01/7	05:30	21:29-21:30/1 18:59-19:40/41
	17:09	18:03	18:52		20:43		21:31	18:36-20:52/136	22:03	20:08-21:26/78
18	08:41	07:54	06:55		06:46	18:37-20:07/90	05:52	18:37-21:02/145	05:30	21:29-21:30/1 18:59-19:40/41
	17:11	18:05	18:54		20:45		21:32		22:03	20:08-21:27/79
19	08:40	07:52	06:53		06:44	18:36-20:08/92	05:51	18:38-21:04/146	05:30	21:29-21:31/2 19:00-19:40/40
	17:12	18:07	18:55		20:47		21:34		22:04	20:08-21:27/79
20	08:39	07:51	06:50		06:42	18:35-20:09/94	05:49	18:39-21:05/146	05:30	21:29-21:31/2 19:00-19:40/40
	17:14	18:09	18:57		20:48		21:35		22:04	20:08-21:27/79
21	08:38	07:49	06:48		06:40	18:34-20:10/96	05:48	18:39-21:06/147	05:30	21:29-21:31/2 19:00-19:40/40
	17:16	18:11	18:59		20:50		21:37		22:04	20:08-21:27/79
22	08:37	07:47	06:46		06:38	18:34-20:10/96	05:47	18:40-21:07/147	05:30	21:30-21:32/2 19:01-19:41/40
	17:17	18:12	19:00		20:51		21:38		22:04	20:09-21:28/79
23	08:36	07:45	06:43		06:36	20:20-20:26/6	05:46	18:40-21:08/148	05:30	21:30-21:32/2 19:01-19:41/40
	17:19	18:14	19:02		20:53	18:33-20:11/98	21:39		22:05	20:09-21:28/79
24	08:35	07:42	06:41		06:34	20:17-20:28/11	05:44	18:41-21:10/149	05:30	21:30-21:32/2 19:00-19:41/41
	17:21	18:16	19:04		20:55	18:33-20:11/98	21:41		22:05	20:09-21:28/79
25	08:33	07:40	06:39		06:32	20:12-20:29/17	05:43	18:42-21:11/149	05:31	21:31-21:32/1 19:01-19:42/41
	17:22	18:18	19:05		20:56	18:32-20:11/99	21:42		22:05	20:10-21:28/78
26	08:32	07:38	06:37		06:30	18:32-20:30/118	05:42	18:43-21:12/149	05:31	21:31-21:32/1 19:01-19:42/41
	17:24	18:19	19:07		20:58		21:43		22:05	20:10-21:28/78
27	08:31	07:36	06:34		06:28	18:31-20:32/121	05:41	18:44-21:13/149	05:32	20:10-21:28/78 19:00-19:42/42
	17:26	18:21	19:09		21:00		21:44		22:05	19:48-19:49/1
28	08:30	07:34	06:32		06:26	18:31-20:33/122	05:40	18:44-21:14/150	05:32	20:10-21:29/79 19:01-19:43/42
	17:28	18:23	19:10		21:01		21:46		22:05	19:46-19:53/7
29	08:28		07:30		06:24	18:32-20:36/124	05:39	20:04-21:16/72	05:33	20:10-21:29/79 19:00-19:43/43
	17:29		20:12		21:03		21:47	18:46-20:03/77	22:04	19:44-19:54/10
30	08:27		07:28	19:41-19:49/8	06:22	18:31-20:37/126	05:38	20:04-21:17/73	05:33	20:11-21:29/78
	17:31		20:14		21:04		21:48	18:47-20:02/75	22:04	19:00-19:56/56
31	08:25		07:25	19:39-19:50/11			05:37	20:04-21:18/74		
	17:33		20:15				21:49	18:47-20:01/74		
Potential sun hours	262		279		367		414		482		494	
Sum of minutes with flicker	0		0		19		2484		4322		3936	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 12 - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (236)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 20:11-21:30/79	06:09 18:44-20:58/134	06:57 18:45-19:56/71	07:44	07:36	08:26
	22:04 19:00-19:57/57	21:33	20:33	19:25	17:21	16:42
2	05:34 20:11-21:30/79	06:11 18:44-20:58/134	06:59 18:45-19:55/70	07:46	07:38	08:27
	22:04 18:59-19:58/59	21:32	20:31	19:23	17:19	16:41
3	05:35 20:11-21:30/79	06:12 18:43-20:56/133	07:00 18:47-19:56/69	07:48	07:40	08:29
	22:03 19:00-20:00/60	21:30	20:29	19:21	17:17	16:41
4	05:36 20:11-21:31/80	06:14 18:42-20:54/132	07:02 18:48-19:55/67	07:49	07:42	08:30
	22:03 18:59-20:01/62	21:29	20:27	19:19	17:16	16:40
5	05:37 20:11-21:30/79	06:15 18:42-20:53/131	07:03 18:50-19:56/66	07:51	07:43	08:31
	22:02 18:58-20:01/63	21:27	20:24	19:16	17:14	16:40
6	05:38 20:11-21:29/78	06:17 18:41-20:51/130	07:05 18:51-19:55/64	07:52	07:45	08:32
	22:02 18:58-20:03/65	21:25	20:22	19:14	17:12	16:39
7	05:38 20:11-21:29/78	06:18 18:41-20:49/128	07:06 18:54-19:54/60	07:54	07:47	08:34
	22:01 18:58-20:04/66	21:23	20:20	19:12	17:11	16:39
8	05:39 20:12-21:29/77	06:20 18:41-20:48/127	07:08 18:57-19:51/54	07:56	07:49	08:35
	22:01 18:58-20:05/67	21:22	20:18	19:10	17:09	16:39
9	05:40 20:12-21:28/76	06:21 18:40-20:47/127	07:10 19:28-19:49/21	07:57	07:50	08:36
	22:00 18:57-20:06/69	21:20	20:15 19:02-19:22/20	19:08	17:07	16:39
10	05:41 20:12-21:28/76	06:23 18:40-20:47/127	07:11 19:28-19:46/18	07:59	07:52	08:37
	21:59 18:57-20:07/70	21:18	20:13	19:05	17:06	16:38
11	05:42 20:12-21:27/75	06:24 18:39-20:47/128	07:13 19:29-19:45/16	08:01	07:54	08:38
	21:59 18:56-20:08/72	21:16	20:11	19:03	17:04	16:38
12	05:43 20:12-21:26/74	06:26 18:40-20:46/126	07:14 19:30-19:42/12	08:02	07:55	08:39
	21:58 18:56-20:09/73	21:14	20:09	19:01	17:03	16:38
13	05:44 20:13-21:26/73	06:27 18:39-20:44/125	07:16 19:32-19:40/8	08:04	07:57	08:40
	21:57 18:55-20:10/75	21:12	20:06	18:59	17:01	16:38
14	05:45 20:13-21:25/72	06:29 18:39-20:43/124	07:17 19:36-19:37/1	08:06	07:59	08:41
	21:56 18:55-20:11/76	21:10	20:04	18:57	17:00	16:38
15	05:46 20:13-21:24/71	06:30 18:38-20:40/122	07:19	08:07	08:01	08:42
	21:55 18:54-20:12/78	21:09	20:02	18:55	16:59	16:38
16	05:48 18:53-21:23/150	06:32 18:39-20:39/120	07:21	08:09	08:02	08:43
	21:54	21:07	19:59	18:52	16:57	16:38
17	05:49 18:53-21:22/149	06:34 18:38-20:37/119	07:22	08:11	08:04	08:44
	21:53	21:05	19:57	18:50	16:56	16:39
18	05:50 18:52-21:21/149	06:35 20:19-20:35/16	07:24	08:12	08:06	08:44
	21:52	21:03 18:39-20:18/99	19:55	18:48	16:55	16:39
19	05:51 18:51-21:20/149	06:37 20:23-20:33/10	07:25	08:14	08:07	08:45
	21:51	21:01 18:38-20:17/99	19:53	18:46	16:53	16:39
20	05:53 18:51-21:19/148	06:38 20:26-20:32/6	07:27	08:16	08:09	08:46
	21:50	20:59 18:39-20:16/97	19:50	18:44	16:52	16:39
21	05:54 18:51-21:18/147	06:40 18:38-20:15/97	07:28	08:17	08:11	08:46
	21:49	20:57	19:48	18:42	16:51	16:40
22	05:55 18:50-21:17/147	06:41 18:39-20:14/95	07:30	08:19	08:12	08:47
	21:48	20:54	19:46	18:40	16:50	16:40
23	05:56 18:49-21:16/147	06:43 18:39-20:12/93	07:32	08:21	08:14	08:47
	21:46	20:52	19:43	18:38	16:49	16:41
24	05:58 18:48-21:14/146	06:44 18:40-20:12/92	07:33	08:23	08:15	08:48
	21:45	20:50	19:41	18:36	16:48	16:41
25	05:59 18:48-21:14/146	06:46 18:39-20:10/91	07:35	07:24	08:17	08:48
	21:44	20:48	19:39	17:34	16:47	16:42
26	06:00 21:04-21:12/8	06:48 18:40-20:08/88	07:36	07:26	08:18	08:49
	21:42 18:47-21:03/136	20:46	19:37	17:32	16:46	16:43
27	06:02 21:04-21:11/7	06:49 18:40-20:06/86	07:38	07:28	08:20	08:49
	21:41 18:46-21:02/136	20:44	19:34	17:30	16:45	16:43
28	06:03 21:06-21:10/4	06:51 18:41-20:04/83	07:40	07:29	08:22	08:49
	21:40 18:46-21:02/136	20:42	19:32	17:28	16:44	16:44
29	06:05 18:45-21:01/136	06:52 18:41-20:01/80	07:41	07:31	08:23	08:49
	21:38	20:40	19:30	17:26	16:44	16:45
30	06:06 18:45-21:00/135	06:54 18:43-19:59/76	07:43	07:33	08:24	08:49
	21:37	20:37	19:28	17:25	16:43	16:46
31	06:08 18:45-21:00/135	06:55 18:43-19:55/72		07:35		08:49
	21:35	20:35		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	4469	3447	617	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 13 - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (237)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:49 16:48	08:24 17:35	07:32 18:25	07:23 20:17	06:20 20:23-20:38/15 21:06	05:36 21:05-21:18/13 21:50	05:34 21:10-21:32/22 22:04	06:09 20:32-20:55/23 21:33	06:57 20:33	07:44 19:25	07:36 17:21	08:26 16:42
2	08:49 16:49	08:22 17:36	07:30 18:26	07:21 20:19	06:18 20:22-20:39/17 21:08	05:36 21:06-21:20/14 21:51	05:34 21:09-21:31/22 22:04	06:11 20:31-20:55/24 21:32	06:59 20:31	07:46 19:23	07:38 17:19	08:27 16:41
3	08:49 16:50	08:21 17:38	07:28 18:28	07:19 20:20	06:16 20:21-20:41/20 21:09	05:35 21:05-21:21/16 21:52	05:35 21:10-21:31/21 22:03	06:12 20:31-20:56/25 21:30	07:00 20:29	07:48 19:21	07:40 17:17	08:29 16:41
4	08:49 16:51	08:19 17:40	07:26 18:30	07:16 20:22	06:15 20:21-20:43/22 21:11	05:34 21:05-21:21/16 21:53	05:36 21:11-21:31/20 22:03	06:14 20:30-20:56/26 21:29	07:02 20:27	07:49 19:19	07:42 17:16	08:30 16:40
5	08:49 16:53	08:18 17:42	07:24 18:32	07:14 20:24	06:13 20:21-20:44/23 21:13	05:34 21:05-21:23/18 21:54	05:37 21:10-21:30/20 22:03	06:15 20:31-20:56/25 21:27	07:03 20:24	07:51 19:16	07:43 17:14	08:31 16:40
6	08:49 16:54	08:16 17:44	07:21 18:33	07:12 20:25	06:11 20:20-20:45/25 21:14	05:33 21:05-21:23/18 21:55	05:38 21:11-21:29/18 22:02	06:17 20:30-20:56/26 21:25	07:05 20:22	07:52 19:14	07:45 17:12	08:32 16:39
7	08:48 16:55	08:14 17:45	07:19 18:35	07:10 20:27	06:09 20:21-20:46/25 21:16	05:32 21:05-21:24/19 21:56	05:38 21:11-21:29/18 22:01	06:18 20:31-20:55/24 21:23	07:06 20:20	07:54 19:12	07:47 17:11	08:34 16:39
8	08:48 16:56	08:13 17:47	07:17 18:37	07:08 20:28	06:08 20:20-20:46/26 21:17	05:32 21:04-21:24/20 21:57	05:39 21:12-21:29/17 22:01	06:20 20:30-20:53/23 21:22	07:08 20:18	07:56 19:10	07:49 17:09	08:35 16:39
9	08:47 16:58	08:11 17:49	07:15 18:38	07:05 20:30	06:06 20:21-20:46/25 21:19	05:31 21:05-21:25/20 21:58	05:40 21:12-21:28/16 22:00	06:21 20:30-20:51/21 21:20	07:10 20:15	07:57 19:08	07:50 17:07	08:36 16:39
10	08:47 16:59	08:09 17:51	07:13 18:40	07:03 20:32	06:04 20:21-20:45/24 21:20	05:31 21:05-21:26/21 21:59	05:41 21:13-21:28/15 22:00	06:23 20:31-20:50/19 21:18	07:11 20:13	07:59 19:05	07:52 17:06	08:37 16:38
11	08:46 17:00	08:07 17:53	07:10 18:42	07:01 20:33	06:03 20:21-20:45/24 21:22	05:31 21:06-21:27/21 21:59	05:42 21:13-21:27/14 21:59	06:24 20:31-20:48/17 21:16	07:13 20:11	08:01 19:03	07:54 17:04	08:38 16:38
12	08:46 17:02	08:06 17:54	07:08 18:44	06:59 20:35	06:01 20:21-20:44/23 21:23	05:30 21:05-21:27/22 22:00	05:43 21:14-21:27/13 21:58	06:26 20:32-20:46/14 21:14	07:14 20:09	08:02 19:01	07:55 17:03	08:39 16:38
13	08:45 17:03	08:04 17:56	07:06 18:45	06:57 20:37	05:59 20:22-20:44/22 21:25	05:30 21:05-21:28/23 22:01	05:44 21:15-21:26/11 21:57	06:27 20:32-20:44/12 21:12	07:16 20:06	08:04 18:59	07:57 17:01	08:40 16:38
14	08:44 17:05	08:02 17:58	07:04 18:47	06:55 20:38	05:58 20:23-20:43/20 21:27	05:30 21:06-21:29/23 22:01	05:45 21:15-21:25/10 21:56	06:29 20:34-20:43/9 21:10	07:17 20:04	08:06 18:57	07:59 17:00	08:41 16:38
15	08:44 17:06	08:00 18:00	07:01 18:49	06:52 20:40	05:56 20:24-20:43/19 21:28	05:30 21:06-21:29/23 22:02	05:46 21:16-21:24/8 21:55	06:30 20:35-20:40/5 21:09	07:19 20:02	08:07 18:55	08:01 16:59	08:42 16:38
16	08:43 17:08	07:58 18:02	06:59 18:50	06:50 20:42	05:55 20:25-20:42/17 21:29	05:30 21:06-21:30/24 22:02	05:48 21:17-21:23/6 21:54	06:32 21:07	07:21 19:59	08:09 18:52	08:02 16:57	08:43 16:38
17	08:42 17:09	07:56 18:03	06:57 18:52	06:48 20:43	05:53 20:26-20:40/14 21:31	05:30 21:06-21:30/24 22:03	05:49 21:18-21:22/4 21:53	06:34 21:05	07:22 19:57	08:11 18:50	08:04 16:56	08:44 16:38
18	08:41 17:11	07:54 18:05	06:55 18:54	06:46 20:45	05:52 20:28-20:39/11 21:32	05:30 21:07-21:30/23 22:03	05:50 21:19-21:21/2 21:52	06:35 21:03	07:24 19:55	08:12 18:48	08:06 16:55	08:44 16:39
19	08:40 17:12	07:53 18:07	06:53 18:55	06:44 20:47	05:51 20:31-20:36/5 21:34	05:30 21:07-21:31/24 22:04	05:51 21:51	06:37 21:01	07:25 19:53	08:14 18:46	08:07 16:53	08:45 16:39
20	08:39 17:14	07:51 18:09	06:50 18:57	06:42 20:48	05:49 21:35	05:30 21:07-21:31/24 22:04	05:52 21:50	06:38 20:59	07:27 19:50	08:16 18:44	08:09 16:52	08:46 16:39
21	08:38 17:16	07:49 18:11	06:48 18:59	06:40 20:50	05:48 21:37	05:30 21:07-21:31/24 22:04	05:54 21:49	06:40 20:57	07:28 19:48	08:17 18:42	08:11 16:51	08:46 16:40
22	08:37 17:17	07:47 18:12	06:46 19:00	06:38 20:51	05:47 21:38	05:30 21:08-21:32/24 22:04	05:55 21:48	06:41 20:54	07:30 19:46	08:19 18:40	08:12 16:50	08:47 16:40
23	08:36 17:19	07:45 18:14	06:43 19:02	06:36 20:53	05:46 21:39	05:30 21:08-21:32/24 22:05	05:56 21:46	06:43 20:52	07:32 19:43	08:21 18:38	08:14 16:49	08:47 16:41
24	08:35 17:21	07:42 18:16	06:41 19:04	06:34 20:55	05:44 21:41	05:30 21:08-21:32/24 22:05	05:58 21:45	06:44 20:50	07:33 19:41	08:23 18:36	08:15 16:48	08:48 16:41
25	08:33 17:22	07:40 18:18	06:39 19:05	06:32 20:56	05:43 21:10-21:11/1 21:42	05:31 21:08-21:32/24 22:05	05:59 20:40-20:48/8 21:44	06:46 20:48	07:35 19:39	07:24 17:34	08:17 16:47	08:48 16:42
26	08:32 17:24	07:38 18:19	06:37 19:07	06:30 20:58	05:42 21:09-21:12/3 21:43	05:31 21:08-21:32/24 22:05	06:00 20:38-20:50/12 21:42	06:48 20:46	07:36 19:37	07:26 17:32	08:19 16:46	08:49 16:43
27	08:31 17:26	07:36 18:21	06:34 19:09	06:28 20:30-20:32/2 21:00	05:41 21:08-21:13/5 21:45	05:32 21:08-21:31/23 22:05	06:02 20:36-20:51/15 21:41	06:49 20:44	07:38 19:34	07:28 17:30	08:20 16:45	08:49 16:43
28	08:30 17:28	07:34 18:23	06:32 19:10	06:26 20:27-20:33/6 21:01	05:40 21:07-21:14/7 21:46	05:32 21:09-21:32/23 22:05	06:03 20:35-20:53/18 21:40	06:51 20:42	07:40 19:32	07:29 17:28	08:22 16:44	08:49 16:44
29	08:28 17:29		07:30 20:12	06:24 20:26-20:36/10 21:03	05:39 21:07-21:16/9 21:47	05:33 21:09-21:31/22 22:04	06:05 20:34-20:53/19 21:38	06:52 20:40	07:41 19:30	07:31 17:26	08:23 16:44	08:49 16:45
30	08:27 17:31		07:28 20:14	06:22 20:24-20:37/13 21:05	05:38 21:06-21:17/11 21:48	05:33 21:09-21:32/23 22:04	06:06 20:33-20:54/21 21:37	06:54 20:38	07:43 19:28	07:33 17:25	08:24 16:43	08:49 16:46
31	08:25 17:33		07:25 20:15		05:37 21:06-21:18/12 21:49		06:08 20:33-20:55/22 21:35	06:55 20:35		07:35 17:23		08:49 16:47
Potential sun hours	262	279	367	414	482	494	498	451	380	333	269	248
Sum of minutes with flicker	0	0	0	31	425	641	372	293	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 14 - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April		May		June	
1	08:49	08:24	07:32	07:23		06:20	19:55-20:38/43	05:36	20:45-21:18/33
	16:48	17:35	18:25	20:17		21:06		21:50	
2	08:49	08:22	07:30	07:21		06:18	19:55-20:39/44	05:36	20:46-21:20/34
	16:49	17:36	18:26	20:19		21:08		21:51	
3	08:49	08:21	07:28	07:19		06:16	19:55-20:41/46	05:35	20:46-21:21/35
	16:50	17:38	18:28	20:20		21:09		21:52	
4	08:49	08:19	07:26	07:17		06:15	19:56-20:43/47	05:34	20:46-21:21/35
	16:51	17:40	18:30	20:22		21:11		21:53	
5	08:49	08:18	07:24	07:14		06:13	19:56-20:44/48	05:34	20:47-21:23/36
	16:53	17:42	18:32	20:24		21:13		21:54	
6	08:49	08:16	07:21	07:12		06:11	19:56-20:45/49	05:33	20:47-21:23/36
	16:54	17:44	18:33	20:25		21:14		21:55	
7	08:48	08:14	07:19	07:10		06:09	19:57-20:47/50	05:32	20:47-21:24/37
	16:55	17:45	18:35	20:27		21:16		21:56	
8	08:48	08:13	07:17	07:08		06:08	19:58-20:48/50	05:32	20:48-21:25/37
	16:56	17:47	18:37	20:28		21:17		21:57	
9	08:47	08:11	07:15	07:05	20:02-20:05/3	06:06	19:59-20:50/51	05:31	20:48-21:25/37
	16:58	17:49	18:39	20:30		21:19		21:58	
10	08:47	08:09	07:13	07:03	20:01-20:06/5	06:04	20:00-20:51/51	05:31	20:49-21:26/37
	16:59	17:51	18:40	20:32		21:20		21:59	
11	08:46	08:08	07:10	07:01	19:59-20:07/8	06:03	20:02-20:53/51	05:31	20:49-21:27/38
	17:00	17:53	18:42	20:33		21:22		21:59	
12	08:46	08:06	07:08	06:59	19:58-20:09/11	06:01	20:03-20:54/51	05:30	20:49-21:27/38
	17:02	17:54	18:44	20:35		21:24		22:00	
13	08:45	08:04	07:06	06:57	19:57-20:10/13	05:59	20:26-20:56/30	05:30	20:50-21:28/38
	17:03	17:56	18:45	20:37		21:25	20:05-20:22/17	22:01	
14	08:44	08:02	07:04	06:55	19:57-20:12/15	05:58	20:26-20:57/31	05:30	20:50-21:29/39
	17:05	17:58	18:47	20:38		21:27	20:08-20:14/6	22:01	
15	08:44	08:00	07:02	06:52	19:57-20:14/17	05:56	20:27-20:58/31	05:30	20:50-21:29/39
	17:06	18:00	18:49	20:40		21:28		22:02	
16	08:43	07:58	06:59	06:50	19:58-20:15/17	05:55	20:27-21:00/33	05:30	20:51-21:30/39
	17:08	18:02	18:50	20:42		21:30		22:02	
17	08:42	07:56	06:57	06:48	19:58-20:16/18	05:54	20:27-21:01/34	05:30	20:51-21:30/39
	17:09	18:03	18:52	20:43		21:31		22:03	
18	08:41	07:54	06:55	06:46	19:59-20:18/19	05:52	20:28-21:02/34	05:30	20:51-21:30/39
	17:11	18:05	18:54	20:45		21:32		22:03	
19	08:40	07:53	06:53	06:44	20:01-20:20/19	05:51	20:28-21:04/36	05:30	20:52-21:31/39
	17:12	18:07	18:55	20:47		21:34		22:04	
20	08:39	07:51	06:50	06:42	20:03-20:22/19	05:49	20:29-21:05/36	05:30	20:52-21:31/39
	17:14	18:09	18:57	20:48		21:35		22:04	
21	08:38	07:49	06:48	06:40	20:01-20:23/22	05:48	20:29-21:06/37	05:30	20:52-21:31/39
	17:16	18:11	18:59	20:50		21:37		22:04	
22	08:37	07:47	06:46	06:38	20:00-20:25/25	05:47	20:30-21:07/37	05:30	20:53-21:32/39
	17:17	18:12	19:00	20:51		21:38		22:04	
23	08:36	07:45	06:44	06:36	19:59-20:26/27	05:46	20:31-21:08/37	05:30	20:53-21:32/39
	17:19	18:14	19:02	20:53		21:39		22:05	
24	08:35	07:43	06:41	06:34	19:58-20:28/30	05:44	20:33-21:10/37	05:31	20:53-21:32/39
	17:21	18:16	19:04	20:55		21:41		22:05	
25	08:33	07:40	06:39	06:32	19:57-20:29/32	05:43	20:34-21:11/37	05:31	20:53-21:32/39
	17:22	18:18	19:05	20:56		21:42		22:05	
26	08:32	07:38	06:37	06:30	19:56-20:31/35	05:42	20:35-21:12/37	05:31	20:53-21:32/39
	17:24	18:19	19:07	20:58		21:43		22:05	
27	08:31	07:36	06:34	06:28	19:55-20:32/37	05:41	20:44-21:13/29	05:32	20:53-21:31/38
	17:26	18:21	19:09	21:00		21:45	20:38-20:43/5	22:05	
28	08:30	07:34	06:32	06:26	19:55-20:33/38	05:40	20:44-21:14/30	05:32	20:53-21:32/39
	17:28	18:23	19:10	21:01		21:46		22:05	
29	08:28		07:30	06:24	19:56-20:36/40	05:39	20:45-21:16/31	05:33	20:53-21:31/38
	17:29		20:12	21:03		21:47		22:04	
30	08:27		07:28	06:22	19:55-20:37/42	05:38	20:45-21:17/32	05:33	20:53-21:32/39
	17:31		20:14	21:05		21:48		22:04	
31	08:25		07:25			05:37	20:45-21:18/33		
	17:33		20:15			21:49			
Potential sun hours	262	279	367	414		482		494	
Sum of minutes with flicker	0	0	0	492		1251		1132	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 14 - NORDEX N149/4.0-4.5 4500 149.0 !O! hub: 125,0 m (TOT: 199,5 m) (238)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 20:54-21:32/38	06:09 20:13-21:04/51	06:57 19:59-20:07/8	07:44	07:36	08:26
	22:04	21:33	20:33	19:25	17:21	16:42
2	05:35 20:53-21:31/38	06:11 20:12-21:03/51	06:59 19:59-20:04/5	07:46	07:38	08:27
	22:04	21:32	20:31	19:23	17:19	16:42
3	05:35 20:53-21:31/38	06:12 20:10-21:01/51	07:00 20:00-20:03/3	07:48	07:40	08:29
	22:03	21:30	20:29	19:21	17:17	16:41
4	05:36 20:54-21:31/37	06:14 20:08-20:59/51	07:02	07:49	07:42	08:30
	22:03	21:29	20:27	19:19	17:16	16:40
5	05:37 20:53-21:30/37	06:15 20:08-20:58/50	07:03	07:51	07:43	08:31
	22:03	21:27	20:24	19:16	17:14	16:40
6	05:38 20:53-21:29/36	06:17 20:07-20:56/49	07:05	07:52	07:45	08:33
	22:02	21:25	20:22	19:14	17:12	16:40
7	05:38 20:53-21:29/36	06:18 20:06-20:55/49	07:06	07:54	07:47	08:34
	22:01	21:23	20:20	19:12	17:11	16:39
8	05:39 20:53-21:29/36	06:20 20:05-20:53/48	07:08	07:56	07:49	08:35
	22:01	21:22	20:18	19:10	17:09	16:39
9	05:40 20:53-21:28/35	06:21 20:04-20:51/47	07:10	07:57	07:50	08:36
	22:00	21:20	20:15	19:08	17:07	16:39
10	05:41 20:53-21:28/35	06:23 20:04-20:50/46	07:11	07:59	07:52	08:37
	22:00	21:18	20:13	19:05	17:06	16:38
11	05:42 20:53-21:27/34	06:24 20:03-20:48/45	07:13	08:01	07:54	08:38
	21:59	21:16	20:11	19:03	17:04	16:38
12	05:43 20:54-21:26/32	06:26 20:04-20:46/42	07:14	08:02	07:56	08:39
	21:58	21:14	20:09	19:01	17:03	16:38
13	05:44 20:54-21:26/32	06:27 20:03-20:44/41	07:16	08:04	07:57	08:40
	21:57	21:12	20:06	18:59	17:01	16:38
14	05:45 20:54-21:25/31	06:29 20:03-20:43/40	07:17	08:06	07:59	08:41
	21:56	21:11	20:04	18:57	17:00	16:38
15	05:47 20:54-21:24/30	06:30 20:03-20:40/37	07:19	08:07	08:01	08:42
	21:55	21:09	20:02	18:55	16:59	16:38
16	05:48 20:54-21:23/29	06:32 20:03-20:39/36	07:21	08:09	08:02	08:43
	21:54	21:07	19:59	18:52	16:57	16:38
17	05:49 20:46-21:22/36	06:34 20:03-20:37/34	07:22	08:11	08:04	08:44
	21:53	21:05	19:57	18:50	16:56	16:39
18	05:50 20:44-21:21/37	06:35 20:04-20:35/31	07:24	08:12	08:06	08:44
	21:52	21:03	19:55	18:48	16:55	16:39
19	05:51 20:43-21:20/37	06:37 20:03-20:33/30	07:25	08:14	08:07	08:45
	21:51	21:01	19:53	18:46	16:53	16:39
20	05:53 20:42-21:20/38	06:38 20:04-20:32/28	07:27	08:16	08:09	08:46
	21:50	20:59	19:50	18:44	16:52	16:39
21	05:54 20:41-21:18/37	06:40 20:05-20:29/24	07:28	08:17	08:11	08:46
	21:49	20:57	19:48	18:42	16:51	16:40
22	05:55 20:40-21:17/37	06:41 20:06-20:28/22	07:30	08:19	08:12	08:47
	21:48	20:55	19:46	18:40	16:50	16:40
23	05:56 20:39-21:16/37	06:43 20:07-20:25/18	07:32	08:21	08:14	08:47
	21:46	20:52	19:44	18:38	16:49	16:41
24	05:58 20:38-21:14/36	06:45 20:04-20:24/20	07:33	08:23	08:15	08:48
	21:45	20:50	19:41	18:36	16:48	16:41
25	05:59 20:39-21:14/35	06:46 20:02-20:21/19	07:35	07:24	08:17	08:48
	21:44	20:48	19:39	17:34	16:47	16:42
26	06:01 20:38-21:12/34	06:48 20:01-20:17/16	07:36	07:26	08:19	08:49
	21:42	20:46	19:37	17:32	16:46	16:43
27	06:02 20:37-21:11/34	06:49 19:59-20:17/18	07:38	07:28	08:20	08:49
	21:41	20:44	19:34	17:30	16:45	16:43
28	06:03 20:38-21:10/32	06:51 19:59-20:15/16	07:40	07:29	08:22	08:49
	21:40	20:42	19:32	17:28	16:44	16:44
29	06:05 20:37-21:08/31	06:52 19:58-20:13/15	07:41	07:31	08:23	08:49
	21:38	20:40	19:30	17:26	16:44	16:45
30	06:06 20:36-21:07/31	06:54 19:58-20:11/13	07:43	07:33	08:24	08:49
	21:37 20:17-20:26/9	20:38	19:28	17:25	16:43	16:46
31	06:08 20:35-21:06/31	06:56 19:58-20:09/11		07:35		08:49
	21:35 20:15-20:34/19	20:35		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	1105	1049	16	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 15 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (239)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 15:30-15:58/28	08:24 15:38-17:05/87	07:32	07:23	06:20	05:37
	16:48	17:35	18:25	20:17	21:06	21:50
2	08:49 15:30-15:59/29	08:22 15:39-17:07/88	07:30	07:21	06:18	05:36
	16:49	17:37	18:27	20:19	21:08	21:51
3	08:49 15:30-15:58/28	08:21 16:31-17:09/38	07:28	07:19	06:17	05:35
	16:50	17:38 15:38-16:30/52	18:28	20:20	21:09	21:52
4	08:49 15:31-15:59/28	08:19 15:38-17:11/93	07:26	07:17	06:15	05:34
	16:52	17:40	18:30	20:22	21:11	21:53
5	08:49 15:32-16:00/28	08:18 15:39-17:13/94	07:24	07:14	06:13	05:34
	16:53	17:42	18:32	20:24	21:13	21:54
6	08:49 15:32-15:59/27	08:16 16:32-17:15/43	07:21	07:12	06:11	05:33
	16:54	17:44 15:39-16:30/51	18:33	20:25	21:14	21:55
7	08:48 15:33-16:00/27	08:14 16:32-17:15/43	07:19	07:10	06:09	05:33
	16:55	17:46 15:39-16:30/51	18:35	20:27	21:16	21:56
8	08:48 15:33-16:00/27	08:13 16:32-17:15/43	07:17	07:08	06:08	05:32
	16:56	17:47 15:39-16:30/51	18:37	20:29	21:17	21:57
9	08:47 15:33-16:00/27	08:11 16:34-17:16/42	07:15	07:06	06:06	05:32
	16:58	17:49 15:41-16:30/49	18:39	20:30	21:19	21:58
10	08:47 15:35-16:03/28	08:09 16:35-17:15/40	07:13	07:03	06:04	05:31
	16:59	17:51 15:41-16:30/49	18:40	20:32	21:20	21:59
11	08:46 15:35-16:06/31	08:08 16:36-17:15/39 15:41-16:29/48	07:10	07:01	06:03	05:31
	17:01 16:24-16:27/3	17:53 17:24-17:25/1	18:42	20:33	21:22	21:59
12	08:46 15:36-16:08/32	08:06 16:56-17:14/18 15:42-16:29/47	07:08	06:59	06:01	05:31
	17:02 16:22-16:29/7	17:55 17:22-17:27/5 16:38-16:53/15	18:44	20:35	21:23	22:00
13	08:45 15:37-16:09/32	08:04 16:57-17:13/16 15:43-16:28/45	07:06	06:57	06:00	05:30
	17:03 16:22-16:30/8	17:56 17:21-17:29/8 16:41-16:51/10	18:45	20:37	21:25	22:01
14	08:44 15:38-16:12/34	08:02 16:58-17:11/13 15:43-16:27/44	07:04	06:55	05:58	05:30
	17:05 16:22-16:33/11	17:58 17:20-17:31/11	18:47	20:38	21:27	22:01
15	08:44 15:39-16:13/34	08:00 17:01-17:09/8 15:44-16:26/42	07:02	06:53	05:57	05:30
	17:06 16:21-16:34/13	18:00 17:19-17:32/13	18:49	20:40	21:28	22:02
16	08:43 15:41-16:15/34	07:58 17:19-17:34/15	06:59	06:50	05:55	05:30
	17:08 16:21-16:36/15	18:02 15:46-16:25/39	18:50	20:42	21:29	22:02
17	08:42 15:42-16:17/35	07:56 17:19-17:36/17	06:57	06:48	05:54	05:30
	17:09 16:21-16:38/17	18:04 15:47-16:24/37	18:52	20:43	21:31	22:03
18	08:41 15:43-16:18/35	07:54 17:19-17:37/18	06:55	06:46	05:52	05:30
	17:11 16:21-16:39/18	18:05 15:49-16:23/34	18:54	20:45	21:32	22:03
19	08:40 15:42-16:18/36	07:53 17:20-17:36/16	06:53	06:44	05:51	05:30
	17:13 16:20-16:40/20	18:07 15:51-16:21/30	18:55	20:47	21:34	22:04
20	08:39 15:41-16:42/61	07:51 17:20-17:36/16	06:50	06:42	05:50	05:30
	17:14	18:09 15:53-16:19/26	18:57	20:48	21:35	22:04
21	08:38 15:41-16:44/63	07:49 17:22-17:35/13	06:48	06:40	05:48	05:30
	17:16	18:11 15:56-16:16/20	18:59	20:50	21:37	22:04
22	08:37 15:41-16:46/65	07:47 17:24-17:33/9	06:46	06:38	05:47	05:30
	17:17	18:12 16:01-16:12/11	19:00	20:51	21:38	22:04
23	08:36 15:41-16:48/67	07:45	06:44	06:36	05:46	05:30
	17:19	18:14	19:02	20:53	21:39	22:05
24	08:35 15:40-16:50/70	07:43	06:41	06:34	05:45	05:31
	17:21	18:16	19:04	20:55	21:41	22:05
25	08:33 15:40-16:52/72	07:40	06:39	06:32	05:43	05:31
	17:23	18:18	19:05	20:56	21:42	22:05
26	08:32 15:40-16:54/74	07:38	06:37	06:30	05:42	05:31
	17:24	18:20	19:07	20:58	21:43	22:05
27	08:31 15:39-16:54/75	07:36	06:35	06:28	05:41	05:32
	17:26	18:21	19:09	21:00	21:44	22:05
28	08:30 15:39-16:56/77	07:34	06:32	06:26	05:40	05:32
	17:28	18:23	19:10	21:01	21:46	22:05
29	08:28 15:39-16:56/77		07:30	06:24	05:39	05:33
	17:29		20:12	21:03	21:47	22:04
30	08:27 17:01-17:02/1		07:28	06:22	05:38	05:33
	17:31 15:39-16:57/78		20:14	21:05	21:48	22:04
31	08:25 15:39-17:03/84		07:26		05:37	
	17:33		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	1556	1598	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 15 - Siemens Gamesa SG 6.0-170 6200 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (239)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34	06:09	06:57	07:44	07:36 16:05-16:45/40	08:26 15:17-15:48/31
	22:04	21:33	20:33	19:25	17:21 15:11-16:00/49	16:42 16:06-16:10/4
2	05:35	06:11	06:59	07:46	07:38 16:03-16:44/41	08:27 15:18-15:47/29
	22:04	21:32	20:31	19:23	17:19 15:09-15:59/50	16:42
3	05:35	06:12	07:00	07:48	07:40 16:02-16:45/43	08:29 15:18-15:44/26
	22:03	21:30	20:29	19:21	17:18 15:09-15:59/50	16:41
4	05:36	06:14	07:02	07:49	07:42 16:02-16:45/43	08:30 15:17-15:44/27
	22:03	21:29	20:27	19:19	17:16 15:09-16:00/51	16:41
5	05:37	06:15	07:03	07:51	07:43 16:01-16:44/43	08:31 15:18-15:45/27
	22:02	21:27	20:24	19:16	17:14 15:09-16:00/51	16:40
6	05:38	06:17	07:05	07:53	07:45 16:01-16:43/42	08:32 15:18-15:45/27
	22:02	21:25	20:22	19:14	17:12 15:09-16:00/51	16:40
7	05:39	06:18	07:07	07:54	07:47 16:01-16:41/40	08:34 15:18-15:46/28
	22:01	21:23	20:20	19:12	17:11 15:09-16:00/51	16:39
8	05:39	06:20	07:08	07:56	07:49 15:09-16:40/91	08:35 15:19-15:47/28
	22:01	21:22	20:18	19:10	17:09	16:39
9	05:40	06:21	07:10	07:57	07:50 15:10-16:38/88	08:36 15:19-15:47/28
	22:00	21:20	20:15	19:08	17:08	16:39
10	05:41	06:23	07:11	07:59	07:52 15:10-16:35/85	08:37 15:19-15:48/29
	21:59	21:18	20:13	19:05	17:06	16:39
11	05:42	06:24	07:13	08:01	07:54 16:29-16:34/5	08:38 15:20-15:48/28
	21:59	21:16	20:11	19:03	17:04 15:09-16:28/79	16:38
12	05:43	06:26	07:14	08:02	07:56 15:10-16:28/78	08:39 15:20-15:48/28
	21:58	21:14	20:09	19:01	17:03	16:38
13	05:44	06:27	07:16	08:04	07:57 15:11-16:28/77	08:40 15:21-15:49/28
	21:57	21:12	20:06	18:59	17:02	16:38
14	05:46	06:29	07:18	08:06	07:59 15:11-16:28/77	08:41 15:21-15:49/28
	21:56	21:10	20:04	18:57	17:00	16:38
15	05:47	06:31	07:19	08:07	08:01 15:12-16:27/75	08:42 15:22-15:50/28
	21:55	21:09	20:02	18:55	16:59	16:38
16	05:48	06:32	07:21	08:09	08:02 15:13-16:27/74	08:43 15:22-15:51/29
	21:54	21:07	20:00	18:53	16:57	16:39
17	05:49	06:34	07:22	08:11	08:04 15:13-16:25/72	08:44 15:22-15:50/28
	21:53	21:05	19:57	18:50	16:56	16:39
18	05:50	06:35	07:24	08:12	08:06 15:14-16:24/70	08:44 15:23-15:51/28
	21:52	21:03	19:55	18:48	16:55	16:39
19	05:51	06:37	07:25	08:14 17:57-18:02/5	08:07 15:15-16:22/67	08:45 15:23-15:52/29
	21:51	21:01	19:53	18:46	16:54	16:39
20	05:53	06:38	07:27	08:16 17:53-18:04/11	08:09 15:16-16:21/65	08:46 15:23-15:52/29
	21:50	20:59	19:50	18:44 16:29-16:44/15	16:52	16:40
21	05:54	06:40	07:29	08:17 17:52-18:05/13	08:11 15:17-16:20/63	08:46 15:24-15:53/29
	21:49	20:57	19:48	18:42 16:26-16:48/22	16:51	16:40
22	05:55	06:41	07:30	08:19 17:51-18:06/15	08:12 15:17-16:18/61	08:47 15:24-15:53/29
	21:48	20:55	19:46	18:40 16:23-16:50/27	16:50	16:40
23	05:57	06:43	07:32	08:21 17:50-18:07/17	08:14 15:19-15:55/36	08:47 15:25-15:54/29
	21:46	20:52	19:44	18:38 16:20-16:52/32	16:49 15:57-16:17/20	16:41
24	05:58	06:45	07:33	08:23 17:50-18:07/17	08:15 15:20-15:55/35	08:48 15:25-15:54/29
	21:45	20:50	19:41	18:36 16:19-16:54/35	16:48 15:58-16:16/18	16:42
25	05:59	06:46	07:35	07:24 16:48-17:05/17	08:17 15:20-15:55/35	08:48 15:26-15:54/28
	21:44	20:48	19:39	17:34 15:17-15:55/38	16:47 15:58-16:15/17	16:42
26	06:01	06:48	07:36	07:26 16:49-17:03/14	08:18 15:19-15:53/34	08:49 15:27-15:55/28
	21:42	20:46	19:37	17:32 15:15-15:55/40	16:46 15:59-16:14/15	16:43
27	06:02	06:49	07:38	07:28 16:30-16:39/9 15:14-15:56/42	08:20 15:18-15:53/35	08:49 15:27-15:55/28
	21:41	20:44	19:34	17:30 16:49-17:01/12	16:45 16:00-16:13/13	16:44
28	06:03	06:51	07:40	07:29 16:28-16:41/13 15:13-15:57/44	08:22 15:17-15:51/34	08:49 15:27-15:56/29
	21:40	20:42	19:32	17:28 16:50-17:00/10	16:44 16:01-16:12/11	16:44
29	06:05	06:52	07:41	07:31 16:26-16:43/17 15:12-15:58/46	08:23 15:18-15:50/32	08:49 15:28-15:56/28
	21:38	20:40	19:30	17:27 16:51-16:58/7 16:10-16:21/11	16:44 16:03-16:11/8	16:45
30	06:06	06:54	07:43	07:33 16:25-16:44/19 15:11-15:59/48	08:24 15:18-15:50/32	08:49 15:28-15:57/29
	21:37	20:38	19:28	17:25 16:52-16:56/4 16:07-16:23/16	16:43 16:04-16:11/7	16:46
31	06:08	06:56		07:35 16:06-16:44/38		08:49 15:29-15:57/28
	21:35	20:35		17:23 15:11-15:59/48		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	0	0	0	702	2154	881

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 16 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 16:04-16:09/5	08:24 16:54-17:05/11	07:32 17:47-17:59/12	07:23	06:20	05:37
	16:48 15:11-15:50/39	17:35 15:27-15:56/29	18:25 17:13-17:38/25	20:17	21:06	21:50
2	08:49 16:05-16:09/4	08:22 17:01-17:07/6	07:30 17:45-18:01/16	07:21	06:18	05:36
	16:49 15:12-15:51/39	17:37 15:29-15:55/26	18:26 17:14-17:37/23	20:19	21:08	21:51
3	08:49 15:11-15:51/40	08:21 15:31-15:53/22	07:28 17:37-18:03/26	07:19	06:17	05:35
	16:50	17:38 17:01-17:09/8	18:28 17:16-17:36/20	20:20	21:09	21:52
4	08:49 16:16-16:18/2	08:19 15:34-15:51/17	07:26 17:18-18:05/47	07:17	06:15	05:34
	16:52 15:12-15:52/40	17:40 17:01-17:11/10	18:30	20:22	21:11	21:53
5	08:49 16:17-16:19/2	08:18 15:39-15:48/9	07:24 17:31-18:05/34	07:14	06:13	05:34
	16:53 15:13-15:53/40	17:42 17:02-17:13/11	18:32 17:20-17:30/10	20:24	21:13	21:54
6	08:49 16:17-16:20/3	08:16 16:59-17:15/16	07:21 17:29-18:05/36	07:12	06:11	05:33
	16:54 15:12-15:53/41	17:44	18:33	20:25	21:14	21:55
7	08:48 16:18-16:22/4	08:14 16:58-17:17/19	07:19 17:28-18:05/37	07:10	06:09	05:33
	16:55 15:13-15:54/41	17:46	18:35 18:09-18:10/1	20:27	21:16	21:56
8	08:48 16:18-16:23/5	08:13 16:56-17:18/22	07:17 17:27-18:05/38	07:08	06:08	05:32
	16:56 15:13-15:55/42	17:47	18:37 18:09-18:12/3	20:28	21:17	21:57
9	08:47 16:18-16:24/6	08:11 16:56-17:21/25	07:15 17:25-18:03/38	07:06	06:06	05:32
	16:58 15:13-15:55/42	17:49	18:39 18:09-18:13/4	20:30	21:19	21:58
10	08:47 16:19-16:26/7	08:09 16:55-17:23/28	07:13 17:24-18:03/39	07:03	06:04	05:31
	16:59 15:14-15:56/42	17:51	18:40 18:08-18:15/7	20:32	21:20	21:59
11	08:46 16:20-16:27/7	08:08 16:55-17:25/30	07:10 17:24-18:02/38	07:01	06:03	05:31
	17:00 15:13-15:56/43	17:53	18:42 18:07-18:17/10	20:33	21:22	21:59
12	08:46 16:20-16:29/9	08:06 16:54-17:27/33	07:08 17:23-18:02/39	06:59	06:01	05:30
	17:02 15:14-15:57/43	17:55	18:44 18:07-18:19/12	20:35	21:23	22:00
13	08:45 16:21-16:30/9	08:04 17:25-17:29/4	07:06 17:22-18:01/39	06:57	06:00	05:30
	17:03 15:14-15:57/43	17:56 16:54-17:23/29	18:45 18:06-18:20/14	20:37	21:25	22:01
14	08:44 16:23-16:31/8	08:02 16:53-17:21/28	07:04 18:06-18:22/16	06:55	05:58	05:30
	17:05 15:15-15:58/43	17:58	18:47 17:22-18:02/40	20:38	21:27	22:01
15	08:44 16:25-16:30/5	08:00 17:23-17:29/6	07:02 18:06-18:24/18	06:53	05:57	05:30
	17:06 15:15-15:59/44	18:00 16:53-17:21/28	18:49 17:22-18:02/40	20:40	21:28	22:02
16	08:43 15:15-15:59/44	07:58 16:54-17:33/39	06:59 18:07-18:23/16	06:50	05:55	05:30
	17:08	18:02	18:50 17:22-18:02/40	20:42	21:29	22:02
17	08:42 15:16-15:59/43	07:56 16:54-17:35/41	06:57 18:08-18:19/11	06:48	05:54	05:30
	17:09	18:04	18:52 17:21-18:00/39	20:43	21:31	22:03
18	08:41 15:16-16:00/44	07:54 16:54-17:37/43	06:55 18:11-18:16/5	06:46	05:52	05:30
	17:11	18:05	18:54 17:22-18:00/38	20:45	21:32	22:03
19	08:40 15:17-16:00/43	07:53 16:55-17:38/43	06:53 17:22-17:59/37	06:44	05:51	05:30
	17:13	18:07	18:55	20:47	21:34	22:04
20	08:39 15:16-15:59/43	07:51 16:56-17:39/43	06:50 17:23-17:59/36	06:42	05:49	05:30
	17:14	18:09	18:57	20:48	21:35	22:04
21	08:38 15:17-16:00/43	07:49 16:57-17:40/43	06:48 17:23-17:57/34	06:40	05:48	05:30
	17:16	18:11	18:59	20:50	21:37	22:04
22	08:37 16:44-16:46/2	07:47 16:59-17:40/41	06:46 17:24-17:56/32	06:38	05:47	05:30
	17:17 15:18-16:00/42	18:12	19:00	20:51	21:38	22:04
23	08:36 16:44-16:48/4	07:45 17:01-17:40/39	06:44 18:35-18:37/2	06:36	05:46	05:30
	17:19 15:19-16:00/41	18:14	19:02 17:26-17:55/29	20:53	21:39	22:05
24	08:35 16:44-16:49/5	07:43 17:12-17:41/29	06:41 18:34-18:38/4	06:34	05:45	05:31
	17:21 15:19-16:00/41	18:16 17:05-17:10/5	19:04 17:27-17:52/25	20:55	21:41	22:05
25	08:33 16:45-16:52/7	07:40 17:12-17:41/29	06:39 18:34-18:40/6	06:32	05:43	05:31
	17:23 15:20-16:00/40	18:18	19:05 17:29-17:50/21	20:56	21:42	22:05
26	08:32 16:46-16:54/8	07:38 17:12-17:40/28	06:37 18:35-18:42/7	06:30	05:42	05:31
	17:24 15:21-16:00/39	18:20	19:07 17:32-17:47/15	20:58	21:43	22:05
27	08:31 16:46-16:55/9	07:36 17:12-17:39/27	06:35 18:37-18:43/6	06:28	05:41	05:32
	17:26 15:21-15:59/38	18:21	19:09 17:37-17:42/5	21:00	21:44	22:05
28	08:30 16:49-16:58/9	07:34 17:49-17:57/8	06:32	06:26	05:40	05:32
	17:28 15:22-15:59/37	18:23 17:12-17:39/27	19:10	21:01	21:46	22:05
29	08:28 16:50-16:59/9		07:30	06:24	05:39	05:33
	17:29 15:23-15:58/35		20:12	21:03	21:47	22:04
30	08:27 16:51-17:02/11		07:28	06:22	05:38	05:33
	17:31 15:25-15:58/33		20:14	21:05	21:48	22:04
31	08:25 16:52-17:03/11		07:26		05:37	
	17:33 15:26-15:57/31		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	1410	902	1090	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 16 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (240)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September		October		November		December	
1	05:34	06:09	06:57		07:44	18:02-18:41/39	07:36	16:25-16:52/27	08:26	16:02-16:10/8
	22:04	21:33	20:33		19:25	18:46-18:58/12	17:21		16:42	14:56-15:38/42
2	05:35	06:11	06:59		07:46	18:02-18:41/39	07:38	16:25-16:50/25	08:27	16:02-16:09/7
	22:04	21:32	20:31		19:23	18:46-18:57/11	17:19		16:42	14:57-15:39/42
3	05:35	06:12	07:00		07:48	18:02-18:40/38	07:40	16:26-16:48/22	08:29	16:02-16:08/6
	22:03	21:30	20:29		19:21	18:46-18:54/8	17:17		16:41	14:57-15:39/42
4	05:36	06:14	07:02		07:49	18:03-18:41/38	07:42	16:27-16:46/19	08:30	16:02-16:07/5
	22:03	21:29	20:27		19:19	18:47-18:52/5	17:16		16:40	14:57-15:39/42
5	05:37	06:15	07:03		07:51	18:03-18:42/39	07:43	16:29-16:44/15	08:31	16:03-16:07/4
	22:02	21:27	20:24		19:16	18:46-18:50/4	17:14		16:40	14:58-15:40/42
6	05:38	06:17	07:05		07:52	18:03-18:41/38	07:45	15:08-15:18/10	08:32	16:03-16:06/3
	22:02	21:25	20:22		19:14	18:45-18:47/2	17:12	16:32-16:43/11	16:40	14:58-15:39/41
7	05:39	06:18	07:07		07:54	18:05-18:41/36	07:47	15:04-15:22/18	08:34	16:03-16:06/3
	22:01	21:23	20:20		19:12		17:11	16:32-16:41/9	16:39	14:59-15:39/40
8	05:39	06:20	07:08		07:56	18:06-18:41/35	07:49	15:02-15:24/22	08:35	16:04-16:06/2
	22:01	21:22	20:18		19:10	17:58-18:04/6	17:09	16:32-16:40/8	16:39	15:00-15:40/40
9	05:40	06:21	07:10		07:57	17:53-18:40/47	07:50	16:31-16:38/7	08:36	15:00-15:40/40
	22:00	21:20	20:15		19:08		17:08	15:00-15:26/26	16:39	
10	05:41	06:23	07:11		07:59	17:51-18:38/47	07:52	16:25-16:35/10	08:37	15:54-15:58/4
	21:59	21:18	20:13		19:05		17:06	14:59-15:28/29	16:38	15:01-15:40/39
11	05:42	06:24	07:13		08:01	18:13-18:36/23	07:54	16:23-16:34/11	08:38	15:54-15:59/5
	21:59	21:16	20:11		19:03	17:49-18:10/21	17:04	14:56-15:28/32	16:38	15:01-15:41/40
12	05:43	06:26	07:14		08:02	18:19-18:33/14	07:55	16:22-16:32/10	08:39	15:54-16:00/6
	21:58	21:14	20:09		19:01	17:47-18:10/23	17:03	14:56-15:29/33	16:38	15:02-15:41/39
13	05:44	06:27	07:16		08:04	18:21-18:31/10	07:57	16:22-16:31/9	08:40	15:53-16:01/8
	21:57	21:12	20:06		18:59	17:46-18:11/25	17:01	14:55-15:30/35	16:38	15:03-15:41/38
14	05:45	06:29	07:17		08:06	18:23-18:29/6	07:59	16:20-16:30/10	08:41	15:54-16:02/8
	21:56	21:10	20:04		18:57	17:45-18:12/27	17:00	14:54-15:31/37	16:38	15:03-15:41/38
15	05:47	06:31	07:19		08:07	17:45-18:12/27	08:01	16:19-16:28/9	08:42	15:54-16:03/9
	21:55	21:09	20:02		18:55		16:59	14:54-15:32/38	16:38	15:04-15:42/38
16	05:48	06:32	07:21	19:26-19:31/5	08:09	17:43-18:12/29	08:02	16:19-16:27/8	08:43	15:54-16:04/10
	21:54	21:07	19:59		18:53		16:57	14:54-15:33/39	16:38	15:05-15:42/37
17	05:49	06:34	07:22	19:24-19:31/7	08:11	17:43-18:12/29	08:04	16:18-16:25/7	08:44	15:54-16:04/10
	21:53	21:05	19:57	18:21-18:35/14	18:50		16:56	14:53-15:33/40	16:39	15:04-15:42/38
18	05:50	06:35	07:24	19:22-19:28/6	08:12	17:35-18:12/37	08:06	16:18-16:23/5	08:44	15:54-16:04/10
	21:52	21:03	19:55	18:17-18:37/20	18:48		16:55	14:52-15:34/42	16:39	15:05-15:43/38
19	05:51	06:37	07:25	19:22-19:26/4	08:14	17:32-18:12/40	08:07	16:18-16:22/4	08:45	15:55-16:05/10
	21:51	21:01	19:53	18:15-18:39/24	18:46		16:54	14:53-15:34/41	16:39	15:06-15:43/37
20	05:53	06:38	07:27	19:21-19:23/2	08:16	17:29-18:10/41	08:09	16:19-16:21/2	08:46	15:55-16:05/10
	21:50	20:59	19:50	18:13-18:41/28	18:44		16:52	14:53-15:35/42	16:40	15:06-15:43/37
21	05:54	06:40	07:28	18:10-18:41/31	08:17	17:27-18:10/43	08:11	14:53-15:36/43	08:46	15:56-16:06/10
	21:49	20:57	19:48		18:42		16:51		16:40	15:07-15:44/37
22	05:55	06:41	07:30	18:09-18:42/33	08:19	17:26-18:09/43	08:12	14:52-15:35/43	08:47	15:56-16:06/10
	21:48	20:54	19:46		18:40		16:50		16:40	15:07-15:44/37
23	05:57	06:43	07:32	18:07-18:42/35	08:21	17:25-18:08/43	08:14	14:53-15:36/43	08:47	15:57-16:07/10
	21:46	20:52	19:44		18:38		16:49		16:41	15:08-15:45/37
24	05:58	06:45	07:33	18:06-18:43/37	08:23	17:25-18:07/42	08:15	14:53-15:37/44	08:48	15:57-16:07/10
	21:45	20:50	19:41		18:36		16:48		16:42	15:08-15:45/37
25	05:59	06:46	07:35	18:05-18:42/37	07:24	16:24-17:05/41	08:17	14:54-15:37/43	08:48	15:57-16:07/10
	21:44	20:48	19:39		17:34		16:47		16:42	15:08-15:45/37
26	06:01	06:48	07:36	18:51-19:01/10	07:26	16:23-17:02/39	08:18	14:53-15:37/44	08:49	15:59-16:08/9
	21:42	20:46	19:37	18:04-18:43/39	17:32		16:46		16:43	15:09-15:47/38
27	06:02	06:49	07:38	18:50-19:02/12	07:28	16:55-16:56/1	08:20	16:04-16:09/5	08:49	15:59-16:09/10
	21:41	20:44	19:34	18:04-18:43/39	17:30	16:23-16:51/28	16:45	14:54-15:38/44	16:44	15:10-15:47/37
28	06:03	06:51	07:40	18:48-19:05/17	07:29	16:57-16:58/1	08:22	16:02-16:10/8	08:49	16:00-16:09/9
	21:40	20:42	19:32	18:03-18:42/39	17:28	16:23-16:51/28	16:44	14:54-15:37/43	16:44	15:10-15:48/38
29	06:05	06:52	07:41	18:47-19:03/16	07:31	16:54-16:58/4	08:23	16:02-16:11/9	08:49	16:00-16:09/9
	21:38	20:40	19:30	18:03-18:42/39	17:27	16:23-16:53/30	16:44	14:55-15:38/43	16:45	15:10-15:48/38
30	06:06	06:54	07:43	18:02-18:41/39	07:33	16:24-16:56/32	08:24	16:02-16:11/9	08:49	16:01-16:09/8
	21:37	20:38	19:28	18:46-19:00/14	17:25		16:43	14:56-15:39/43	16:46	15:10-15:49/39
31	06:08	06:56			07:35	16:24-16:54/30			08:49	16:02-16:09/7
	21:35	20:35			17:23				16:47	15:11-15:50/39
Potential sun hours	498	451	380		333		269		248	
Sum of minutes with flicker	0	0	547		1201		1176		1434	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 17 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49	08:24 16:32-16:55/23	07:32 17:32-17:59/27	07:23 19:43-19:51/8	06:20 20:23-20:38/15	05:37 21:03-21:18/15
	16:48	17:35	18:25	20:17	21:06 19:37-20:10/33	21:50
2	08:49	08:22 17:03-17:07/4	07:30 17:33-18:01/28	07:21 19:43-19:53/10	06:18 20:24-20:37/13	05:36 21:03-21:20/17
	16:49	17:36 16:34-16:55/21	18:26	20:19	21:08 19:37-20:09/32	21:51
3	08:49	08:21 17:01-17:09/8	07:28 17:35-18:03/28	07:19 19:45-19:55/10	06:16 20:24-20:36/12	05:35 21:02-21:21/19
	16:50	17:38 16:34-16:54/20	18:28	20:20	21:09 19:38-20:09/31	21:52
4	08:49	08:19 17:00-17:11/11	07:26 17:36-18:05/29	07:17 19:52-19:57/5	06:15 20:27-20:35/8	05:34 21:02-21:21/19
	16:51	17:40 16:35-16:53/18	18:30	20:22 19:48-19:51/3	21:11 19:39-20:08/29	21:53
5	08:49	08:18 17:00-17:13/13	07:24 17:41-18:04/23	07:14 19:51-19:57/6	06:13 19:40-20:06/26	05:34 21:02-21:22/20
	16:53	17:42 16:37-16:53/16	18:32	20:24	21:13	21:54
6	08:49	08:16 16:59-17:15/16	07:21 17:41-18:04/23	07:12 19:52-19:59/7	06:11 19:41-20:05/24	05:33 21:02-21:23/21
	16:54	17:44 16:39-16:51/12	18:33	20:25	21:14	21:55
7	08:48	08:14 16:58-17:17/19	07:19 17:42-18:04/22	07:10 19:53-20:01/8	06:09 19:43-20:04/21	05:32 21:02-21:24/22
	16:55	17:45 16:41-16:49/8	18:35	20:27	21:16	21:56
8	08:48	08:13 16:58-17:18/20	07:17 18:11-18:12/1	07:08 19:55-20:03/8	06:08 19:44-20:02/18	05:32 21:03-21:25/22
	16:56	17:47	18:37 17:42-18:03/21	20:28	21:17	21:57
9	08:47	08:11 16:59-17:20/21	07:15 18:09-18:13/4	07:05 19:56-20:04/8	06:06 19:47-20:00/13	05:31 21:02-21:25/23
	16:58	17:49	18:39 17:42-18:01/19	20:30	21:19	21:58
10	08:47	08:09 16:59-17:20/21	07:13 18:08-18:15/7	07:03 20:05-20:06/1	06:04 19:51-19:55/4	05:31 21:02-21:26/24
	16:59	17:51	18:40 17:43-18:00/17	20:32	21:20	21:59
11	08:46	08:07 16:59-17:20/21	07:10 18:08-18:17/9	07:01 20:03-20:07/4	06:03 20:50-20:53/3	05:31 21:03-21:27/24
	17:00	17:53	18:42 17:45-17:59/14	20:33	21:22	21:59
12	08:46	08:06 16:59-17:19/20	07:08 18:08-18:19/11	06:59 20:02-20:09/7	06:01 20:49-20:54/5	05:30 21:02-21:26/24
	17:02	17:55	18:44 17:48-17:56/8	20:35	21:23	22:00
13	08:45	08:04 17:00-17:19/19	07:06 18:08-18:20/12	06:57 19:49-20:10/21	06:00 20:49-20:56/7	05:30 21:02-21:27/25
	17:03	17:56	18:45	20:37	21:25	22:01
14	08:44	08:02 17:01-17:18/17	07:04 18:09-18:20/11	06:55 19:46-20:12/26	05:58 20:48-20:57/9	05:30 21:03-21:27/24
	17:05	17:58	18:47	20:38	21:27	22:01
15	08:44	08:00 17:02-17:16/14	07:02 18:10-18:18/8	06:52 19:44-20:14/30	05:56 20:49-20:58/9	05:30 21:03-21:28/25
	17:06	18:00	18:49 18:19-18:22/3	20:40	21:28	22:02
16	08:43	07:58 17:04-17:15/11	06:59 18:14-18:26/12	06:50 19:42-20:12/30	05:55 20:49-21:00/11	05:30 21:03-21:28/25
	17:08	18:02	18:50	20:42	21:29	22:02
17	08:42	07:56 17:08-17:11/3	06:57 18:11-18:27/16	06:48 19:41-20:10/29	05:54 20:49-21:01/12	05:30 21:03-21:28/25
	17:09	18:03	18:52	20:43	21:31	22:03
18	08:41 16:38-16:39/1	07:54	06:55 18:10-18:29/19	06:46 19:40-20:11/31	05:52 20:50-21:02/12	05:30 21:03-21:28/25
	17:11	18:05	18:54	20:45	21:32	22:03
19	08:40 16:35-16:40/5	07:53	06:53 18:09-18:31/22	06:44 19:39-20:12/33	05:51 20:50-21:03/13	05:30 21:04-21:28/24
	17:12	18:07	18:55	20:47	21:34	22:04
20	08:39 16:34-16:42/8	07:51 17:38-17:42/4	06:50 18:08-18:33/25	06:42 19:38-20:12/34	05:49 20:51-21:02/11	05:30 21:04-21:28/24
	17:14	18:09	18:57	20:48	21:35	22:04
21	08:38 16:33-16:44/11	07:49 17:36-17:44/8	06:48 18:06-18:33/27	06:40 19:37-20:12/35	05:48 20:52-21:01/9	05:30 21:04-21:28/24
	17:16	18:11	18:59	20:50	21:37	22:04
22	08:37 16:33-16:46/13	07:47 17:34-17:46/12	06:46 18:06-18:34/28	06:38 19:37-20:13/36	05:47 20:53-21:00/7	05:30 21:05-21:29/24
	17:17	18:12	19:00	20:51	21:38	22:04
23	08:36 16:33-16:48/15	07:45 17:33-17:48/15	06:44 18:06-18:34/28	06:36 19:36-20:13/37	05:46	05:30 21:05-21:29/24
	17:19	18:14	19:02	20:53	21:39	22:05
24	08:35 16:32-16:49/17	07:42 17:33-17:50/17	06:41 18:05-18:32/27	06:34 20:27-20:28/1	05:44	05:31 21:04-21:29/25
	17:21	18:16	19:04	20:55 19:36-20:13/37	21:41	22:05
25	08:33 16:32-16:52/20	07:40 17:32-17:52/20	06:39 18:05-18:32/27	06:32 20:25-20:29/4	05:43	05:31 21:05-21:30/25
	17:22	18:18	19:05	20:56 19:35-20:12/37	21:42	22:05
26	08:32 16:32-16:54/22	07:38 17:32-17:54/22	06:37 18:06-18:31/25	06:30 20:24-20:30/6	05:42 21:08-21:12/4	05:31 21:05-21:30/25
	17:24	18:19	19:07	20:58 19:35-20:12/37	21:43	22:05
27	08:31 16:31-16:54/23	07:36 17:31-17:55/24	06:34 18:07-18:29/22	06:28 20:23-20:32/9	05:41 21:06-21:13/7	05:32 21:06-21:31/25
	17:26	18:21	19:09	21:00 19:35-20:12/37	21:44	22:05
28	08:30 16:32-16:55/23	07:34 17:32-17:57/25	06:32 18:07-18:27/20	06:26 20:23-20:33/10	05:40 21:05-21:14/9	05:32 21:06-21:30/24
	17:28	18:23	19:10	21:01 19:35-20:11/36	21:46	22:05
29	08:28 16:32-16:55/23		07:30 19:45-19:47/2	06:24 20:23-20:36/13	05:39 21:05-21:16/11	05:33 21:06-21:31/25
	17:29		20:12 19:08-19:25/17	21:03 19:36-20:12/36	21:47	22:04
30	08:27 16:32-16:56/24		07:28 19:44-19:48/4	06:22 20:23-20:37/14	05:38 21:04-21:17/13	05:33 21:06-21:30/24
	17:31		20:14 19:10-19:23/13	21:04 19:36-20:11/35	21:48	22:04
31	08:25 16:32-16:55/23		07:25 19:44-19:50/6		05:37 21:03-21:18/15	
	17:33		20:15 19:14-19:19/5		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	228	503	670	739	446	692

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 17 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (241)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 21:07-21:31/24 22:04	06:09 21:00-21:04/4 21:33	06:57 20:03-20:07/4 20:33	07:44 18:47-18:58/11 19:25 18:29-18:32/3	07:36 16:28-16:50/22 17:21	08:26 16:42
2	05:35 21:07-21:30/23 22:04	06:11 21:01-21:03/2 21:32	06:59 20:03-20:04/1 20:31	07:46 18:47-18:57/10 19:23 18:25-18:36/11	07:38 16:27-16:49/22 17:19	08:27 16:42
3	05:35 21:07-21:31/24 22:03	06:12 19:59-20:08/9 21:30	07:00 19:54-20:02/8 20:29	07:48 18:46-18:54/8 19:21 18:22-18:37/15	07:40 16:28-16:48/20 17:17	08:29 16:41
4	05:36 21:08-21:31/23 22:03	06:14 19:55-20:10/15 21:29	07:02 19:52-20:00/8 20:27	07:49 18:46-18:52/6 19:19 18:20-18:39/19	07:42 16:28-16:46/18 17:16 16:10-16:19/9	08:30 16:40
5	05:37 21:08-21:31/23 22:02	06:15 19:54-20:13/19 21:27	07:03 19:50-19:58/8 20:24	07:51 18:46-18:49/3 19:16 18:19-18:40/21	07:43 16:29-16:44/15 17:14 16:08-16:21/13	08:31 16:40
6	05:38 21:08-21:29/21 22:02	06:17 19:52-20:14/22 21:25	07:05 19:48-19:55/7 20:22	07:52 18:18-18:39/21 19:14	07:45 16:30-16:43/13 17:12 16:07-16:23/16	08:32 16:40
7	05:38 21:09-21:29/20 22:01	06:18 19:51-20:15/24 21:23	07:07 19:47-19:54/7 20:20	07:54 18:17-18:40/23 19:12	07:47 16:31-16:41/10 17:11 16:06-16:24/18	08:34 16:39
8	05:39 21:09-21:29/20 22:01	06:20 20:37-20:42/5 21:22 19:49-20:16/27	07:08 19:46-19:51/5 20:18 19:42-19:44/2	07:56 18:17-18:40/23 19:10	07:49 16:32-16:40/8 17:09 16:05-16:25/20	08:35 16:39
9	05:40 21:10-21:28/18 22:00	06:21 20:35-20:44/9 21:20 19:48-20:17/29	07:10 19:39-19:49/10 20:15	07:57 18:13-18:39/26 19:08	07:50 16:34-16:38/4 17:07 16:05-16:26/21	08:36 16:39
10	05:41 21:10-21:28/18 21:59	06:23 20:34-20:45/11 21:18 19:47-20:18/31	07:11 19:37-19:46/9 20:13	07:59 18:10-18:38/28 19:05	07:52 16:03-16:26/23 17:06	08:37 16:38
11	05:42 21:11-21:27/16 21:59	06:24 20:32-20:46/14 21:16 19:45-20:18/33	07:13 19:36-19:45/9 20:11	08:01 18:08-18:36/28 19:03	07:54 16:03-16:26/23 17:04	08:38 16:38
12	05:43 21:12-21:26/14 21:58	06:26 20:32-20:46/14 21:14 19:45-20:19/34	07:14 19:35-19:42/7 20:09 19:06-19:10/4	08:02 18:06-18:33/27 19:01	07:55 16:03-16:27/24 17:03	08:39 16:38
13	05:44 21:12-21:26/14 21:57	06:27 20:31-20:44/13 21:12 19:44-20:18/34	07:16 19:35-19:40/5 20:06 19:02-19:14/12	08:04 18:05-18:31/26 18:59	07:57 16:04-16:27/23 17:01	08:40 16:38
14	05:45 21:13-21:25/12 21:56	06:29 20:31-20:43/12 21:10 19:44-20:19/35	07:17 19:35-19:37/2 20:04 18:59-19:15/16	08:06 18:05-18:29/24 18:57	07:59 16:04-16:27/23 17:00	08:41 16:38
15	05:47 21:14-21:24/10 21:55	06:30 20:30-20:40/10 21:09 19:43-20:19/36	07:19 18:57-19:17/20 20:02	08:07 18:05-18:27/22 18:55	08:01 16:04-16:27/23 16:59	08:42 16:38
16	05:48 21:15-21:23/8 21:54	06:32 20:31-20:39/8 21:07 19:43-20:19/36	07:21 18:55-19:17/22 19:59	08:09 18:04-18:24/20 18:52	08:02 16:05-16:27/22 16:57	08:43 16:38
17	05:49 21:17-21:22/5 21:53	06:34 20:31-20:37/6 21:05 19:42-20:19/37	07:22 18:54-19:19/25 19:57	08:11 18:04-18:22/18 18:50	08:04 16:05-16:25/20 16:56	08:44 16:39
18	05:50 21:52	06:35 20:32-20:35/3 21:03 19:42-20:19/37	07:24 18:53-19:19/26 19:55	08:12 18:04-18:21/17 18:48	08:06 16:06-16:23/17 16:55	08:44 16:39
19	05:51 21:51	06:37 19:41-20:18/37 21:01	07:25 18:53-19:20/27 19:53	08:14 18:05-18:19/14 18:46	08:07 16:07-16:22/15 16:53	08:45 16:39
20	05:53 21:50	06:38 19:42-20:18/36 20:59	07:27 18:51-19:19/28 19:50	08:16 18:05-18:16/11 18:44	08:09 16:08-16:21/13 16:52	08:46 16:39
21	05:54 21:05-21:09/4 21:49	06:40 19:41-20:17/36 20:57	07:28 18:51-19:19/28 19:48	08:17 18:06-18:14/8 18:42	08:11 16:09-16:20/11 16:51	08:46 16:40
22	05:55 21:03-21:11/8 21:48	06:41 19:42-20:17/35 20:54	07:30 18:52-19:19/27 19:46	08:19 18:09-18:12/3 18:40	08:12 16:10-16:18/8 16:50	08:47 16:40
23	05:56 21:02-21:12/10 21:46	06:43 19:42-20:16/34 20:52	07:32 18:51-19:17/26 19:44	08:21 18:38	08:14 16:12-16:17/5 16:49	08:47 16:41
24	05:58 21:00-21:12/12 21:45	06:45 19:43-20:15/32 20:50	07:33 18:52-19:15/23 19:41	08:23 18:36	08:15 16:15-16:16/1 16:48	08:48 16:41
25	05:59 21:01-21:14/13 21:44	06:46 19:43-20:14/31 20:48	07:35 18:52-19:12/20 19:39	07:24 16:37-16:43/6 17:34	08:17 16:47	08:48 16:42
26	06:01 21:00-21:12/12 21:42	06:48 19:44-20:13/29 20:46	07:36 18:53-19:10/17 19:37	07:26 16:33-16:45/12 17:32	08:18 16:46	08:49 16:43
27	06:02 20:59-21:11/12 21:41	06:49 19:44-20:14/30 20:44	07:38 18:55-19:08/13 19:34	07:28 16:31-16:46/15 17:30	08:20 16:45	08:49 16:44
28	06:03 21:00-21:10/10 21:40	06:51 19:46-20:15/29 20:42	07:40 18:52-19:05/13 19:32	07:29 16:30-16:47/17 17:28	08:22 16:44	08:49 16:44
29	06:05 20:59-21:08/9 21:38	06:52 19:47-20:13/26 20:40	07:41 18:50-19:00/10 19:30	07:31 16:29-16:48/19 17:26	08:23 16:44	08:49 16:45
30	06:06 20:59-21:06/7 21:37	06:54 19:50-20:11/21 20:38	07:43 18:48-19:00/12 19:28	07:33 16:29-16:49/20 17:25	08:24 16:43	08:49 16:46
31	06:08 21:00-21:06/6 21:35	06:56 20:02-20:08/6 20:35		07:35 16:28-16:49/21 17:23		08:49 16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	396	951	461	556	480	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 18 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 16:12-16:14/2 16:48	08:24 17:35	07:32 17:35-17:59/24 18:25	07:23 19:45-19:51/6 18:54-19:34/40 20:17 16:09-17:26/77	06:20 19:17-20:09/52 21:06 15:20-18:02/162	05:37 15:29-18:11/162 21:50
2	08:49 16:12-16:16/4 16:49	08:22 17:37	07:30 17:43-18:01/18 18:26	07:21 19:45-19:53/8 18:53-19:35/42 20:19 16:06-17:29/83	06:18 19:17-20:07/50 21:08 15:20-18:02/162	05:36 15:30-18:12/162 21:51
3	08:49 16:12-16:16/4 16:50	08:21 17:08-17:09/1 17:38	07:28 17:44-18:03/19 18:28	07:19 19:45-19:55/10 18:52-19:36/44 20:20 16:03-17:31/88	06:17 19:19-20:07/48 21:09 15:20-18:03/163	05:35 15:31-18:11/160 21:52
4	08:49 16:12-16:18/6 16:51	08:19 17:07-17:11/4 17:40	07:26 17:43-18:05/22 18:30	07:17 19:46-19:57/11 18:51-19:36/45 20:22 16:00-17:33/93	06:15 19:19-20:05/46 21:11 15:19-18:04/165	05:34 15:31-18:11/160 21:53
5	08:49 16:13-16:19/6 16:53	08:18 17:07-17:13/6 17:42	07:24 17:41-18:05/24 18:32	07:14 19:46-19:56/10 18:51-19:37/46 20:24 15:58-17:36/98	06:13 19:19-20:02/43 21:13 15:19-18:04/165	05:34 15:32-18:12/160 21:54
6	08:49 16:13-16:20/7 16:54	08:16 17:06-17:15/9 17:44	07:21 17:41-18:05/24 18:33	07:12 19:48-19:54/6 18:49-19:36/47 20:25 15:54-17:37/103	06:11 19:20-20:00/40 21:14 15:19-18:05/166	05:33 15:32-18:12/160 21:55
7	08:48 16:13-16:22/9 16:55	08:14 17:06-17:17/11 17:45	07:19 17:40-18:05/25 18:35	07:10 19:59-20:01/2 18:49-19:36/47 20:27 15:52-17:39/107	06:09 15:18-18:05/167 21:16 19:21-19:59/38	05:32 15:33-18:12/159 21:56
8	08:48 16:13-16:23/10 16:56	08:13 17:06-17:18/12 17:47	07:17 17:40-18:05/25 18:37	07:08 19:55-20:03/8 18:49-19:36/47 20:28 15:50-17:40/110	06:08 15:18-18:05/167 21:17 19:21-19:58/37	05:32 15:34-18:13/159 21:57
9	08:47 16:13-16:24/11 16:58	08:11 17:07-17:21/14 17:49	07:15 17:39-18:04/25 18:39	07:05 19:54-20:04/10 18:48-19:36/48 20:30 15:48-17:42/114	06:06 15:19-18:06/167 21:19 19:23-19:57/34	05:32 15:34-18:13/159 21:58
10	08:47 16:14-16:26/12 16:59	08:09 17:07-17:23/16 17:51	07:13 17:40-18:04/24 18:40	07:03 19:52-20:06/14 18:48-19:36/48 20:32 15:46-17:44/118	06:04 15:18-18:05/167 21:20 19:24-19:56/32	05:31 15:35-18:13/158 21:59
11	08:46 16:14-16:27/13 17:00	08:07 17:08-17:25/17 17:53	07:10 17:40-18:03/23 18:42	07:01 18:48-20:07/79 20:33 15:44-17:46/122	06:03 15:19-18:06/167 21:22 19:25-19:55/30	05:31 15:36-18:14/158 21:59
12	08:46 16:14-16:29/15 17:02	08:06 17:10-17:27/17 17:55	07:08 17:41-18:03/22 18:44	06:59 18:48-20:09/81 20:35 15:41-17:46/125	06:01 15:18-18:06/168 21:23 19:26-19:54/28	05:30 15:36-18:13/157 22:00
13	08:45 16:14-16:30/16 17:03	08:04 17:12-17:29/17 17:56	07:06 18:18-18:20/2 18:45 17:42-18:00/18	06:57 18:48-20:10/82 20:37 15:40-17:48/128	06:00 15:19-18:07/168 21:25 19:28-19:53/25	05:30 15:36-18:13/157 22:01
14	08:44 16:16-16:32/16 17:05	08:02 17:13-17:30/17 17:58	07:04 18:18-18:22/4 18:47 17:44-17:59/15	06:55 18:48-20:12/84 20:38 15:38-17:49/131	05:58 15:19-18:06/167 21:27 19:29-19:50/21	05:30 15:37-18:14/157 22:01
15	08:44 16:16-16:32/16 17:06	08:00 17:14-17:32/18 18:00	07:02 18:18-18:24/6 18:49 17:46-17:57/11	06:52 18:49-20:14/85 20:40 15:36-17:50/134	05:56 15:19-18:07/168 21:28 19:31-19:49/18	05:30 15:37-18:14/157 22:02
16	08:43 16:17-16:32/15 17:08	07:58 17:15-17:29/14 18:02	06:59 18:19-18:26/7 18:50	06:50 18:49-20:15/86 20:42 15:35-17:52/137	05:55 15:20-18:08/168 21:29 19:35-19:46/11	05:30 15:38-18:14/156 22:02
17	08:42 16:18-16:32/14 17:09	07:56 17:17-17:26/9 18:04	06:57 18:22-18:23/1 18:52	06:48 18:50-20:17/87 20:43 15:34-17:53/139	05:54 15:20-18:07/167 21:31	05:30 15:38-18:15/157 22:03
18	08:41 16:38-16:39/1 17:11 16:19-16:32/13	07:54 17:20-17:23/3 18:05 17:34-17:38/4	06:55 18:27-18:29/2 18:54	06:46 18:51-20:18/87 20:45 15:32-17:54/142	05:52 15:20-18:08/168 21:32	05:30 15:39-18:15/156 22:03
19	08:40 16:37-16:40/3 17:12 16:19-16:31/12	07:53 17:32-17:40/8 18:07	06:53 18:27-18:31/4 18:55	06:44 18:52-20:17/85 20:47 15:31-17:55/144	05:51 15:21-18:08/167 21:34	05:30 15:39-18:15/156 22:04
20	08:39 16:37-16:42/5 17:14 16:21-16:30/9	07:51 17:31-17:42/11 18:09	06:50 18:27-18:32/5 18:57	06:42 18:53-20:13/80 20:48 15:30-17:55/145	05:49 15:22-18:09/167 21:35	05:30 15:39-18:15/156 22:04
21	08:38 16:37-16:44/7 17:16 16:23-16:29/6	07:49 17:30-17:44/14 18:11	06:48 18:29-18:33/4 18:59	06:40 18:54-20:13/79 20:50 15:29-17:56/147	05:48 15:23-18:09/166 21:37	05:30 15:40-18:16/156 22:04
22	08:37 16:37-16:46/9 17:17	07:47 17:30-17:46/16 18:12	06:46 18:30-18:35/5 19:00	06:38 18:55-20:14/79 20:51 15:27-17:57/150	05:47 15:22-18:08/166 21:38	05:30 15:40-18:16/156 22:04
23	08:36 16:38-16:48/10 17:19	07:45 17:30-17:48/18 18:14	06:44 18:34-18:37/3 19:02	06:36 18:57-20:13/76 20:53 15:26-17:58/152	05:46 15:23-18:09/166 21:39	05:30 15:40-18:16/156 22:05
24	08:35 16:37-16:49/12 17:21	07:43 17:30-17:50/20 18:16	06:41 18:33-18:38/5 19:04	06:34 18:59-20:13/74 20:55 15:25-17:58/153	05:45 15:24-18:09/165 21:41	05:31 15:40-18:16/156 22:05
25	08:33 16:38-16:52/14 17:22	07:40 17:30-17:52/22 18:18	06:39 18:34-18:40/6 19:05 18:13-18:18/5	06:32 19:02-20:13/71 20:56 15:24-17:59/155	05:43 15:24-18:09/165 21:42	05:31 15:40-18:17/157 22:05
26	08:32 16:39-16:54/15 17:24	07:38 17:31-17:54/23 18:19	06:37 18:35-18:42/7 19:07 18:07-18:25/18	06:30 19:17-20:12/55 19:07-19:11/4 20:58 15:23-17:59/156	05:42 15:25-18:09/164 21:43	05:31 15:40-18:16/156 22:05
27	08:31 16:39-16:53/14 17:26	07:36 17:31-17:55/24 18:21	06:35 18:37-18:41/4 18:04-18:28/24 19:09 15:37-16:05/28	06:28 19:17-20:12/55 21:00 15:23-18:00/157	05:41 15:26-18:10/164 21:44	05:32 15:41-18:17/156 22:05
28	08:30 16:40-16:53/13 17:28	07:34 17:33-17:56/23 18:23	06:32 15:28-16:11/43 19:10 18:01-18:29/28	06:26 19:17-20:11/54 21:01 15:22-18:00/158	05:40 15:26-18:10/164 21:46	05:32 15:40-18:17/157 22:05
29	08:28 16:41-16:52/11 17:29		07:30 16:23-17:16/53 20:12 18:59-19:31/32	06:24 19:17-20:11/54 21:03 15:22-18:02/160	05:39 15:28-18:11/163 21:47	05:33 15:41-18:18/157 22:04
30	08:27 16:44-16:52/8 17:31		07:28 16:18-17:20/62 20:14 18:57-19:32/35	06:22 19:17-20:10/53 21:05 15:21-18:02/161	05:38 15:28-18:11/163 21:48	05:33 15:40-18:17/157 22:04
31	08:25 17:33		07:25 19:47-19:50/3 18:56-19:34/38 20:15 16:14-17:24/70		05:37 15:29-18:11/162 21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	338	368	823	5916	5687	4730

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 18 - SENVION MM100 2000 100.0 !O! hub: 100,0 m (TOT: 150,0 m) (242)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 15:40-18:18/158 22:04	06:09 15:29-18:16/167 21:33 19:36-20:05/29	06:57 18:47-20:07/80 20:33 15:43-17:45/122	07:44 18:21-18:41/20 19:25	07:36 16:37-16:52/15 17:21	08:26 15:56-16:10/14 16:42
2	05:35 15:40-18:17/157 22:04	06:11 15:29-18:17/168 21:32 19:35-20:06/31	06:59 19:50-20:04/14 18:46-19:34/48 20:31 15:44-17:42/118	07:46 18:20-18:42/22 19:23	07:38 16:36-16:50/14 17:19	08:27 15:57-16:09/12 16:42
3	05:35 15:40-18:18/158 22:03	06:12 15:28-18:16/168 21:30 19:34-20:07/33	07:00 19:52-20:03/11 18:46-19:34/48 20:29 15:46-17:40/114	07:48 18:18-18:42/24 19:21	07:40 16:36-16:48/12 17:17	08:29 15:57-16:08/11 16:41
4	05:36 15:40-18:18/158 22:03	06:14 15:28-18:15/167 21:29 19:32-20:07/35	07:02 19:52-20:00/8 18:46-19:33/47 20:27 15:47-17:38/111	07:49 18:17-18:42/25 19:19	07:42 16:36-16:46/10 17:16	08:30 15:57-16:07/10 16:40
5	05:37 15:40-18:19/159 22:02	06:15 15:28-18:15/167 21:27 19:31-20:09/38	07:03 19:55-19:58/3 18:46-19:33/47 20:24 15:49-17:36/107	07:51 18:17-18:42/25 19:16	07:43 16:36-16:44/8 17:14	08:31 15:58-16:07/9 16:40
6	05:38 15:39-18:18/159 22:02	06:17 15:28-18:14/166 21:25 19:30-20:09/39	07:05 19:44-19:50/6 18:45-19:32/47 20:22 15:50-17:33/103	07:52 18:16-18:41/25 19:14	07:45 16:37-16:43/6 17:12	08:32 15:59-16:06/7 16:40
7	05:38 15:39-18:18/159 22:01	06:18 19:30-20:10/40 21:23 15:29-18:14/165	07:07 19:42-19:52/10 18:46-19:32/46 20:20 15:53-17:31/98	07:54 18:16-18:41/25 19:12	07:47 16:38-16:41/3 17:11	08:34 15:59-16:06/7 16:39
8	05:39 15:39-18:19/160 22:01	06:20 19:28-20:12/44 21:22 15:28-18:13/165	07:08 19:40-19:51/11 18:45-19:30/45 20:18 15:54-17:28/94	07:56 18:17-18:41/24 19:10	07:49 16:39-16:40/1 17:09	08:35 16:00-16:06/6 16:39
9	05:40 15:38-18:19/161 22:00	06:21 19:28-20:15/47 21:20 15:29-18:13/164	07:10 19:39-19:49/10 18:46-19:30/44 20:15 15:57-17:26/89	07:57 18:16-18:39/23 19:08	07:50 17:07	08:36 16:01-16:05/4 16:39
10	05:41 15:38-18:19/161 21:59	06:23 19:27-20:15/48 21:18 15:28-18:12/164	07:11 19:38-19:46/8 18:46-19:28/42 20:13 15:59-17:22/83	07:59 18:17-18:38/21 19:05	07:52 17:06	08:37 16:01-16:05/4 16:38
11	05:42 15:38-18:19/161 21:59	06:24 19:26-20:16/50 21:16 15:28-18:11/163	07:13 19:39-19:45/6 18:47-19:27/40 20:11 16:02-17:19/77	08:01 18:18-18:36/18 19:03	07:54 16:17-16:19/2 17:04	08:38 16:02-16:05/3 16:38
12	05:43 15:37-18:19/162 21:58	06:26 19:26-20:17/51 21:14 15:29-18:11/162	07:14 19:38-19:42/4 18:47-19:25/38 20:09 16:05-17:16/71	08:02 18:15-18:33/18 19:01	07:55 16:14-16:23/9 17:03	08:39 16:03-16:04/1 16:38
13	05:44 15:37-18:19/162 21:57	06:27 19:25-20:18/53 21:12 15:29-18:09/160	07:16 19:39-19:40/1 18:48-19:24/36 20:06 16:09-17:12/63	08:04 18:07-18:31/24 18:59	07:57 16:13-16:24/11 17:01	08:40 16:38
14	05:45 15:36-18:19/163 21:56	06:29 19:25-20:19/54 21:10 15:30-18:09/159	07:17 16:12-17:07/55 20:04 18:49-19:21/32	08:06 18:05-18:29/24 18:57	07:59 16:12-16:25/13 17:00	08:41 16:38
15	05:47 15:36-18:19/163 21:55	06:30 19:24-20:19/55 21:09 15:29-18:08/159	07:19 16:17-17:02/45 20:02 18:51-19:19/28	08:07 18:04-18:27/23 18:55	08:01 16:12-16:26/14 16:59	08:42 16:38
16	05:48 15:35-18:19/164 21:54	06:32 19:24-20:19/55 21:07 15:30-18:07/157	07:21 19:27-19:28/1 18:52-19:16/24 19:59 16:23-16:55/32	08:09 18:02-18:24/22 18:53	08:02 16:12-16:27/15 16:57	08:43 16:38
17	05:49 15:35-18:19/164 21:53	06:34 19:24-20:19/55 19:12-19:20/8 21:05 15:30-18:06/156	07:22 19:24-19:31/7 19:57 18:55-19:14/19	08:11 18:01-18:22/21 18:50	08:04 16:11-16:25/14 16:56	08:44 16:39
18	05:50 15:34-18:19/165 21:52	06:35 19:08-20:19/71 21:03 15:31-18:05/154	07:24 19:21-19:28/7 19:55 18:58-19:08/10	08:12 18:01-18:21/20 18:48	08:06 16:11-16:23/12 16:55	08:44 16:39
19	05:51 15:34-18:19/165 21:51	06:37 19:04-20:19/75 21:01 15:31-18:04/153	07:25 19:21-19:26/5 19:53	08:14 18:01-18:19/18 18:46	08:07 16:12-16:22/10 16:53	08:45 16:39
20	05:53 15:34-18:19/165 21:50	06:38 19:02-20:19/77 20:59 15:32-18:03/151	07:27 19:20-19:23/3 19:50	08:16 18:01-18:16/15 18:44	08:09 16:12-16:21/9 16:52	08:46 16:40
21	05:54 15:33-18:19/166 21:49	06:40 19:00-20:18/78 20:57 15:32-18:02/150	07:28 19:16-19:21/5 19:48	08:17 18:01-18:14/13 18:42	08:11 16:13-16:20/7 16:51 15:59-16:05/6	08:46 16:40
22	05:55 15:33-18:19/166 21:48	06:41 18:59-20:18/79 20:54 15:33-18:01/148	07:30 19:14-19:20/6 19:46	08:19 18:02-18:12/10 18:40	08:12 16:13-16:18/5 16:50 15:57-16:06/9	08:47 16:40
23	05:56 15:32-18:18/166 21:46	06:43 18:56-20:17/81 20:52 15:34-17:59/145	07:32 19:12-19:17/5 19:44	08:21 18:03-18:10/7 18:38	08:14 16:14-16:17/3 16:49 15:56-16:08/12	08:47 16:41
24	05:58 15:32-18:19/167 21:45	06:45 18:55-20:21/86 20:50 15:35-17:58/143	07:33 19:11-19:15/4 19:41	08:23 17:49-17:55/6 18:36 18:05-18:08/3	08:15 16:15-16:16/1 16:48 15:56-16:09/13	08:48 16:41
25	05:59 15:31-18:19/168 21:44	06:46 18:53-20:21/88 20:48 15:35-17:56/141	07:35 19:09-19:12/3 19:39	07:24 16:47-16:57/10 17:34	08:17 15:56-16:10/14 16:47	08:48 16:42
26	06:01 15:31-18:18/167 21:42	06:48 18:53-20:19/86 20:46 15:37-17:55/138	07:36 19:37	07:26 16:44-16:58/14 17:32	08:18 15:55-16:10/15 16:46	08:49 16:43
27	06:02 15:30-18:18/168 21:41 19:47-19:54/7	06:49 18:51-20:17/86 20:44 15:37-17:53/136	07:38 19:01-19:07/6 19:34	07:28 16:43-17:01/18 17:30	08:20 15:55-16:11/16 16:45	08:49 16:44
28	06:03 15:30-18:18/168 21:40 19:44-19:58/14	06:51 18:50-20:15/85 20:42 15:38-17:52/134	07:40 18:59-19:05/6 19:32 18:28-18:36/8	07:29 16:43-17:00/17 17:28	08:22 15:55-16:11/16 16:44	08:49 16:44
29	06:05 15:30-18:17/167 21:38 19:41-20:00/19	06:52 18:49-20:13/84 20:40 15:39-17:50/131	07:41 18:59-19:03/4 19:30 18:25-18:39/14	07:31 16:41-16:58/17 17:27	08:23 15:56-16:11/15 16:44	08:49 16:45
30	06:06 15:29-18:17/168 21:37 19:39-20:02/23	06:54 18:49-20:11/82 20:38 15:41-17:49/128	07:43 18:57-19:00/3 19:28 18:22-18:40/18	07:33 16:39-16:56/17 17:25	08:24 15:56-16:11/15 16:43	08:49 16:11-16:12/1 16:46
31	06:08 15:29-18:17/168 21:35 19:38-20:04/26	06:56 18:47-20:08/81 20:35 15:41-17:46/125	 	07:35 16:38-16:54/16 17:23	 	08:49 16:12-16:13/1 16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	5152	6658	2300	585	325	90

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 19 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (243)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April		May		June	
1	08:49	08:24	07:32		07:23	08:13-08:54/41	06:20	18:14-19:28/74	05:36	18:07-19:40/93 06:04-06:20/16
	16:48	17:35	18:25		20:17		21:06	07:37-08:45/68	21:50	07:42-08:34/52
2	08:49	08:22	07:30		07:21	08:11-08:55/44	06:18	18:13-19:29/76	05:36	18:08-19:41/93 06:04-06:20/16
	16:49	17:36	18:26		20:19		21:08	07:36-08:45/69	21:51	07:44-08:35/51
3	08:49	08:21	07:28		07:19	08:10-08:56/46	06:16	18:11-19:29/78	05:35	18:08-19:41/93 06:03-06:20/17
	16:50	17:38	18:28		20:20		21:09	07:35-08:45/70	21:52	07:44-08:34/50
4	08:49	08:19	07:26		07:16	08:09-08:56/47	06:15	18:11-19:31/80	05:34	18:08-19:41/93 06:03-06:20/17
	16:51	17:40	18:30		20:22		21:11	07:36-08:45/69	21:53	07:44-08:33/49
5	08:49	08:18	07:23		07:14	08:08-08:57/49	06:13	18:10-19:31/81	05:34	18:09-19:42/93 06:03-06:21/18
	16:53	17:42	18:32		20:23		21:12	07:35-08:45/70	21:54	07:45-08:33/48
6	08:48	08:16	07:21		07:12	08:06-08:56/50	06:11	18:09-19:32/83	05:33	18:09-19:41/92 06:03-06:20/17
	16:54	17:44	18:33		20:25		21:14	07:35-08:44/69	21:55	07:45-08:32/47
7	08:48	08:14	07:19		07:10	08:06-08:57/51	06:09	18:09-19:33/84	05:32	18:09-19:42/93 06:04-06:21/17
	16:55	17:45	18:35		20:27		21:16	07:35-08:45/70	21:56	07:46-08:32/46
8	08:48	08:13	07:17		07:08	08:05-08:57/52	06:08	18:08-19:33/85	05:32	18:09-19:41/92 06:04-06:21/17
	16:56	17:47	18:37		20:28		21:17	07:35-08:44/69	21:57	07:47-08:33/46
9	08:47	08:11	07:15		07:05	08:05-08:57/52	06:06	18:08-19:34/86	05:31	18:10-19:42/92 06:04-06:21/17
	16:58	17:49	18:38		20:30		21:19	07:35-08:45/70	21:58	07:47-08:32/45
10	08:47	08:09	07:13		07:03	08:04-08:57/53	06:04	18:07-19:34/87	05:31	18:10-19:42/92 06:05-06:21/16
	16:59	17:51	18:40		20:32		21:20	07:35-08:44/69	21:59	07:48-08:32/44
11	08:46	08:07	07:10		07:01	08:03-08:56/53	06:03	18:07-19:35/88	05:31	18:11-19:43/92 06:05-06:21/16
	17:00	17:53	18:42		20:33		21:22	07:35-08:44/69	21:59	07:49-08:32/43
12	08:46	08:06	07:08		06:59	08:03-08:56/53	06:01	18:06-19:35/89	05:30	18:10-19:42/92 06:05-06:21/16
	17:02	17:54	18:44		20:35		21:23	07:35-08:43/68	22:00	07:49-08:31/42
13	08:45	08:04	07:06		06:57	08:03-08:55/52	05:59	18:07-19:36/89	05:30	18:11-19:43/92 06:05-06:21/16
	17:03	17:56	18:45		20:37		21:25	07:35-08:43/68	22:01	07:49-08:31/42
14	08:44	08:02	07:04		06:55	07:59-08:55/56	05:58	18:06-19:36/90	05:30	18:11-19:43/92 06:06-06:21/15
	17:05	17:58	18:47		20:38		21:26	07:35-08:42/67	22:01	07:50-08:31/41
15	08:43	08:00	07:01		06:52	07:57-08:54/57	05:56	18:06-19:37/91	05:30	18:12-19:43/91 06:06-06:21/15
	17:06	18:00	18:49		20:40		21:28	07:35-08:42/67	22:02	07:50-08:31/41
16	08:43	07:58	06:59		06:50	07:54-08:54/60	05:55	18:06-19:37/91	05:30	18:12-19:44/92 06:07-06:21/14
	17:08	18:02	18:50		20:42		21:29	07:36-08:42/66	22:02	07:51-08:31/40
17	08:42	07:56	06:57		06:48	07:52-08:53/61	05:53	18:05-19:37/92	05:29	18:12-19:44/92 06:07-06:22/15
	17:09	18:03	18:52		20:43		21:31	07:36-08:41/65	22:03	07:51-08:31/40
18	08:41	07:54	06:55		06:46	18:50-18:57/7	05:52	18:05-19:38/93	05:29	18:12-19:44/92 06:07-06:22/15
	17:11	18:05	18:54		20:45	07:50-08:52/62	21:32	07:36-08:41/65	22:03	07:52-08:31/39
19	08:40	07:52	06:52		06:44	18:41-19:05/24	05:51	18:06-19:38/92	05:30	18:13-19:44/91 06:07-06:22/15
	17:12	18:07	18:55		20:46	07:49-08:51/62	21:34	07:37-08:41/64	22:04	07:52-08:31/39
20	08:39	07:50	06:50		06:42	18:36-19:09/33	05:49	18:06-19:39/93	05:30	18:13-19:44/91 06:07-06:22/15
	17:14	18:09	18:57		20:48	07:47-08:50/63	21:35	07:37-08:41/64	22:04	07:52-08:31/39
21	08:38	07:48	06:48		06:40	18:33-19:12/39	05:48	18:05-19:38/93	05:30	18:13-19:44/91 06:08-06:23/15
	17:16	18:11	18:59		20:50	07:46-08:49/63	21:37	07:37-08:39/62	22:04	07:52-08:31/39
22	08:37	07:46	06:46		06:38	18:30-19:15/45	05:47	18:05-19:38/93	05:30	18:14-19:45/91 06:08-06:23/15
	17:17	18:12	19:00		20:51	07:44-08:48/64	21:38	07:37-08:39/62	22:04	07:53-08:32/39
23	08:36	07:44	06:43		06:36	18:27-19:17/50	05:46	18:05-19:39/94 06:12-06:14/2	05:30	18:14-19:45/91 06:08-06:23/15
	17:19	18:14	19:02		20:53	07:43-08:46/63	21:39	07:38-08:39/61	22:04	07:53-08:32/39
24	08:35	07:42	06:41		06:34	18:25-19:19/54	05:44	18:06-19:39/93 06:11-06:16/5	05:30	18:14-19:45/91 06:08-06:23/15
	17:21	18:16	19:04		20:55	07:42-08:45/63	21:41	07:38-08:38/60	22:05	07:53-08:32/39
25	08:33	07:40	06:39		06:32	18:23-19:20/57	05:43	18:06-19:39/93 06:10-06:17/7	05:31	18:14-19:46/92 06:09-06:24/15
	17:22	18:18	19:05		20:56	07:41-08:44/63	21:42	07:39-08:38/59	22:05	07:53-08:33/40
26	08:32	07:38	06:37	07:30-07:41/11	06:30	18:21-19:22/61	05:42	18:06-19:39/93 06:09-06:17/8	05:31	18:14-19:46/92 06:09-06:23/14
	17:24	18:19	19:07		20:58	07:40-08:44/64	21:43	07:39-08:37/58	22:05	07:53-08:33/40
27	08:31	07:36	06:34	07:25-07:46/21	06:28	18:19-19:23/64	05:41	18:06-19:39/93 06:08-06:18/10	05:32	18:14-19:45/91 06:09-06:24/15
	17:26	18:21	19:09		21:00	07:39-08:44/65	21:44	07:40-08:37/57	22:05	07:53-08:33/40
28	08:29	07:34	06:32	07:21-07:48/27	06:26	18:17-19:24/67	05:40	18:06-19:40/94 06:07-06:18/11	05:32	18:15-19:46/91 06:09-06:24/15
	17:28	18:23	19:10		21:01	07:38-08:44/66	21:46	07:40-08:36/56	22:05	07:53-08:34/41
29	08:28		07:30	08:19-08:50/31	06:24	18:17-19:26/69	05:39	18:07-19:41/94 06:07-06:19/12	05:33	18:14-19:46/92 06:10-06:25/15
	17:29		20:12		21:03	07:38-08:45/67	21:47	07:41-08:36/55	22:04	07:53-08:34/41
30	08:27		07:28	08:17-08:52/35	06:22	18:15-19:27/72	05:38	18:07-19:41/94 06:06-06:20/14	05:33	18:15-19:47/92 06:09-06:25/16
	17:31		20:14		21:04	07:38-08:45/67	21:48	07:42-08:36/54	22:04	07:53-08:35/42
31	08:25		07:25	08:15-08:53/38			05:37	18:07-19:41/94 06:05-06:20/15		
	17:33		20:15				21:49	07:42-08:35/53		
Potential sun hours	262	279	367		414		482		494	
Sum of minutes with flicker	0	0	163		2351		4827		4511	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 19 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (243)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 18:15-19:47/92 06:10-06:25/15	06:09 18:17-19:45/88	06:57 08:03-08:56/53	07:44	07:36	08:26
	22:04 07:53-08:36/43	21:33 07:45-08:54/69	20:33	19:25	17:21	16:42
2	05:34 18:15-19:47/92 06:09-06:25/16	06:10 18:17-19:45/88	06:59 08:02-08:55/53	07:46	07:38	08:27
	22:04 07:52-08:36/44	21:32 07:46-08:55/69	20:31	19:23	17:19	16:41
3	05:35 18:15-19:47/92 06:09-06:26/17	06:12 18:18-19:45/87	07:00 08:03-08:55/52	07:48	07:40	08:29
	22:03 07:53-08:37/44	21:30 07:45-08:54/69	20:29	19:21	17:17	16:41
4	05:36 18:15-19:48/93 06:10-06:26/16	06:13 18:18-19:43/85	07:02 08:02-08:54/52	07:49	07:42	08:30
	22:03 07:53-08:38/45	21:28 07:45-08:54/69	20:26	19:19	17:16	16:40
5	05:37 18:15-19:47/92 06:10-06:27/17	06:15 18:19-19:43/84	07:03 08:03-08:54/51	07:51	07:43	08:31
	22:02 07:52-08:37/45	21:27 07:45-08:55/70	20:24	19:16	17:14	16:40
6	05:37 18:15-19:48/93 06:09-06:26/17	06:16 18:19-19:42/83	07:05 08:02-08:52/50	07:52	07:45	08:32
	22:02 07:52-08:38/46	21:25 07:45-08:54/69	20:22	19:14	17:12	16:39
7	05:38 18:15-19:48/93 06:10-06:27/17	06:18 18:20-19:42/82	07:06 08:03-08:52/49	07:54	07:47	08:34
	22:01 07:52-08:39/47	21:23 07:45-08:55/70	20:20	19:12	17:11	16:39
8	05:39 18:15-19:48/93 06:10-06:27/17	06:20 18:20-19:41/81	07:08 08:03-08:51/48	07:56	07:49	08:35
	22:01 07:52-08:40/48	21:22 07:45-08:54/69	20:18	19:10	17:09	16:39
9	05:40 18:16-19:48/92 06:10-06:28/18	06:21 18:20-19:39/79	07:10 08:04-08:50/46	07:57	07:50	08:36
	22:00 07:52-08:41/49	21:20 07:44-08:54/70	20:15	19:07	17:07	16:39
10	05:41 18:16-19:49/93 06:11-06:28/17	06:23 18:21-19:39/78	07:11 08:04-08:48/44	07:59	07:52	08:37
	21:59 07:51-08:42/51	21:18 07:45-08:54/69	20:13	19:05	17:06	16:38
11	05:42 18:16-19:49/93 06:12-06:28/16	06:24 18:21-19:37/76	07:13 08:06-08:47/41	08:01	07:54	08:38
	21:59 07:51-08:42/51	21:16 07:45-08:54/69	20:11	19:03	17:04	16:38
12	05:43 18:16-19:49/93 06:13-06:28/15	06:26 18:23-19:36/73	07:14 08:06-08:45/39	08:02	07:55	08:39
	21:58 07:51-08:43/52	21:14 07:45-08:54/69	20:08	19:01	17:03	16:38
13	05:44 18:16-19:49/93 06:14-06:28/14	06:27 18:23-19:34/71	07:16 08:08-08:43/35	08:04	07:57	08:40
	21:57 07:50-08:44/54	21:12 07:45-08:53/68	20:06	18:59	17:01	16:38
14	05:45 18:16-19:49/93 06:15-06:28/13	06:29 18:25-19:33/68	07:17 08:09-08:41/32	08:06	07:59	08:41
	21:56 07:50-08:45/55	21:10 07:46-08:53/67	20:04	18:57	17:00	16:38
15	05:46 18:16-19:49/93 06:16-06:28/12	06:30 18:25-19:31/66	07:19 08:11-08:39/28	08:07	08:01	08:42
	21:55 07:50-08:45/55	21:08 07:46-08:52/66	20:02	18:55	16:59	16:38
16	05:48 18:16-19:49/93 06:17-06:27/10	06:32 18:27-19:30/63	07:21 08:13-08:35/22	08:09	08:02	08:43
	21:54 07:49-08:46/57	21:07 07:47-08:52/65	19:59	18:52	16:57	16:38
17	05:49 18:16-19:49/93 06:18-06:27/9	06:33 18:28-19:28/60	07:22 08:17-08:31/14	08:11	08:04	08:44
	21:53 07:49-08:46/57	21:05 07:47-08:51/64	19:57	18:50	16:56	16:38
18	05:50 18:15-19:49/94 06:19-06:26/7	06:35 18:30-19:27/57	07:24	08:12	08:06	08:44
	21:52 07:49-08:47/58	21:03 07:48-08:50/62	19:55	18:48	16:55	16:39
19	05:51 18:15-19:49/94 06:20-06:26/6	06:37 18:31-19:24/53	07:25	08:14	08:07	08:45
	21:51 07:48-08:48/60	21:01 07:48-08:51/63	19:53	18:46	16:53	16:39
20	05:52 18:15-19:48/93 06:22-06:26/4	06:38 18:33-19:22/49	07:27	08:16	08:09	08:46
	21:50 07:49-08:49/60	20:59 07:49-08:52/63	19:50	18:44	16:52	16:39
21	05:54 18:16-19:49/93 06:23-06:24/1	06:40 18:35-19:19/44	07:28	08:17	08:11	08:46
	21:49 07:48-08:49/61	20:56 07:49-08:53/64	19:48	18:42	16:51	16:40
22	05:55 18:16-19:49/93	06:41 18:38-19:17/39	07:30	08:19	08:12	08:47
	21:48 07:48-08:50/62	20:54 07:51-08:54/63	19:46	18:40	16:50	16:40
23	05:56 18:16-19:48/92	06:43 18:40-19:12/32	07:32	08:21	08:14	08:47
	21:46 07:47-08:50/63	20:52 07:51-08:54/63	19:43	18:38	16:49	16:41
24	05:58 18:15-19:48/93	06:44 18:45-19:08/23	07:33	08:22	08:15	08:48
	21:45 07:47-08:50/63	20:50 07:53-08:55/62	19:41	18:36	16:48	16:41
25	05:59 18:16-19:48/92	06:46 07:53-08:55/62	07:35	07:24	08:17	08:48
	21:44 07:47-08:52/65	20:48	19:39	17:34	16:47	16:42
26	06:00 18:16-19:48/92	06:48 07:55-08:56/61	07:36	07:26	08:18	08:48
	21:42 07:46-08:52/66	20:46	19:37	17:32	16:46	16:43
27	06:02 18:16-19:47/91	06:49 07:56-08:56/60	07:38	07:28	08:20	08:49
	21:41 07:46-08:52/66	20:44	19:34	17:30	16:45	16:43
28	06:03 18:17-19:48/91	06:51 07:59-08:56/57	07:39	07:29	08:21	08:49
	21:39 07:46-08:53/67	20:42	19:32	17:28	16:44	16:44
29	06:05 18:16-19:47/91	06:52 08:00-08:56/56	07:41	07:31	08:23	08:49
	21:38 07:46-08:53/67	20:40	19:30	17:26	16:43	16:45
30	06:06 18:16-19:46/90	06:54 08:03-08:56/53	07:43	07:33	08:24	08:49
	21:36 07:45-08:53/68	20:37	19:28	17:25	16:43	16:46
31	06:08 18:17-19:46/89	06:55 08:03-08:56/53		07:35		08:49
	21:35 07:46-08:54/68	20:35		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	4875	3612	709	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 20 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (244)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April		May		June	
1	08:49	08:24	07:32		07:23	18:59-19:28/29	06:20	08:55-10:45/110	05:36	20:22-20:53/31
	16:48	17:35	18:25		20:17	09:20-10:45/85	21:06		21:50	09:04-10:19/75
2	08:49	08:22	07:30		07:21	18:57-19:30/33	06:18	08:55-10:44/109	05:36	20:22-20:54/32
	16:49	17:36	18:26		20:19	09:18-10:46/88	21:08		21:51	09:05-10:20/75
3	08:49	08:21	07:28		07:19	18:56-19:31/35	06:16	08:55-10:43/108	05:35	20:22-20:55/33
	16:50	17:38	18:28		20:20	09:17-10:47/90	21:09		21:52	09:05-10:19/74
4	08:49	08:19	07:26		07:16	18:54-19:32/38	06:15	08:55-10:43/108	05:34	20:21-20:55/34 09:05-10:18/73
	16:51	17:40	18:30		20:22	09:15-10:48/93	21:11		21:53	10:47-11:08/21
5	08:49	08:18	07:23		07:14	18:52-19:32/40	06:13	08:55-10:41/106	05:34	20:21-20:56/35 09:07-10:18/71
	16:53	17:42	18:32		20:23	09:14-10:49/95	21:12		21:54	10:43-11:13/30
6	08:48	08:16	07:21		07:12	18:51-19:33/42	06:11	08:55-10:40/105	05:33	20:20-20:57/37 09:07-10:17/70
	16:54	17:44	18:33		20:25	09:12-10:49/97	21:14		21:55	10:40-11:17/37
7	08:48	08:14	07:19		07:10	18:51-19:34/43	06:09	08:56-10:40/104	05:32	20:20-20:58/38 09:07-10:17/70
	16:55	17:45	18:35		20:27	09:10-10:50/100	21:16		21:56	10:38-11:20/42
8	08:48	08:13	07:17		07:08	18:50-19:34/44	06:08	08:55-10:39/104	05:32	20:20-20:58/38 09:08-10:17/69
	16:56	17:47	18:37		20:28	09:09-10:50/101	21:17		21:57	10:36-11:23/47
9	08:47	08:11	07:15		07:05	18:50-19:35/45	06:06	08:56-10:38/102	05:31	20:20-20:59/39 09:08-10:16/68
	16:58	17:49	18:38		20:30	09:08-10:51/103	21:19		21:58	10:34-11:24/50
10	08:47	08:09	07:13		07:03	18:49-19:35/46	06:04	08:56-10:37/101	05:31	20:20-20:59/39 09:09-10:16/67
	16:59	17:51	18:40		20:32	09:07-10:52/105	21:20		21:59	10:33-11:26/53
11	08:46	08:07	07:10		07:01	18:48-19:34/46	06:03	08:56-10:37/101	05:31	20:20-21:00/40 09:10-10:16/66
	17:00	17:53	18:42		20:33	09:05-10:51/106	21:22		21:59	10:32-11:28/56
12	08:46	08:06	07:08		06:59	18:48-19:34/46	06:01	08:56-10:35/99	05:30	20:19-21:00/41 09:09-10:15/66
	17:02	17:54	18:44		20:35	09:05-10:51/106	21:23		22:00	10:31-11:29/58
13	08:45	08:04	07:06		06:57	18:48-19:34/46	05:59	08:57-10:35/98	05:30	20:20-21:00/40 09:10-10:15/65
	17:03	17:56	18:45		20:37	09:04-10:51/107	21:25		22:01	10:30-11:31/61
14	08:44	08:02	07:04		06:55	18:48-19:34/46	05:58	08:56-10:33/97	05:30	20:20-21:01/41 09:11-10:15/64
	17:05	17:58	18:47		20:38	09:03-10:52/109	21:26		22:01	10:29-11:32/63
15	08:43	08:00	07:01		06:52	18:48-19:33/45	05:56	08:57-10:33/96	05:30	20:20-21:01/41 09:11-10:15/64
	17:06	18:00	18:49		20:40	09:02-10:52/110	21:28		22:02	10:29-11:33/64
16	08:43	07:58	06:59		06:50	18:48-19:33/45	05:55	08:58-10:32/94	05:30	20:20-21:02/42 09:11-10:15/64
	17:08	18:02	18:50		20:42	09:02-10:52/110	21:29		22:02	10:29-11:34/65
17	08:42	07:56	06:57		06:48	18:48-19:32/44	05:53	08:57-10:31/94	05:29	20:20-21:02/42 09:12-10:15/63
	17:09	18:03	18:52		20:43	09:01-10:52/111	21:31		22:03	10:28-11:35/67
18	08:41	07:54	06:55		06:46	18:49-19:32/43	05:52	08:58-10:30/92	05:29	20:20-21:02/42 09:12-10:15/63
	17:11	18:05	18:54		20:45	09:00-10:52/112	21:32		22:03	10:28-11:35/67
19	08:40	07:52	06:52		06:44	18:49-19:31/42	05:51	08:58-10:30/92	05:30	20:20-21:03/43 09:12-10:15/63
	17:12	18:07	18:55		20:46	09:00-10:51/111	21:34		22:04	10:28-11:36/68
20	08:39	07:50	06:50		06:42	18:50-19:30/40	05:49	08:59-10:29/90	05:30	20:20-21:03/43 09:12-10:15/63
	17:14	18:09	18:57		20:48	08:59-10:51/112	21:35		22:04	10:28-11:36/68
21	08:38	07:48	06:48	08:54-09:18/24	06:40	18:50-19:29/39	05:48	08:59-10:27/88	05:30	20:20-21:03/43 09:12-10:15/63
	17:16	18:11	18:59		20:50	08:59-10:51/112	21:37		22:04	10:28-11:36/68
22	08:37	07:46	06:46	08:48-09:24/36	06:38	18:51-19:28/37	05:47	08:59-10:27/88	05:30	20:21-21:04/43 09:13-10:16/63
	17:17	18:12	19:00		20:51	08:58-10:50/112	21:38		22:04	10:29-11:37/68
23	08:36	07:44	06:43	08:44-09:28/44	06:36	18:52-19:27/35	05:46	09:00-10:26/86	05:30	20:21-21:04/43 09:13-10:16/63
	17:19	18:14	19:02		20:53	08:58-10:50/112	21:39		22:04	10:29-11:37/68
24	08:35	07:42	06:41	08:39-09:31/52	06:34	18:54-19:25/31	05:44	09:00-10:25/85	05:30	20:21-21:03/42 09:13-10:16/63
	17:21	18:16	19:04		20:55	08:57-10:49/112	21:41		22:05	10:29-11:36/67
25	08:33	07:40	06:39	08:36-09:34/58	06:32	18:55-19:23/28	05:43	20:33-20:41/8	05:31	20:22-21:04/42 09:14-10:17/63
	17:22	18:18	19:05		20:56	08:57-10:49/112	21:42	09:01-10:24/83	22:05	10:30-11:37/67
26	08:32	07:38	06:37	08:34-09:36/62	06:30	18:56-19:22/26	05:42	20:29-20:44/15	05:31	20:22-21:04/42 09:14-10:17/63
	17:24	18:19	19:07		20:58	08:56-10:48/112	21:43	09:01-10:23/82	22:05	10:31-11:36/65
27	08:31	07:36	06:34	08:32-09:39/67	06:28	18:58-19:19/21	05:41	20:27-20:46/19	05:32	20:22-21:04/42 09:13-10:17/64
	17:26	18:21	19:09		21:00	08:56-10:47/111	21:44	09:01-10:23/82	22:05	10:31-11:35/64
28	08:29	07:34	06:32	08:28-09:40/72	06:26	19:01-19:16/15	05:40	20:26-20:48/22	05:32	20:23-21:04/41 09:14-10:18/64
	17:28	18:23	19:10		21:01	08:56-10:46/110	21:46	09:02-10:22/80	22:05	10:32-11:35/63
29	08:28		07:30	19:09-19:21/12	06:24	19:07-19:12/5	05:39	20:25-20:50/25	05:33	20:23-21:04/41 09:13-10:18/65
	17:29		20:12	09:26-10:41/75	21:03	08:56-10:47/111	21:47	09:03-10:22/79	22:04	10:33-11:34/61
30	08:27		07:28	19:05-19:25/20	06:22	08:56-10:46/110	05:38	20:24-20:51/27	05:33	20:24-21:04/40 09:14-10:19/65
	17:31		20:14	09:24-10:43/79	21:04		21:48	09:04-10:21/77	22:04	10:34-11:34/60
31	08:25		07:25	19:02-19:27/25			05:37	20:23-20:52/29		
	17:33		20:15	09:22-10:45/83			21:49	09:04-10:20/76		
Potential sun hours	262	279	367		414		482		494	
Sum of minutes with flicker	0	0	709		4240		3061		4747	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 20 - VESTAS V126-3.45 HTq 3450 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (244)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 20:24-21:04/40 09:14-10:20/66	06:09 09:06-10:46/100	06:57 18:48-19:34/46	07:44	07:36	08:26
	22:04 10:36-11:33/57	21:33	20:33 09:05-10:51/106	19:25	17:21	16:42
2	05:34 20:24-21:04/40 09:13-10:20/67	06:11 09:07-10:48/101	06:59 18:47-19:33/46	07:46	07:38	08:27
	22:04 10:37-11:31/54	21:32	20:31 09:05-10:49/104	19:23	17:19	16:41
3	05:35 20:25-21:04/39 09:14-10:21/67	06:12 09:06-10:48/102	07:00 18:48-19:33/45	07:48	07:40	08:29
	22:03 10:39-11:30/51	21:30	20:29 09:06-10:49/103	19:21	17:17	16:41
4	05:36 20:26-21:04/38 09:14-10:22/68	06:13 09:05-10:48/103	07:02 18:47-19:31/44	07:49	07:42	08:30
	22:03 10:41-11:29/48	21:28	20:26 09:06-10:47/101	19:19	17:16	16:40
5	05:37 20:26-21:03/37 09:13-10:22/69	06:15 09:06-10:50/104	07:03 18:48-19:31/43	07:51	07:43	08:31
	22:02 10:42-11:26/44	21:27	20:24 09:07-10:47/100	19:16	17:14	16:40
6	05:37 20:26-21:03/37 09:13-10:23/70	06:17 09:05-10:50/105	07:05 18:47-19:29/42	07:52	07:45	08:32
	22:02 10:45-11:24/39	21:25	20:22 09:08-10:45/97	19:14	17:12	16:39
7	05:38 20:27-21:03/36 09:13-10:24/71	06:18 09:05-10:51/106	07:06 18:48-19:29/41	07:54	07:47	08:34
	22:01 10:48-11:21/33	21:23	20:20 09:09-10:44/95	19:12	17:11	16:39
8	05:39 20:28-21:03/35 09:13-10:25/72	06:20 09:05-10:51/106	07:08 18:48-19:27/39	07:56	07:49	08:35
	22:01 10:52-11:18/26	21:22	20:18 09:09-10:42/93	19:10	17:09	16:39
9	05:40 20:29-21:02/33 09:13-10:26/73	06:21 09:04-10:51/107	07:10 18:50-19:26/36	07:57	07:50	08:36
	22:00 10:59-11:11/12	21:20	20:15 09:11-10:42/91	19:07	17:07	16:39
10	05:41 20:29-21:02/33	06:23 09:04-10:52/108	07:11 18:50-19:23/33	07:59	07:52	08:37
	21:59 09:13-10:27/74	21:18	20:13 09:11-10:39/88	19:05	17:06	16:38
11	05:42 20:30-21:01/31	06:24 09:04-10:52/108	07:13 18:52-19:22/30	08:01	07:54	08:38
	21:59 09:13-10:27/74	21:16	20:11 09:13-10:38/85	19:03	17:04	16:38
12	05:43 20:31-21:01/30	06:26 09:04-10:53/109	07:14 18:53-19:19/26	08:02	07:55	08:39
	21:58 09:12-10:28/76	21:14	20:09 09:13-10:36/83	19:01	17:03	16:38
13	05:44 20:32-21:00/28	06:27 09:03-10:53/110	07:16 18:55-19:16/21	08:04	07:57	08:40
	21:57 09:12-10:29/77	21:12	20:06 09:15-10:35/80	18:59	17:01	16:38
14	05:45 20:33-20:59/26	06:29 19:12-19:21/9	07:17 18:58-19:12/14	08:06	07:59	08:41
	21:56 09:12-10:30/78	21:10 09:04-10:54/110	20:04 09:16-10:32/76	18:57	17:00	16:38
15	05:46 20:35-20:58/23	06:30 19:08-19:25/17	07:19 09:18-10:30/72	08:07	08:01	08:42
	21:55 09:12-10:31/79	21:08 09:03-10:54/111	20:02	18:55	16:59	16:38
16	05:48 20:36-20:57/21	06:32 19:05-19:27/22	07:21 09:19-10:27/68	08:09	08:02	08:43
	21:54 09:11-10:32/81	21:07 09:04-10:55/111	19:59	18:52	16:57	16:38
17	05:49 20:38-20:55/17	06:33 19:03-19:29/26	07:22 09:22-10:25/63	08:11	08:04	08:44
	21:53 09:11-10:33/82	21:05 09:03-10:55/112	19:57	18:50	16:56	16:38
18	05:50 20:40-20:52/12	06:35 19:01-19:30/29	07:24 09:23-10:22/59	08:12	08:06	08:44
	21:52 09:10-10:33/83	21:03 09:03-10:55/112	19:55	18:48	16:55	16:39
19	05:51 09:10-10:34/84	06:37 18:59-19:31/32	07:25 09:26-10:19/53	08:14	08:07	08:45
	21:51	21:01 09:03-10:55/112	19:53	18:46	16:53	16:39
20	05:52 09:10-10:36/86	06:38 18:58-19:32/34	07:27 09:28-10:15/47	08:16	08:09	08:46
	21:50	20:59 09:03-10:55/112	19:50	18:44	16:52	16:39
21	05:54 09:10-10:37/87	06:40 18:56-19:33/37	07:28 09:32-10:11/39	08:17	08:11	08:46
	21:49	20:56 09:03-10:55/112	19:48	18:42	16:51	16:40
22	05:55 09:09-10:37/88	06:41 18:55-19:34/39	07:30 09:37-10:06/29	08:19	08:12	08:47
	21:48	20:54 09:03-10:55/112	19:46	18:40	16:50	16:40
23	05:56 09:09-10:38/89	06:43 18:53-19:34/41	07:32 09:45-09:56/11	08:21	08:14	08:47
	21:46	20:52 09:03-10:55/112	19:43	18:38	16:49	16:41
24	05:58 09:08-10:39/91	06:44 18:53-19:35/42	07:33	08:22	08:15	08:48
	21:45	20:50 09:04-10:55/111	19:41	18:36	16:48	16:41
25	05:59 09:09-10:40/91	06:46 18:51-19:34/43	07:35	07:24	08:17	08:48
	21:44	20:48 09:03-10:54/111	19:39	17:34	16:47	16:42
26	06:00 09:08-10:41/93	06:48 18:51-19:35/44	07:36	07:26	08:18	08:49
	21:42	20:46 09:04-10:54/110	19:37	17:32	16:46	16:43
27	06:02 09:08-10:42/94	06:49 18:50-19:35/45	07:38	07:28	08:20	08:49
	21:41	20:44 09:04-10:54/110	19:34	17:30	16:45	16:43
28	06:03 09:08-10:43/95	06:51 18:50-19:35/45	07:40	07:29	08:21	08:49
	21:39	20:42 09:04-10:54/110	19:32	17:28	16:44	16:44
29	06:05 09:07-10:44/97	06:52 18:48-19:34/46	07:41	07:31	08:23	08:49
	21:38	20:40 09:04-10:52/108	19:30	17:26	16:43	16:45
30	06:06 09:07-10:44/97	06:54 18:49-19:35/46	07:43	07:33	08:24	08:49
	21:36	20:37 09:05-10:52/107	19:28	17:25	16:43	16:46
31	06:08 09:07-10:46/99	06:55 18:48-19:34/46		07:35		08:49
	21:35	20:35 09:05-10:51/106		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	3438	4001	2249	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 21 - ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (246)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49	08:24	07:32 17:13-17:24/11	07:23	06:20 19:39-20:30/51	05:37 19:36-20:36/60
	16:48	17:35	18:25 17:37-17:59/22	20:17	21:06	21:50
2	08:49	08:22	07:30 17:37-18:01/24	07:21	06:18 19:38-20:31/53	05:36 19:37-20:37/60
	16:49	17:37	18:27	20:19	21:08	21:51
3	08:49	08:21	07:28 17:37-18:03/26	07:19	06:17 19:38-20:32/54	05:35 19:37-20:36/59
	16:50	17:38	18:28	20:20	21:09	21:52
4	08:49	08:19	07:26 17:38-18:05/27	07:17	06:15 19:37-20:33/56	05:34 19:38-20:37/59
	16:52	17:40	18:30	20:22	21:11	21:53
5	08:49	08:18	07:24 17:38-18:06/28	07:14	06:13 19:36-20:33/57	05:34 19:38-20:36/58
	16:53	17:42	18:32	20:24	21:13	21:54
6	08:49	08:16	07:21 17:40-18:08/28	07:12	06:11 19:36-20:34/58	05:33 19:39-20:37/58
	16:54	17:44	18:33	20:25	21:14	21:55
7	08:48	08:14	07:19 17:42-18:10/28	07:10	06:09 19:35-20:34/59	05:33 19:39-20:36/57
	16:55	17:46	18:35	20:27	21:16	21:56
8	08:48	08:13 17:13-17:18/5	07:17 17:45-18:12/27	07:08	06:08 19:34-20:34/60	05:32 19:40-20:37/57
	16:56	17:47	18:37	20:29	21:17	21:57
9	08:47	08:11 17:11-17:21/10	07:15 17:47-18:13/26	07:06	06:06 19:34-20:35/61	05:32 19:39-20:36/57
	16:58	17:49	18:39	20:30	21:19	21:58
10	08:47	08:09 17:09-17:23/14	07:13 17:48-18:15/27	07:03	06:04 19:33-20:35/62	05:31 19:40-20:36/56
	16:59	17:51	18:40	20:32	21:20	21:59
11	08:46	08:08 17:08-17:25/17	07:10 17:49-18:17/28	07:01	06:03 19:33-20:36/63	05:31 19:41-20:37/56
	17:00	17:53	18:42	20:33	21:22	21:59
12	08:46	08:06 17:07-17:27/20	07:08 17:51-18:19/28	06:59	06:01 19:33-20:35/62	05:30 19:40-20:36/56
	17:02	17:55	18:44	20:35	21:24	22:00
13	08:45	08:04 17:06-17:29/23	07:06 17:52-18:20/28	06:57	06:00 19:33-20:36/63	05:30 19:41-20:36/55
	17:03	17:56	18:45	20:37	21:25	22:01
14	08:44	08:02 17:05-17:31/26	07:04 18:02-18:22/20	06:55	05:58 19:32-20:36/64	05:30 19:41-20:36/55
	17:05	17:58	18:47 17:56-18:00/4	20:38	21:27	22:01
15	08:44	08:00 17:04-17:32/28	07:02 18:02-18:24/22	06:53	05:57 19:32-20:36/64	05:30 19:42-20:37/55
	17:06	18:00	18:49	20:40	21:28	22:02
16	08:43	07:58 17:04-17:34/30	06:59 18:01-18:26/25	06:50	05:55 19:33-20:37/64	05:30 19:42-20:37/55
	17:08	18:02	18:50	20:42	21:30	22:02
17	08:42	07:56 17:03-17:36/33	06:57 18:00-18:27/27	06:48	05:54 19:32-20:36/64	05:30 19:43-20:37/54
	17:09	18:04	18:52	20:43	21:31	22:03
18	08:41	07:55 17:03-17:38/35	06:55 18:00-18:29/29	06:46	05:52 19:32-20:36/64	05:30 19:43-20:37/54
	17:11	18:05	18:54	20:45	21:32	22:03
19	08:40	07:53 17:03-17:40/37	06:53 18:00-18:29/29	06:44	05:51 19:33-20:37/64	05:30 19:43-20:37/54
	17:13	18:07	18:55	20:47	21:34	22:04
20	08:39	07:51 17:03-17:42/39	06:50 18:00-18:28/28	06:42	05:50 19:33-20:37/64	05:30 19:43-20:37/54
	17:14	18:09	18:57	20:48	21:35	22:04
21	08:38 16:42-16:44/2	07:49 17:03-17:44/41	06:48 17:59-18:26/27	06:40	05:48 19:33-20:37/64	05:30 19:44-20:38/54
	17:16	18:11	18:59	20:50	21:37	22:04
22	08:37 16:43-16:46/3	07:47 17:04-17:46/42	06:46 18:00-18:26/26	06:38 19:59-20:13/14	05:47 19:33-20:36/63	05:30 19:44-20:38/54
	17:17	18:12	19:00	20:52	21:38	22:04
23	08:36 16:43-16:48/5	07:45 17:04-17:48/44	06:44 18:01-18:25/24	06:36 19:55-20:17/22	05:46 19:33-20:36/63	05:30 19:44-20:38/54
	17:19	18:14	19:02	20:53	21:39	22:05
24	08:35 16:43-16:49/6	07:43 17:05-17:33/28	06:41 18:01-18:23/22	06:34 19:51-20:20/29	05:45 19:33-20:36/63	05:31 19:44-20:38/54
	17:21	18:16 17:35-17:50/15	19:04	20:55	21:41	22:05
25	08:33 16:44-16:52/8	07:40 17:06-17:33/27	06:39 18:03-18:21/18	06:32 19:49-20:22/33	05:43 19:34-20:36/62	05:31 19:45-20:39/54
	17:23	18:18 17:36-17:52/16	19:05	20:56	21:42	22:05
26	08:32 16:46-16:54/8	07:38 17:07-17:31/24	06:37 18:05-18:19/14	06:30 19:47-20:24/37	05:42 19:34-20:36/62	05:31 19:44-20:39/55
	17:24	18:20 17:38-17:54/16	19:07	20:58	21:43	22:05
27	08:31 16:46-16:55/9	07:36 17:08-17:29/21	06:35 18:09-18:15/6	06:28 19:45-20:25/40	05:41 19:34-20:36/62	05:32 19:45-20:40/55
	17:26	18:21 17:37-17:55/18	19:09	21:00	21:45	22:05
28	08:30 16:49-16:55/6	07:34 17:10-17:27/17	06:32	06:26 19:44-20:27/43	05:40 19:35-20:37/62	05:32 19:45-20:39/54
	17:28	18:23 17:37-17:57/20	19:10	21:01	21:46	22:05
29	08:28		07:30	06:24 19:42-20:28/46	05:39 19:35-20:37/62	05:33 19:45-20:40/55
	17:29		20:12	21:03	21:47	22:04
30	08:27		07:28	06:22 19:41-20:29/48	05:38 19:36-20:37/61	05:33 19:45-20:40/55
	17:31		20:14	21:05	21:48	22:04
31	08:25		07:26		05:37 19:36-20:36/60	
	17:33		20:15		21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	47	646	679	312	1891	1673

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Marc Vranken / marc.vranken@encon.eu
Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 21 - ENERCON E-138 EP3 E2 4200 138.3 !O! hub: 110,8 m (TOT: 180,0 m) (246)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 19:45-20:41/56	06:09 19:43-20:46/63	06:57	07:44 18:30-18:58/28	07:36 16:39-16:52/13	08:26
	22:04	21:33	20:33	19:25	17:21	16:42
2	05:35 19:44-20:40/56	06:11 19:44-20:46/62	06:59	07:46 18:29-18:57/28	07:38 16:40-16:50/10	08:27
	22:04	21:32	20:31	19:23	17:19	16:42
3	05:35 19:45-20:41/56	06:12 19:44-20:45/61	07:00	07:48 18:26-18:54/28	07:40 16:44-16:48/4	08:29
	22:03	21:30	20:29	19:21	17:18	16:41
4	05:36 19:45-20:42/57	06:14 19:44-20:44/60	07:02	07:49 18:26-18:52/26	07:42	08:30
	22:03	21:29	20:27	19:19	17:16	16:41
5	05:37 19:45-20:42/57	06:15 19:45-20:44/59	07:03	07:51 18:25-18:50/25	07:43	08:31
	22:03	21:27	20:24	19:16	17:14	16:40
6	05:38 19:44-20:42/58	06:17 19:44-20:43/59	07:05	07:53 18:19-18:47/28	07:45	08:33
	22:02	21:25	20:22	19:14	17:12	16:40
7	05:39 19:44-20:42/58	06:18 19:45-20:43/58	07:07	07:54 18:17-18:45/28	07:47	08:34
	22:01	21:23	20:20	19:12	17:11	16:39
8	05:39 19:44-20:43/59	06:20 19:45-20:42/57	07:08	07:56 18:15-18:43/28	07:49	08:35
	22:01	21:22	20:18	19:10	17:09	16:39
9	05:40 19:44-20:43/59	06:21 19:47-20:42/55	07:10	07:57 18:13-18:40/27	07:50	08:36
	22:00	21:20	20:15	19:08	17:08	16:39
10	05:41 19:44-20:44/60	06:23 19:47-20:40/53	07:11	07:59 18:12-18:38/26	07:52	08:37
	22:00	21:18	20:13	19:05	17:06	16:39
11	05:42 19:44-20:44/60	06:24 19:48-20:40/52	07:13	08:01 18:11-18:36/25	07:54	08:38
	21:59	21:16	20:11	19:03	17:04	16:38
12	05:43 19:44-20:45/61	06:26 19:48-20:38/50	07:14	08:02 17:50-17:53/3	07:56	08:39
	21:58	21:14	20:09	19:01 18:10-18:33/23	17:03	16:38
13	05:44 19:44-20:45/61	06:27 19:49-20:37/48	07:16	08:04 17:45-17:59/14	07:57	08:40
	21:57	21:12	20:06	18:59 18:10-18:31/21	17:02	16:38
14	05:46 19:44-20:45/61	06:29 19:50-20:36/46	07:18	08:06 17:42-18:01/19	07:59 16:21-16:27/6	08:41
	21:56	21:11	20:04	18:57 18:10-18:29/19	17:00	16:38
15	05:47 19:44-20:45/61	06:31 19:51-20:34/43	07:19	08:07 17:41-18:03/22	08:01 16:19-16:28/9	08:42
	21:55	21:09	20:02	18:55 18:10-18:27/17	16:59	16:38
16	05:48 19:44-20:46/62	06:32 19:53-20:32/39	07:21 18:59-19:01/2	08:09 17:38-18:03/25	08:02 16:19-16:27/8	08:43
	21:54	21:07	20:00	18:53 18:08-18:24/16	16:57	16:38
17	05:49 19:43-20:46/63	06:34 19:54-20:30/36	07:22 18:54-19:07/13	08:11 17:37-18:04/27	08:04 16:17-16:25/8	08:44
	21:53	21:05	19:57	18:50 18:07-18:22/15	16:56	16:39
18	05:50 19:43-20:46/63	06:35 19:56-20:28/32	07:24 18:51-19:08/17	08:12 17:36-18:05/29	08:06 16:17-16:23/6	08:44
	21:52	21:03	19:55	18:48 18:06-18:21/15	16:55	16:39
19	05:51 19:43-20:46/63	06:37 19:58-20:25/27	07:25 18:49-19:10/21	08:14 17:35-18:19/44	08:07 16:17-16:22/5	08:45
	21:51	21:01	19:53	18:46	16:54	16:39
20	05:53 19:44-20:47/63	06:38 20:01-20:22/21	07:27 18:48-19:11/23	08:16 17:34-18:16/42	08:09 16:18-16:21/3	08:46
	21:50	20:59	19:50	18:44	16:52	16:40
21	05:54 19:43-20:47/64	06:40 20:05-20:17/12	07:29 18:46-19:11/25	08:17 17:34-18:14/40	08:11 16:18-16:20/2	08:46
	21:49	20:57	19:48	18:42	16:51	16:40
22	05:55 19:43-20:47/64	06:41	07:30 18:45-19:12/27	08:19 17:33-18:12/39	08:12	08:47
	21:48	20:55	19:46	18:40	16:50	16:40
23	05:57 19:43-20:46/63	06:43	07:32 18:44-19:11/27	08:21 17:33-18:10/37	08:14	08:47
	21:46	20:52	19:44	18:38	16:49	16:41
24	05:58 19:43-20:47/64	06:45	07:33 18:43-19:13/30	08:23 17:34-18:08/34	08:15	08:48
	21:45	20:50	19:41	18:36	16:48	16:42
25	05:59 19:43-20:47/64	06:46	07:35 18:42-19:12/30	07:24 16:34-17:06/32	08:17	08:48
	21:44	20:48	19:39	17:34	16:47	16:42
26	06:01 19:43-20:47/64	06:48	07:36 18:42-19:10/28	07:26 16:33-17:03/30	08:19	08:49
	21:42	20:46	19:37	17:32	16:46	16:43
27	06:02 19:43-20:46/63	06:49	07:38 18:43-19:08/25	07:28 16:34-17:01/27	08:20	08:49
	21:41	20:44	19:34	17:30	16:45	16:44
28	06:03 19:43-20:47/64	06:51	07:40 18:42-19:05/23	07:29 16:35-17:00/25	08:22	08:49
	21:40	20:42	19:32	17:28	16:44	16:44
29	06:05 19:43-20:46/63	06:52	07:41 18:43-19:03/20	07:31 16:35-16:58/23	08:23	08:49
	21:38	20:40	19:30	17:27	16:44	16:45
30	06:06 19:44-20:47/63	06:54	07:43 18:33-19:00/27	07:33 16:36-16:56/20	08:24	08:49
	21:37	20:38	19:28	17:25	16:43	16:46
31	06:08 19:43-20:46/63	06:56		07:35 16:38-16:54/16		08:49
	21:35	20:35		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	1893	993	338	971	74	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 22 - NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	08:49 16:48	08:24 17:35	07:32 17:41-17:59/18 18:25	07:23 19:35-19:51/16 20:17	06:20 19:56-20:29/33 21:06	05:37 20:35-21:01/26 21:50
2	08:49 16:49	08:22 17:37	07:30 17:42-18:01/19 18:27	07:21 19:35-19:53/18 20:19	06:18 19:55-20:29/34 21:08	05:36 20:36-21:01/25 21:51
3	08:49 16:50	08:21 17:38	07:28 17:43-18:03/20 18:28	07:19 19:35-19:54/19 20:20	06:17 19:55-20:29/34 21:09	05:35 20:36-21:01/25 21:53
4	08:49 16:52	08:19 17:40	07:26 17:46-18:05/19 18:30	07:17 19:35-19:54/19 20:22	06:15 19:55-20:29/34 21:11	05:34 20:36-21:01/25 21:54
5	08:49 16:53	08:18 17:42	07:24 17:50-18:04/14 18:32	07:14 19:35-19:53/18 20:24	06:13 19:54-20:28/34 21:13	05:34 20:37-21:01/24 21:54
6	08:49 16:54	08:16 17:44	07:21 17:51-18:03/12 18:33	07:12 19:35-19:51/16 20:25	06:11 19:55-20:29/34 21:14	05:33 20:37-21:00/23 21:55
7	08:48 16:55	08:14 17:46	07:19 18:08-18:10/2 18:35 17:52-18:01/9	07:10 19:36-19:50/14 20:27	06:09 19:54-20:29/35 21:16	05:33 20:38-21:01/23 21:56
8	08:48 16:56	08:13 17:47	07:17 18:06-18:12/6 18:37	07:08 19:37-19:49/12 20:29	06:08 19:54-20:28/34 21:17	05:32 20:39-21:01/22 21:57
9	08:47 16:58	08:11 17:49	07:15 18:05-18:13/8 18:39	07:06 19:40-19:46/6 20:30	06:06 19:55-20:28/33 21:19	05:32 20:39-21:00/21 21:58
10	08:47 16:59	08:09 17:51	07:13 18:04-18:15/11 18:40	07:03 20:32	06:04 19:54-20:28/34 21:20	05:31 20:40-21:01/21 21:59
11	08:46 17:00	08:08 17:53	07:10 18:04-18:17/13 18:42	07:01 20:33	06:03 19:55-20:28/33 21:22 20:44-20:50/6	05:31 20:40-21:01/21 21:59
12	08:46 17:02	08:06 17:55	07:08 18:04-18:19/15 18:44	06:59 20:35	06:01 19:55-20:27/32 21:24 20:40-20:52/12	05:30 20:40-21:00/20 22:00
13	08:45 17:03	08:04 17:56	07:06 18:04-18:20/16 18:45	06:57 20:37	06:00 19:56-20:27/31 21:25 20:39-20:55/16	05:30 20:41-21:00/19 22:01
14	08:44 17:05	08:02 17:58	07:04 18:06-18:22/16 18:47	06:55 20:38	05:58 19:56-20:26/30 21:27 20:37-20:55/18	05:30 20:41-21:00/19 22:01
15	08:44 17:06	08:00 18:00	07:02 18:08-18:24/16 18:49	06:53 20:07-20:11/4 20:40	05:57 19:57-20:26/29 21:28 20:37-20:57/20	05:30 20:42-21:00/18 22:02
16	08:43 17:08	07:58 18:02	06:59 18:10-18:25/15 18:50	06:50 20:03-20:15/12 20:42	05:55 19:58-20:25/27 21:30 20:36-20:58/22	05:30 20:42-21:00/18 22:02
17	08:42 17:09	07:56 18:04	06:57 18:10-18:23/13 18:52	06:48 20:01-20:17/16 20:43	05:54 19:58-20:24/26 21:31 20:35-20:58/23	05:30 20:43-21:00/17 22:03
18	08:41 17:11	07:55 18:05	06:55 18:11-18:22/11 18:54 18:28-18:29/1	06:46 19:59-20:18/19 20:45	05:52 20:00-20:23/23 21:32 20:34-20:59/25	05:30 20:43-21:00/17 22:03
19	08:40 17:13	07:53 18:07	06:53 18:13-18:20/7 18:55 18:26-18:31/5	06:44 19:58-20:20/22 20:47	05:51 20:01-20:23/22 21:34 20:34-21:00/26	05:30 20:43-21:00/17 22:04
20	08:39 17:14	07:51 18:09	06:50 18:25-18:33/8 18:57	06:42 19:57-20:22/25 20:48	05:50 20:02-20:22/20 21:35 20:34-21:00/26	05:30 20:43-21:01/18 22:04
21	08:38 17:16	07:49 18:11	06:48 18:23-18:33/10 18:59	06:40 19:56-20:23/27 20:50	05:48 20:04-20:21/17 21:37 20:34-21:01/27	05:30 20:44-21:02/18 22:04
22	08:37 17:17	07:47 18:12	06:46 18:22-18:35/13 19:00	06:38 19:56-20:25/29 20:52	05:47 20:05-20:18/13 21:38 20:33-21:00/27	05:30 20:44-21:02/18 22:04
23	08:36 17:19	07:45 17:44-17:48/4 18:14	06:44 18:22-18:37/15 19:02	06:36 19:55-20:26/31 20:53	05:46 20:07-20:16/9 21:39 20:33-21:00/27	05:30 20:44-21:02/18 22:05
24	08:35 17:21	07:43 17:43-17:50/7 18:16	06:41 18:21-18:38/17 19:04	06:34 19:55-20:28/33 20:55	05:45 20:33-21:01/28 21:41	05:31 20:44-21:01/17 22:05
25	08:33 17:23	07:41 17:42-17:52/10 18:18	06:39 18:22-18:37/15 19:05	06:32 19:55-20:29/34 20:56	05:43 20:33-21:01/28 21:42	05:31 20:45-21:02/17 22:05
26	08:32 17:24	07:38 17:42-17:54/12 18:20	06:37 18:23-18:36/13 19:07	06:30 19:55-20:30/35 20:58	05:42 20:33-21:01/28 21:43	05:31 20:44-21:02/18 22:05
27	08:31 17:26	07:36 17:40-17:55/15 18:21	06:35 18:24-18:34/10 19:09	06:28 19:55-20:30/35 21:00	05:41 20:34-21:01/27 21:45	05:32 20:45-21:03/18 22:05
28	08:30 17:28	07:34 17:41-17:57/16 18:23	06:32 18:44-18:45/1 19:10 18:26-18:30/4	06:26 19:56-20:30/34 21:01	05:40 20:34-21:01/27 21:46	05:32 20:44-21:03/19 22:05
29	08:28 17:29		07:30 19:40-19:47/7 20:12	06:24 19:57-20:30/33 21:03	05:39 20:35-21:02/27 21:47	05:33 20:45-21:04/19 22:04
30	08:27 17:31		07:28 19:38-19:48/10 20:14	06:22 19:57-20:30/33 21:05	05:38 20:35-21:01/26 21:48	05:33 20:44-21:04/20 22:04
31	08:25 17:33		07:26 19:37-19:50/13 20:15		05:37 20:35-21:01/26 21:49	
Potential sun hours	262	279	367	414	482	494
Sum of minutes with flicker	0	64	402	560	1143	601

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 22 - NORDEX N149/5.7 5700 149.0 !O! hub: 155,0 m (TOT: 229,5 m) (247)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July		August		September		October		November	December
1	05:34	20:45-21:05/20	06:09	20:05-20:38/33	06:57		07:44	18:44-18:58/14	07:36	08:26
	22:04		21:33	20:52-21:02/10	20:33		19:25		17:21	16:42
2	05:35	20:44-21:05/21	06:11	20:06-20:38/32	06:59		07:46	18:43-18:57/14	07:38	08:27
	22:04		21:32		20:31		19:23		17:19	16:42
3	05:35	20:44-21:05/21	06:12	20:05-20:38/33	07:00	19:38-19:44/6	07:48	18:42-18:54/12	07:40	08:29
	22:03		21:30		20:29		19:21		17:18	16:41
4	05:36	20:44-21:06/22	06:14	20:04-20:38/34	07:02	19:34-19:46/12	07:49	18:42-18:52/10	07:42	08:30
	22:03		21:29		20:27		19:19		17:16	16:41
5	05:37	20:44-21:07/23	06:15	20:04-20:39/35	07:03	19:33-19:47/14	07:51	18:43-18:50/7	07:43	08:31
	22:03		21:27		20:24		19:16		17:14	16:40
6	05:38	20:43-21:07/24	06:17	20:04-20:38/34	07:05	19:31-19:47/16	07:53	18:43-18:47/4	07:45	08:33
	22:02		21:25		20:22		19:14	18:30-18:36/6	17:12	16:40
7	05:39	20:44-21:07/23	06:18	20:04-20:39/35	07:07	19:30-19:48/18	07:54	18:27-18:38/11	07:47	08:34
	22:01		21:23		20:20		19:12		17:11	16:39
8	05:39	20:44-21:08/24	06:20	20:04-20:38/34	07:08	19:29-19:48/19	07:56	18:26-18:39/13	07:49	08:35
	22:01		21:22		20:18		19:10		17:09	16:39
9	05:40	20:44-21:08/24	06:21	20:04-20:38/34	07:10	19:29-19:48/19	07:57	18:24-18:39/15	07:50	08:36
	22:00		21:20		20:15		19:08		17:08	16:39
10	05:41	20:44-21:09/25	06:23	20:04-20:37/33	07:11	19:28-19:46/18	07:59	18:19-18:38/19	07:52	08:37
	22:00		21:18		20:13		19:05		17:06	16:38
11	05:42	20:43-21:09/26	06:24	20:04-20:37/33	07:13	19:28-19:45/17	08:01	18:17-18:36/19	07:54	08:38
	21:59		21:16		20:11		19:03		17:04	16:38
12	05:43	20:43-21:10/27	06:26	20:05-20:38/33	07:14	19:28-19:42/14	08:02	18:15-18:33/18	07:56	08:39
	21:58		21:14		20:09		19:01		17:03	16:38
13	05:44	20:43-21:10/27	06:27	20:05-20:37/32	07:16	19:29-19:40/11	08:04	18:14-18:31/17	07:57	08:40
	21:57		21:12		20:06		18:59		17:01	16:38
14	05:45	20:43-21:10/27	06:29	20:04-20:38/34	07:18	19:30-19:37/7	08:06	18:14-18:29/15	07:59	08:41
	21:56		21:11		20:04		18:57		17:00	16:38
15	05:47	20:43-21:10/27	06:31	20:03-20:37/34	07:19	19:33-19:35/2	08:07	18:14-18:27/13	08:01	08:42
	21:55		21:09		20:02		18:55		16:59	16:38
16	05:48	20:43-21:10/27	06:32	20:03-20:37/34	07:21	19:13-19:22/9	08:09	18:13-18:24/11	08:02	08:43
	21:54		21:07		20:00		18:53		16:57	16:38
17	05:49	20:43-21:10/27	06:34	20:02-20:37/35	07:22	19:11-19:24/13	08:11	18:14-18:22/8	08:04	08:44
	21:53		21:05		19:57		18:50		16:56	16:39
18	05:50	20:43-21:10/27	06:35	20:02-20:35/33	07:24	19:09-19:24/15	08:12	18:14-18:21/7	08:06	08:44
	21:52		21:03		19:55		18:48		16:55	16:39
19	05:51	20:43-21:10/27	06:37	20:01-20:33/32	07:25	19:09-19:25/16	08:14	18:16-18:19/3	08:07	08:45
	21:51		21:01		19:53		18:46		16:54	16:39
20	05:53	20:20-20:25/5	06:38	20:01-20:32/31	07:27	19:08-19:23/15	08:16		08:09	08:46
	21:50	20:44-21:11/27	20:59		19:50		18:44		16:52	16:40
21	05:54	20:16-20:28/12	06:40	20:01-20:29/28	07:29	19:08-19:21/13	08:17		08:11	08:46
	21:49	20:44-21:11/27	20:57		19:48		18:42		16:51	16:40
22	05:55	20:14-20:30/16	06:41	20:01-20:28/27	07:30	19:08-19:20/12	08:19		08:12	08:47
	21:48	20:44-21:10/26	20:55		19:46		18:40		16:50	16:40
23	05:57	20:13-20:31/18	06:43	20:01-20:25/24	07:32	19:08-19:17/9	08:21		08:14	08:47
	21:46	20:44-21:10/26	20:52		19:44		18:38		16:49	16:41
24	05:58	20:12-20:33/21	06:45	20:02-20:24/22	07:33	18:58-19:02/4	08:23		08:15	08:48
	21:45	20:45-21:11/26	20:50		19:41	19:09-19:15/6	18:36		16:48	16:42
25	05:59	20:11-20:34/23	06:46	20:02-20:21/19	07:35	18:54-19:04/10	07:24		08:17	08:48
	21:44	20:45-21:10/25	20:48		19:39	19:10-19:12/2	17:34		16:47	16:42
26	06:01	20:10-20:34/24	06:48	20:04-20:20/16	07:36	18:53-19:06/13	07:26		08:19	08:49
	21:42	20:45-21:09/24	20:46		19:37		17:32		16:46	16:43
27	06:02	20:08-20:35/27	06:49	20:05-20:17/12	07:38	18:52-19:07/15	07:28		08:20	08:49
	21:41	20:45-21:08/23	20:44		19:34		17:30		16:45	16:44
28	06:03	20:08-20:36/28	06:51	20:10-20:13/3	07:40	18:51-19:05/14	07:30		08:22	08:49
	21:40	20:47-21:08/21	20:42		19:32		17:28		16:44	16:44
29	06:05	20:07-20:36/29	06:52		07:41	18:47-19:03/16	07:31		08:23	08:49
	21:38	20:47-21:07/20	20:40		19:30		17:27		16:44	16:45
30	06:06	20:06-20:37/31	06:54		07:43	18:44-19:00/16	07:33		08:24	08:49
	21:37	20:48-21:05/17	20:38		19:28		17:25		16:43	16:46
31	06:08	20:06-20:38/32	06:56				07:35			08:49
	21:35	20:50-21:04/14	20:35				17:23			16:47
Potential sun hours	498		451		380		333		269	248
Sum of minutes with flicker	1011		829		371		236		0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
13/11/2023 13:30/3.6.355

SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 23 - NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (248)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	January	February	March		April		May	June	
1	08:49	08:24	07:32		07:23	19:45-19:51/6	06:20	05:37	
	16:48	17:35	18:25		20:17		21:06	21:50	
2	08:49	08:22	07:30		07:21	19:43-19:53/10	06:18	05:36	
	16:49	17:37	18:27		20:19		21:08	21:51	
3	08:49	08:21	07:28		07:19	19:41-19:55/14	06:17	05:35	
	16:50	17:38	18:28		20:20		21:09	21:53	
4	08:49	08:19	07:26		07:17	19:40-19:57/17	06:15	05:34	
	16:52	17:40	18:30		20:22		21:11	21:54	
5	08:49	08:18	07:24		07:14	19:40-19:58/18	06:13	05:34	21:17-21:22/5
	16:53	17:42	18:32		20:24		21:13	21:54	
6	08:49	08:16	07:21		07:12	19:38-19:59/21	06:11	05:33	21:16-21:24/8
	16:54	17:44	18:33		20:25		21:14	21:55	
7	08:48	08:14	07:19		07:10	19:38-20:01/23	06:09	05:33	21:15-21:24/9
	16:55	17:46	18:35		20:27		21:16	21:56	
8	08:48	08:13	07:17		07:08	19:38-20:03/25	06:08	05:32	21:15-21:25/10
	16:56	17:47	18:37		20:29		21:17	21:57	
9	08:47	08:11	07:15		07:06	19:38-20:04/26	06:06	05:32	21:14-21:25/11
	16:58	17:49	18:39		20:30		21:19	21:58	
10	08:47	08:09	07:13		07:03	19:39-20:06/27	06:04	05:31	21:14-21:26/12
	16:59	17:51	18:40		20:32		21:20	21:59	
11	08:46	08:08	07:11		07:01	19:40-20:08/28	06:03	05:31	21:14-21:27/13
	17:00	17:53	18:42		20:33		21:22	21:59	
12	08:46	08:06	07:08		06:59	19:40-20:07/27	06:01	05:31	21:13-21:27/14
	17:02	17:55	18:44		20:35		21:24	22:00	
13	08:45	08:04	07:06		06:57	19:42-20:06/24	06:00	05:30	21:13-21:28/15
	17:03	17:56	18:45		20:37		21:25	22:01	
14	08:44	08:02	07:04		06:55	19:59-20:03/4	05:58	05:30	21:13-21:29/16
	17:05	17:58	18:47		20:38	19:56-19:58/2	21:27	22:01	
15	08:44	08:00	07:02		06:53		05:57	05:30	21:13-21:29/16
	17:06	18:00	18:49		20:40		21:28	22:02	
16	08:43	07:58	06:59		06:50	20:11-20:15/4	05:55	05:30	21:13-21:30/17
	17:08	18:02	18:50		20:42		21:30	22:02	
17	08:42	07:56	06:57		06:48	20:09-20:17/8	05:54	05:30	21:13-21:30/17
	17:09	18:04	18:52		20:43		21:31	22:03	
18	08:41	07:55	06:55		06:46	20:08-20:18/10	05:52	05:30	21:13-21:30/17
	17:11	18:05	18:54		20:45		21:32	22:03	
19	08:40	07:53	06:53		06:44	20:07-20:20/13	05:51	05:30	21:13-21:31/18
	17:13	18:07	18:55		20:47		21:34	22:04	
20	08:39	07:51	06:50		06:42	20:07-20:22/15	05:50	05:30	21:13-21:31/18
	17:14	18:09	18:57		20:48		21:35	22:04	
21	08:38	07:49	06:48	18:30-18:33/3	06:40	20:06-20:23/17	05:48	05:30	21:14-21:32/18
	17:16	18:11	18:59		20:50		21:37	22:04	
22	08:37	07:47	06:46	18:30-18:35/5	06:38	20:06-20:24/18	05:47	05:30	21:14-21:32/18
	17:17	18:13	19:00		20:52		21:38	22:04	
23	08:36	07:45	06:44	18:30-18:37/7	06:36	20:06-20:24/18	05:46	05:30	21:14-21:32/18
	17:19	18:14	19:02		20:53		21:39	22:05	
24	08:35	07:43	06:41	18:29-18:38/9	06:34	20:07-20:23/16	05:45	05:31	21:14-21:31/17
	17:21	18:16	19:04		20:55		21:41	22:05	
25	08:33	07:41	06:39	18:29-18:40/11	06:32	20:07-20:22/15	05:43	05:31	21:15-21:32/17
	17:23	18:18	19:05		20:56		21:42	22:05	
26	08:32	07:38	06:37	18:31-18:40/9	06:30	20:08-20:20/12	05:42	05:31	21:15-21:32/17
	17:24	18:20	19:07		20:58		21:43	22:05	
27	08:31	07:36	06:35	18:33-18:38/5	06:28	20:10-20:18/8	05:41	05:32	21:16-21:32/16
	17:26	18:21	19:09		21:00		21:45	22:05	
28	08:30	07:34	06:32		06:26		05:40	05:32	21:16-21:32/16
	17:28	18:23	19:10		21:01		21:46	22:05	
29	08:28		07:30		06:24		05:39	05:33	21:17-21:32/15
	17:29		20:12		21:03		21:47	22:04	
30	08:27		07:28		06:22		05:38	05:33	21:17-21:31/14
	17:31		20:14		21:05		21:48	22:04	
31	08:25		07:26	19:48-19:50/2			05:37		
	17:33		20:15				21:49		
Potential sun hours	262	279	367		414		482	494	
Sum of minutes with flicker	0	0	51		426		0	382	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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SHADOW - Calendar per WTG

Calculation: SS OVA - Ontwikkeling incl. Kronos WTG: 23 - NORDEX N131/3300 DE 3300 131.0 !-! hub: 132,5 m (TOT: 198,0 m) (248)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2,00	2,90	4,40	6,30	7,10	7,30	7,20	6,80	5,50	3,90	2,30	1,70

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
525	540	628	495	324	360	760	1 304	1 401	854	622	566	8 380

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:34 21:18-21:32/14	06:09	06:57 19:39-20:07/28	07:44	07:36	08:26
	22:04	21:34	20:33	19:25	17:21	16:42
2	05:35 21:18-21:31/13	06:11	06:59 19:37-20:04/27	07:46	07:38	08:27
	22:04	21:32	20:31	19:23	17:19	16:42
3	05:35 21:19-21:31/12	06:12	07:00 19:36-20:03/27	07:48	07:40	08:29
	22:03	21:30	20:29	19:21	17:18	16:41
4	05:36 21:20-21:31/11	06:14	07:02 19:35-20:00/25	07:49	07:42	08:30
	22:03	21:29	20:27	19:19	17:16	16:41
5	05:37 21:21-21:31/10	06:15	07:03 19:35-19:58/23	07:51	07:43	08:31
	22:03	21:27	20:24	19:16	17:14	16:40
6	05:38 21:21-21:29/8	06:17	07:05 19:34-19:55/21	07:53	07:45	08:33
	22:02	21:25	20:22	19:14	17:12	16:40
7	05:39 21:22-21:29/7	06:18	07:07 19:35-19:54/19	07:54	07:47	08:34
	22:02	21:23	20:20	19:12	17:11	16:39
8	05:39 21:24-21:29/5	06:20	07:08 19:34-19:51/17	07:56	07:49	08:35
	22:01	21:22	20:18	19:10	17:09	16:39
9	05:40	06:21	07:10 19:35-19:49/14	07:57	07:50	08:36
	22:00	21:20	20:15	19:08	17:08	16:39
10	05:41	06:23	07:11 19:36-19:46/10	07:59	07:52	08:37
	22:00	21:18	20:13	19:05	17:06	16:39
11	05:42	06:24	07:13 19:37-19:45/8	08:01	07:54	08:38
	21:59	21:16	20:11	19:03	17:04	16:38
12	05:43	06:26	07:14 19:39-19:42/3	08:02	07:56	08:39
	21:58	21:14	20:09	19:01	17:03	16:38
13	05:44	06:27	07:16	08:04	07:57	08:40
	21:57	21:12	20:06	18:59	17:02	16:38
14	05:46	06:29	07:18	08:06	07:59	08:41
	21:56	21:11	20:04	18:57	17:00	16:38
15	05:47	06:31 20:20-20:22/2	07:19	08:07	08:01	08:42
	21:55	21:09	20:02	18:55	16:59	16:38
16	05:48	06:32 20:17-20:26/9	07:21 19:23-19:25/2	08:09	08:02	08:43
	21:54	21:07	20:00	18:53	16:57	16:38
17	05:49	06:34 20:15-20:27/12	07:22 19:19-19:28/9	08:11	08:04	08:44
	21:53	21:05	19:57	18:50	16:56	16:39
18	05:50	06:35 20:14-20:29/15	07:24 19:17-19:28/11	08:12	08:06	08:44
	21:52	21:03	19:55	18:48	16:55	16:39
19	05:51	06:37 20:12-20:29/17	07:25 19:16-19:26/10	08:14	08:07	08:45
	21:51	21:01	19:53	18:46	16:54	16:39
20	05:53	06:38 20:12-20:29/17	07:27 19:16-19:24/8	08:16	08:09	08:46
	21:50	20:59	19:50	18:44	16:52	16:40
21	05:54	06:40 20:11-20:29/18	07:29 19:15-19:21/6	08:18	08:11	08:46
	21:49	20:57	19:48	18:42	16:51	16:40
22	05:55	06:41 20:11-20:28/17	07:30 19:16-19:20/4	08:19	08:12	08:47
	21:48	20:55	19:46	18:40	16:50	16:40
23	05:57	06:43 20:11-20:25/14	07:32 19:16-19:17/1	08:21	08:14	08:47
	21:46	20:52	19:44	18:38	16:49	16:41
24	05:58	06:45 20:11-20:24/13	07:33	08:23	08:15	08:48
	21:45	20:50	19:41	18:36	16:48	16:42
25	05:59	06:46 20:11-20:21/10	07:35	07:24	08:17	08:48
	21:44	20:48	19:39	17:34	16:47	16:42
26	06:01	06:48 20:12-20:20/8	07:36	07:26	08:19	08:49
	21:42	20:46	19:37	17:32	16:46	16:43
27	06:02	06:49 20:13-20:17/4	07:38	07:28	08:20	08:49
	21:41	20:44	19:34	17:30	16:45	16:44
28	06:03	06:51	07:40	07:30	08:22	08:49
	21:40	20:42	19:32	17:28	16:44	16:44
29	06:05	06:52 19:56-20:04/8	07:41	07:31	08:23	08:49
	21:38	20:40	19:30	17:27	16:44	16:45
30	06:06	06:54 19:43-20:07/24	07:43	07:33	08:25	08:49
	21:37	20:38	19:28	17:25	16:43	16:46
31	06:08	06:56 19:40-20:07/27		07:35		08:49
	21:35	20:35		17:23		16:47
Potential sun hours	498	451	380	333	269	248
Sum of minutes with flicker	80	215	273	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

BIJLAGE 4: LIJST VAN WINDTURBINES

ENCON

BEGELEIDING IN DUURZAME GROEI

Als onafhankelijke organisatie begeleidt Encon bedrijven in hun transitie om duurzamer te worden met creatieve en vernieuwende oplossingen.

Duurzaamheid is niet langer weg te denken en heeft een impact op elk onderdeel van de bedrijfsvoering. Of het nu gaat over de toenemende druk op de operationele marges, de nood aan meer rendabele investeringen of de uitdaging om te blijven voldoen aan de kritische vragen van medewerkers en consumenten. Er bestaat geen one-size-fits-all oplossing voor duurzaamheid. Waar het ene bedrijf redelijk eenvoudig een belangrijke ingreep kan doen, is dat door de unieke omstandigheden voor het andere bedrijf onmogelijk.

Daarom onderzoeken onze experten op maat van jouw bedrijf welke ingrepen op de meest kostenefficiënte manier de grootste impact creëren. Op die manier slagen we er dankzij onze onafhankelijke expertise steeds in om onze klanten te ontzorgen en meer te doen met minder.

GEÏNTEGREERDE AANPAK

De integratie van duurzaamheid in de bedrijfsvoering is geen eenvoudig proces. Het vereist op elkaar inwerkende en elkaar versterkende projecten op het gebied van duurzaamheid die gezamenlijk een structurele verandering teweeg brengen. Deze verandering gebeurt niet van dag één op dag twee en vraagt in elke fase van de transitie een andere aanpak. We hebben ons aanbod daarom ook zo opgebouwd dat we bedrijven in elke fase van hun duurzaamheidstransitie kunnen helpen en om op het eigen ritme te kunnen groeien.

Dankzij onze geïntegreerde aanpak kunnen we bedrijven zowel ondersteunen bij de integratie en activatie van duurzaamheid overheen verschillende departementen als de uitvoering van een afgebakend duurzaamheidsprojecten. Op die manier kan je zowel bij Encon terecht voor ondersteuning bij de wettelijke conformiteiten van duurzaamheid als voor het realiseren van de ambitie om je te onderscheiden op vlak van duurzaamheid.

