

TITOLARE DEL DOCUMENTO:

## AREN ELECTRIC POWER SPA

Sede legale e amministrativa: Via Dell'Arrigoni, 308 – 47522 – Cesena (FC)

Codice Fiscale e P. IVA 03803880404

COMUNI DI CALITRI E BISACCIA (AV)

LOCALITA' "PIANI SAN PIETRO"

# PROGETTO PER LA REALIZZAZIONE DI **IMPIANTO EOLICO** **"PIANI SAN PIETRO"**

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TITOLO ELABORATO:

**RELAZIONE SULL'EVOLUZIONE DELL'OMBRA – FENOMENO SHADOW FLICKERING**

CODICE ELABORATO:

**CLTDT\_GENR02800\_00**

FORMATO:

**A4**

Nr. EL.:

**/**

FASE:

**PROGETTO  
DEFINITIVO**

REV.	DESCRIZIONE	DATA	REDATTO	VERIFICATO	APPROVATO
00	Prima emissione				
01					
02					

## 1. PREMESSA

Il presente elaborato ha lo scopo di valutare in maniera tecnica l'eventuale impatto generato dall'evoluzione dell'ombra derivante dalla futura installazione di un impianto di produzione di energia da fonte eolica nei comuni di Calitri e Bisaccia (Av) ubicato a circa 3 km a NO dal centro abitato di Calitri e circa 3,5 km SE, costituito da n. 16 aerogeneratori da 6 MW per una potenza complessiva di 96 MW e aventi un'altezza al mozzo pari a 105 metri ed un diametro del rotore pari a 150 metri.

A seguito di tutti gli studi effettuati sull'area in esame (analisi orografiche, anemologiche e della rete elettrica) e in base all'ipotesi di rendimento economico, si ritiene che per l'impianto in oggetto possano essere convenientemente utilizzati aerogeneratori di grossa taglia. Tutte le turbine scelte da AREN ELECTRIC POWER sono sempre certificate a livello internazionale, generalmente dalla Germanischer Lloyd, DNV o da altro organismo equivalente. Questa certificazione è essenziale per garantire la bancabilità del progetto e la sicurezza al paese che le turbine produrranno l'energia annunciata (poiché la curva di potenza,  $P = f(v_{\text{vento}})$ , è certificata).

La turbina utilizzata per lo studio progettuale è caratterizzata da una potenza nominale unitaria pari a 6 MW, ed un'altezza massima punta pala di 180 mt. Il modello di turbina scelto è il più performante sul mercato per il sito eolico in esame.

Per lo studio dello Shadow Flicker è stata presa in considerazione una VESTAS V150 che ha le medesime caratteristiche dimensionali dell'aerogeneratore di progetto avente un'altezza al mozzo pari a 105 metri ed un diametro del rotore pari a 150 metri.

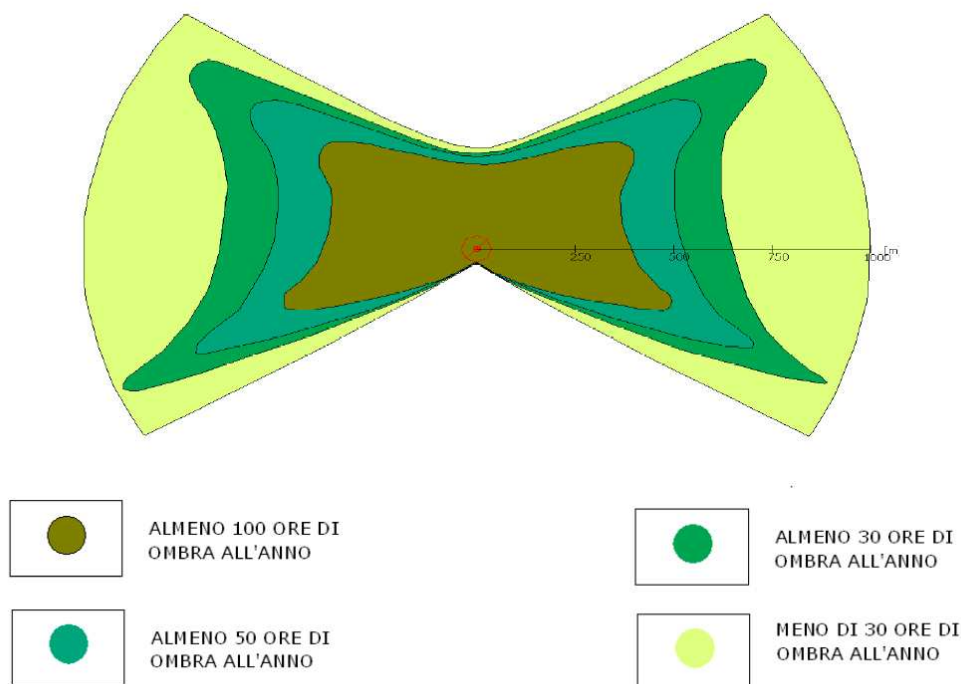
Lo Shadow-Flickering è l'espressione comunemente impiegata in ambito specialistico per descrivere l'effetto stroboscopico delle ombre proiettate dalle pale rotanti degli aerogeneratori eolici quando sussistono le condizioni meteorologiche opportune; infatti la possibilità e la durata di tali effetti dipendono da una serie di condizioni ambientali, tra cui : la posizione del sole, l'ora del giorno, il giorno dell'anno, le condizioni atmosferiche ambientali e la posizione della turbina eolica rispetto ad un recettore sensibile. La valutazione tecnica è eseguita con l'ausilio di un software di simulazione specifico per la progettazione degli impianti eolici WIND PRO®, costituito da un insieme di moduli di elaborazione orientati alla simulazione di una serie di aspetti che caratterizzano le diverse fasi progettuali. Il modulo SHADOW è quello specifico per la valutazione dell'evoluzione dell'ombra e del flickering. In tale report è riportata:

- *La descrizione del caso studio con le posizioni delle turbine e loro caratteristiche tecniche*
- *Una breve descrizione tecnica del fenomeno di shadow flickering*
- *La descrizione dei recettori soggetti al fenomeno per i quali è stata richiesta questa analisi*
- *Sintesi della metodologia di analisi seguita per lo studio*
- *Sintesi dei risultati ottenuti, con allegati grafici ed analitici di dettaglio che descrivono il fenomeno su ognuno dei recettori e da parte di ognuna delle turbine per tutto l'anno solare.*

## 2. STUDIO DELL'EVOLUZIONE DELL'OMBRA GIORNALIERA GENERATA DAGLI AEROGENERATORI

Le turbine eoliche, come altre strutture fortemente sviluppate in altezza, proiettano un'ombra sulle aree adiacenti in presenza della luce solare diretta. Per chi vive in tali zone prossime all'insediamento eolico può essere molto fastidioso il cosiddetto fenomeno del "flicker" che consiste in un effetto di lampeggiamento che si verifica quando le pale del rotore in movimento "tagliano" la luce solare in maniera intermittente. Una progettazione attenta a questa problematica permette di evitare questo spiacevole fenomeno semplicemente prevedendo il luogo di incidenza dell'ombra e disponendo le turbine in maniera tale che l'ombra sulle zone sensibili non superi un certo numero di ore all'anno. Il grafico in figura i riporta l'evoluzione annuale dell'ombra di una turbina considerando il caso peggiore di pale sempre in rotazione intorno al mozzo, e orientate sempre ortogonalmente al sole durante la sua evoluzione giornaliera.

Come è evidente dal grafico e dalla legenda le ore annue di ombra sono sempre minori con l'aumentare della distanza dal pilone secondo una particolare geometria dettata dalla posizione geografica; da osservare che l'ombra arriva a proiettarsi anche sino ad una distanza di 1 km, anche se solo per pochi minuti all'anno.



*Figura 2: Evoluzione annuale tipo dell'ombra di una pala*

Considerati i pochi precedenti esistenti (Germania) e le ipotesi così penalizzanti con cui è stata calcolato tale grafico si è ritenuto opportuno effettuare una sovrapposizione sull'impianto della parte più interna del grafico ovvero dell'area **che supera le 100 ore all'anno di ombra dei punti di installazione, intendendo questo come limite da non superarsi.**

In Italia, così come nella maggior parte dei paesi Europei ed extraeuropei non esiste una normativa specifica in relativa al disturbo generato dal fenomeno di Shadow – Flickering. Esistono delle regolamentazioni locali

ma quasi mai comprendono limiti numerici specifici, quanto piuttosto delle raccomandazioni tese a sottolineare che il fenomeno non sia “unreasonable” o “significant”.

### 3. INDIVIDUAZIONE DEI RECETTORI ED IPOTESI DI CALCOLO

L'analisi di shadow-flickering di cui al presente studio è stata elaborata per specifici 32 recettori che circondano l'impianto; tuttavia alcune strutture inserite nel modello di simulazione potrebbero essere ruderi non abitati e sostanzialmente privi di caratteristiche minime di abitabilità o agibilità.

<b>NOME</b>	<b>EST</b>	<b>NORD</b>
A	533031	4537099
B	534209	4536254
C	533863	4536818
D	533808	4536872
E	533822	4536995
F	533885	4536455
G	534084	4536476
H	534107	4536530
I	534217	4536034
J	534146	4535854
K	533642	4535902
L	533684	4535919
M	533464	4536293
N	535310	4535969
O	535176	4535460
P	535161	4535425
Q	534950	4535502
R	534979	4535102
S	533890	4534564
T	533511	4534232
U	534278	4532753
V	535078	4532985
W	535108	4532998
X	535157	4533376
Y	535035	4533508
Z	532810	4529921
AA	533174	4529998
AB	532585	4529002
AC	532766	4529652
AD	532547	4529591
AE	532348	4529733
AF	531640	4529528

Tab. 1 – Coordinate ricettori UTM-WGS84

Lo studio, i cui risultati in dettaglio sono riportati di seguito, è stato condotto con uno specifico software (WindPRO).

Nello studio ci si è posti nella condizione più sfavorevole possibile, in quanto si è considerato che:

- il sole risplende per tutta la giornata dall'alba al tramonto (cioè si è sempre in assenza di copertura nuvolosa);
- il piano di rotazione delle pale è sempre perpendicolare alla linea che passa per il sole e per l'aerogeneratore (l'aerogeneratore "insegue" il sole);
- l'aerogeneratore è sempre operativo.

Allo stesso tempo, si è trascurata la presenza degli alberi e di altri ostacoli che bordano le strade "intercettando" l'ombra degli aerogeneratori riducendo il fastidio del flickering.

Ciò significa che i risultati ai quali si perverrà sono ampiamente cautelativi.

In base alla metodologia descritta nei paragrafi precedenti, sono stati utilizzati i seguenti dati di input per impostare il modello di simulazione per la valutazione del fenomeno di Shadow-Flickering degli aerogeneratori di progetto:

- Il DTM o Modello del terreno digitale** per caratterizzare l'orografia è stato estrapolato dal grid disponibile in download dal SIT della Regione Puglia, georeferenziato, sovrapposto, confrontato e adeguato con le curve di livello presenti sulla cartografia ufficiale CTR 1:5.000 con uno step di 5 m. Il modello digitale ottenuto copre un'area sufficiente ad inglobare l'area del parco eolico di progetto e trova un buon riscontro con l'andamento orografico verificato in sito.
- Posizioni geografiche di ricettori con dettaglio dimensionale delle aree più esposte.** Sono i ricettori individuati dallo studio acustico e classificati secondo la loro abitabilità e destinazione d'uso. Per tutti i ricettori si è ritenuto opportuno usare l'ipotesi di cautela della modalità "green house mode". Questa scelta è stata operata poiché in talune circostanze anche lo spazio antistante le strutture può essere considerato o adibito a luogo di riposo e relax. La scelta di una singola finestra o di una facciata in alcune condizioni potrebbe risultare riduttiva allo scopo di una vera valutazione d'impatto.
- Posizioni geografiche delle turbine eoliche e loro caratteristiche dimensionali**  
Gli aerogeneratori di progetto con le loro caratteristiche dimensionali e tecnologiche
- Nessun ostacolo naturale o artificiale è stato modellato.**

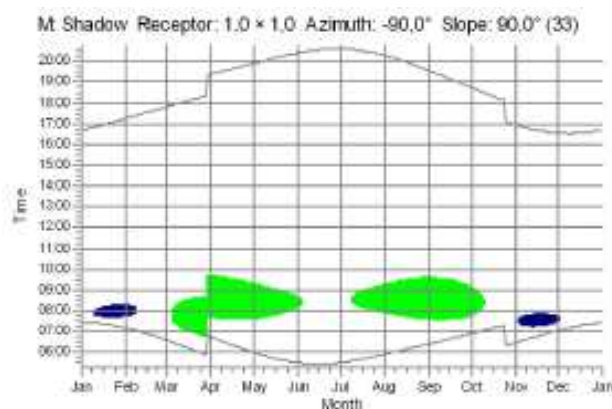
#### 4. I RISULTATI DEL CALCOLO DELL'EVOLUZIONE DELL'OMBRA

Nella procedura "Worst case" il fenomeno di shadow/flickering viene calcolato non tenendo conto delle condizioni di soleggiamento del sito e del vento, dati che allo stato dell'arte per il sito in questione non sono disponibili. Invece se avessimo di dati di cui sopra potremmo calcolare il fenomeno di shadow/flickering con

la metodologia (“real case”), che secondo altri casi simili comporterebbe la riduzione del fenomeno ad 1/3 dei valori, il quale seppur più realistico, è comunque sovrastimato poiché non tiene conto della presenza di nubi e di vegetazione ad alto fusto. Dalle simulazioni effettuate, si evince che gli aerogeneratori di progetto generano maggiormente il fenomeno di shadow/flickering sui recettori “D-F-J-M-N-AC” individuato nell'analisi che, nelle ipotesi di “Worst case”, subisce il fenomeno per un periodo che superano le 100 ore/anno, per tutti gli altri rimanenti recettori considerati invece, l'effetto calcolato è più modesto e/o comunque meno rilevante fino a divenire irrilevante e in alcuni casi nullo.

**Con le considerazioni di cui sopra, ovvero prevedendo la riduzione ad 1/3 si avranno valori sicuramente più ridotti e nessun recettore supera le 100 ore/anno.**

E' stato elaborato un calendario dell'ombra riportato in appendice (rif. Appendice Calendar), che riporta in maniera grafica giorno per giorno, per tutto l'anno, la durata giornaliera del fenomeno, l'orario di inizio e di fine del fenomeno, nelle condizioni di caso reale. Dalla lettura del “Calendar” si legge che il fenomeno dell'ombreggiamento, si esplica sui recettori con intensità maggiore nel periodo compreso tra Marzo-Giugno e Luglio-Ottobre nelle prime ore del mattino. Nella figura che segue è riportato a titolo di esempio il grafico "calendar" di un recettore: le macchie individuano i momenti di shadow, la posizione nel grafico individua tempo e durata del fenomeno, il colore della macchia individua la turbina che causa il fenomeno.



L'allegato 2 riporta il dettaglio analitico di quanto espresso dal grafico precedente con gli specifici orari di inizio e di fine del fenomeno. A seguire è altresì riportata la sintesi grafica annuale (come mostra l'immagine precedente) dell'apporto di ombreggiamento a carico di ogni recettore ed il/gli aerogeneratore/i responsabile/i del fenomeno.

E' stata inoltre elaborata una mappa (report Map, Allegato 3) in cui vengono riportate, con diverse gradazioni di colore, le zone soggette ad una determinata durata del fenomeno dell'ombreggiamento oltre all'estensione areale nella quale il fenomeno risulta significativo.

Il fenomeno dell'ombreggiamento interessa marginalmente tratti di strade comunali e/o private per un numero di ore all'anno del tutto irrilevanti e cioè pari ad un massimo di 30 ore/anno, ma solo in alcuni tratti.

Preme tuttavia evidenziare che nelle simulazioni non si è tenuto conto della possibile presenza di vegetazione capace di offrire un effetto “barriera” ai recettori e/o alle strade limitrofe. Inoltre, la percezione dell’impianto dalla strada risulterebbe essere “in movimento” e quindi legata alla breve permanenza delle automobili in transito, per cui il fastidio indotto sarebbe temporalmente limitato. A questo si aggiunge che le simulazioni sono state effettuate assumendo le “condizioni peggiori”, sovrastimando pertanto l’effetto di flickering.

## 5. CONCLUSIONI E RACCOMANDAZIONI

In conclusione, si può affermare che i risultati ottenuti dalle elaborazioni evidenziano, pur considerando le condizioni più sfavorevoli, che le turbine di progetto generano effetti di shadow flickering i cui **impatti risultano essere nulli per molte strutture, e piuttosto modesti (o non particolarmente problematici) per altre.**

In ogni caso è comunque da rimarcare l’effetto di sovrastima dovuto al grado di cautela utilizzato per la simulazione che non tiene in conto di tutte le possibili fonti di attenuazione dell’effetto cui ogni recettore è (o può essere) soggetto quali presenza di alberi, ostacoli, siepi e quant’altro possa attenuare il fenomeno dell’evoluzione giornaliera dell’ombra.

## 6. ELENCO ALLEGATI

Di seguito vengono riportati i risultati dello Shadow Flicker elaborati con il software *WindPro*

1. Main result: quadro sintetico dei risultati di calcolo;
2. Calendar: analisi giornaliera dell’effetto “flickering” ricevuto da ogni recettore;
3. Calendar, graphical: grafico dell’analisi giornaliera dell’effetto “flickering” ricevuto da ogni recettore;
4. Calendar per WTG: analisi giornaliera dell’effetto “flickering” indotto da ogni aerogeneratore sui recettori;
5. Map: mappa delle aree soggette ad ombreggiamento.

## SHADOW - Main Result

### Calculation: Shadow

#### Assumptions for shadow calculations

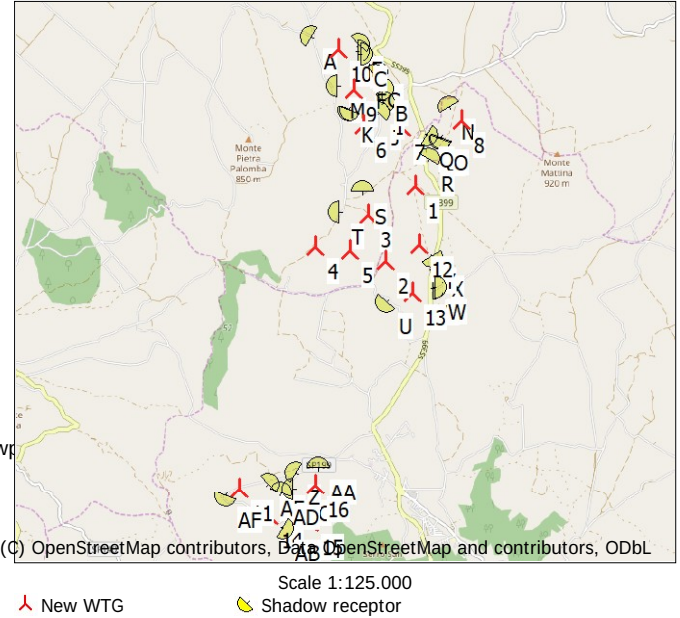
Maximum distance for influence  
 Calculate only when more than 20 % of sun is covered by the blade  
 Please look in WTG table

Minimum sun height over horizon for influence 3 °  
 Day step for calculation 1 days  
 Time step for calculation 1 minutes  
 The calculated times are "worst case" given by the following assumptions:  
 The sun is shining all the day, from sunrise to sunset  
 The rotor plane is always perpendicular to the line from the WTG to the sun  
 The WTG is always operating

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:  
 Height contours used: Elevation Grid Data Object: Aren\_Calitri\_EMDGrid\_0.wp  
 Obstacles used in calculation  
 Eye height for map: 1,5 m  
 Grid resolution: 1,0 m

All coordinates are in  
 UTM (north)-WGS84 Zone: 33

#### WTGs



	Easting	Northing	Z	Row data/Description	WTG type			Shadow data				
					Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM
			[m]									
1	534.771	4.534.650	735,5	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
2	534.263	4.533.415	724,4	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
3	533.976	4.534.169	699,2	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
4	533.112	4.533.649	678,9	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
5	533.684	4.533.574	710,8	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
6	533.900	4.535.659	724,9	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
7	534.528	4.535.635	750,9	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
8	535.504	4.535.734	771,8	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
9	533.731	4.536.246	717,9	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
10	533.473	4.536.904	729,6	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
11	531.873	4.529.639	649,0	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
12	534.824	4.533.686	728,6	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
13	534.722	4.532.896	718,7	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
14	532.365	4.529.198	595,0	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
15	533.032	4.529.099	557,5	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0
16	533.119	4.529.714	627,9	VESTAS V150-6.0 6000 150.0 !O! ... Yes	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	0,0

#### Shadow receptor-Input

No.	Easting	Northing	Z	Width	Height	Elevation	Degrees from	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l.	south cw	window		(ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]	[°]		[m]
A	533.031	4.537.099	757,2	1,0	1,0	1,0	-60,0	90,0	Fixed direction	2,0
B	534.209	4.536.254	765,4	1,0	1,0	1,0	90,0	90,0	Fixed direction	2,0
C	533.863	4.536.818	780,8	1,0	1,0	1,0	90,0	90,0	Fixed direction	2,0
D	533.808	4.536.872	768,1	1,0	1,0	1,0	90,0	90,0	Fixed direction	2,0
E	533.822	4.536.995	768,8	1,0	1,0	1,0	45,0	90,0	Fixed direction	2,0
F	533.885	4.536.455	762,6	1,0	1,0	1,0	45,0	90,0	Fixed direction	2,0
G	534.084	4.536.476	781,8	1,0	1,0	1,0	45,0	90,0	Fixed direction	2,0
H	534.107	4.536.530	783,0	1,0	1,0	1,0	45,0	90,0	Fixed direction	2,0
I	534.217	4.536.034	757,4	1,0	1,0	1,0	45,0	90,0	Fixed direction	2,0
J	534.146	4.535.854	753,0	1,0	1,0	1,0	45,0	90,0	Fixed direction	2,0
K	533.642	4.535.902	691,3	1,0	1,0	1,0	-160,0	90,0	Fixed direction	2,0
L	533.684	4.535.919	694,8	1,0	1,0	1,0	-160,0	90,0	Fixed direction	2,0
M	533.464	4.536.293	700,7	1,0	1,0	1,0	-90,0	90,0	Fixed direction	2,0
N	535.310	4.535.969	752,2	1,0	1,0	1,0	-30,0	90,0	Fixed direction	2,0
O	535.176	4.535.460	769,3	1,0	1,0	1,0	-160,0	90,0	Fixed direction	2,0
P	535.161	4.535.425	770,5	1,0	1,0	1,0	-160,0	90,0	Fixed direction	2,0

To be continued on next page...



## SHADOW - Main Result

### Calculation: Shadow

...continued from previous page

No.	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Degrees from south cw	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]	[°]		[m]
Q	534.950	4.535.502	745,0	1,0	1,0	1,0	120,0	90,0	Fixed direction	2,0
R	534.979	4.535.102	765,3	1,0	1,0	1,0	30,0	90,0	Fixed direction	2,0
S	533.890	4.534.564	702,6	1,0	1,0	1,0	0,0	90,0	Fixed direction	2,0
T	533.511	4.534.232	673,8	1,0	1,0	1,0	-90,0	90,0	Fixed direction	2,0
U	534.278	4.532.753	702,5	1,0	1,0	1,0	-140,0	90,0	Fixed direction	2,0
V	535.078	4.532.985	755,6	1,0	1,0	1,0	90,0	90,0	Fixed direction	2,0
W	535.108	4.532.998	754,3	1,0	1,0	1,0	90,0	90,0	Fixed direction	2,0
X	535.157	4.533.376	753,3	1,0	1,0	1,0	150,0	90,0	Fixed direction	2,0
Y	535.035	4.533.508	754,6	1,0	1,0	1,0	150,0	90,0	Fixed direction	2,0
Z	532.810	4.529.921	681,6	1,0	1,0	1,0	-60,0	90,0	Fixed direction	2,0
AA	533.174	4.529.998	671,4	1,0	1,0	1,0	0,0	90,0	Fixed direction	2,0
AB	532.585	4.529.002	579,9	1,0	1,0	1,0	120,0	90,0	Fixed direction	2,0
AC	532.766	4.529.652	662,6	1,0	1,0	1,0	-90,0	90,0	Fixed direction	2,0
AD	532.547	4.529.591	675,1	1,0	1,0	1,0	20,0	90,0	Fixed direction	2,0
AE	532.348	4.529.733	675,7	1,0	1,0	1,0	45,0	90,0	Fixed direction	2,0
AF	531.640	4.529.528	621,3	1,0	1,0	1,0	-160,0	90,0	Fixed direction	2,0

### Calculation Results

Shadow receptor

#### Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
A	86:50	108	1:12
B	66:54	94	1:03
C	157:13	165	1:20
D	210:12	193	1:40
E	129:11	127	1:31
F	231:07	121	2:22
G	113:39	126	1:12
H	104:12	159	1:05
I	180:23	170	1:59
J	244:39	156	1:53
K	26:21	65	0:37
L	22:48	67	0:34
M	273:01	240	1:54
N	242:18	152	1:50
O	10:16	87	0:10
P	36:52	87	0:35
Q	152:03	156	1:21
R	13:57	63	0:18
S	0:00	0	0:00
T	116:03	185	1:10
U	125:40	112	1:17
V	150:30	209	1:30
W	137:23	205	1:23
X	20:18	52	0:34
Y	28:53	71	0:40
Z	157:26	137	1:30
AA	20:07	54	0:43
AB	0:00	0	0:00
AC	207:55	174	1:36
AD	38:43	70	0:49
AE	74:22	93	1:09
AF	67:59	110	1:19

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]
1	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (11)	19:17
2	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (12)	70:33
3	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (13)	85:18
4	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (14)	0:00

To be continued on next page...

Project:

**Aren\_Calitri**

Licensed user:

**Vega sas**

Via delli Carri, 48

IT-71100 Foggia

+39 0881 756251

Vega sas / info@studiovega.org

Calculated:

16/05/2022 15:49/3.4.405

## SHADOW - Main Result

### Calculation: Shadow

...continued from previous page

No.	Name	Worst case [h/year]
5	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (15)	13:47
6	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (16)	274:25
7	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (17)	238:38
8	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (18)	249:04
9	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (19)	713:58
10	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (20)	471:09
11	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (21)	170:11
12	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (22)	11:28
13	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (23)	251:54
14	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (24)	1:24
15	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (25)	2:08
16	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (26)	378:57

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

## SHADOW - Calendar

Calculation: ShadowShadow receptor: A - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	07:11 17:15	07:31 (10)   06:35 08:12 (10)   17:49	62	07:11 (10)   06:44 08:13 (10)   19:23	05:58 19:55
2	07:24 16:42	07:10 17:16	07:30 (10)   06:33 08:13 (10)   17:50	61	07:11 (10)   06:42 08:12 (10)   19:24	05:57 19:56
3	07:24 16:42	07:09 17:17	07:29 (10)   06:32 08:14 (10)   17:51	59	07:12 (10)   06:41 08:11 (10)   19:25	05:56 19:57
4	07:24 16:43	07:08 17:19	07:27 (10)   06:30 08:14 (10)   17:52	56	07:13 (10)   06:39 08:09 (10)   19:26	05:55 19:58
5	07:24 16:44	07:07 17:20	07:26 (10)   06:29 08:15 (10)   17:54	54	07:13 (10)   06:37 08:07 (10)   19:27	05:53 19:59
6	07:24 16:45	07:05 17:21	07:25 (10)   06:27 08:16 (10)   17:55	51	07:15 (10)   06:36 08:06 (10)   19:28	05:52 20:00
7	07:24 16:46	07:04 17:22	07:24 (10)   06:25 08:17 (10)   17:56	48	07:16 (10)   06:34 08:04 (10)   19:29	05:51 20:01
8	07:24 16:47	07:03 17:24	07:23 (10)   06:24 08:18 (10)   17:57	44	07:18 (10)   06:33 08:02 (10)   19:30	05:50 20:02
9	07:24 16:48	07:02 17:25	07:22 (10)   06:22 08:18 (10)   17:58	39	07:20 (10)   06:31 07:59 (10)   19:31	05:49 20:03
10	07:24 16:49	07:01 17:26	07:20 (10)   06:21 08:18 (10)   17:59	35	07:21 (10)   06:29 07:56 (10)   19:32	05:47 20:04
11	07:23 16:50	07:00 17:27	07:19 (10)   06:19 08:19 (10)   18:00	29	07:25 (10)   06:28 07:54 (10)   19:33	05:46 20:05
12	07:23 16:51	06:58 17:29	07:18 (10)   06:17 08:19 (10)   18:01	21	07:28 (10)   06:26 07:49 (10)   19:35	05:45 20:06
13	07:23 16:52	06:57 17:30	07:17 (10)   06:16 08:20 (10)   18:02	6	07:35 (10)   06:25 07:41 (10)   19:36	05:44 20:07
14	07:23 16:53	06:56 17:31	07:15 (10)   06:14 08:19 (10)   18:04		06:23 19:37	05:43 20:08
15	07:22 16:55	06:55 17:32	07:14 (10)   06:12 08:20 (10)   18:05		06:21 19:38	05:42 20:09
16	07:22 16:56	06:53 17:34	07:13 (10)   06:11 08:20 (10)   18:06		06:20 19:39	05:41 20:10
17	07:21 16:57	06:52 17:35	07:11 (10)   06:09 08:19 (10)   18:07		06:18 19:40	05:40 20:11
18	07:21 16:58	06:51 17:36	07:10 (10)   06:07 08:20 (10)   18:08		06:17 19:41	05:39 20:12
19	07:20 16:59	07:41 (10)   06:49 07:48 (10)   17:37	71	08:20 (10)   18:09	06:15 19:42	05:38 20:13
20	07:20 17:00	07:41 (10)   06:48 07:52 (10)   17:38	72	07:07 (10)   06:04 08:19 (10)   18:10	06:14 19:43	05:38 20:14
21	07:19 17:01	07:40 (10)   06:47 07:54 (10)   17:40	71	07:08 (10)   06:02 08:19 (10)   18:11	06:12 19:44	05:37 20:15
22	07:19 17:03	07:39 (10)   06:45 07:56 (10)   17:41	71	07:07 (10)   06:01 08:18 (10)   18:12	06:11 19:45	05:36 20:16
23	07:18 17:04	07:39 (10)   06:44 07:59 (10)   17:42	70	07:08 (10)   05:59 08:18 (10)   18:13	06:09 19:46	05:35 20:17
24	07:17 17:05	07:38 (10)   06:42 08:01 (10)   17:43	69	07:08 (10)   05:57 08:17 (10)   18:14	06:08 19:47	05:34 20:17
25	07:16 17:06	07:37 (10)   06:41 08:02 (10)   17:44	68	07:09 (10)   05:56 08:17 (10)   18:15	06:07 19:48	05:34 20:18
26	07:16 17:08	07:36 (10)   06:39 08:04 (10)   17:45	67	07:09 (10)   05:54 08:16 (10)   18:17	06:05 19:49	05:33 20:19
27	07:15 17:09	07:35 (10)   06:38 08:05 (10)   17:47	65	07:10 (10)   05:52 08:15 (10)   18:18	06:04 19:50	05:32 20:20
28	07:14 17:10	07:34 (10)   06:36 08:07 (10)   17:48	64	07:10 (10)   05:51 08:14 (10)   18:19	06:02 19:51	05:32 20:21
29	07:13 17:11	07:34 (10)   08:09 (10)		06:49 19:20	06:01 19:53	05:31 20:22
30	07:12 17:12	07:33 (10)   08:10 (10)		06:47 19:21	06:00 19:54	05:31 20:23
31	07:11 17:14	07:32 (10)   08:11 (10)		06:46 19:22		05:30 20:23
Potential sun hours	298	297	369	399	448	452
Total, worst case	319	1705	565			

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

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

## SHADOW - Calendar

Calculation: ShadowShadow receptor: A - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October		November		December	
1	05:30 20:35	05:54 20:16	06:25 19:33	06:55 18:43	16	08:10 (10) 08:26 (10)	06:29 16:56	06:50 (10) 07:48 (10)	07:03 16:32
2	05:31 20:35	05:55 20:15	06:26 19:31	06:56 18:41	26	08:05 (10) 08:31 (10)	06:30 16:55	06:51 (10) 07:47 (10)	07:04 16:31
3	05:31 20:35	05:56 20:14	06:27 19:30	06:57 18:39	33	08:01 (10) 08:34 (10)	06:31 16:54	06:53 (10) 07:47 (10)	07:05 16:31
4	05:32 20:35	05:57 20:13	06:28 19:28	06:58 18:38	38	07:58 (10) 08:36 (10)	06:32 16:52	06:54 (10) 07:47 (10)	07:06 16:31
5	05:32 20:34	05:58 20:12	06:29 19:27	06:59 18:36	42	07:56 (10) 08:38 (10)	06:33 16:51	06:55 (10) 07:46 (10)	07:07 16:31
6	05:33 20:34	05:59 20:10	06:30 19:25	07:00 18:34	46	07:54 (10) 08:40 (10)	06:35 16:50	06:56 (10) 07:45 (10)	07:08 16:31
7	05:33 20:34	06:00 20:09	06:31 19:23	07:01 18:33	49	07:52 (10) 08:41 (10)	06:36 16:49	06:58 (10) 07:45 (10)	07:09 16:31
8	05:34 20:33	06:01 20:08	06:32 19:22	07:02 18:31	52	07:50 (10) 08:42 (10)	06:37 16:48	06:59 (10) 07:44 (10)	07:10 16:31
9	05:35 20:33	06:02 20:07	06:33 19:20	07:03 18:29	55	07:48 (10) 08:43 (10)	06:38 16:47	07:00 (10) 07:43 (10)	07:11 16:31
10	05:35 20:33	06:03 20:05	06:34 19:18	07:04 18:28	57	07:47 (10) 08:44 (10)	06:39 16:46	07:02 (10) 07:43 (10)	07:12 16:31
11	05:36 20:32	06:04 20:04	06:34 19:17	07:05 18:26	60	07:45 (10) 08:45 (10)	06:41 16:45	07:03 (10) 07:42 (10)	07:13 16:31
12	05:37 20:32	06:05 20:03	06:35 19:15	07:06 18:25	62	07:44 (10) 08:46 (10)	06:42 16:44	07:04 (10) 07:41 (10)	07:14 16:31
13	05:37 20:31	06:06 20:02	06:36 19:13	07:07 18:23	63	07:43 (10) 08:46 (10)	06:43 16:43	07:05 (10) 07:40 (10)	07:15 16:31
14	05:38 20:31	06:07 20:00	06:37 19:11	07:08 18:22	65	07:43 (10) 08:48 (10)	06:44 16:42	07:07 (10) 07:39 (10)	07:15 16:31
15	05:39 20:30	06:08 19:59	06:38 19:10	07:09 18:20	66	07:42 (10) 08:48 (10)	06:45 16:41	07:08 (10) 07:38 (10)	07:16 16:31
16	05:40 20:30	06:09 19:57	06:39 19:08	07:10 18:18	67	07:41 (10) 08:48 (10)	06:46 16:40	07:09 (10) 07:37 (10)	07:17 16:32
17	05:41 20:29	06:10 19:56	06:40 19:06	07:11 18:17	69	07:40 (10) 08:49 (10)	06:48 16:40	07:10 (10) 07:35 (10)	07:17 16:32
18	05:41 20:28	06:11 19:55	06:41 19:05	07:13 18:15	70	07:39 (10) 08:49 (10)	06:49 16:39	07:12 (10) 07:35 (10)	07:18 16:32
19	05:42 20:28	06:12 19:53	06:42 19:03	07:14 18:14	70	07:39 (10) 08:49 (10)	06:50 16:38	07:13 (10) 07:33 (10)	07:19 16:33
20	05:43 20:27	06:13 19:52	06:43 19:01	07:15 18:12	71	07:38 (10) 08:49 (10)	06:51 16:37	07:14 (10) 07:31 (10)	07:19 16:33
21	05:44 20:26	06:14 19:50	06:44 19:00	07:16 18:11	72	07:38 (10) 08:50 (10)	06:52 16:37	07:15 (10) 07:29 (10)	07:20 16:33
22	05:45 20:25	06:15 19:49	06:45 18:58	07:17 18:09	72	07:38 (10) 08:50 (10)	06:53 16:36	07:17 (10) 07:28 (10)	07:20 16:34
23	05:46 20:25	06:16 19:47	06:46 18:56	07:18 18:08	70	07:39 (10) 08:49 (10)	06:55 16:35	07:18 (10) 07:25 (10)	07:21 16:34
24	05:46 20:24	06:17 19:46	06:47 18:54	07:19 18:07	69	07:40 (10) 08:49 (10)	06:56 16:35	07:21 (10) 16:35	07:21 16:35
25	05:47 20:23	06:18 19:44	06:48 18:53	07:20 17:05	68	06:41 (10) 07:49 (10)	06:57 16:34	07:22 (10) 16:34	07:22 16:36
26	05:48 20:22	06:19 19:43	06:49 18:51	07:22 17:04	67	06:43 (10) 07:50 (10)	06:58 16:34	07:22 (10) 16:36	07:22 16:36
27	05:49 20:21	06:20 19:41	06:50 18:49	07:23 17:03	65	06:44 (10) 07:49 (10)	06:59 16:33	07:23 (10) 16:37	07:23 16:37
28	05:50 20:20	06:21 19:39	06:51 18:48	07:24 17:01	64	06:45 (10) 07:49 (10)	07:00 16:33	07:23 (10) 16:33	07:23 16:37
29	05:51 20:19	06:22 19:38	06:52 18:46	07:25 17:00	62	06:46 (10) 07:48 (10)	07:01 16:32	07:23 (10) 16:38	07:23 16:38
30	05:52 20:18	06:23 19:36	06:53 18:44	07:26 16:59	61	06:48 (10) 07:49 (10)	07:02 16:32	07:23 (10) 16:39	07:23 16:39
31	05:53 20:17	06:24 19:35	06:54 18:42	07:27 16:57	59	06:49 (10) 07:48 (10)	16:32 16:31	07:24 (10) 16:40	07:24 16:40
Potential sun hours	459	428	375	345	1806	298	815	288	288
Total, worst case					1806		815		288

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: C - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April		May		June				
1	07:24 16:41	07:11 17:15	06:35 17:49	06:44 19:23	6	18:55 (10) 19:01 (10)	05:58 19:55	70	18:22 (10) 19:32 (10)	05:30 20:24	61	18:37 (10) 19:38 (10)
2	07:24 16:42	07:10 17:16	06:33 17:50	06:42 19:24	11	18:52 (10) 19:03 (10)	05:57 19:56	70	18:22 (10) 19:32 (10)	05:29 20:25	60	18:38 (10) 19:38 (10)
3	07:24 16:42	07:09 17:17	06:32 17:51	06:41 19:25	15	18:49 (10) 19:04 (10)	05:56 19:57	72	18:22 (10) 19:34 (10)	05:29 20:25	59	18:38 (10) 19:37 (10)
4	07:24 16:43	07:08 17:19	06:30 17:52	06:39 19:26	18	18:47 (10) 19:05 (10)	05:54 19:58	73	18:22 (10) 19:35 (10)	05:28 20:26	58	18:39 (10) 19:37 (10)
5	07:24 16:44	07:06 17:20	06:28 17:53	06:37 19:27	22	18:44 (10) 19:06 (10)	05:53 19:59	74	18:22 (10) 19:36 (10)	05:28 20:27	57	18:40 (10) 19:37 (10)
6	07:24 16:45	07:05 17:21	06:27 17:55	06:36 19:28	24	18:42 (10) 19:06 (10)	05:52 20:00	74	18:23 (10) 19:37 (10)	05:28 20:28	56	18:40 (10) 19:36 (10)
7	07:24 16:46	07:04 17:22	06:25 17:56	06:34 19:29	28	18:40 (10) 19:08 (10)	05:51 20:01	75	18:22 (10) 19:37 (10)	05:27 20:28	55	18:41 (10) 19:36 (10)
8	07:24 16:47	07:03 17:24	06:24 17:57	06:33 19:30	31	18:38 (10) 19:09 (10)	05:50 20:02	76	18:22 (10) 19:38 (10)	05:27 20:29	54	18:42 (10) 19:36 (10)
9	07:24 16:48	07:02 17:25	06:22 17:58	06:31 19:31	33	18:36 (10) 19:09 (10)	05:49 20:03	76	18:23 (10) 19:39 (10)	05:27 20:29	54	18:42 (10) 19:36 (10)
10	07:24 16:49	07:01 17:26	06:20 17:59	06:29 19:32	36	18:35 (10) 19:11 (10)	05:47 20:04	77	18:23 (10) 19:40 (10)	05:27 20:30	53	18:43 (10) 19:36 (10)
11	07:23 16:50	07:00 17:27	06:19 18:00	06:28 19:33	39	18:33 (10) 19:12 (10)	05:46 20:05	77	18:24 (10) 19:41 (10)	05:26 20:30	52	18:43 (10) 19:35 (10)
12	07:23 16:51	06:58 17:29	06:17 18:01	06:26 19:34	40	18:33 (10) 19:13 (10)	05:45 20:06	78	18:24 (10) 19:42 (10)	05:26 20:31	51	18:44 (10) 19:35 (10)
13	07:23 16:52	06:57 17:30	06:16 18:02	06:25 19:36	43	18:31 (10) 19:14 (10)	05:44 20:07	79	18:24 (10) 19:43 (10)	05:26 20:31	51	18:44 (10) 19:35 (10)
14	07:22 16:53	06:56 17:31	06:14 18:04	06:23 19:37	45	18:30 (10) 19:15 (10)	05:43 20:08	79	18:25 (10) 19:44 (10)	05:26 20:32	49	18:45 (10) 19:34 (10)
15	07:22 16:55	06:55 17:32	06:12 18:05	06:21 19:38	47	18:29 (10) 19:16 (10)	05:42 20:09	80	18:25 (10) 19:45 (10)	05:26 20:32	49	18:45 (10) 19:34 (10)
16	07:22 16:56	06:53 17:33	06:11 18:06	06:20 19:39	48	18:28 (10) 19:16 (10)	05:41 20:10	79	18:26 (10) 19:45 (10)	05:26 20:33	48	18:46 (10) 19:34 (10)
17	07:21 16:57	06:52 17:35	06:09 18:07	06:18 19:40	51	18:27 (10) 19:18 (10)	05:40 20:11	79	18:27 (10) 19:46 (10)	05:26 20:33	48	18:46 (10) 19:34 (10)
18	07:21 16:58	06:51 17:36	06:07 18:08	06:17 19:41	52	18:26 (10) 19:18 (10)	05:39 20:12	78	18:27 (10) 19:45 (10)	05:26 20:33	48	18:47 (10) 19:35 (10)
19	07:20 16:59	06:49 17:37	06:06 18:09	06:15 19:42	54	18:26 (10) 19:20 (10)	05:38 20:13	76	18:28 (10) 19:44 (10)	05:26 20:34	48	18:47 (10) 19:35 (10)
20	07:20 17:00	06:48 17:38	06:04 18:10	06:14 19:43	55	18:26 (10) 19:21 (10)	05:38 20:14	76	18:28 (10) 19:44 (10)	05:27 20:34	47	18:48 (10) 19:35 (10)
21	07:19 17:01	06:46 17:39	06:02 18:11	06:12 19:44	58	18:24 (10) 19:22 (10)	05:37 20:15	74	18:29 (10) 19:43 (10)	05:27 20:34	47	18:48 (10) 19:35 (10)
22	07:19 17:03	06:45 17:41	06:01 18:12	06:11 19:45	59	18:24 (10) 19:23 (10)	05:36 20:16	73	18:30 (10) 19:43 (10)	05:27 20:34	47	18:48 (10) 19:35 (10)
23	07:18 17:04	06:44 17:42	05:59 18:13	06:09 19:46	61	18:23 (10) 19:24 (10)	05:35 20:17	72	18:30 (10) 19:42 (10)	05:27 20:35	47	18:49 (10) 19:36 (10)
24	07:17 17:05	06:42 17:43	05:57 18:14	06:08 19:47	62	18:23 (10) 19:25 (10)	05:34 20:17	71	18:31 (10) 19:42 (10)	05:27 20:35	48	18:48 (10) 19:36 (10)
25	07:16 17:06	06:41 17:44	05:56 18:15	06:07 19:48	63	18:22 (10) 19:25 (10)	05:34 20:18	70	18:32 (10) 19:42 (10)	05:28 20:35	48	18:48 (10) 19:36 (10)
26	07:16 17:07	06:39 17:45	05:54 18:16	06:05 19:49	65	18:22 (10) 19:27 (10)	05:33 20:19	69	18:32 (10) 19:41 (10)	05:28 20:35	48	18:49 (10) 19:37 (10)
27	07:15 17:09	06:38 17:47	05:52 18:18	06:04 19:50	65	18:23 (10) 19:28 (10)	05:32 20:20	67	18:33 (10) 19:40 (10)	05:28 20:35	49	18:48 (10) 19:37 (10)
28	07:14 17:10	06:36 17:48	05:51 18:19	06:02 19:51	66	18:22 (10) 19:28 (10)	05:32 20:21	66	18:34 (10) 19:40 (10)	05:29 20:35	49	18:48 (10) 19:37 (10)
29	07:13 17:11		06:49 19:20	06:01 19:52	68	18:22 (10) 19:30 (10)	05:31 20:22	65	18:34 (10) 19:39 (10)	05:29 20:35	51	18:48 (10) 19:39 (10)
30	07:12 17:12		06:47 19:21	06:00 19:54	69	18:22 (10) 19:31 (10)	05:31 20:22	64	18:35 (10) 19:39 (10)	05:30 20:35	51	18:48 (10) 19:39 (10)
31	07:11 17:14		06:46 19:22				05:30 20:23	63	18:35 (10) 19:38 (10)			
Potential sun hours	298	297	369	399			448			452		
Total, worst case					1334			2272				1543

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: C - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December	
1	05:30	18:48 (10)   05:54	18:34 (10)   06:25	18:32 (10)   06:54	06:29	07:03	
	20:35	19:40 (10)   20:16	19:52 (10)   19:33	19:10 (10)   18:43	16:56	16:32	
2	05:31	18:48 (10)   05:55	18:34 (10)   06:26	18:33 (10)   06:55	06:30	07:04	
	20:35	19:40 (10)   20:15	19:51 (10)   19:31	19:09 (10)   18:41	16:55	16:31	
3	05:31	18:48 (10)   05:56	18:34 (10)   06:27	18:34 (10)   06:57	06:31	07:05	
	20:35	19:41 (10)   20:14	19:50 (10)   19:30	19:07 (10)   18:39	16:54	16:31	
4	05:32	18:47 (10)   05:57	18:33 (10)   06:28	18:35 (10)   06:58	06:32	07:06	
	20:35	19:41 (10)   20:13	19:49 (10)   19:28	19:06 (10)   18:38	16:52	16:31	
5	05:32	18:47 (10)   05:58	18:33 (10)   06:29	18:36 (10)   06:59	06:33	07:07	
	20:34	19:42 (10)   20:12	19:48 (10)   19:27	19:04 (10)   18:36	16:51	16:31	
6	05:33	18:46 (10)   05:59	18:33 (10)   06:30	18:38 (10)   07:00	06:35	07:08	
	20:34	19:42 (10)   20:10	19:47 (10)   19:25	19:03 (10)   18:34	16:50	16:31	
7	05:33	18:46 (10)   06:00	18:32 (10)   06:31	18:39 (10)   07:01	06:36	07:09	
	20:34	19:43 (10)   20:09	19:46 (10)   19:23	19:01 (10)   18:33	16:49	16:31	
8	05:34	18:46 (10)   06:01	18:32 (10)   06:31	18:41 (10)   07:02	06:37	07:10	
	20:33	19:44 (10)   20:08	19:45 (10)   19:22	18:59 (10)   18:31	16:48	16:31	
9	05:35	18:45 (10)   06:02	18:31 (10)   06:32	18:43 (10)   07:03	06:38	07:11	
	20:33	19:44 (10)   20:07	19:43 (10)   19:20	18:58 (10)   18:29	16:47	16:31	
10	05:35	18:45 (10)   06:03	18:30 (10)   06:33	18:45 (10)   07:04	06:39	07:12	
	20:33	19:45 (10)   20:05	19:42 (10)   19:18	18:56 (10)   18:28	16:46	16:31	
11	05:36	18:45 (10)   06:04	18:30 (10)   06:34	18:48 (10)   07:05	06:40	07:13	
	20:32	19:46 (10)   20:04	19:41 (10)   19:16	18:54 (10)   18:26	16:45	16:31	
12	05:37	18:44 (10)   06:05	18:30 (10)   06:35	18:51 (10)   07:06	06:42	07:14	
	20:32	19:46 (10)   20:03	19:40 (10)   19:15	18:53 (10)   18:25	16:44	16:31	
13	05:37	18:44 (10)   06:06	18:30 (10)   06:36		07:07	06:43	07:14
	20:31	19:47 (10)   20:01	19:38 (10)   19:13		18:23	16:43	16:31
14	05:38	18:44 (10)   06:07	18:30 (10)   06:37		07:08	06:44	07:15
	20:31	19:48 (10)   20:00	19:37 (10)   19:11		18:21	16:42	16:31
15	05:39	18:42 (10)   06:08	18:29 (10)   06:38		07:09	06:45	07:16
	20:30	19:48 (10)   19:59	19:36 (10)   19:10		18:20	16:41	16:31
16	05:40	18:42 (10)   06:09	18:29 (10)   06:39		07:10	06:46	07:17
	20:30	19:49 (10)   19:57	19:34 (10)   19:08		18:18	16:40	16:32
17	05:40	18:42 (10)   06:10	18:29 (10)   06:40		07:11	06:48	07:17
	20:29	19:50 (10)   19:56	19:33 (10)   19:06		18:17	16:39	16:32
18	05:41	18:42 (10)   06:11	18:29 (10)   06:41		07:13	06:49	07:18
	20:28	19:51 (10)   19:55	19:32 (10)   19:05		18:15	16:39	16:32
19	05:42	18:41 (10)   06:12	18:29 (10)   06:42		07:14	06:50	07:19
	20:28	19:52 (10)   19:53	19:30 (10)   19:03		18:14	16:38	16:33
20	05:43	18:40 (10)   06:13	18:29 (10)   06:43		07:15	06:51	07:19
	20:27	19:52 (10)   19:52	19:29 (10)   19:01		18:12	16:37	16:33
21	05:44	18:40 (10)   06:14	18:29 (10)   06:44		07:16	06:52	07:20
	20:26	19:52 (10)   19:50	19:28 (10)   18:59		18:11	16:37	16:33
22	05:45	18:39 (10)   06:15	18:29 (10)   06:45		07:17	06:53	07:20
	20:25	19:53 (10)   19:49	19:26 (10)   18:58		18:09	16:36	16:34
23	05:46	18:39 (10)   06:16	18:29 (10)   06:46		07:18	06:55	07:21
	20:25	19:54 (10)   19:47	19:25 (10)   18:56		18:08	16:35	16:34
24	05:46	18:39 (10)   06:17	18:30 (10)   06:47		07:19	06:56	07:21
	20:24	19:54 (10)   19:46	19:23 (10)   18:54		18:07	16:35	16:35
25	05:47	18:38 (10)   06:18	18:30 (10)   06:48		06:20	06:57	07:22
	20:23	19:55 (10)   19:44	19:22 (10)   18:53		17:05	16:34	16:36
26	05:48	18:38 (10)   06:19	18:30 (10)   06:49		06:22	06:58	07:22
	20:22	19:56 (10)   19:43	19:21 (10)   18:51		17:04	16:34	16:36
27	05:49	18:36 (10)   06:20	18:31 (10)   06:50		06:23	06:59	07:22
	20:21	19:55 (10)   19:41	19:19 (10)   18:49		17:02	16:33	16:37
28	05:50	18:36 (10)   06:21	18:31 (10)   06:51		06:24	07:00	07:23
	20:20	19:56 (10)   19:39	19:18 (10)   18:48		17:01	16:33	16:37
29	05:51	18:36 (10)   06:22	18:31 (10)   06:52		06:25	07:01	07:23
	20:19	19:55 (10)   19:38	19:16 (10)   18:46		17:00	16:32	16:38
30	05:52	18:35 (10)   06:23	18:31 (10)   06:53		06:26	07:02	07:23
	20:18	19:54 (10)   19:36	19:14 (10)   18:44		16:59	16:32	16:39
31	05:53	18:35 (10)   06:24	18:32 (10)		06:27		07:24
	20:17	19:53 (10)   19:35	19:12 (10)		16:57		16:40
Potential sun hours	459	428	375	345	298	288	
Total, worst case	2065	1954	265				

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: D - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	07:11 17:15	06:35 17:49	06:44 19:23	18:00 (10) 19:01 (10)	05:58 19:27 (10)
2	07:24 16:42	07:10 17:16	06:33 17:50	06:42 19:24	18:00 (10) 19:03 (10)	05:57 19:26 (10)
3	07:24 16:42	07:09 17:17	06:32 17:51	06:41 19:25	17:58 (10) 19:04 (10)	05:56 19:26 (10)
4	07:24 16:43	07:08 17:19	06:30 17:52	06:39 19:26	17:58 (10) 19:05 (10)	05:54 19:25 (10)
5	07:24 16:44	07:06 17:20	06:28 17:53	06:37 19:27	17:56 (10) 19:06 (10)	05:53 19:25 (10)
6	07:24 16:45	07:05 17:21	06:27 17:55	06:36 19:28	17:55 (10) 19:06 (10)	05:52 20:00
7	07:24 16:46	07:04 17:22	06:25 17:56	06:34 19:29	17:55 (10) 19:08 (10)	05:51 20:01
8	07:24 16:47	07:03 17:24	06:24 17:57	06:33 19:30	17:53 (10) 19:09 (10)	05:50 20:02
9	07:24 16:48	07:02 17:25	06:22 17:58	06:31 19:31	17:52 (10) 19:09 (10)	05:49 20:03
10	07:24 16:49	07:01 17:26	06:21 17:59	06:29 19:32	17:52 (10) 19:11 (10)	05:47 20:04
11	07:23 16:50	07:00 17:27	06:19 18:00	06:28 19:33	17:51 (10) 19:12 (10)	05:46 20:05
12	07:23 16:51	06:58 17:29	06:17 18:01	06:26 19:35	17:51 (10) 19:13 (10)	05:45 20:06
13	07:23 16:52	06:57 17:30	06:16 18:02	06:25 19:36	17:50 (10) 19:14 (10)	05:44 20:07
14	07:22 16:53	06:56 17:31	06:14 18:04	06:23 19:37	17:50 (10) 19:15 (10)	05:43 20:08
15	07:22 16:55	06:55 17:32	06:12 18:05	06:21 19:38	17:49 (10) 19:16 (10)	05:42 20:09
16	07:22 16:56	06:53 17:33	06:11 18:06	06:20 19:39	17:49 (10) 19:16 (10)	05:41 20:10
17	07:21 16:57	06:52 17:35	06:09 18:07	06:18 19:40	17:49 (10) 19:18 (10)	05:40 20:11
18	07:21 16:58	06:51 17:36	06:07 18:08	06:17 19:41	17:48 (10) 19:18 (10)	05:39 20:12
19	07:20 16:59	06:49 17:37	06:06 18:09	06:15 19:42	17:48 (10) 19:20 (10)	05:38 20:13
20	07:20 17:00	06:48 17:38	06:04 18:10	06:14 19:43	17:49 (10) 19:21 (10)	05:38 20:14
21	07:19 17:01	06:46 17:39	06:02 18:11	06:12 19:44	17:48 (10) 19:22 (10)	05:37 20:15
22	07:19 17:03	06:45 17:41	06:01 18:12	06:11 19:45	17:49 (10) 19:23 (10)	05:36 20:16
23	07:18 17:04	06:44 17:42	05:59 18:13	06:09 19:46	17:48 (10) 19:24 (10)	05:35 20:17
24	07:17 17:05	06:42 17:43	05:57 18:14	06:08 19:47	17:48 (10) 19:25 (10)	05:34 20:17
25	07:16 17:06	06:41 17:44	05:56 18:15	06:07 19:48	17:48 (10) 19:25 (10)	05:34 20:18
26	07:16 17:07	06:39 17:45	05:54 18:16	06:05 19:49	17:48 (10) 19:27 (10)	05:33 20:19
27	07:15 17:09	06:38 17:47	05:52 18:18	06:04 19:50	17:49 (10) 19:28 (10)	05:32 20:20
28	07:14 17:10	06:36 17:48	05:51 18:19	06:02 19:51	17:48 (10) 19:28 (10)	05:32 20:21
29	07:13 17:11		06:49 19:20	06:01 19:52	17:49 (10) 19:27 (10)	05:31 20:22
30	07:12 17:12		06:47 19:21	06:00 19:54	17:50 (10) 19:27 (10)	05:31 20:22
31	07:11 17:14		06:46 19:22	18:02 (10) 19:00 (10)		05:30 19:06 (10)
Potential sun hours	298	297	369	399	448	452
Total, worst case			534	2543	2414	1063

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: D - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December	
1	05:30	18:29 (10)   05:54	18:06 (10)   06:25	17:50 (10)   06:54	06:29	07:03	
	20:35	19:04 (10)   20:16	19:31 (10)   19:33	19:10 (10)   18:43	16:56	16:32	
2	05:31	18:28 (10)   05:55	18:05 (10)   06:26	17:50 (10)   06:55	06:30	07:04	
	20:35	19:05 (10)   20:15	19:32 (10)   19:31	19:09 (10)   18:41	16:55	16:31	
3	05:31	18:28 (10)   05:56	18:04 (10)   06:27	17:50 (10)   06:57	06:31	07:05	
	20:35	19:06 (10)   20:14	19:32 (10)   19:30	19:07 (10)   18:39	16:54	16:31	
4	05:32	18:27 (10)   05:57	18:04 (10)   06:28	17:50 (10)   06:58	06:32	07:06	
	20:35	19:07 (10)   20:13	19:33 (10)   19:28	19:06 (10)   18:38	16:52	16:31	
5	05:32	18:26 (10)   05:58	18:03 (10)   06:29	17:51 (10)   06:59	06:33	07:07	
	20:34	19:08 (10)   20:12	19:33 (10)   19:27	19:04 (10)   18:36	16:51	16:31	
6	05:33	18:25 (10)   05:59	18:02 (10)   06:30	17:51 (10)   07:00	06:35	07:08	
	20:34	19:08 (10)   20:10	19:34 (10)   19:25	19:03 (10)   18:34	16:50	16:31	
7	05:33	18:25 (10)   06:00	18:02 (10)   06:31	17:51 (10)   07:01	06:36	07:09	
	20:34	19:10 (10)   20:09	19:34 (10)   19:23	19:01 (10)   18:33	16:49	16:31	
8	05:34	18:25 (10)   06:01	18:01 (10)   06:31	17:52 (10)   07:02	06:37	07:10	
	20:33	19:11 (10)   20:08	19:35 (10)   19:22	18:59 (10)   18:31	16:48	16:31	
9	05:35	18:23 (10)   06:02	17:59 (10)   06:32	17:52 (10)   07:03	06:38	07:11	
	20:33	19:11 (10)   20:07	19:34 (10)   19:20	18:58 (10)   18:29	16:47	16:31	
10	05:35	18:23 (10)   06:03	17:59 (10)   06:33	17:53 (10)   07:04	06:39	07:12	
	20:33	19:13 (10)   20:05	19:34 (10)   19:18	18:56 (10)   18:28	16:46	16:31	
11	05:36	18:22 (10)   06:04	17:58 (10)   06:34	17:53 (10)   07:05	06:40	07:13	
	20:32	19:14 (10)   20:04	19:35 (10)   19:16	18:54 (10)   18:26	16:45	16:31	
12	05:37	18:21 (10)   06:05	17:58 (10)   06:35	17:54 (10)   07:06	06:42	07:14	
	20:32	19:14 (10)   20:03	19:35 (10)   19:15	18:53 (10)   18:25	16:44	16:31	
13	05:37	18:20 (10)   06:06	17:57 (10)   06:36	17:55 (10)   07:07	06:43	07:14	
	20:31	19:16 (10)   20:01	19:35 (10)   19:13	18:51 (10)   18:23	16:43	16:31	
14	05:38	18:20 (10)   06:07	17:57 (10)   06:37	17:56 (10)   07:08	06:44	07:15	
	20:31	19:17 (10)   20:00	19:35 (10)   19:11	18:50 (10)   18:21	16:42	16:31	
15	05:39	18:18 (10)   06:08	17:56 (10)   06:38	17:57 (10)   07:09	06:45	07:16	
	20:30	19:17 (10)   19:59	19:35 (10)   19:10	18:48 (10)   18:20	16:41	16:31	
16	05:40	18:18 (10)   06:09	17:55 (10)   06:39	17:58 (10)   07:10	06:46	07:17	
	20:30	19:18 (10)   19:57	19:34 (10)   19:08	18:46 (10)   18:18	16:40	16:32	
17	05:40	18:17 (10)   06:10	17:55 (10)   06:40	17:59 (10)   07:11	06:48	07:17	
	20:29	19:19 (10)   19:56	19:33 (10)   19:06	18:45 (10)   18:17	16:39	16:32	
18	05:41	18:17 (10)   06:11	17:55 (10)   06:41	18:00 (10)   07:13	06:49	07:18	
	20:28	19:21 (10)   19:55	19:32 (10)   19:05	18:43 (10)   18:15	16:39	16:32	
19	05:42	18:16 (10)   06:12	17:54 (10)   06:42	18:01 (10)   07:14	06:50	07:19	
	20:28	19:22 (10)   19:53	19:30 (10)   19:03	18:40 (10)   18:14	16:38	16:33	
20	05:43	18:15 (10)   06:13	17:54 (10)   06:43	18:02 (10)   07:15	06:51	07:19	
	20:27	19:22 (10)   19:52	19:29 (10)   19:01	18:38 (10)   18:12	16:37	16:33	
21	05:44	18:14 (10)   06:14	17:53 (10)   06:44	18:04 (10)   07:16	06:52	07:20	
	20:26	19:23 (10)   19:50	19:28 (10)   19:00	18:37 (10)   18:11	16:37	16:33	
22	05:45	18:13 (10)   06:15	17:53 (10)   06:45	18:07 (10)   07:17	06:53	07:20	
	20:25	19:24 (10)   19:49	19:26 (10)   18:58	18:35 (10)   18:09	16:36	16:34	
23	05:46	18:13 (10)   06:16	17:53 (10)   06:46	18:09 (10)   07:18	06:55	07:21	
	20:25	19:25 (10)   19:47	19:25 (10)   18:56	18:33 (10)   18:08	16:35	16:34	
24	05:46	18:12 (10)   06:17	17:52 (10)   06:47	18:13 (10)   07:19	06:56	07:21	
	20:24	19:26 (10)   19:46	19:23 (10)   18:54	18:32 (10)   18:07	16:35	16:35	
25	05:47	18:11 (10)   06:18	17:52 (10)   06:48	18:17 (10)   06:20	06:57	07:22	
	20:23	19:27 (10)   19:44	19:22 (10)   18:53	18:30 (10)   17:05	16:34	16:36	
26	05:48	18:11 (10)   06:19	17:52 (10)   06:49	18:24 (10)   06:22	06:58	07:22	
	20:22	19:28 (10)   19:43	19:21 (10)   18:51	18:28 (10)   17:04	16:34	16:36	
27	05:49	18:09 (10)   06:20	17:52 (10)   06:50		06:23	06:59	07:22
	20:21	19:27 (10)   19:41	19:19 (10)   18:49		17:02	16:33	16:37
28	05:50	18:08 (10)   06:21	17:51 (10)   06:51		06:24	07:00	07:23
	20:20	19:28 (10)   19:39	19:18 (10)   18:48		17:01	16:33	16:37
29	05:51	18:08 (10)   06:22	17:51 (10)   06:52		06:25	07:01	07:23
	20:19	19:29 (10)   19:38	19:16 (10)   18:46		17:00	16:32	16:38
30	05:52	18:07 (10)   06:23	17:50 (10)   06:53		06:26	07:02	07:23
	20:18	19:30 (10)   19:36	19:14 (10)   18:44		16:59	16:32	16:39
31	05:53	18:06 (10)   06:24	17:50 (10)		06:27		07:24
	20:17	19:30 (10)   19:35	19:12 (10)		16:57		16:40
Potential sun hours	459	428	375	345	298	288	
Total, worst case	1865	2856	1337				

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: E - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	07:11 17:15	06:35 17:49	16:18 (10) 17:28 (10)	06:44 19:23	17:25 (10) 19:58
2	07:24 16:42	07:10 17:16	06:33 17:50	16:17 (10) 17:29 (10)	06:42 19:24	17:27 (10) 19:56
3	07:24 16:42	07:09 17:17	06:32 17:51	16:17 (10) 17:30 (10)	06:41 19:25	17:29 (10) 19:57
4	07:24 16:43	07:08 17:19	06:30 17:52	16:16 (10) 17:31 (10)	06:39 19:26	17:31 (10) 19:58
5	07:24 16:44	07:06 17:20	06:28 17:53	16:15 (10) 17:32 (10)	06:37 19:27	17:33 (10) 19:59
6	07:24 16:45	07:05 17:21	16:54 (10) 16:58 (10)	06:27 17:55	06:36 17:34 (10)	17:35 (10) 20:00
7	07:24 16:46	07:04 17:22	16:49 (10) 16:59 (10)	06:25 17:56	06:34 19:29	17:38 (10) 20:01
8	07:24 16:47	07:03 17:24	16:46 (10) 17:01 (10)	06:24 17:57	16:14 (10) 19:30	17:42 (10) 20:02
9	07:24 16:48	07:02 17:25	16:43 (10) 17:02 (10)	06:22 17:58	16:14 (10) 19:31	17:47 (10) 20:03
10	07:24 16:49	07:01 17:26	16:40 (10) 17:03 (10)	06:21 17:59	16:14 (10) 19:32	18:01 (10) 20:04
11	07:23 16:50	07:00 17:27	16:38 (10) 17:04 (10)	06:19 18:00	16:14 (10) 19:33	18:08 (10) 20:05
12	07:23 16:51	06:58 17:29	16:36 (10) 17:06 (10)	06:17 18:01	16:14 (10) 19:35	20:06 20:31
13	07:23 16:52	06:57 17:30	16:35 (10) 17:08 (10)	06:16 18:02	16:14 (10) 19:36	20:07 20:32
14	07:22 16:53	06:56 17:31	16:32 (10) 17:08 (10)	06:14 18:04	16:14 (10) 19:37	20:08 20:33
15	07:22 16:55	06:55 17:32	16:31 (10) 17:10 (10)	06:12 18:05	16:14 (10) 19:38	20:09 20:34
16	07:22 16:56	06:53 17:33	16:30 (10) 17:11 (10)	06:11 18:06	16:14 (10) 19:39	20:10 20:35
17	07:21 16:57	06:52 17:35	16:28 (10) 17:12 (10)	06:09 18:07	16:15 (10) 19:40	20:11 20:36
18	07:21 16:58	06:51 17:36	16:27 (10) 17:14 (10)	06:07 18:08	16:15 (10) 19:41	20:12 20:37
19	07:20 16:59	06:49 17:37	16:26 (10) 17:15 (10)	06:06 18:09	16:15 (10) 19:42	20:13 20:38
20	07:20 17:00	06:48 17:38	16:25 (10) 17:16 (10)	06:04 18:10	16:16 (10) 19:43	20:14 20:39
21	07:19 17:01	06:46 17:39	16:24 (10) 17:18 (10)	06:02 18:11	16:16 (10) 19:44	20:15 20:40
22	07:19 17:03	06:45 17:41	16:23 (10) 17:19 (10)	06:01 18:12	16:16 (10) 19:45	20:16 20:41
23	07:18 17:04	06:44 17:42	16:22 (10) 17:20 (10)	05:59 18:13	16:17 (10) 19:46	20:17 20:42
24	07:17 17:05	06:42 17:43	16:21 (10) 17:21 (10)	05:57 18:14	16:18 (10) 19:47	20:18 20:43
25	07:16 17:06	06:41 17:44	16:20 (10) 17:23 (10)	05:56 18:15	16:18 (10) 19:48	20:19 20:44
26	07:16 17:07	06:39 17:45	16:19 (10) 17:24 (10)	05:54 18:16	16:18 (10) 19:49	20:20 20:45
27	07:15 17:09	06:38 17:47	16:19 (10) 17:25 (10)	05:52 18:18	16:20 (10) 19:50	20:21 20:46
28	07:14 17:10	06:36 17:48	16:18 (10) 17:26 (10)	05:51 18:19	16:21 (10) 19:51	20:22 20:47
29	07:13 17:11		06:49 19:20	17:21 (10) 18:32 (10)	06:01 19:52	20:23 20:48
30	07:12 17:12		06:47 19:21	17:23 (10) 18:31 (10)	06:00 19:53	20:24 20:49
31	07:11 17:14		06:46 19:22	17:24 (10) 18:29 (10)		20:25 20:50
Potential sun hours	298	297	369	399	384	452
Total, worst case		957	2505		384	452

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: E - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December						
1	05:30	05:54	06:25	06:54	16:53 (10)	06:29	16:10 (10)	07:03				
	20:35	20:16	19:33	18:43	86	18:19 (10)	16:56	22	16:32 (10)	16:32		
2	05:31	05:55	06:26	06:55	16:53 (10)	06:30	16:12 (10)	07:04				
	20:35	20:15	19:31	18:41	86	18:19 (10)	16:55	19	16:31 (10)	16:31		
3	05:31	05:56	06:27	17:45 (10)	06:57	16:53 (10)	06:31	16:16 (10)	07:05			
	20:35	20:14	19:30	14	17:59 (10)	18:39	84	18:17 (10)	16:54	14	16:30 (10)	16:31
4	05:32	05:57	06:28	17:39 (10)	06:58	16:52 (10)	06:32	16:19 (10)	07:06			
	20:35	20:13	19:28	26	18:05 (10)	18:38	83	18:15 (10)	16:52	10	16:29 (10)	16:31
5	05:32	05:58	06:29	17:35 (10)	06:59	16:52 (10)	06:33	16:24 (10)	07:07			
	20:34	20:12	19:27	33	18:08 (10)	18:36	82	18:14 (10)	16:51	3	16:27 (10)	16:31
6	05:33	05:59	06:30	17:31 (10)	07:00	16:51 (10)	06:35	07:08				
	20:34	20:10	19:25	40	18:11 (10)	18:34	81	18:12 (10)	16:50	16:31		
7	05:33	06:00	06:31	17:28 (10)	07:01	16:51 (10)	06:36	07:09				
	20:34	20:09	19:23	45	18:13 (10)	18:33	79	18:10 (10)	16:49	16:31		
8	05:34	06:01	06:31	17:25 (10)	07:02	16:51 (10)	06:37	07:10				
	20:33	20:08	19:22	50	18:15 (10)	18:31	77	18:08 (10)	16:48	16:31		
9	05:35	06:02	06:32	17:23 (10)	07:03	16:50 (10)	06:38	07:11				
	20:33	20:07	19:20	54	18:17 (10)	18:29	77	18:07 (10)	16:47	16:31		
10	05:35	06:03	06:33	17:21 (10)	07:04	16:50 (10)	06:39	07:12				
	20:33	20:05	19:18	57	18:18 (10)	18:28	75	18:05 (10)	16:46	16:31		
11	05:36	06:04	06:34	17:18 (10)	07:05	16:50 (10)	06:40	07:13				
	20:32	20:04	19:16	62	18:20 (10)	18:26	73	18:03 (10)	16:45	16:31		
12	05:37	06:05	06:35	17:16 (10)	07:06	16:50 (10)	06:42	07:14				
	20:32	20:03	19:15	65	18:21 (10)	18:25	71	18:01 (10)	16:44	16:31		
13	05:37	06:06	06:36	17:14 (10)	07:07	16:50 (10)	06:43	07:14				
	20:31	20:01	19:13	68	18:22 (10)	18:23	70	18:00 (10)	16:43	16:31		
14	05:38	06:07	06:37	17:13 (10)	07:08	16:51 (10)	06:44	07:15				
	20:31	20:00	19:11	70	18:23 (10)	18:21	68	17:59 (10)	16:42	16:31		
15	05:39	06:08	06:38	17:11 (10)	07:09	16:52 (10)	06:45	07:16				
	20:30	19:59	19:10	73	18:24 (10)	18:20	65	17:57 (10)	16:41	16:31		
16	05:40	06:09	06:39	17:09 (10)	07:10	16:52 (10)	06:46	07:17				
	20:30	19:57	19:08	76	18:25 (10)	18:18	64	17:56 (10)	16:40	16:32		
17	05:40	06:10	06:40	17:08 (10)	07:11	16:52 (10)	06:48	07:17				
	20:29	19:56	19:06	77	18:25 (10)	18:17	62	17:54 (10)	16:39	16:32		
18	05:41	06:11	06:41	17:06 (10)	07:13	16:52 (10)	06:49	07:18				
	20:28	19:55	19:05	80	18:26 (10)	18:15	60	17:52 (10)	16:39	16:32		
19	05:42	06:12	06:42	17:04 (10)	07:14	16:53 (10)	06:50	07:19				
	20:28	19:53	19:03	81	18:25 (10)	18:14	57	17:50 (10)	16:38	16:33		
20	05:43	06:13	06:43	17:03 (10)	07:15	16:53 (10)	06:51	07:19				
	20:27	19:52	19:01	83	18:26 (10)	18:12	56	17:49 (10)	16:37	16:33		
21	05:44	06:14	06:44	17:02 (10)	07:16	16:55 (10)	06:52	07:20				
	20:26	19:50	19:00	84	18:26 (10)	18:11	53	17:48 (10)	16:37	16:33		
22	05:45	06:15	06:45	17:00 (10)	07:17	16:56 (10)	06:53	07:20				
	20:25	19:49	18:58	86	18:26 (10)	18:09	50	17:46 (10)	16:36	16:34		
23	05:46	06:16	06:46	16:59 (10)	07:18	16:56 (10)	06:55	07:21				
	20:25	19:47	18:56	88	18:27 (10)	18:08	49	17:45 (10)	16:35	16:34		
24	05:46	06:17	06:47	16:58 (10)	07:19	16:57 (10)	06:56	07:21				
	20:24	19:46	18:54	89	18:27 (10)	18:07	46	17:43 (10)	16:35	16:35		
25	05:47	06:18	06:48	16:57 (10)	06:20	15:58 (10)	06:57	07:22				
	20:23	19:44	18:53	90	18:27 (10)	17:05	43	16:41 (10)	16:34	16:36		
26	05:48	06:19	06:49	16:56 (10)	06:22	16:00 (10)	06:58	07:22				
	20:22	19:43	18:51	91	18:27 (10)	17:04	41	16:41 (10)	16:34	16:36		
27	05:49	06:20	06:50	16:56 (10)	06:23	16:01 (10)	06:59	07:22				
	20:21	19:41	18:49	90	18:26 (10)	17:02	38	16:39 (10)	16:33	16:37		
28	05:50	06:21	06:51	16:55 (10)	06:24	16:03 (10)	07:00	07:23				
	20:20	19:39	18:48	90	18:25 (10)	17:01	35	16:38 (10)	16:33	16:37		
29	05:51	06:22	06:52	16:54 (10)	06:25	16:04 (10)	07:01	07:23				
	20:19	19:38	18:46	89	18:23 (10)	17:00	32	16:36 (10)	16:32	16:38		
30	05:52	06:23	06:53	16:53 (10)	06:26	16:06 (10)	07:02	07:23				
	20:18	19:36	18:44	88	18:21 (10)	16:59	29	16:35 (10)	16:32	16:39		
31	05:53	06:24			06:27	16:08 (10)		07:24				
	20:17	19:35			16:57	16:34 (10)		16:40				
Potential sun hours	459	428	375	345	298	288						
Total, worst case			1939	1898	68	288						

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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## SHADOW - Calendar

**Calculation:** Shadow receptor: F - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (26)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41   140	13:34 (9) 07:11   17:15   109	14:03 (9) 06:35   17:49	06:44 19:23	05:58 19:55	05:30 20:24
2	07:24 16:42   140	13:34 (9) 07:10   17:16   107	14:05 (9) 06:33   17:50	06:42 19:24	05:57 19:56	05:29 20:25
3	07:24 16:42   140	13:35 (9) 07:09   17:17   105	14:05 (9) 06:32   17:51	06:41 19:25	05:56 19:57	05:29 20:25
4	07:24 16:43   139	13:36 (9) 07:08   17:19   102	14:07 (9) 06:30   17:52	06:39 19:26	05:54 19:58	05:28 20:26
5	07:24 16:44   139	13:36 (9) 07:06   17:20   99	14:09 (9) 06:28   17:53	06:37 19:27	05:53 19:59	05:28 20:27
6	07:24 16:45   139	13:37 (9) 07:05   17:21   96	14:11 (9) 06:27   17:55	06:36 19:28	05:52 20:00	05:28 20:28
7	07:24 16:46   138	13:38 (9) 07:04   17:22   93	14:13 (9) 06:25   17:56	06:34 19:29	05:51 20:01	05:27 20:28
8	07:24 16:47   137	13:39 (9) 07:03   17:24   90	14:15 (9) 06:24   17:57	06:33 19:30	05:50 20:02	05:27 20:29
9	07:24 16:48   137	13:40 (9) 07:02   17:25   87	14:17 (9) 06:22   17:58	06:31 19:31	05:49 20:03	05:27 20:29
10	07:24 16:49   136	13:40 (9) 07:01   17:26   83	14:19 (9) 06:20   17:59	06:29 19:32	05:47 20:04	05:27 20:30
11	07:23 16:50   136	13:41 (9) 07:00   17:27   78	14:22 (9) 06:19   18:00	06:28 19:33	05:46 20:05	05:26 20:30
12	07:23 16:51   135	13:42 (9) 06:58   17:29   75	14:24 (9) 06:17   18:01	06:26 19:34	05:45 20:06	05:26 20:31
13	07:23 16:52   135	13:42 (9) 06:57   17:30   70	14:27 (9) 06:16   18:02	06:25 19:36	05:44 20:07	05:26 20:31
14	07:22 16:53   134	13:43 (9) 06:56   17:31   65	14:29 (9) 06:14   18:04	06:23 19:37	05:43 20:08	05:26 20:32
15	07:22 16:55   134	13:43 (9) 06:55   17:32   59	14:33 (9) 06:12   18:05	06:21 19:38	05:42 20:09	05:26 20:32
16	07:22 16:56   132	13:45 (9) 06:53   17:33   53	14:37 (9) 06:11   18:06	06:20 19:39	05:41 20:10	05:26 20:33
17	07:21 16:57   132	13:45 (9) 06:52   17:35   46	14:40 (9) 06:09   18:07	06:18 19:40	05:40 20:11	05:26 20:33
18	07:21 16:58   130	13:47 (9) 06:51   17:36   36	14:46 (9) 06:07   18:08	06:17 19:41	05:39 20:12	05:26 20:33
19	07:20 16:59   130	13:47 (9) 06:49   17:37   25	14:52 (9) 06:06   18:09	06:15 19:42	05:38 20:13	05:26 20:34
20	07:20 17:00   128	13:49 (9) 06:48   17:38	06:04 18:10	06:14 19:43	05:38 20:14	05:27 20:34
21	07:19 17:01   128	13:49 (9) 06:46   17:40	06:02 18:11	06:12 19:44	05:37 20:15	05:27 20:34
22	07:18 17:03   126	13:50 (9) 06:45   17:41	06:01 18:12	06:11 19:45	05:36 20:16	05:27 20:34
23	07:18 17:04   125	13:51 (9) 06:44   17:42	05:59 18:13	06:09 19:46	05:35 20:17	05:27 20:35
24	07:17 17:05   123	13:53 (9) 06:42   17:43	05:57 18:14	06:08 19:47	05:34 20:17	05:27 20:35
25	07:16 17:06   122	13:54 (9) 06:41   17:44	05:56 18:15	06:07 19:48	05:34 20:18	05:28 20:35
26	07:16 17:07   120	13:55 (9) 06:39   17:45	05:54 18:16	06:05 19:49	05:33 20:19	05:28 20:35
27	07:15 17:09   119	13:56 (9) 06:38   17:47	05:52 18:18	06:04 19:50	05:32 20:20	05:28 20:35
28	07:14 17:10   117	13:57 (9) 06:36   17:48	05:51 18:19	06:02 19:51	05:32 20:21	05:29 20:35
29	07:13 17:11   115	13:58 (9) 06:35   17:49	06:49 19:20	06:01 19:52	05:31 20:22	05:29 20:35
30	07:12 17:12   114	14:00 (9) 06:34   17:50	06:47 19:21	06:00 19:54	05:31 20:22	05:30 20:35
31	07:11 17:14   111	14:02 (9) 06:33   17:51	06:46 19:22	06:00 19:55	05:30 20:23	05:30 20:35
Potential sun hours	298	297	369	399	448	452
Total, worst case	4031	1478				

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: F - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (26)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December						
1	05:30	05:54	06:25	06:54	06:29	13:48 (9)	07:03	13:23 (9)				
	20:35	20:16	19:33	18:43	16:56	84	15:12 (9)	16:32	136	15:39 (9)		
2	05:31	05:55	06:26	06:55	06:30	13:46 (9)	07:04	13:23 (9)				
	20:35	20:15	19:31	18:41	16:55	87	15:13 (9)	16:31	136	15:39 (9)		
3	05:31	05:56	06:27	06:57	06:31	13:45 (9)	07:05	13:23 (9)				
	20:35	20:14	19:30	18:39	16:54	90	15:15 (9)	16:31	137	15:40 (9)		
4	05:32	05:57	06:28	06:58	06:32	13:42 (9)	07:06	13:23 (9)				
	20:34	20:13	19:28	18:38	16:52	94	15:16 (9)	16:31	137	15:40 (9)		
5	05:32	05:58	06:29	06:59	06:33	13:40 (9)	07:07	13:23 (9)				
	20:34	20:12	19:27	18:36	16:51	97	15:17 (9)	16:31	138	15:41 (9)		
6	05:33	05:59	06:30	07:00	06:34	13:38 (9)	07:08	13:23 (9)				
	20:34	20:10	19:25	18:34	16:50	100	15:18 (9)	16:31	139	15:42 (9)		
7	05:33	06:00	06:31	07:01	06:36	13:38 (9)	07:09	13:23 (9)				
	20:34	20:09	19:23	18:33	16:49	102	15:20 (9)	16:31	139	15:42 (9)		
8	05:34	06:01	06:31	07:02	06:37	13:36 (9)	07:10	13:24 (9)				
	20:33	20:08	19:22	18:31	16:48	105	15:21 (9)	16:31	139	15:43 (9)		
9	05:35	06:02	06:32	07:03	06:38	13:34 (9)	07:11	13:24 (9)				
	20:33	20:07	19:20	18:29	16:47	108	15:22 (9)	16:31	140	15:44 (9)		
10	05:35	06:03	06:33	07:04	06:39	13:34 (9)	07:12	13:24 (9)				
	20:33	20:05	19:18	18:28	16:46	109	15:23 (9)	16:31	140	15:44 (9)		
11	05:36	06:04	06:34	07:05	06:40	13:32 (9)	07:13	13:25 (9)				
	20:32	20:04	19:16	18:26	16:45	112	15:24 (9)	16:31	140	15:45 (9)		
12	05:37	06:05	06:35	07:06	06:42	13:31 (9)	07:14	13:24 (9)				
	20:32	20:03	19:15	18:25	16:44	114	15:25 (9)	16:31	141	15:45 (9)		
13	05:37	06:06	06:36	07:07	06:43	13:30 (9)	07:14	13:25 (9)				
	20:31	20:01	19:13	18:23	16:43	115	15:25 (9)	16:31	140	15:45 (9)		
14	05:38	06:07	06:37	07:08	06:44	13:30 (9)	07:15	13:25 (9)				
	20:31	20:00	19:11	18:21	16:42	117	15:27 (9)	16:31	141	15:46 (9)		
15	05:39	06:08	06:38	07:09	06:45	13:28 (9)	07:16	13:26 (9)				
	20:30	19:59	19:10	18:20	16:41	120	15:28 (9)	16:31	141	15:47 (9)		
16	05:40	06:09	06:39	07:10	06:46	13:27 (9)	07:17	13:26 (9)				
	20:30	19:57	19:08	18:18	16:40	121	15:28 (9)	16:32	141	15:47 (9)		
17	05:40	06:10	06:40	07:11	06:48	13:26 (9)	07:17	13:26 (9)				
	20:29	19:56	19:06	18:17	16:39	123	15:29 (9)	16:32	142	15:48 (9)		
18	05:41	06:11	06:41	07:13	06:49	13:27 (9)	07:18	13:26 (9)				
	20:28	19:55	19:05	18:15	16:39	123	15:30 (9)	16:32	142	15:48 (9)		
19	05:42	06:12	06:42	07:14	06:50	13:26 (9)	07:19	13:27 (9)				
	20:28	19:53	19:03	18:14	16:38	125	15:31 (9)	16:33	141	15:48 (9)		
20	05:43	06:13	06:43	07:15	06:51	13:25 (9)	07:19	13:28 (9)				
	20:27	19:52	19:01	18:12	16:37	126	15:31 (9)	16:33	141	15:49 (9)		
21	05:44	06:14	06:44	07:16	06:52	13:24 (9)	07:20	13:28 (9)				
	20:26	19:50	18:59	18:11	16:37	128	15:32 (9)	16:33	141	15:49 (9)		
22	05:45	06:15	06:45	07:17	15:31 (9)	06:53	13:25 (9)	07:20	13:29 (9)			
	20:25	19:49	18:58	18:09	7	15:38 (9)	16:36	128	15:33 (9)	16:34	141	15:50 (9)
23	05:46	06:16	06:46	07:18	15:20 (9)	06:55	13:24 (9)	07:21	13:29 (9)			
	20:25	19:47	18:56	18:08	28	15:48 (9)	16:35	130	15:34 (9)	16:34	141	15:50 (9)
24	05:46	06:17	06:47	07:19	15:14 (9)	06:56	13:24 (9)	07:21	13:29 (9)			
	20:24	19:46	18:54	18:07	39	15:53 (9)	16:35	130	15:34 (9)	16:35	141	15:50 (9)
25	05:47	06:18	06:48	07:20	14:09 (9)	06:57	13:23 (9)	07:22	13:30 (9)			
	20:23	19:44	18:53	17:05	47	14:56 (9)	16:34	132	15:35 (9)	16:36	141	15:51 (9)
26	05:48	06:19	06:49	07:22	14:06 (9)	06:58	13:23 (9)	07:22	13:30 (9)			
	20:22	19:43	18:51	17:04	54	15:00 (9)	16:34	132	15:35 (9)	16:36	142	15:52 (9)
27	05:49	06:20	06:50	07:23	14:02 (9)	06:59	13:22 (9)	07:22	13:31 (9)			
	20:21	19:41	18:49	17:02	60	15:02 (9)	16:33	134	15:36 (9)	16:37	141	15:52 (9)
28	05:50	06:21	06:51	07:24	13:59 (9)	07:00	13:23 (9)	07:23	13:32 (9)			
	20:20	19:39	18:48	17:01	65	15:04 (9)	16:33	134	15:37 (9)	16:37	141	15:53 (9)
29	05:51	06:22	06:52	07:25	13:55 (9)	07:01	13:23 (9)	07:23	13:32 (9)			
	20:19	19:38	18:46	17:00	71	15:06 (9)	16:32	135	15:38 (9)	16:38	141	15:53 (9)
30	05:52	06:23	06:53	07:26	13:53 (9)	07:02	13:23 (9)	07:23	13:33 (9)			
	20:18	19:36	18:44	16:59	76	15:09 (9)	16:32	135	15:38 (9)	16:39	140	15:53 (9)
31	05:53	06:24		06:27	13:51 (9)		07:24	13:33 (9)				
	20:17	19:35		16:57	79	15:10 (9)		16:40	141	15:54 (9)		
Potential sun hours	459	428	375	345	298		288	4342				
Total, worst case				526	3490							

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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## SHADOW - Calendar

**Calculation:** Shadow receptor: G - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	
1	07:24 16:41	15:30 (9) 16:15 (9)	07:10 17:15	15:43 (9) 16:52 (9)	06:35 17:49	06:44 19:23	05:58 20:24
2	07:24 16:42	15:31 (9) 16:15 (9)	07:10 17:16	15:44 (9) 16:53 (9)	06:33 17:50	06:42 19:24	05:57 20:25
3	07:24 16:42	15:31 (9) 16:16 (9)	07:09 17:17	15:44 (9) 16:53 (9)	06:32 17:51	06:41 19:25	05:56 20:25
4	07:24 16:43	15:31 (9) 16:17 (9)	07:08 17:19	15:45 (9) 16:55 (9)	06:30 17:52	06:39 19:26	05:54 20:26
5	07:24 16:44	15:32 (9) 16:18 (9)	07:06 17:20	15:46 (9) 16:56 (9)	06:28 17:53	06:37 19:27	05:53 20:27
6	07:24 16:45	15:32 (9) 16:19 (9)	07:05 17:21	15:47 (9) 16:58 (9)	06:27 17:55	06:36 19:28	05:52 20:28
7	07:24 16:46	15:33 (9) 16:20 (9)	07:04 17:22	15:48 (9) 16:59 (9)	06:25 17:56	06:34 19:29	05:51 20:28
8	07:24 16:47	15:33 (9) 16:22 (9)	07:03 17:24	15:49 (9) 17:01 (9)	06:24 17:57	06:33 19:30	05:50 20:29
9	07:24 16:48	15:33 (9) 16:22 (9)	07:02 17:25	15:50 (9) 17:01 (9)	06:22 17:58	06:31 19:31	05:49 20:29
10	07:24 16:49	15:33 (9) 16:23 (9)	07:01 17:26	15:50 (9) 16:59 (9)	06:20 17:59	06:29 19:32	05:47 20:30
11	07:23 16:50	15:34 (9) 16:25 (9)	07:00 17:27	15:52 (9) 16:59 (9)	06:19 18:00	06:28 19:33	05:46 20:30
12	07:23 16:51	15:35 (9) 16:26 (9)	06:58 17:29	15:53 (9) 16:58 (9)	06:17 18:01	06:26 19:34	05:45 20:31
13	07:23 16:52	15:34 (9) 16:27 (9)	06:57 17:30	15:55 (9) 16:57 (9)	06:16 18:02	06:25 19:36	05:44 20:31
14	07:22 16:53	15:35 (9) 16:28 (9)	06:56 17:31	15:56 (9) 16:55 (9)	06:14 18:04	06:23 19:37	05:43 20:32
15	07:22 16:55	15:35 (9) 16:29 (9)	06:55 17:32	15:58 (9) 16:54 (9)	06:12 18:05	06:21 19:38	05:42 20:32
16	07:22 16:56	15:36 (9) 16:31 (9)	06:53 17:33	16:00 (9) 16:52 (9)	06:11 18:06	06:20 19:39	05:41 20:33
17	07:21 16:57	15:36 (9) 16:31 (9)	06:52 17:35	16:01 (9) 16:50 (9)	06:09 18:07	06:18 19:40	05:40 20:33
18	07:21 16:58	15:37 (9) 16:33 (9)	06:51 17:36	16:04 (9) 16:48 (9)	06:07 18:08	06:17 19:41	05:39 20:33
19	07:20 16:59	15:36 (9) 16:34 (9)	06:49 17:37	16:06 (9) 16:45 (9)	06:06 18:09	06:15 19:42	05:38 20:34
20	07:20 17:00	15:37 (9) 16:36 (9)	06:48 17:38	16:09 (9) 16:42 (9)	06:04 18:10	06:14 19:43	05:38 20:34
21	07:19 17:01	15:38 (9) 16:37 (9)	06:46 17:39	16:13 (9) 16:39 (9)	06:02 18:11	06:12 19:44	05:37 20:34
22	07:18 17:03	15:38 (9) 16:38 (9)	06:45 17:41	16:19 (9) 16:32 (9)	06:01 18:12	06:11 19:45	05:36 20:34
23	07:18 17:04	15:38 (9) 16:39 (9)	06:44 17:42		05:59 18:13	06:09 19:46	05:35 20:35
24	07:17 17:05	15:39 (9) 16:41 (9)	06:42 17:43		05:57 18:14	06:08 19:47	05:34 20:35
25	07:16 17:06	15:39 (9) 16:42 (9)	06:41 17:44		05:56 18:15	06:07 19:48	05:34 20:35
26	07:16 17:07	15:39 (9) 16:43 (9)	06:39 17:45		05:54 18:16	06:05 19:49	05:33 20:35
27	07:15 17:09	15:40 (9) 16:44 (9)	06:38 17:47		05:52 18:18	06:04 19:50	05:32 20:35
28	07:14 17:10	15:40 (9) 16:45 (9)	06:36 17:48		05:51 18:19	06:02 19:51	05:32 20:35
29	07:13 17:11	15:41 (9) 16:47 (9)			06:49 19:20	06:01 19:52	05:31 20:35
30	07:12 17:12	15:41 (9) 16:48 (9)			06:47 19:21	06:00 19:54	05:31 20:35
31	07:11 17:14	15:43 (9) 16:50 (9)			06:46 19:22		05:30 20:23
Potential sun hours	298		297	369	399	448	452
Total, worst case	1711		1266				

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: G - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	05:30 20:35	05:54 20:16	06:25 19:33	06:54 18:43	06:29 16:56	15:20 (9) 16:29 (9)
2	05:31 20:35	05:55 20:15	06:26 19:31	06:55 18:41	06:30 16:55	15:19 (9) 16:30 (9)
3	05:31 20:35	05:56 20:14	06:27 19:30	06:57 18:39	06:31 16:54	15:18 (9) 16:30 (9)
4	05:32 20:34	05:57 20:13	06:28 19:28	06:58 18:38	06:32 16:52	15:17 (9) 16:29 (9)
5	05:32 20:34	05:58 20:12	06:29 19:26	06:59 18:36	06:33 16:51	15:16 (9) 16:27 (9)
6	05:33 20:34	05:59 20:10	06:30 19:25	07:00 18:34	06:34 16:50	15:15 (9) 16:26 (9)
7	05:33 20:34	06:00 20:09	06:30 19:23	07:01 18:33	06:36 16:49	15:15 (9) 16:25 (9)
8	05:34 20:33	06:01 20:08	06:31 19:22	07:02 18:31	06:37 16:48	15:15 (9) 16:24 (9)
9	05:35 20:33	06:02 20:07	06:32 19:20	07:03 18:29	06:38 16:47	15:14 (9) 16:23 (9)
10	05:35 20:33	06:03 20:05	06:33 19:18	07:04 18:28	06:39 16:46	15:14 (9) 16:22 (9)
11	05:36 20:32	06:04 20:04	06:34 19:16	07:05 18:26	06:40 16:45	15:14 (9) 16:21 (9)
12	05:37 20:32	06:05 20:03	06:35 19:15	07:06 18:25	06:42 16:44	15:13 (9) 16:20 (9)
13	05:37 20:31	06:06 20:01	06:36 19:13	07:07 18:23	06:43 16:43	15:13 (9) 16:18 (9)
14	05:38 20:31	06:07 20:00	06:37 19:11	07:08 18:21	06:44 16:42	15:13 (9) 16:18 (9)
15	05:39 20:30	06:08 19:59	06:38 19:10	07:09 18:20	06:45 16:41	15:13 (9) 16:17 (9)
16	05:40 20:30	06:09 19:57	06:39 19:08	07:10 18:18	06:46 16:40	15:12 (9) 16:16 (9)
17	05:40 20:29	06:10 19:56	06:40 19:06	07:11 18:17	06:48 16:39	15:12 (9) 16:15 (9)
18	05:41 20:28	06:11 19:54	06:41 19:05	07:13 18:15	06:49 16:39	15:13 (9) 16:15 (9)
19	05:42 20:28	06:12 19:53	06:42 19:03	07:14 18:14	06:50 16:38	15:13 (9) 16:14 (9)
20	05:43 20:27	06:13 19:52	06:43 19:01	07:15 18:12	06:51 17:05 (9)	15:13 (9) 16:13 (9)
21	05:44 20:26	06:14 19:50	06:44 18:59	07:16 18:11	06:52 17:11 (9)	15:13 (9) 16:12 (9)
22	05:45 20:25	06:15 19:49	06:45 18:58	07:17 18:09	06:53 17:14 (9)	15:14 (9) 16:12 (9)
23	05:46 20:25	06:16 19:47	06:46 18:56	07:18 18:08	06:55 17:16 (9)	15:14 (9) 16:11 (9)
24	05:46 20:24	06:17 19:46	06:47 18:54	07:19 18:07	06:56 17:18 (9)	15:14 (9) 16:10 (9)
25	05:47 20:23	06:18 19:44	06:48 18:53	07:20 17:05	06:57 15:30 (9)	15:14 (9) 16:09 (9)
26	05:48 20:22	06:19 19:43	06:49 18:51	07:22 17:04	06:58 16:22 (9)	15:14 (9) 16:34
27	05:49 20:21	06:20 19:41	06:50 18:49	07:23 17:02	06:59 16:24 (9)	15:14 (9) 16:33
28	05:50 20:20	06:21 19:39	06:51 18:48	07:24 17:01	07:00 15:25 (9)	15:15 (9) 16:33
29	05:51 20:19	06:22 19:38	06:52 18:46	07:25 17:00	07:01 16:26 (9)	15:15 (9) 16:32
30	05:52 20:18	06:23 19:36	06:53 18:44	07:26 16:59	07:02 16:28 (9)	15:16 (9) 16:32
31	05:53 20:17	06:24 19:35	06:54 18:42	07:27 16:57	15:21 (9) 16:29 (9)	07:24 16:40
Potential sun hours	459	428	375	345	298	288
Total, worst case				583	1891	1368

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: H - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (28)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January		February		March		April		May		June	
1	07:24		15:22 (9)	07:10	15:46 (9)	06:35	06:44	05:58		05:30		19:48 (10)
	16:41	53	16:15 (9)	17:15	16:42 (9)	17:49	19:23	19:55		20:24	11	19:59 (10)
2	07:24		15:23 (9)	07:10	15:48 (9)	06:33	06:42	05:57		05:29		19:48 (10)
	16:42	52	16:15 (9)	17:16	16:41 (9)	17:50	19:24	19:56		20:25	12	20:00 (10)
3	07:24		15:23 (9)	07:09	15:48 (9)	06:32	06:41	05:56		05:29		19:47 (10)
	16:42	53	16:16 (9)	17:17	16:39 (9)	17:51	19:25	19:57		20:25	13	20:00 (10)
4	07:24		15:24 (9)	07:08	15:50 (9)	06:30	06:39	05:54		05:28		19:47 (10)
	16:43	53	16:17 (9)	17:19	16:37 (9)	17:52	19:26	19:58		20:26	14	20:01 (10)
5	07:24		15:25 (9)	07:06	15:52 (9)	06:28	06:37	05:53		05:28		19:47 (10)
	16:44	53	16:18 (9)	17:20	16:36 (9)	17:53	19:27	19:59		20:27	15	20:02 (10)
6	07:24		15:25 (9)	07:05	15:55 (9)	06:27	06:36	05:52		05:28		19:47 (10)
	16:45	54	16:19 (9)	17:21	16:34 (9)	17:55	19:28	20:00		20:28	15	20:02 (10)
7	07:24		15:26 (9)	07:04	15:57 (9)	06:25	06:34	05:51		05:27		19:47 (10)
	16:46	54	16:20 (9)	17:22	16:32 (9)	17:56	19:29	20:01		20:28	16	20:03 (10)
8	07:24		15:27 (9)	07:03	16:00 (9)	06:24	06:33	05:50		05:27		19:47 (10)
	16:47	55	16:22 (9)	17:24	16:29 (9)	17:57	19:30	20:02		20:29	17	20:04 (10)
9	07:24		15:26 (9)	07:02	16:04 (9)	06:22	06:31	05:49		05:27		19:47 (10)
	16:48	56	16:22 (9)	17:25	16:26 (9)	17:58	19:31	20:03		20:29	17	20:04 (10)
10	07:24		15:27 (9)	07:01	16:10 (9)	06:20	06:29	05:47		05:27		19:47 (10)
	16:49	56	16:23 (9)	17:26	16:19 (9)	17:59	19:32	20:04		20:30	18	20:05 (10)
11	07:23		15:28 (9)	07:00		06:19	06:28	05:46		05:26		19:46 (10)
	16:50	57	16:25 (9)	17:27		18:00	19:33	20:05		20:30	19	20:05 (10)
12	07:23		15:29 (9)	06:58		06:17	06:26	05:45		05:26		19:47 (10)
	16:51	57	16:26 (9)	17:29		18:01	19:34	20:06		20:31	18	20:05 (10)
13	07:23		15:29 (9)	06:57		06:16	06:25	05:44		05:26		19:47 (10)
	16:52	58	16:27 (9)	17:30		18:02	19:36	20:07		20:31	19	20:06 (10)
14	07:22		15:30 (9)	06:56		06:14	06:23	05:43		05:26		19:47 (10)
	16:53	58	16:28 (9)	17:31		18:04	19:37	20:08		20:32	19	20:06 (10)
15	07:22		15:30 (9)	06:55		06:12	06:21	05:42		05:26		19:47 (10)
	16:55	59	16:29 (9)	17:32		18:05	19:38	20:09		20:32	20	20:07 (10)
16	07:22		15:31 (9)	06:53		06:11	06:20	05:41		05:26		19:47 (10)
	16:56	60	16:31 (9)	17:33		18:06	19:39	20:10		20:33	20	20:07 (10)
17	07:21		15:31 (9)	06:52		06:09	06:18	05:40		05:26		19:47 (10)
	16:57	60	16:31 (9)	17:35		18:07	19:40	20:11		20:33	20	20:07 (10)
18	07:21		15:32 (9)	06:51		06:07	06:17	05:39		05:26		19:48 (10)
	16:58	61	16:33 (9)	17:36		18:08	19:41	20:12		20:33	20	20:08 (10)
19	07:20		15:33 (9)	06:49		06:06	06:15	05:38		05:26		19:48 (10)
	16:59	61	16:34 (9)	17:37		18:09	19:42	20:13		20:34	21	20:09 (10)
20	07:20		15:34 (9)	06:48		06:04	06:14	05:38		05:27		19:48 (10)
	17:00	62	16:36 (9)	17:38		18:10	19:43	20:14		20:34	21	20:09 (10)
21	07:19		15:34 (9)	06:46		06:02	06:12	05:37		05:27		19:48 (10)
	17:01	63	16:37 (9)	17:39		18:11	19:44	20:15		20:34	21	20:09 (10)
22	07:18		15:35 (9)	06:45		06:01	06:11	05:36		05:27		19:48 (10)
	17:03	63	16:38 (9)	17:41		18:12	19:45	20:16		20:34	21	20:09 (10)
23	07:18		15:35 (9)	06:44		05:59	06:09	05:35		05:27		19:49 (10)
	17:04	64	16:39 (9)	17:42		18:13	19:46	20:17		20:35	21	20:10 (10)
24	07:17		15:37 (9)	06:42		05:57	06:08	05:34		19:52 (10)	05:27	19:49 (10)
	17:05	64	16:41 (9)	17:43		18:14	19:47	20:17	1	19:53 (10)	20:35	20:09 (10)
25	07:16		15:38 (9)	06:41		05:56	06:07	05:34		19:52 (10)	05:28	19:49 (10)
	17:06	64	16:42 (9)	17:44		18:15	19:48	20:18	2	19:54 (10)	20:35	20:09 (10)
26	07:16		15:39 (9)	06:39		05:54	06:05	05:33		19:51 (10)	05:28	19:50 (10)
	17:07	64	16:43 (9)	17:45		18:16	19:49	20:19	4	19:55 (10)	20:35	20:10 (10)
27	07:15		15:39 (9)	06:38		05:52	06:04	05:32		19:50 (10)	05:28	19:50 (10)
	17:09	65	16:44 (9)	17:47		18:18	19:50	20:20	5	19:55 (10)	20:35	20:10 (10)
28	07:14		15:40 (9)	06:36		05:51	06:02	05:32		19:50 (10)	05:29	19:50 (10)
	17:10	64	16:44 (9)	17:48		18:19	19:51	20:21	6	19:56 (10)	20:35	19:50 (10)
29	07:13		15:41 (9)			06:49	06:01	05:31		19:49 (10)	05:29	19:51 (10)
	17:11	62	16:43 (9)			19:20	19:52	20:22	8	19:57 (10)	20:35	20:10 (10)
30	07:12		15:43 (9)			06:47	06:00	05:31		19:49 (10)	05:30	19:51 (10)
	17:12	60	16:43 (9)			19:21	19:54	20:22	9	19:58 (10)	20:35	20:09 (10)
31	07:11		15:45 (9)			06:46		05:30		19:48 (10)		
	17:14	58	16:43 (9)			19:22		20:23	10	19:58 (10)		
Potential sun hours	298		297		369	399	448			452		544
Total, worst case	1823		385				45			544		

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: H - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (28)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December	
1	05:30 20:35	19:51 (10) 20:10 (10)	05:54 20:16	06:25 19:33	06:54 18:43	06:29 16:56	15:38 (9) 15:50 (9)
2	05:31 20:35	19:51 (10) 20:09 (10)	05:55 20:15	06:26 19:31	06:55 18:41	06:30 16:55	15:32 (9) 15:56 (9)
3	05:31 20:35	19:52 (10) 20:10 (10)	05:56 20:14	06:27 19:30	06:57 18:39	06:31 16:54	15:30 (9) 16:00 (9)
4	05:32 20:34	19:52 (10) 20:09 (10)	05:57 20:13	06:28 19:28	06:58 18:38	06:32 16:52	15:27 (9) 16:02 (9)
5	05:32 20:34	19:53 (10) 20:09 (10)	05:58 20:12	06:29 19:26	06:59 18:36	06:33 16:51	15:24 (9) 16:04 (9)
6	05:33 20:34	19:53 (10) 20:08 (10)	05:59 20:10	06:30 19:25	06:34 18:34	06:34 16:50	15:22 (9) 16:06 (9)
7	05:33 20:34	19:54 (10) 20:09 (10)	06:00 20:09	06:30 19:23	07:01 18:33	06:36 16:49	15:21 (9) 16:08 (9)
8	05:34 20:33	19:54 (10) 20:09 (10)	06:01 20:08	06:31 19:22	07:02 18:31	06:37 16:48	15:19 (9) 16:10 (9)
9	05:35 20:33	19:54 (10) 20:08 (10)	06:02 20:07	06:32 19:20	07:03 18:29	06:38 16:47	15:17 (9) 16:11 (9)
10	05:35 20:33	19:55 (10) 20:08 (10)	06:03 20:05	06:33 19:18	07:04 18:28	06:39 16:46	15:17 (9) 16:13 (9)
11	05:36 20:32	19:56 (10) 20:08 (10)	06:04 20:04	06:34 19:16	07:05 18:26	06:40 16:45	15:16 (9) 16:14 (9)
12	05:37 20:32	19:56 (10) 20:07 (10)	06:05 20:03	06:35 19:15	07:06 18:25	06:42 16:44	15:14 (9) 16:15 (9)
13	05:37 20:31	19:57 (10) 20:06 (10)	06:06 20:01	06:36 19:13	07:07 18:23	06:43 16:43	15:13 (9) 16:15 (9)
14	05:38 20:31	19:58 (10) 20:06 (10)	06:07 20:00	06:37 19:11	07:08 18:21	06:44 16:42	15:13 (9) 16:17 (9)
15	05:39 20:30	19:58 (10) 20:05 (10)	06:08 19:59	06:38 19:10	07:09 18:20	06:45 16:41	15:12 (9) 16:17 (9)
16	05:40 20:30	19:59 (10) 20:05 (10)	06:09 19:57	06:39 19:08	07:10 18:18	06:46 16:40	15:12 (9) 16:16 (9)
17	05:40 20:29	20:00 (10) 20:04 (10)	06:10 19:56	06:40 19:06	07:11 18:17	06:48 16:39	15:11 (9) 16:15 (9)
18	05:41 20:28	20:01 (10) 20:04 (10)	06:11 19:54	06:41 19:05	07:13 18:15	06:49 16:39	15:11 (9) 16:15 (9)
19	05:42 20:28	20:02 (10) 20:04 (10)	06:12 19:53	06:42 19:03	07:14 18:14	06:50 16:38	15:10 (9) 16:14 (9)
20	05:43 20:27	06:13 19:52	06:43 19:01	07:15 18:12	06:51 16:37	15:10 (9) 16:13 (9)	07:19 16:33
21	05:44 20:26	06:14 19:50	06:44 18:59	07:16 18:11	06:52 16:37	15:09 (9) 16:12 (9)	07:20 16:33
22	05:45 20:25	06:15 19:49	06:45 18:58	07:17 18:09	06:53 16:36	15:10 (9) 16:12 (9)	07:20 16:34
23	05:46 20:25	06:16 19:47	06:46 18:56	07:18 18:08	06:55 16:35	15:10 (9) 16:11 (9)	07:21 16:34
24	05:46 20:24	06:17 19:46	06:47 18:54	07:19 18:07	06:56 16:35	15:09 (9) 16:10 (9)	07:21 16:35
25	05:47 20:23	06:18 19:44	06:48 18:53	07:20 17:05	06:57 16:34	15:09 (9) 16:09 (9)	07:22 16:36
26	05:48 20:22	06:19 19:43	06:49 18:51	07:22 17:04	06:58 16:34	15:09 (9) 16:09 (9)	07:22 16:36
27	05:49 20:21	06:20 19:41	06:50 18:49	07:23 17:02	06:59 16:33	15:09 (9) 16:08 (9)	07:22 16:37
28	05:50 20:20	06:21 19:39	06:51 18:48	07:24 17:01	07:00 16:33	15:10 (9) 16:08 (9)	07:23 16:37
29	05:51 20:19	06:22 19:38	06:52 18:46	07:25 17:00	07:01 16:32	15:10 (9) 16:08 (9)	07:23 16:38
30	05:52 20:18	06:23 19:36	06:53 18:44	07:26 16:59	07:02 16:32	15:10 (9) 16:07 (9)	07:23 16:39
31	05:53 20:17	06:24 19:35	06:54 16:57	07:27 16:57	07:03 16:57	15:10 (9) 16:07 (9)	07:24 16:40
Potential sun hours	459	428	375	345	298	288	1612
Total, worst case	222				1621		1612

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: I - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (29)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	112 08:47 (7) 15:39 (6)	07:10 17:15	06:35 17:49	06:44 19:23	05:58 19:32 (9)
2	07:24 16:42	112 08:47 (7) 15:39 (6)	07:10 17:16	06:33 17:50	06:42 19:24	05:57 19:32 (9)
3	07:24 16:42	110 08:48 (7) 15:39 (6)	07:09 17:17	06:32 17:51	06:41 19:25	05:56 19:34 (9)
4	07:24 16:43	109 08:49 (7) 15:39 (6)	07:07 17:19	06:30 17:52	06:39 19:26	05:54 19:35 (9)
5	07:24 16:44	107 08:50 (7) 15:39 (6)	07:06 17:20	06:28 17:53	06:37 19:27	05:53 19:36 (9)
6	07:24 16:45	104 08:51 (7) 15:39 (6)	07:05 17:21	06:27 17:55	06:36 19:28	05:52 20:00
7	07:24 16:46	102 08:52 (7) 15:39 (6)	07:04 17:22	06:25 17:56	06:34 19:29	05:51 20:01
8	07:24 16:47	100 08:53 (7) 15:39 (6)	07:03 17:24	06:24 17:57	06:33 19:30	05:50 20:02
9	07:24 16:48	98 08:54 (7) 15:38 (6)	07:02 17:25	06:22 17:58	06:31 19:31	05:49 20:03
10	07:24 16:49	95 08:54 (7) 15:38 (6)	07:01 17:26	06:20 17:59	06:29 19:32	05:47 20:04
11	07:23 16:50	93 08:55 (7) 15:38 (6)	07:00 17:27	06:19 18:00	06:28 19:33	05:46 20:05
12	07:23 16:51	90 08:56 (7) 15:38 (6)	06:58 17:29	06:17 18:01	06:26 19:34	05:45 20:06
13	07:23 16:52	87 08:57 (7) 15:37 (6)	06:57 17:30	06:16 18:02	06:25 19:36	05:44 20:07
14	07:22 16:53	82 08:58 (7) 15:37 (6)	06:56 17:31	06:14 18:04	06:23 19:37	05:43 20:08
15	07:22 16:55	79 08:58 (7) 15:36 (6)	06:55 17:32	06:12 18:05	06:21 19:38	05:42 20:09
16	07:22 16:56	75 08:59 (7) 15:35 (6)	06:53 17:33	06:11 18:06	06:20 19:39	05:41 20:10
17	07:21 16:57	68 09:00 (7) 15:33 (6)	06:52 17:35	06:09 18:07	06:18 19:40	05:40 20:11
18	07:21 16:58	65 09:01 (7) 15:33 (6)	06:51 17:36	06:07 18:08	06:17 19:41	05:39 20:12
19	07:20 16:59	57 09:02 (7) 15:30 (6)	06:49 17:37	06:06 18:09	06:15 19:42	05:38 20:13
20	07:20 17:00	50 09:03 (7) 15:29 (6)	06:48 17:38	06:04 18:10	06:14 19:43	05:38 20:14
21	07:19 17:01	37 09:05 (7) 15:25 (6)	06:46 17:39	06:02 18:11	06:12 19:44	05:37 20:15
22	07:18 17:03	16 09:08 (7) 09:24 (7)	06:45 17:41	06:01 18:12	06:11 19:45	05:36 20:16
23	07:18 17:04		06:44 17:42	05:59 18:13	06:09 19:46	05:35 20:16
24	07:17 17:05		06:42 17:43	05:57 18:14	06:08 19:47	05:34 20:17
25	07:16 17:06		06:41 17:44	05:56 18:15	06:07 19:48	05:34 20:18
26	07:16 17:07		06:39 17:45	05:54 18:16	06:05 19:49	05:33 20:19
27	07:15 17:09		06:38 17:47	05:52 18:18	06:04 19:50	05:32 20:20
28	07:14 17:10		06:36 17:48	05:51 18:19	06:02 19:51	05:32 20:21
29	07:13 17:11			06:49 19:20	06:01 19:52	05:31 20:22
30	07:12 17:12			06:47 19:21	06:00 19:54	19:27 (9) 19:31 (9)
31	07:11 17:14			06:46 19:22		05:30 20:23
Potential sun hours	298		297	369	399	448
Total, worst case	1848			4		1165
						452
						1784

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: I - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (29)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July		August		September		October		November		December	
1	05:30		19:10 (9)	05:54	19:18 (9)	06:25	06:54	06:29	07:03	08:37 (7)		
	20:35	60	20:10 (9)	20:16	19:52 (9)	19:33	18:43	16:56	16:32	93	15:20 (6)	
2	05:31		19:10 (9)	05:55	19:19 (9)	06:26	06:55	06:30	07:04	08:37 (7)		
	20:35	59	20:09 (9)	20:15	19:51 (9)	19:31	18:41	16:55	16:31	95	15:21 (6)	
3	05:31		19:11 (9)	05:56	19:20 (9)	06:27	06:57	06:31	07:05	08:37 (7)		
	20:35	59	20:10 (9)	20:14	19:50 (9)	19:30	18:39	16:54	16:31	98	15:22 (6)	
4	05:32		19:10 (9)	05:57	19:21 (9)	06:28	06:58	06:32	07:06	08:37 (7)		
	20:34	59	20:09 (9)	20:13	19:49 (9)	19:28	18:38	16:52	16:31	100	15:23 (6)	
5	05:32		19:11 (9)	05:58	19:22 (9)	06:29	06:59	06:33	07:07	08:37 (7)		
	20:34	58	20:09 (9)	20:12	19:48 (9)	19:26	18:36	16:51	16:31	102	15:24 (6)	
6	05:33		19:10 (9)	05:59	19:23 (9)	06:30	07:00	06:34	07:08	08:37 (7)		
	20:34	58	20:08 (9)	20:10	19:47 (9)	19:25	18:34	16:50	16:31	104	15:25 (6)	
7	05:33		19:11 (9)	06:00	19:24 (9)	06:30	07:01	06:36	07:09	08:37 (7)		
	20:34	58	20:09 (9)	20:09	19:46 (9)	19:23	18:33	16:49	16:31	106	15:26 (6)	
8	05:34		19:11 (9)	06:01	19:26 (9)	06:31	07:02	06:37	07:10	08:37 (7)		
	20:33	58	20:09 (9)	20:08	19:45 (9)	19:22	18:31	16:48	16:31	108	15:27 (6)	
9	05:35		19:11 (9)	06:02	19:26 (9)	06:32	07:03	06:38	07:11	08:37 (7)		
	20:33	57	20:08 (9)	20:07	19:43 (9)	19:20	18:29	16:47	16:31	110	15:28 (6)	
10	05:35		19:11 (9)	06:03	19:28 (9)	06:33	07:04	06:39	07:12	08:37 (7)		
	20:33	57	20:08 (9)	20:05	19:42 (9)	19:18	18:28	16:46	16:31	112	15:29 (6)	
11	05:36		19:12 (9)	06:04	19:30 (9)	06:34	07:05	06:40	07:13	08:37 (7)		
	20:32	56	20:08 (9)	20:04	19:41 (9)	19:16	18:26	16:45	16:31	112	15:29 (6)	
12	05:37		19:11 (9)	06:05	19:32 (9)	06:35	07:06	06:42	07:14	08:37 (7)		
	20:32	56	20:07 (9)	20:03	19:39 (9)	19:15	18:25	16:44	16:31	114	15:30 (6)	
13	05:37		19:12 (9)	06:06	19:36 (9)	06:36	07:07	06:43	07:14	08:38 (7)		
	20:31	54	20:06 (9)	20:01	19:38 (9)	19:13	18:23	16:43	16:31	114	15:31 (6)	
14	05:38		19:12 (9)	06:07		06:37	07:08	06:44	07:15	08:38 (7)		
	20:31	54	20:06 (9)	20:00		19:11	18:21	16:42	16:31	116	15:32 (6)	
15	05:39		19:12 (9)	06:08		06:38	07:09	06:45	07:16	08:39 (7)		
	20:30	53	20:05 (9)	19:59		19:10	18:20	16:41	16:31	116	15:33 (6)	
16	05:40		19:12 (9)	06:09		06:39	07:10	06:46	07:17	08:38 (7)		
	20:30	53	20:05 (9)	19:57		19:08	18:18	16:40	16:32	117	15:32 (6)	
17	05:40		19:13 (9)	06:10		06:40	07:11	06:48	07:17	08:39 (7)		
	20:29	51	20:04 (9)	19:56		19:06	18:17	16:39	16:32	117	15:33 (6)	
18	05:41		19:13 (9)	06:11		06:41	07:13	06:49	07:18	08:39 (7)		
	20:28	51	20:04 (9)	19:54		19:05	18:15	16:39	16:32	117	15:33 (6)	
19	05:42		19:13 (9)	06:12		06:42	07:14	06:50	07:19	08:40 (7)		
	20:28	50	20:03 (9)	19:53		19:03	18:14	16:38	16:33	118	15:34 (6)	
20	05:43		19:13 (9)	06:13		06:43	07:15	06:51	07:19	08:40 (7)		
	20:27	49	20:02 (9)	19:52		19:01	18:12	16:37	16:33	119	15:35 (6)	
21	05:44		19:13 (9)	06:14		06:44	07:16	06:52	08:40 (7)	07:20	08:40 (7)	
	20:26	49	20:02 (9)	19:50		18:59	18:11	16:37	15:00 (6)	16:33	119	15:35 (6)
22	05:45		19:14 (9)	06:15		06:45	07:17	06:53	08:39 (7)	07:20	08:41 (7)	
	20:25	47	20:01 (9)	19:49		18:58	18:09	16:36	15:05 (6)	16:34	119	15:36 (6)
23	05:46		19:14 (9)	06:16		06:46	07:18	06:55	08:39 (7)	07:21	08:41 (7)	
	20:25	46	20:00 (9)	19:47		18:56	18:08	16:35	15:07 (6)	16:34	119	15:36 (6)
24	05:46		19:15 (9)	06:17		06:47	07:19	06:56	08:38 (7)	07:21	08:41 (7)	
	20:24	45	20:00 (9)	19:46		18:54	18:07	16:35	15:10 (6)	16:35	119	15:36 (6)
25	05:47		19:15 (9)	06:18		06:48	06:20	06:57	08:38 (7)	07:22	08:43 (7)	
	20:23	44	19:59 (9)	19:44		18:53	17:05	16:34	15:11 (6)	16:36	117	15:37 (6)
26	05:48		19:16 (9)	06:19		06:49	06:22	06:58	08:38 (7)	07:22	08:43 (7)	
	20:22	42	19:58 (9)	19:43		18:51	17:04	16:34	15:13 (6)	16:36	117	15:37 (6)
27	05:49		19:15 (9)	06:20		06:50	06:23	06:59	08:37 (7)	07:22	08:43 (7)	
	20:21	42	19:57 (9)	19:41		18:49	17:02	16:33	15:15 (6)	16:37	117	15:37 (6)
28	05:50		19:16 (9)	06:21		06:51	06:24	07:00	08:38 (7)	07:23	08:45 (7)	
	20:20	40	19:56 (9)	19:39		18:48	17:01	16:33	15:17 (6)	16:37	116	15:39 (6)
29	05:51		19:16 (9)	06:22		06:52	06:25	07:01	08:37 (7)	07:23	08:45 (7)	
	20:19	39	19:55 (9)	19:38		18:46	17:00	16:32	15:18 (6)	16:38	116	15:39 (6)
30	05:52		19:17 (9)	06:23		06:53	06:26	07:02	08:37 (7)	07:23	08:45 (7)	
	20:18	37	19:54 (9)	19:36		18:44	16:59	16:32	15:19 (6)	16:39	116	15:39 (6)
31	05:53		19:18 (9)	06:24			06:27		07:24	08:46 (7)		
	20:17	35	19:53 (9)	19:35			16:57		16:40	114	15:39 (6)	
Potential sun hours	459		428		375	345	298		288	3477		
Total, worst case	1576		266				703					

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: J - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (30)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June			
1	07:24 16:41	94 16:15 (6)	07:10 17:15	112 16:41 (6)	06:35 17:49	67 15:15 (6)	06:44 19:23	05:58 19:55	20:24 20:24
2	07:24 16:42	94 16:15 (6)	07:10 17:16	112 16:41 (6)	06:33 17:50	63 16:20 (6)	06:42 19:24	05:57 19:56	05:29 20:25
3	07:24 16:42	94 16:16 (6)	07:09 17:17	112 16:41 (6)	06:32 17:51	58 16:17 (6)	06:41 19:25	05:56 19:57	05:29 20:25
4	07:24 16:43	95 16:17 (6)	07:07 17:19	111 16:41 (6)	06:30 17:52	54 16:16 (6)	06:39 19:26	05:54 19:58	05:28 20:26
5	07:24 16:44	96 16:18 (6)	07:06 17:20	111 16:41 (6)	06:28 17:53	48 16:12 (6)	06:37 19:27	05:53 19:59	05:28 20:27
6	07:24 16:45	96 16:19 (6)	07:05 17:21	110 16:41 (6)	06:27 17:55	42 16:10 (6)	06:36 19:28	05:52 20:00	05:28 20:27
7	07:24 16:46	97 16:20 (6)	07:04 17:22	110 16:41 (6)	06:25 17:56	35 16:06 (6)	06:34 19:29	05:51 20:01	05:27 20:28
8	07:24 16:47	98 16:22 (6)	07:03 17:24	109 16:41 (6)	06:24 17:57	24 16:00 (6)	06:33 19:30	05:50 20:02	05:27 20:29
9	07:24 16:48	99 16:23 (6)	07:02 17:25	108 16:41 (6)	06:22 17:58	3 15:50 (6)	06:31 19:31	05:49 20:03	05:27 20:29
10	07:24 16:49	100 16:23 (6)	07:01 17:26	107 16:40 (6)	06:20 17:59		06:29 19:32	05:47 20:04	05:27 20:30
11	07:23 16:50	101 16:25 (6)	07:00 17:27	106 16:40 (6)	06:19 18:00		06:28 19:33	05:46 20:05	05:26 20:30
12	07:23 16:51	101 16:26 (6)	06:58 17:29	104 16:39 (6)	06:17 18:01		06:26 19:34	05:45 20:06	05:26 20:31
13	07:23 16:52	103 16:27 (6)	06:57 17:30	103 16:39 (6)	06:16 18:02		06:25 19:36	05:44 20:07	05:26 20:31
14	07:22 16:53	103 16:28 (6)	06:56 17:31	102 16:38 (6)	06:14 18:04		06:23 19:37	05:43 20:08	05:26 20:32
15	07:22 16:55	105 16:29 (6)	06:55 17:32	101 16:38 (6)	06:12 18:05		06:21 19:38	05:42 20:09	05:26 20:32
16	07:22 16:56	106 16:31 (6)	06:53 17:33	100 16:38 (6)	06:11 18:06		06:20 19:39	05:41 20:10	05:26 20:33
17	07:21 16:57	106 16:31 (6)	06:52 17:35	98 16:36 (6)	06:09 18:07		06:18 19:40	05:40 20:11	05:26 20:33
18	07:21 16:58	107 16:33 (6)	06:51 17:36	96 16:36 (6)	06:07 18:08		06:17 19:41	05:39 20:12	05:26 20:33
19	07:20 16:59	109 16:34 (6)	06:49 17:37	94 16:34 (6)	06:06 18:09		06:15 19:42	05:38 20:13	05:26 20:34
20	07:20 17:00	110 16:36 (6)	06:48 17:38	93 16:34 (6)	06:04 18:10		06:14 19:43	05:38 20:14	05:27 20:34
21	07:19 17:01	111 16:37 (6)	06:46 17:39	90 16:33 (6)	06:02 18:11		06:12 19:44	05:37 20:15	05:27 20:34
22	07:18 17:03	112 16:38 (6)	06:45 17:41	88 16:32 (6)	06:01 18:12		06:11 19:45	05:36 20:16	05:27 20:34
23	07:18 17:04	112 16:38 (6)	06:44 17:42	86 16:31 (6)	05:59 18:13		06:09 19:46	05:35 20:16	05:27 20:35
24	07:17 17:05	113 16:40 (6)	06:42 17:43	83 16:29 (6)	05:57 18:14		06:08 19:47	05:34 20:17	05:27 20:35
25	07:16 17:06	113 16:40 (6)	06:41 17:44	81 16:29 (6)	05:56 18:15		06:07 19:48	05:34 20:18	05:28 20:35
26	07:16 17:07	113 16:40 (6)	06:39 17:45	78 16:27 (6)	05:54 18:16		06:05 19:49	05:33 20:19	05:28 20:35
27	07:15 17:09	113 16:40 (6)	06:38 17:47	75 16:26 (6)	05:52 18:18		06:04 19:50	05:32 20:20	05:28 20:35
28	07:14 17:10	113 16:40 (6)	06:36 17:48	71 16:24 (6)	05:51 18:19		06:02 19:51	05:32 20:21	05:29 20:35
29	07:13 17:11	113 16:40 (6)	06:35 17:49		05:50 18:20		06:01 19:52	05:31 20:22	05:29 20:35
30	07:12 17:12	112 16:40 (6)	06:34 17:50		05:49 18:21		06:00 19:53	05:31 20:23	05:30 20:35
31	07:11 17:14	112 16:41 (6)	06:33 17:51		05:48 18:22		05:30 19:54	05:30 20:24	05:30 20:35
Potential sun hours	298		297		369		399	448	452
Total, worst case	3251		2751		394				

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: J - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (30)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December	
1	05:30 20:35	05:54 20:16	06:25 19:33	06:54 18:43	06:29 16:56	14:22 (6) 07:03 16:09 (6) 16:32	14:26 (6) 16:07 (6)
2	05:31 20:35	05:55 20:15	06:26 19:31	06:55 18:41	06:30 16:55	14:22 (6) 07:04 16:10 (6) 16:31	14:26 (6) 16:06 (6)
3	05:31 20:35	05:56 20:14	06:27 19:30	06:57 18:39	06:31 16:54	14:22 (6) 07:05 16:11 (6) 16:31	14:27 (6) 16:06 (6)
4	05:32 20:34	05:57 20:13	06:28 19:28	06:58 18:38	06:32 16:52	14:21 (6) 07:06 16:11 (6) 16:31	14:28 (6) 16:06 (6)
5	05:32 20:34	05:58 20:12	06:29 19:26	06:59 18:36	16:17 (6) 06:33 16:35 (6) 16:51	14:21 (6) 07:07 16:11 (6) 16:31	14:28 (6) 16:06 (6)
6	05:33 20:34	05:59 20:10	06:30 19:25	07:00 18:34	16:10 (6) 06:34 16:40 (6) 16:50	14:20 (6) 07:08 16:11 (6) 16:31	14:29 (6) 16:05 (6)
7	05:33 20:34	06:00 20:09	06:31 19:23	07:01 18:33	16:05 (6) 06:36 16:44 (6) 16:49	14:20 (6) 07:09 16:12 (6) 16:31	14:29 (6) 16:05 (6)
8	05:34 20:33	06:01 20:08	06:31 19:22	07:02 18:31	16:01 (6) 06:37 16:47 (6) 16:48	14:20 (6) 07:10 16:12 (6) 16:31	14:30 (6) 16:05 (6)
9	05:35 20:33	06:02 20:07	06:32 19:20	07:03 18:29	15:58 (6) 06:38 16:49 (6) 16:47	14:20 (6) 07:11 16:11 (6) 16:31	14:31 (6) 16:05 (6)
10	05:35 20:33	06:03 20:05	06:33 19:18	07:04 18:28	15:55 (6) 06:39 16:51 (6) 16:46	14:20 (6) 07:12 16:12 (6) 16:31	14:31 (6) 16:06 (6)
11	05:36 20:32	06:04 20:04	06:34 19:16	07:05 18:26	15:52 (6) 06:40 16:53 (6) 16:45	14:20 (6) 07:13 16:12 (6) 16:31	14:31 (6) 16:06 (6)
12	05:37 20:32	06:05 20:03	06:35 19:15	07:06 18:25	15:49 (6) 06:42 16:54 (6) 16:44	14:20 (6) 07:14 16:12 (6) 16:31	14:32 (6) 16:05 (6)
13	05:37 20:31	06:06 20:01	06:36 19:13	07:07 18:23	15:47 (6) 06:43 16:55 (6) 16:43	14:19 (6) 07:14 16:12 (6) 16:31	14:33 (6) 16:05 (6)
14	05:38 20:31	06:07 20:00	06:37 19:11	07:08 18:21	15:44 (6) 06:44 16:57 (6) 16:42	14:20 (6) 07:15 16:13 (6) 16:31	14:33 (6) 16:06 (6)
15	05:39 20:30	06:08 19:59	06:38 19:10	07:09 18:20	15:43 (6) 06:45 16:59 (6) 16:41	14:20 (6) 07:16 16:13 (6) 16:31	14:34 (6) 16:06 (6)
16	05:40 20:30	06:09 19:57	06:39 19:08	07:10 18:18	15:41 (6) 06:46 17:00 (6) 16:40	14:20 (6) 07:17 16:13 (6) 16:32	14:34 (6) 16:06 (6)
17	05:41 20:29	06:10 19:56	06:40 19:06	07:11 18:17	15:39 (6) 06:48 17:01 (6) 16:39	14:20 (6) 07:17 16:13 (6) 16:32	14:35 (6) 16:06 (6)
18	05:41 20:28	06:11 19:54	06:41 19:05	07:13 18:15	15:37 (6) 06:49 17:01 (6) 16:39	14:21 (6) 07:18 16:13 (6) 16:32	14:35 (6) 16:06 (6)
19	05:42 20:28	06:12 19:53	06:42 19:03	07:14 18:14	15:35 (6) 06:50 17:02 (6) 16:38	14:21 (6) 07:19 16:13 (6) 16:33	14:36 (6) 16:07 (6)
20	05:43 20:27	06:13 19:52	06:43 19:01	07:15 18:12	15:34 (6) 06:51 17:03 (6) 16:37	14:21 (6) 07:19 16:13 (6) 16:33	14:37 (6) 16:08 (6)
21	05:44 20:26	06:14 19:50	06:44 18:59	07:16 18:11	15:33 (6) 06:52 17:04 (6) 16:37	14:21 (6) 07:20 16:12 (6) 16:33	14:37 (6) 16:07 (6)
22	05:45 20:25	06:15 19:49	06:45 18:58	07:17 18:09	15:32 (6) 06:53 17:05 (6) 16:36	14:22 (6) 07:20 16:12 (6) 16:34	14:38 (6) 16:08 (6)
23	05:46 20:25	06:16 19:47	06:46 18:56	07:18 18:08	15:30 (6) 06:55 17:05 (6) 16:35	14:22 (6) 07:21 16:11 (6) 16:34	14:38 (6) 16:09 (6)
24	05:46 20:24	06:17 19:46	06:47 18:54	07:19 18:07	15:29 (6) 06:56 17:06 (6) 16:35	14:23 (6) 07:21 16:10 (6) 16:35	14:38 (6) 16:09 (6)
25	05:47 20:23	06:18 19:44	06:48 18:53	07:20 17:05	14:28 (6) 06:57 16:06 (6) 16:34	14:23 (6) 07:22 16:09 (6) 16:36	14:39 (6) 16:10 (6)
26	05:48 20:22	06:19 19:43	06:49 18:51	07:22 17:04	14:27 (6) 06:58 16:07 (6) 16:34	14:23 (6) 07:22 16:09 (6) 16:36	14:39 (6) 16:10 (6)
27	05:49 20:21	06:20 19:41	06:50 18:49	07:23 17:02	14:26 (6) 06:59 16:08 (6) 16:33	14:23 (6) 07:22 16:08 (6) 16:37	14:39 (6) 16:11 (6)
28	05:50 20:20	06:21 19:39	06:51 18:48	07:24 17:01	14:25 (6) 07:00 16:08 (6) 16:33	14:25 (6) 07:23 16:08 (6) 16:37	14:40 (6) 16:12 (6)
29	05:51 20:19	06:22 19:38	06:52 18:46	07:25 17:00	14:24 (6) 07:01 16:08 (6) 16:32	14:25 (6) 07:23 16:08 (6) 16:38	14:40 (6) 16:12 (6)
30	05:52 20:18	06:23 19:36	06:53 18:44	07:26 16:59	14:24 (6) 07:02 16:09 (6) 16:32	14:26 (6) 07:23 16:07 (6) 16:39	14:41 (6) 16:13 (6)
31	05:53 20:17	06:24 19:35	06:54 18:43	07:27 16:57	14:23 (6) 07:03 16:09 (6)	07:24 16:40	14:41 (6) 16:14 (6)
Potential sun hours	459	428	375	345	298	288	2897
Total, worst case				2098	3288		

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: K - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (31)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December			
1	07:24 16:41	07:11 17:15	06:35 17:49	07:09 (7) 19:23	06:44 19:55	05:58 20:24	05:30 20:35	05:54 20:16	06:25 19:33	06:54 18:43	07:48 (7) 08:16 (7)	06:29 16:56	07:03 16:32		
2	07:24 16:42	07:10 17:16	06:33 17:50	07:08 (7) 19:24	06:42 19:56	05:57 20:25	05:29 20:35	05:51 20:15	06:26 19:31	06:55 18:41	07:47 (7) 08:18 (7)	06:30 16:55	07:04 16:31		
3	07:24 16:42	07:09 17:17	06:32 17:51	07:08 (7) 19:25	06:41 19:57	05:56 20:25	05:29 20:35	05:51 20:14	06:27 19:30	06:57 18:39	07:46 (7) 08:18 (7)	06:31 16:54	07:05 16:31		
4	07:24 16:43	07:08 17:19	06:30 17:52	07:07 (7) 19:26	06:39 19:58	05:55 20:26	05:28 20:34	05:57 20:13	06:28 19:28	06:58 18:38	07:45 (7) 08:19 (7)	06:32 16:52	07:06 16:31		
5	07:24 16:44	07:06 17:20	06:28 17:53	07:06 (7) 19:27	06:37 19:59	05:53 20:27	05:28 20:34	05:58 20:12	06:29 19:27	06:59 18:36	07:44 (7) 08:19 (7)	06:33 16:51	07:07 16:31		
6	07:24 16:45	07:05 17:21	06:27 17:55	07:07 (7) 19:28	06:36 20:00	05:52 20:28	05:28 20:34	05:59 20:10	06:30 19:25	07:00 18:34	07:43 (7) 08:19 (7)	06:34 16:50	07:08 16:31		
7	07:24 16:46	07:04 17:22	06:25 17:56	07:06 (7) 19:29	06:34 20:01	05:51 20:29	05:27 20:34	06:00 20:09	06:31 19:23	07:01 18:33	07:43 (7) 08:19 (7)	06:36 16:49	07:09 16:31		
8	07:24 16:47	07:03 17:24	06:24 17:57	07:06 (7) 19:30	06:33 20:02	05:50 20:29	05:27 20:33	06:01 20:08	06:32 19:22	07:02 18:31	07:42 (7) 08:19 (7)	06:37 16:48	07:10 16:31		
9	07:24 16:48	07:02 17:25	06:22 17:58	07:07 (7) 19:31	06:31 20:03	05:49 20:29	05:27 20:33	06:02 20:07	06:32 19:20	07:03 18:29	07:42 (7) 08:17 (7)	06:38 16:47	07:11 16:31		
10	07:24 16:49	07:01 17:26	06:21 17:59	07:07 (7) 19:32	06:29 20:04	05:47 20:30	05:27 20:33	06:03 20:05	06:33 19:18	07:04 18:28	07:42 (7) 08:15 (7)	06:39 16:46	07:12 16:31		
11	07:23 16:50	07:00 17:27	06:19 18:00	07:08 (7) 19:33	06:28 20:05	05:46 20:30	05:27 20:32	06:04 20:04	06:34 19:16	07:05 18:26	07:41 (7) 08:14 (7)	06:40 16:45	07:13 16:31		
12	07:23 16:51	06:58 17:29	06:17 18:01	07:08 (7) 19:34	06:26 20:06	05:45 20:31	05:27 20:32	06:05 20:03	06:35 19:15	07:06 18:25	07:41 (7) 08:12 (7)	06:42 16:44	07:14 16:31		
13	07:23 16:52	06:57 17:30	06:16 18:02	07:09 (7) 19:36	06:25 20:07	05:44 20:31	05:26 20:31	06:06 20:01	06:36 19:13	07:07 18:23	07:42 (7) 08:10 (7)	06:43 16:43	07:14 16:31		
14	07:22 16:53	06:56 17:31	06:14 18:04	06:36 (8) 19:37	06:23 20:08	05:43 20:32	05:26 20:31	06:07 20:00	06:37 19:11	07:08 18:21	07:43 (7) 08:09 (7)	06:44 16:42	07:15 16:31		
15	07:22 16:55	06:55 17:32	06:12 18:05	06:33 (8) 19:38	06:21 20:09	05:42 20:32	05:26 20:30	06:08 19:59	06:38 19:10	07:09 18:20	07:44 (7) 08:07 (7)	06:45 16:41	07:16 16:31		
16	07:22 16:56	06:53 17:33	06:11 18:06	06:31 (8) 19:39	06:20 20:10	05:41 20:33	05:26 20:30	06:09 19:57	06:39 19:08	07:10 18:18	07:44 (7) 08:05 (7)	06:46 16:40	07:17 16:32		
17	07:21 16:57	06:52 17:35	06:09 18:07	06:30 (8) 19:40	06:18 20:11	05:40 20:33	05:26 20:29	06:10 19:56	06:40 19:06	07:11 18:17	07:45 (7) 08:03 (7)	06:48 16:40	07:17 16:32		
18	07:21 16:58	06:51 17:36	06:07 18:08	06:29 (8) 19:41	06:17 20:12	05:39 20:33	05:26 20:28	06:11 19:55	06:41 19:05	07:12 (8) 07:25 (8)	07:47 (7) 08:15 (8)	06:49 16:39	07:18 16:32		
19	07:20 16:59	06:49 17:37	06:06 18:09	06:28 (8) 19:42	06:15 20:13	05:38 20:34	05:26 20:28	06:12 19:53	06:42 19:03	07:13 (8) 07:29 (8)	07:48 (7) 08:14 (8)	06:50 16:38	07:19 16:33		
20	07:20 17:00	06:48 17:38	06:04 18:10	06:29 (8) 19:43	06:14 20:14	05:38 20:34	05:27 20:27	06:13 19:52	06:43 19:01	07:15 (8) 07:29 (8)	07:15 (8) 08:12 (8)	06:51 16:37	07:19 16:33		
21	07:19 17:01	06:46 17:40	06:02 18:11	06:28 (8) 19:44	06:12 20:15	05:37 20:34	05:27 20:26	06:14 19:50	06:44 19:00	07:14 (8) 07:30 (8)	07:16 (8) 08:11 (8)	06:52 16:37	07:20 16:33		
22	07:18 17:03	06:45 17:41	06:01 18:12	06:28 (8) 19:45	06:11 20:16	05:36 20:34	05:27 20:25	06:15 19:49	06:45 18:58	07:13 (8) 07:30 (8)	07:17 (8) 08:09 (8)	06:53 16:34	07:20 16:34		
23	07:18 17:04	06:44 17:42	06:00 18:13	06:29 (8) 19:46	06:09 20:17	05:35 20:35	05:27 20:25	06:16 19:47	06:46 18:56	07:12 (8) 07:30 (8)	07:18 (8) 08:08 (8)	06:55 16:35	07:21 16:34		
24	07:17 17:05	06:42 17:43	06:00 18:14	06:30 (8) 19:47	06:08 20:17	05:34 20:35	05:27 20:24	06:17 19:46	06:47 18:54	07:12 (8) 07:30 (8)	07:19 (8) 08:07 (8)	06:56 16:35	07:21 16:35		
25	07:16 17:06	06:41 17:44	06:00 18:15	06:33 (8) 19:48	06:07 20:18	05:34 20:35	05:28 20:23	06:18 19:44	06:48 18:53	07:11 (8) 07:29 (8)	07:18 (8) 08:05 (8)	06:57 16:34	07:22 16:36		
26	07:16 17:08	06:39 17:45	06:00 18:16	06:33 (8) 19:49	06:06 20:19	05:34 20:35	05:28 20:22	06:19 19:43	06:49 18:51	07:11 (8) 07:29 (8)	07:18 (8) 08:05 (8)	06:58 16:34	07:22 16:36		
27	07:15 17:09	06:38 17:47	06:00 18:18	06:34 (8) 19:50	06:05 20:20	05:34 20:35	05:28 20:21	06:20 19:41	06:50 18:49	07:12 (8) 08:08 (7)	07:19 (8) 08:06 (7)	06:59 16:33	07:22 16:37		
28	07:14 17:10	06:36 17:48	06:00 18:19	06:35 (8) 19:51	06:04 20:21	05:34 20:35	05:29 20:20	06:21 19:39	06:51 18:48	07:13 (8) 08:12 (7)	07:20 (8) 08:07 (7)	07:00 16:33	07:23 16:37		
29	07:13 17:11		06:00 19:20	06:36 (8) 19:52	06:03 20:22	05:34 20:35	05:29 20:19	06:22 19:38	06:52 18:46	07:14 (8) 08:14 (7)	07:21 (8) 08:08 (7)	07:01 16:32	07:23 16:38		
30	07:12 17:12		06:00 19:21	06:37 (8) 19:53	06:02 20:22	05:34 20:35	05:30 20:18	06:23 19:36	06:53 18:44	07:15 (8) 08:15 (7)	07:22 (8) 08:09 (7)	07:02 16:32	07:23 16:39		
31	07:11 17:14		06:00 19:22	06:38 (8) 19:54	06:01 20:23	05:34 20:35	05:31 20:17	06:24 19:35	06:54 18:45	07:16 (8) 08:16 (7)	07:23 (8) 08:10 (7)	07:03 16:33	07:24 16:40		
Potential sun hours	298	297	369	658	399	448	452	459	428	375	247	345	549	298	288
Total, worst case		127													

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

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

## SHADOW - Calendar

Calculation: ShadowShadow receptor: L - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (32)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:24 16:41	07:11 17:15	06:35 17:49	07:13 (7) 19:23	06:44 19:55	05:58 20:24	05:30 20:35	05:54 20:16	06:25 19:33	06:54 18:43	07:18 (8) 08:17 (7)	06:29 16:56	07:03 16:32
2	07:24 16:42	07:10 17:16	06:33 17:50	07:12 (7) 19:24	06:42 19:56	05:57 20:25	05:31 20:35	05:55 20:15	06:26 19:31	06:55 18:41	07:56 (7) 08:20 (7)	06:30 16:55	07:04 16:31
3	07:24 16:42	07:09 17:17	06:32 17:51	07:12 (7) 19:25	06:41 19:57	05:56 20:25	05:31 20:35	05:56 20:14	06:27 19:30	06:57 18:39	07:54 (7) 08:21 (7)	06:31 16:54	07:05 16:31
4	07:24 16:43	07:08 17:19	06:30 17:52	07:12 (7) 19:26	06:39 19:58	05:55 20:26	05:32 20:34	05:57 20:13	06:28 19:28	06:58 18:38	07:52 (7) 08:22 (7)	06:32 16:52	07:06 16:31
5	07:24 16:44	07:06 17:20	06:28 17:53	07:12 (7) 19:27	06:37 19:59	05:53 20:27	05:32 20:34	05:58 20:12	06:29 19:27	06:59 18:36	07:51 (7) 08:23 (7)	06:33 16:51	07:07 16:31
6	07:24 16:45	07:05 17:21	06:27 17:55	07:12 (7) 19:28	06:36 20:00	05:52 20:28	05:33 20:34	05:59 20:10	06:30 19:25	07:00 18:34	07:49 (7) 08:23 (7)	06:34 16:50	07:08 16:31
7	07:24 16:46	07:04 17:22	06:25 17:56	07:12 (7) 19:29	06:34 20:01	05:51 20:29	05:33 20:34	06:00 20:09	06:31 19:23	07:01 18:33	07:48 (7) 08:21 (7)	06:36 16:49	07:09 16:31
8	07:24 16:47	07:03 17:24	06:24 17:57	07:13 (7) 19:30	06:33 20:02	05:50 20:29	05:34 20:33	06:01 20:08	06:32 19:22	07:02 18:31	07:48 (7) 08:19 (7)	06:37 16:48	07:10 16:31
9	07:24 16:48	07:02 17:25	06:22 17:58	07:14 (7) 19:31	06:31 20:03	05:49 20:29	05:35 20:33	06:02 20:07	06:32 19:20	07:03 18:29	07:47 (7) 08:17 (7)	06:38 16:47	07:11 16:31
10	07:24 16:49	07:01 17:26	06:21 17:59	07:15 (7) 19:32	06:29 20:04	05:47 20:30	05:35 20:33	06:03 20:05	06:33 19:18	07:04 18:28	07:46 (7) 08:15 (7)	06:39 16:46	07:12 16:31
11	07:23 16:50	07:00 17:27	06:19 18:00	07:16 (7) 19:33	06:28 20:05	05:46 20:30	05:36 20:32	06:04 20:04	06:34 19:16	07:05 18:26	07:46 (7) 08:14 (7)	06:40 16:45	07:13 16:31
12	07:23 16:51	06:58 17:29	06:17 18:01	07:18 (7) 19:34	06:26 20:06	05:45 20:31	05:37 20:32	06:05 20:03	06:35 19:15	07:06 18:25	07:45 (7) 08:12 (7)	06:42 16:44	07:14 16:31
13	07:23 16:52	06:57 17:30	06:16 18:02	06:36 (8) 19:36	06:25 20:07	05:44 20:31	05:37 20:31	06:06 20:01	06:36 19:13	07:07 18:23	07:45 (7) 08:10 (7)	06:43 16:43	07:14 16:31
14	07:22 16:53	06:56 17:31	06:14 18:04	06:35 (8) 19:37	06:23 20:08	05:43 20:32	05:38 20:31	06:07 20:00	06:37 19:11	07:08 18:21	07:46 (7) 08:09 (7)	06:44 16:42	07:15 16:31
15	07:22 16:55	06:55 17:32	06:12 18:05	06:33 (8) 19:38	06:21 20:09	05:42 20:32	05:39 20:30	06:08 19:59	06:38 19:10	07:09 18:20	07:46 (7) 08:07 (7)	06:45 16:41	07:16 16:31
16	07:22 16:56	06:53 17:33	06:11 18:06	06:31 (8) 19:39	06:20 20:10	05:41 20:33	05:40 20:30	06:09 19:57	06:39 19:08	07:10 18:18	07:46 (7) 08:05 (7)	06:46 16:40	07:17 16:32
17	07:21 16:57	06:52 17:35	06:09 18:07	06:31 (8) 19:40	06:18 20:11	05:40 20:33	05:41 20:29	06:10 19:56	06:40 19:06	07:11 18:17	07:46 (7) 08:03 (7)	06:48 16:40	07:17 16:32
18	07:21 16:58	06:51 17:36	06:07 18:08	06:30 (8) 19:41	06:17 20:12	05:39 20:33	05:41 20:28	06:11 19:55	06:41 19:05	07:12 18:15	07:47 (7) 08:01 (7)	06:49 16:39	07:18 16:32
19	07:20 16:59	06:49 17:37	06:06 18:09	06:30 (8) 19:42	06:15 20:13	05:38 20:34	05:42 20:28	06:12 19:53	06:42 19:03	07:14 18:14	07:47 (7) 07:59 (7)	06:50 16:38	07:19 16:33
20	07:20 17:00	06:48 17:38	06:04 18:10	06:30 (8) 19:43	06:14 20:14	05:38 20:34	05:43 20:27	06:03 19:52	06:43 19:01	07:15 (8) 07:29 (8)	07:47 (7) 08:12	06:51 16:37	07:19 16:33
21	07:19 17:01	06:46 17:40	06:02 18:11	06:30 (8) 19:44	06:12 20:15	05:37 20:34	05:44 20:26	06:14 19:50	06:44 19:00	07:18 (8) 07:30 (8)	07:47 (7) 07:57 (7)	06:52 16:37	07:20 16:33
22	07:18 17:03	06:45 17:41	06:01 18:12	06:31 (8) 19:45	06:11 20:16	05:36 20:34	05:45 20:25	06:15 19:49	06:45 18:58	07:19 (8) 07:31 (8)	07:47 (7) 08:09	06:53 16:36	07:20 16:34
23	07:18 17:04	06:44 17:42	06:00 18:13	06:33 (8) 19:46	06:09 20:17	05:35 20:35	05:46 20:25	06:16 19:47	06:46 18:56	07:14 (8) 07:32 (8)	07:48 (7) 08:18	06:55 16:35	07:21 16:34
24	07:17 17:05	06:42 17:43	06:00 18:14	06:35 (8) 19:47	06:08 20:17	05:34 20:35	05:46 20:24	06:17 19:46	06:47 18:54	07:13 (8) 07:32 (8)	07:49 (7) 08:17	06:56 16:35	07:21 16:35
25	07:16 17:06	06:41 17:44	06:00 18:15	06:34 (8) 19:48	06:07 20:18	05:34 20:35	05:47 20:23	06:18 19:44	06:48 18:53	07:13 (8) 07:31 (8)	07:48 (7) 08:15	06:57 16:34	07:22 16:36
26	07:16 17:08	06:39 17:45	06:00 18:16	06:33 (8) 19:49	06:05 20:19	05:33 20:35	05:48 20:22	06:19 19:43	06:49 18:51	07:12 (8) 07:31 (8)	07:48 (7) 08:14	06:58 16:34	07:22 16:36
27	07:15 17:09	06:38 17:47	06:00 18:18	06:32 (8) 19:50	06:04 20:20	05:32 20:35	05:49 20:21	06:20 19:41	06:50 18:49	07:12 (8) 07:30 (8)	07:48 (7) 08:12	06:59 16:33	07:22 16:37
28	07:14 17:10	06:36 17:48	06:00 18:19	06:32 (8) 19:51	06:02 20:21	05:32 20:35	05:50 20:20	06:21 19:39	06:51 18:48	07:13 (8) 07:29 (8)	07:48 (7) 08:11	07:00 16:33	07:23 16:37
29	07:13 17:11		06:49 19:20	06:31 (8) 19:52	06:01 20:22	05:31 20:35	05:51 20:19	06:22 19:38	06:52 18:46	07:14 (8) 07:28 (8)	07:49 (7) 08:11	07:01 16:32	07:23 16:38
30	07:12 17:12		06:47 19:21	06:30 (8) 19:54	06:00 20:22	05:30 20:35	05:52 20:18	06:23 19:36	06:53 18:44	07:15 (8) 08:15 (7)	07:49 (7) 08:11	07:02 16:32	07:23 16:39
31	07:11 17:14		06:46 19:22	06:30 (8) 19:23	06:00 20:23	05:30 20:35	05:53 20:17	06:24 19:35	06:54 18:44	07:16 (8) 08:16 (7)	07:50 (7) 08:12	07:03 16:32	07:24 16:40
Potential sun hours	298	297	369	399	448	452	459	428	375	187	345	298	288
Total, worst case		133		548						500			

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

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

## SHADOW - Calendar

Calculation: ShadowShadow receptor: M - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (33)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June				
1	07:24	07:11	07:48 (7)	06:35	06:44	07:44 (9)	05:30	08:14 (9)		
	16:41	17:15	26 08:14 (7)	17:49	19:23	112 09:36 (9)	19:55	93 09:14 (9)	21 20:24	08:35 (9)
2	07:24	07:10	07:49 (7)	06:33	06:42	07:44 (9)	05:57	07:41 (9)	05:29	08:17 (9)
	16:42	17:16	25 08:14 (7)	17:50	19:24	112 09:36 (9)	19:56	91 09:12 (9)	20:25	16 08:33 (9)
3	07:24	07:09	07:49 (7)	06:32	06:41	07:43 (9)	05:56	07:42 (9)	05:29	08:20 (9)
	16:42	17:17	23 08:12 (7)	17:51	19:25	113 09:36 (9)	19:57	90 09:12 (9)	20:25	10 08:30 (9)
4	07:24	07:08	07:50 (7)	06:30	06:39	07:43 (9)	05:55	07:42 (9)	05:28	
	16:43	17:19	21 08:11 (7)	17:52	19:26	113 09:36 (9)	19:58	89 09:11 (9)	20:26	
5	07:24	07:06	07:51 (7)	06:28	07:39 (9)	06:37	07:42 (9)	05:53	07:43 (9)	05:28
	16:44	17:20	19 08:10 (7)	17:53	20 07:59 (9)	19:27	113 09:35 (9)	19:59	87 09:10 (9)	20:27
6	07:24	07:05	07:53 (7)	06:27	07:32 (9)	06:36	07:41 (9)	05:52	07:44 (9)	05:28
	16:45	17:21	16 08:09 (7)	17:55	34 08:06 (9)	19:28	113 09:34 (9)	20:00	85 09:09 (9)	20:28
7	07:24	07:04	07:56 (7)	06:25	07:27 (9)	06:34	07:41 (9)	05:51	07:44 (9)	05:27
	16:46	17:22	11 08:07 (7)	17:56	43 08:10 (9)	19:29	114 09:35 (9)	20:01	83 09:07 (9)	20:28
8	07:24	07:03	06:24	06:24	07:24 (9)	06:33	07:40 (9)	05:50	07:44 (9)	05:27
	16:47	17:24	17:57	50 08:14 (9)	19:30	114 09:34 (9)	20:02	82 09:06 (9)	20:29	
9	07:24	07:02	06:22	06:22	07:20 (9)	06:31	07:40 (9)	05:49	07:45 (9)	05:27
	16:48	17:25	17:58	57 08:17 (9)	19:31	113 09:33 (9)	20:03	80 09:05 (9)	20:29	
10	07:24	07:01	06:21	06:21	07:17 (9)	06:29	07:40 (9)	05:47	07:46 (9)	05:27
	16:49	17:26	17:59	62 08:19 (9)	19:32	113 09:33 (9)	20:04	78 09:04 (9)	20:30	
11	07:23	07:51 (7)	07:00	06:19	07:15 (9)	06:28	07:39 (9)	05:46	07:47 (9)	05:27
	16:50	8 07:59 (7)	17:27	18:00	67 08:22 (9)	19:33	113 09:32 (9)	20:05	76 09:03 (9)	20:30
12	07:23	07:50 (7)	06:58	06:17	07:12 (9)	06:26	07:39 (9)	05:45	07:48 (9)	05:26
	16:51	11 08:01 (7)	17:29	18:01	71 08:23 (9)	19:35	113 09:32 (9)	20:06	74 09:02 (9)	20:31
13	07:23	07:48 (7)	06:57	06:16	07:10 (9)	06:25	07:39 (9)	05:44	07:49 (9)	05:26
	16:52	14 08:02 (7)	17:30	18:02	75 08:25 (9)	19:36	111 09:30 (9)	20:07	71 09:00 (9)	20:31
14	07:22	07:48 (7)	06:56	06:14	07:08 (9)	06:23	07:39 (9)	05:43	07:49 (9)	05:26
	16:53	16 08:04 (7)	17:31	18:04	79 08:27 (9)	19:37	111 09:30 (9)	20:08	70 08:59 (9)	20:32
15	07:22	07:47 (7)	06:55	06:12	07:06 (9)	06:21	07:38 (9)	05:42	07:50 (9)	05:26
	16:55	18 08:05 (7)	17:32	18:05	82 08:28 (9)	19:38	111 09:29 (9)	20:09	68 08:58 (9)	20:32
16	07:22	07:47 (7)	06:53	06:11	07:04 (9)	06:20	07:39 (9)	05:41	07:51 (9)	05:26
	16:56	20 08:07 (7)	17:34	18:06	85 08:29 (9)	19:39	110 09:29 (9)	20:10	66 08:57 (9)	20:33
17	07:21	07:46 (7)	06:52	06:09	07:03 (9)	06:18	07:38 (9)	05:40	07:53 (9)	05:26
	16:57	22 08:08 (7)	17:35	18:07	88 08:31 (9)	19:40	109 09:27 (9)	20:11	63 08:56 (9)	20:33
18	07:21	07:46 (7)	06:51	06:07	07:01 (9)	06:17	07:39 (9)	05:39	07:54 (9)	05:26
	16:58	23 08:09 (7)	17:36	18:08	91 08:32 (9)	19:41	108 09:27 (9)	20:12	61 08:55 (9)	20:33
19	07:20	07:45 (7)	06:49	06:06	06:59 (9)	06:15	07:38 (9)	05:38	07:55 (9)	05:26
	16:59	25 08:10 (7)	17:37	18:09	93 08:32 (9)	19:42	108 09:26 (9)	20:13	59 08:54 (9)	20:34
20	07:20	07:46 (7)	06:48	06:04	06:58 (9)	06:14	07:38 (9)	05:38	07:56 (9)	05:27
	17:00	25 08:11 (7)	17:38	18:10	96 08:34 (9)	19:43	107 09:25 (9)	20:14	56 08:52 (9)	20:34
21	07:19	07:45 (7)	06:46	06:02	06:56 (9)	06:12	07:38 (9)	05:37	07:57 (9)	05:27
	17:01	27 08:12 (7)	17:40	18:11	98 08:34 (9)	19:44	106 09:24 (9)	20:15	54 08:51 (9)	20:34
22	07:19	07:45 (7)	06:45	06:01	06:54 (9)	06:11	07:39 (9)	05:36	07:59 (9)	05:27
	17:03	27 08:12 (7)	17:41	18:12	100 08:34 (9)	19:45	104 09:23 (9)	20:16	51 08:50 (9)	20:34
23	07:18	07:44 (7)	06:44	05:59	06:54 (9)	06:09	07:38 (9)	05:35	08:00 (9)	05:27
	17:04	28 08:12 (7)	17:42	18:13	101 08:35 (9)	19:46	104 09:22 (9)	20:17	49 08:49 (9)	20:35
24	07:17	07:45 (7)	06:42	05:57	06:52 (9)	06:08	07:39 (9)	05:34	08:00 (9)	05:27
	17:05	29 08:14 (7)	17:43	18:14	104 08:36 (9)	19:47	102 09:21 (9)	20:17	47 08:47 (9)	20:35
25	07:16	07:45 (7)	06:41	05:56	06:51 (9)	06:07	07:38 (9)	05:34	08:02 (9)	05:28
	17:06	29 08:14 (7)	17:44	18:15	105 08:36 (9)	19:48	102 09:20 (9)	20:18	45 08:47 (9)	20:35
26	07:16	07:45 (7)	06:39	05:54	06:50 (9)	06:05	07:39 (9)	05:33	08:03 (9)	05:28
	17:08	29 08:14 (7)	17:45	18:16	107 08:37 (9)	19:49	100 09:19 (9)	20:19	42 08:45 (9)	20:35
27	07:15	07:45 (7)	06:38	05:52	06:49 (9)	06:04	07:39 (9)	05:32	08:04 (9)	05:28
	17:09	29 08:14 (7)	17:47	18:18	107 08:36 (9)	19:50	99 09:18 (9)	20:20	39 08:43 (9)	20:35
28	07:14	07:45 (7)	06:36	05:51	06:48 (9)	06:02	07:39 (9)	05:32	08:07 (9)	05:29
	17:10	29 08:14 (7)	17:48	18:19	108 08:36 (9)	19:51	98 09:17 (9)	20:21	35 08:42 (9)	20:35
29	07:13	07:45 (7)		06:49	07:47 (9)	06:01	07:40 (9)	05:31	08:08 (9)	05:29
	17:11	29 08:14 (7)		19:20	109 09:36 (9)	19:52	96 09:16 (9)	20:22	32 08:40 (9)	20:35
30	07:12	07:47 (7)		06:47	07:46 (9)	06:00	07:40 (9)	05:31	08:10 (9)	05:30
	17:12	28 08:15 (7)		19:21	111 09:37 (9)	19:54	95 09:15 (9)	20:22	29 08:39 (9)	20:35
31	07:11	07:47 (7)		06:46	07:45 (9)			05:30	08:11 (9)	
	17:14	28 08:15 (7)		19:22	111 09:36 (9)			20:23	26 08:37 (9)	
Potential sun hours	298	297	369	399	448	452				
Total, worst case	494	141	2254	3237	1971	47				

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

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





## SHADOW - Calendar

**Calculation:** Shadow receptor: N - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (34)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June			
1	07:24   16:41	08:39 (8)   17:15	07:10   17:15	08:44 (8)   17:49	06:35   17:49	09:02 (8)   19:23	06:44   19:55	05:58   20:24	05:30   20:24
2	07:24   16:42	08:39 (8)   17:16	07:09   17:16	08:44 (8)   17:50	06:33   17:50	09:04 (8)   19:24	06:42   19:56	05:57   20:25	05:29   20:25
3	07:24   16:42	08:39 (8)   17:17	07:08   17:17	08:44 (8)   17:51	06:32   17:51	09:05 (8)   19:25	06:41   19:57	05:56   20:25	05:29   20:25
4	07:24   16:43	08:39 (8)   17:19	07:07   17:19	08:45 (8)   17:52	06:30   17:52	09:08 (8)   19:26	06:39   19:58	05:54   20:26	05:28   20:26
5	07:24   16:44	08:40 (8)   17:20	07:06   17:20	08:45 (8)   17:53	06:28   17:53	09:11 (8)   19:27	06:37   19:59	05:53   20:27	05:28   20:27
6	07:24   16:45	08:40 (8)   17:21	07:05   17:21	08:45 (8)   17:55	06:27   17:55	09:15 (8)   19:28	06:36   20:00	05:52   20:27	05:28   20:27
7	07:24   16:46	08:40 (8)   17:22	07:04   17:22	08:46 (8)   17:56	06:25   17:56	09:22 (8)   19:29	06:34   20:01	05:51   20:28	05:27   20:28
8	07:24   16:47	08:41 (8)   17:24	07:03   17:24	08:46 (8)   17:57	06:24   17:57	09:33 (8)   19:30	06:32   20:02	05:50   20:29	05:27   20:29
9	07:24   16:48	08:40 (8)   17:25	07:02   17:25	08:47 (8)   17:58	06:22   17:58	09:33 (8)   19:31	06:31   20:03	05:48   20:30	05:27   20:29
10	07:23   16:49	08:41 (8)   17:26	07:01   17:26	08:46 (8)   17:59	06:20   17:59	09:33 (8)   19:32	06:29   20:04	05:47   20:30	05:27   20:30
11	07:23   16:50	08:41 (8)   17:27	07:00   17:27	08:47 (8)   18:00	06:19   18:00	09:33 (8)   19:33	06:28   20:05	05:46   20:30	05:26   20:30
12	07:23   16:51	08:42 (8)   17:29	06:58   17:29	08:48 (8)   18:01	06:17   18:01	09:34 (8)   19:34	06:26   20:06	05:45   20:31	05:26   20:31
13	07:23   16:52	08:41 (8)   17:30	06:57   17:30	08:48 (8)   18:02	06:16   18:02	09:35 (8)   19:35	06:24   20:07	05:44   20:31	05:26   20:31
14	07:22   16:53	08:42 (8)   17:31	06:56   17:31	08:48 (8)   18:03	06:14   18:03	09:35 (8)   19:37	06:23   20:08	05:43   20:32	05:26   20:32
15	07:22   16:54	08:41 (8)   17:32	06:55   17:32	08:49 (8)   18:05	06:12   18:05	09:38 (8)   19:38	06:21   20:09	05:42   20:32	05:26   20:32
16	07:22   16:56	08:42 (8)   17:33	06:53   17:33	08:50 (8)   18:06	06:11   18:06	09:39 (8)   19:39	06:20   20:10	05:41   20:33	05:26   20:33
17	07:21   16:57	08:42 (8)   17:35	06:52   17:35	08:50 (8)   18:07	06:09   18:07	09:40 (8)   19:40	06:18   20:11	05:40   20:33	05:26   20:33
18	07:21   16:58	08:42 (8)   17:36	06:51   17:36	08:51 (8)   18:08	06:07   18:08	09:41 (8)   19:41	06:17   20:12	05:39   20:33	05:26   20:33
19	07:20   16:59	08:42 (8)   17:37	06:49   17:37	08:51 (8)   18:09	06:06   18:09	09:42 (8)   19:42	06:15   20:13	05:38   20:34	05:26   20:34
20	07:20   17:00	08:42 (8)   17:38	06:48   17:38	08:52 (8)   18:10	06:04   18:10	09:43 (8)   19:43	06:14   20:14	05:37   20:34	05:26   20:34
21	07:19   17:01	08:43 (8)   17:39	06:46   17:39	08:53 (8)   18:11	06:02   18:11	09:44 (8)   19:44	06:12   20:15	05:37   20:34	05:27   20:34
22	07:18   17:03	08:42 (8)   17:41	06:45   17:41	08:54 (8)   18:12	06:01   18:12	09:45 (8)   19:45	06:11   20:16	05:36   20:34	05:27   20:34
23	07:18   17:04	08:42 (8)   17:42	06:44   17:42	08:55 (8)   18:13	05:59   18:13	09:46 (8)   19:46	06:09   20:16	05:35   20:35	05:27   20:35
24	07:17   17:05	08:43 (8)   17:43	06:42   17:43	08:55 (8)   18:14	05:57   18:14	09:47 (8)   19:47	06:08   20:17	05:34   20:35	05:27   20:35
25	07:16   17:06	08:43 (8)   17:44	06:41   17:44	08:57 (8)   18:15	05:56   18:15	09:48 (8)   19:48	06:06   20:18	05:34   20:35	05:28   20:35
26	07:16   17:07	08:43 (8)   17:45	06:39   17:45	08:58 (8)   18:16	05:54   18:16	09:49 (8)   19:49	06:05   20:19	05:33   20:35	05:28   20:35
27	07:15   17:09	08:43 (8)   17:47	06:38   17:47	08:59 (8)   18:17	05:52   18:17	09:50 (8)   19:50	06:04   20:20	05:32   20:35	05:28   20:35
28	07:14   17:10	08:43 (8)   17:48	06:36   17:48	09:00 (8)   18:19	05:51   18:19	09:51 (8)   19:51	06:02   20:21	05:32   20:35	05:29   20:35
29	07:13   17:11	08:43 (8)   17:48	06:35   17:48	09:01 (8)   18:20	05:50   18:20	09:52 (8)   19:52	06:01   20:22	05:31   20:35	05:29   20:35
30	07:12   17:12	08:43 (8)   17:48	06:34   17:48	09:02 (8)   18:21	05:49   18:21	09:53 (8)   19:53	06:00   20:22	05:31   20:35	05:30   20:35
31	07:11   17:14	08:44 (8)   17:48	06:33   17:48	09:03 (8)   18:22	05:48   18:22	09:54 (8)   19:54	05:59   20:23	05:30   20:35	05:30   20:35
Potential sun hours	298	297	297	369	399	448	452		
Total, worst case	3307	2655	283						

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: N - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (34)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	05:30 20:35	05:54 20:16	06:25 19:33	06:54 18:43	06:28 16:56	08:16 (8)   07:03 10:01 (8)   16:32
2	05:30 20:35	05:55 20:15	06:26 19:31	06:55 18:41	06:30 16:55	08:16 (8)   07:04 10:01 (8)   16:31
3	05:31 20:35	05:56 20:14	06:26 19:30	06:56 18:39	06:31 16:54	08:16 (8)   07:05 10:02 (8)   16:31
4	05:32 20:34	05:57 20:13	06:27 19:28	06:57 18:38	06:32 16:52	08:16 (8)   07:06 10:03 (8)   16:31
5	05:32 20:34	05:58 20:11	06:28 19:26	06:59 18:36	06:33 16:51	08:15 (8)   07:07 10:03 (8)   16:31
6	05:33 20:34	05:59 20:10	06:29 19:25	07:00 18:34	06:34 16:50	08:15 (8)   07:08 10:03 (8)   16:31
7	05:33 20:34	06:00 20:09	06:30 19:23	07:01 18:33	09:54 (8)   06:36 10:14 (8)   16:49	08:15 (8)   07:09 10:04 (8)   16:31
8	05:34 20:33	06:01 20:08	06:31 19:21	07:02 18:31	09:48 (8)   06:37 10:20 (8)   16:48	08:15 (8)   07:10 10:04 (8)   16:31
9	05:35 20:33	06:02 20:07	06:32 19:20	07:03 18:29	09:44 (8)   06:38 10:24 (8)   16:47	08:15 (8)   07:11 10:04 (8)   16:30
10	05:35 20:33	06:03 20:05	06:33 19:18	07:04 18:28	09:41 (8)   06:39 10:28 (8)   16:46	08:15 (8)   07:12 10:04 (8)   16:31
11	05:36 20:32	06:04 20:04	06:34 19:16	07:05 18:26	09:39 (8)   06:40 10:31 (8)   16:45	08:15 (8)   07:13 10:05 (8)   16:31
12	05:37 20:32	06:05 20:03	06:35 19:15	07:06 18:25	09:36 (8)   06:42 10:33 (8)   16:44	08:15 (8)   07:14 10:05 (8)   16:31
13	05:37 20:31	06:06 20:01	06:36 19:13	07:07 18:23	09:34 (8)   06:43 10:36 (8)   16:43	08:15 (8)   07:14 10:05 (8)   16:31
14	05:38 20:31	06:07 20:00	06:37 19:11	07:08 18:21	09:32 (8)   06:44 10:38 (8)   16:42	08:16 (8)   07:15 10:06 (8)   16:31
15	05:39 20:30	06:08 19:59	06:38 19:10	07:09 18:20	09:31 (8)   06:45 10:41 (8)   16:41	08:16 (8)   07:16 10:06 (8)   16:31
16	05:40 20:30	06:09 19:57	06:39 19:08	07:10 18:18	09:30 (8)   06:46 10:43 (8)   16:40	08:16 (8)   07:17 10:06 (8)   16:31
17	05:40 20:29	06:10 19:56	06:40 19:06	07:11 18:17	09:28 (8)   06:47 10:44 (8)   16:39	08:16 (8)   07:17 10:06 (8)   16:32
18	05:41 20:28	06:11 19:54	06:41 19:05	07:12 18:15	09:26 (8)   06:49 10:46 (8)   16:39	08:17 (8)   07:18 10:07 (8)   16:32
19	05:42 20:28	06:12 19:53	06:42 19:03	07:14 18:14	09:25 (8)   06:50 10:47 (8)   16:38	08:17 (8)   07:19 10:07 (8)   16:32
20	05:43 20:27	06:13 19:52	06:43 19:01	07:15 18:12	09:24 (8)   06:51 10:49 (8)   16:37	08:17 (8)   07:19 10:07 (8)   16:33
21	05:44 20:26	06:14 19:50	06:44 18:59	07:16 18:11	09:24 (8)   06:52 10:51 (8)   16:37	08:18 (8)   07:20 10:07 (8)   16:33
22	05:45 20:25	06:15 19:49	06:45 18:58	07:17 18:09	09:22 (8)   06:53 10:52 (8)   16:36	08:19 (8)   07:20 10:08 (8)   16:34
23	05:46 20:25	06:16 19:47	06:46 18:56	07:18 18:08	09:21 (8)   06:54 10:53 (8)   16:35	08:19 (8)   07:21 10:08 (8)   16:34
24	05:46 20:24	06:17 19:46	06:47 18:54	07:19 18:07	09:20 (8)   06:56 10:54 (8)   16:35	08:19 (8)   07:21 10:08 (8)   16:35
25	05:47 20:23	06:18 19:44	06:48 18:53	07:20 17:05	09:19 (8)   06:57 10:55 (8)   16:34	08:20 (8)   07:22 10:07 (8)   16:35
26	05:48 20:22	06:19 19:42	06:49 18:51	07:22 17:04	08:19 (8)   06:58 09:57 (8)   16:34	08:20 (8)   07:22 10:07 (8)   16:36
27	05:49 20:21	06:20 19:41	06:50 18:49	07:23 17:02	09:57 (8)   16:34 08:19 (8)   06:59	08:20 (8)   07:22 10:07 (8)   16:37
28	05:50 20:20	06:21 19:39	06:51 18:48	07:24 17:01	09:57 (8)   16:33 08:18 (8)   07:00	10:07 (8)   16:37 08:22 (8)   07:23
29	05:51 20:19	06:22 19:38	06:52 18:46	07:25 17:00	09:58 (8)   16:33 08:17 (8)   07:01	10:08 (8)   16:37 08:22 (8)   07:23
30	05:52 20:18	06:23 19:36	06:53 18:44	07:26 16:58	09:58 (8)   16:32 08:17 (8)   07:02	10:08 (8)   16:38 08:23 (8)   07:23
31	05:53 20:17	06:24 19:35	06:54 18:43	07:27 16:57	10:00 (8)   16:32 08:17 (8)   16:32	10:08 (8)   16:39 07:23   16:40
Potential sun hours	459	428	375	345	298	288
Total, worst case				1904	3249	3140

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: Q - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (37)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April		May		June	
1	07:24 16:41	07:10 17:15	06:35 17:49	06:44 19:23		05:58 19:55		18:33 (7) 19:24 (7)	81 19:40 (7)
2	07:24 16:42	07:09 17:16	06:33 17:50	06:42 19:24		05:57 19:56	51 55	18:30 (7) 19:25 (7)	81 19:40 (7)
3	07:24 16:42	07:08 17:17	06:32 17:51	06:41 19:25		05:56 19:57	55 57	18:29 (7) 19:26 (7)	81 19:40 (7)
4	07:24 16:43	07:07 17:19	06:30 17:52	06:39 19:26		05:54 19:58	57 59	18:28 (7) 19:27 (7)	81 19:40 (7)
5	07:24 16:44	07:06 17:20	06:28 17:53	06:37 19:27	4	19:02 (6) 19:06 (6)	62	18:27 (7) 19:29 (7)	81 19:41 (7)
6	07:24 16:45	07:05 17:21	06:27 17:55	06:36 19:28	7	18:59 (6) 19:06 (6)	64	18:26 (7) 19:30 (7)	80 19:40 (7)
7	07:24 16:46	07:04 17:22	06:25 17:56	06:34 19:29	10	18:58 (6) 19:09 (6)	66	18:24 (7) 19:30 (7)	81 19:41 (7)
8	07:24 16:47	07:03 17:24	06:24 17:57	06:33 19:30	13	18:56 (6) 19:09 (6)	67	18:24 (7) 19:31 (7)	81 19:41 (7)
9	07:24 16:48	07:02 17:25	06:22 17:58	06:31 19:31	14	18:55 (6) 19:09 (6)	68	18:23 (7) 19:31 (7)	81 19:41 (7)
10	07:23 16:49	07:01 17:26	06:20 17:59	06:29 19:32	17	18:54 (6) 19:11 (6)	70	18:22 (7) 19:32 (7)	81 19:42 (7)
11	07:23 16:50	07:00 17:27	06:19 18:00	06:28 19:33	19	18:53 (6) 19:12 (6)	71	18:22 (7) 19:33 (7)	80 19:41 (7)
12	07:23 16:51	06:58 17:29	06:17 18:01	06:26 19:34	20	18:53 (6) 19:13 (6)	72	18:21 (7) 19:33 (7)	80 19:41 (7)
13	07:23 16:52	06:57 17:30	06:16 18:02	06:25 19:35	22	18:52 (6) 19:14 (6)	74	18:20 (7) 19:34 (7)	81 19:42 (7)
14	07:22 16:53	06:56 17:31	06:14 18:03	06:23 19:37	23	18:52 (6) 19:15 (6)	74	18:20 (7) 19:34 (7)	81 19:42 (7)
15	07:22 16:55	06:55 17:32	06:12 18:05	06:21 19:38	25	18:51 (6) 19:16 (6)	76	18:19 (7) 19:35 (7)	80 19:42 (7)
16	07:22 16:56	06:53 17:33	06:11 18:06	06:20 19:39	25	18:51 (6) 19:16 (6)	76	18:19 (7) 19:35 (7)	80 19:42 (7)
17	07:21 16:57	06:52 17:35	06:09 18:07	06:18 19:40	27	18:51 (6) 19:18 (6)	76	18:19 (7) 19:35 (7)	80 19:42 (7)
18	07:21 16:58	06:51 17:36	06:07 18:08	06:17 19:41	27	18:51 (6) 19:18 (6)	77	18:19 (7) 19:36 (7)	80 19:43 (7)
19	07:20 16:59	06:49 17:37	06:06 18:09	06:15 19:42	28	18:52 (6) 19:20 (6)	78	18:19 (7) 19:37 (7)	80 19:43 (7)
20	07:20 17:00	06:48 17:38	06:04 18:10	06:14 19:43	29	18:52 (6) 19:21 (6)	79	18:18 (7) 19:37 (7)	81 20:09 (9)
21	07:19 17:01	06:46 17:39	06:02 18:11	06:12 19:44	27	18:53 (6) 19:20 (6)	79	18:18 (7) 19:37 (7)	81 20:09 (9)
22	07:18 17:03	06:45 17:41	06:01 18:12	06:11 19:45	25	18:54 (6) 19:19 (6)	79	18:19 (7) 19:38 (7)	81 20:09 (9)
23	07:18 17:04	06:44 17:42	05:59 18:13	06:09 19:46	23	18:54 (6) 19:17 (6)	80	18:18 (7) 19:38 (7)	81 20:10 (9)
24	07:17 17:05	06:42 17:43	05:57 18:14	06:08 19:47	19	18:56 (6) 19:15 (6)	80	18:18 (7) 19:38 (7)	80 19:44 (7)
25	07:16 17:06	06:41 17:44	05:56 18:15	06:06 19:48	24	18:48 (7) 19:12 (6)	80	18:19 (7) 19:39 (7)	80 19:44 (7)
26	07:16 17:07	06:39 17:45	05:54 18:16	06:05 19:49	29	18:44 (7) 19:13 (7)	80	18:18 (7) 19:38 (7)	80 19:44 (7)
27	07:15 17:09	06:38 17:47	05:52 18:17	06:04 19:50	35	18:41 (7) 19:16 (7)	80	18:18 (7) 19:38 (7)	80 19:45 (7)
28	07:14 17:10	06:36 17:48	05:51 18:19	06:02 19:51	40	18:38 (7) 19:18 (7)	80	18:19 (7) 19:39 (7)	81 19:45 (7)
29	07:13 17:11		06:49 19:20	06:01 19:52	44	18:36 (7) 19:20 (7)	81	18:18 (7) 19:39 (7)	81 19:46 (7)
30	07:12 17:12		06:47 19:21	06:00 19:53	48	18:34 (7) 19:22 (7)	80	18:19 (7) 19:39 (7)	80 19:45 (7)
31	07:11 17:14		06:46 19:22			05:30 20:23	81	18:18 (7) 19:39 (7)	
Potential sun hours	298	297	369	399		448		452	2415
Total, worst case				624		2252			2415

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: Q - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (37)

### Assumptions for shadow calculations

- The calculated times are "worst case" given by the following assumptions:
- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December						
1	05:30	18:26 (7)	05:54	18:32 (7)	06:25	18:52 (6)	06:54	06:29	07:03			
	20:35	80	19:46 (7)	20:16	72	19:44 (7)	19:33	18	18:10 (6)	16:56	16:32	
2	05:31	18:25 (7)	05:55	18:32 (7)	06:26	18:52 (6)	06:55	06:30	07:04			
	20:35	81	19:46 (7)	20:15	71	19:43 (7)	19:31	17	19:09 (6)	18:41	16:55	16:31
3	05:31	18:26 (7)	05:56	18:33 (7)	06:27	18:53 (6)	06:56	06:31	07:05			
	20:35	81	19:47 (7)	20:14	69	19:42 (7)	19:30	14	19:07 (6)	18:39	16:54	16:31
4	05:32	18:26 (7)	05:57	18:34 (7)	06:28	18:53 (6)	06:58	06:32	07:06			
	20:34	80	19:46 (7)	20:13	68	19:42 (7)	19:28	13	19:06 (6)	18:38	16:52	16:31
5	05:32	18:26 (7)	05:58	18:34 (7)	06:28	18:54 (6)	06:59	06:33	07:07			
	20:34	81	19:47 (7)	20:11	67	19:41 (7)	19:26	10	19:04 (6)	18:36	16:51	16:31
6	05:33	18:26 (7)	05:59	18:35 (7)	06:29	18:55 (6)	07:00	06:34	07:08			
	20:34	80	19:46 (7)	20:10	65	19:40 (7)	19:25	8	19:03 (6)	18:34	16:50	16:31
7	05:33	18:26 (7)	06:00	18:36 (7)	06:30	18:57 (6)	07:01	06:36	07:09			
	20:34	81	19:47 (7)	20:09	63	19:39 (7)	19:23	4	19:01 (6)	18:33	16:49	16:31
8	05:34	18:27 (7)	06:01	18:36 (7)	06:31		07:02	06:37	07:10			
	20:33	81	19:48 (7)	20:08	61	19:37 (7)	19:21		18:31	16:48	16:31	
9	05:35	18:26 (7)	06:02	18:37 (7)	06:32		07:03	06:38	07:11			
	20:33	81	19:47 (7)	20:07	59	19:36 (7)	19:20		18:29	16:47	16:31	
10	05:35	18:27 (7)	06:03	18:38 (7)	06:33		07:04	06:39	07:12			
	20:33	81	19:48 (7)	20:05	57	19:35 (7)	19:18		18:28	16:46	16:31	
11	05:36	18:26 (7)	06:04	18:39 (7)	06:34		07:05	06:40	07:13			
	20:32	81	19:47 (7)	20:04	54	19:33 (7)	19:16		18:26	16:45	16:31	
12	05:37	18:27 (7)	06:05	18:41 (7)	06:35		07:06	06:42	07:14			
	20:32	80	19:47 (7)	20:03	50	19:31 (7)	19:15		18:25	16:44	16:31	
13	05:37	18:27 (7)	06:06	18:42 (7)	06:36		07:07	06:43	07:14			
	20:31	81	19:48 (7)	20:01	48	19:30 (7)	19:13		18:23	16:43	16:31	
14	05:38	18:27 (7)	06:07	18:44 (7)	06:37		07:08	06:44	07:15			
	20:31	81	19:48 (7)	20:00	44	19:28 (7)	19:11		18:21	16:42	16:31	
15	05:39	18:27 (7)	06:08	18:46 (7)	06:38		07:09	06:45	07:16			
	20:30	80	19:47 (7)	19:59	39	19:25 (7)	19:10		18:20	16:41	16:31	
16	05:40	18:27 (7)	06:09	18:49 (7)	06:39		07:10	06:46	07:17			
	20:30	81	19:48 (7)	19:57	34	19:23 (7)	19:08		18:18	16:40	16:32	
17	05:40	18:28 (7)	06:10	18:52 (7)	06:40		07:11	06:48	07:17			
	20:29	80	19:48 (7)	19:56	27	19:19 (7)	19:06		18:17	16:39	16:32	
18	05:41	18:28 (7)	06:11	18:56 (7)	06:41		07:12	06:49	07:18			
	20:28	80	19:48 (7)	19:54	24	19:20 (6)	19:05		18:15	16:39	16:32	
19	05:42	18:28 (7)	06:12	19:02 (6)	06:42		07:14	06:50	07:19			
	20:28	80	19:48 (7)	19:53	20	19:22 (6)	19:03		18:14	16:38	16:33	
20	05:43	18:28 (7)	06:13	19:00 (6)	06:43		07:15	06:51	07:19			
	20:27	79	19:47 (7)	19:52	23	19:23 (6)	19:01		18:12	16:37	16:33	
21	05:44	18:28 (7)	06:14	18:58 (6)	06:44		07:16	06:52	07:20			
	20:26	79	19:47 (7)	19:50	26	19:24 (6)	18:59		18:11	16:37	16:33	
22	05:45	18:28 (7)	06:15	18:57 (6)	06:45		07:17	06:53	07:20			
	20:25	79	19:47 (7)	19:49	28	19:25 (6)	18:58		18:09	16:36	16:34	
23	05:46	18:29 (7)	06:16	18:56 (6)	06:46		07:18	06:54	07:21			
	20:25	78	19:47 (7)	19:47	29	19:25 (6)	18:56		18:08	16:35	16:34	
24	05:46	18:29 (7)	06:17	18:55 (6)	06:47		07:19	06:56	07:21			
	20:24	78	19:47 (7)	19:46	28	19:23 (6)	18:54		18:07	16:35	16:35	
25	05:47	18:30 (7)	06:18	18:55 (6)	06:48		06:20	06:57	07:22			
	20:23	77	19:47 (7)	19:44	27	19:22 (6)	18:53		17:05	16:34	16:35	
26	05:48	18:29 (7)	06:19	18:54 (6)	06:49		06:22	06:58	07:22			
	20:22	77	19:46 (7)	19:42	27	19:21 (6)	18:51		17:04	16:34	16:36	
27	05:49	18:29 (7)	06:20	18:53 (6)	06:50		06:23	06:59	07:22			
	20:21	77	19:46 (7)	19:41	26	19:19 (6)	18:49		17:02	16:33	16:37	
28	05:50	18:30 (7)	06:21	18:53 (6)	06:51		06:24	07:00	07:23			
	20:20	75	19:45 (7)	19:39	25	19:18 (6)	18:48		17:01	16:33	16:37	
29	05:51	18:30 (7)	06:22	18:52 (6)	06:52		06:25	07:01	07:23			
	20:19	75	19:45 (7)	19:38	23	19:15 (6)	18:46		17:00	16:32	16:38	
30	05:52	18:31 (7)	06:23	18:52 (6)	06:53		06:26	07:02	07:23			
	20:18	74	19:45 (7)	19:36	22	19:14 (6)	18:44		16:58	16:32	16:39	
31	05:53	18:31 (7)	06:24	18:52 (6)			06:27		07:23			
	20:17	73	19:44 (7)	19:35	20	19:12 (6)			16:57		16:40	
Potential sun hours	459		428		375		345		298		288	
Total, worst case	2452		1296		84							

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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### SHADOW - Calendar

Calculation: ShadowShadow receptor: R - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (38)

#### Assumptions for shadow calculations

- The calculated times are "worst case" given by the following assumptions:
- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:24 16:41	07:10 17:15	06:35 17:49	06:44 19:23	05:58 19:55	05:30 20:24	19:47 (6)   05:30	19:53 (6)   05:54	06:25	06:54	06:28	07:03
2	07:24 16:42	07:09 17:16	06:33 17:50	06:42 19:24	05:57 19:56	05:29 20:25	19:47 (6)   05:31	19:53 (6)   05:55	06:26	06:55	06:30	07:04
3	07:24 16:42	07:08 17:17	06:32 17:51	06:41 19:25	05:56 19:57	05:29 20:25	19:46 (6)   05:31	19:53 (6)   05:56	06:27	06:56	06:31	07:05
4	07:24 16:43	07:07 17:19	06:30 17:52	06:39 19:26	05:54 19:58	05:28 20:26	19:47 (6)   05:32	19:53 (6)   05:57	06:28	06:58	06:32	07:06
5	07:24 16:44	07:06 17:20	06:28 17:53	06:37 19:27	05:53 19:59	05:28 20:27	19:47 (6)   05:32	19:53 (6)   05:58	06:28	06:59	06:33	07:07
6	07:24 16:45	07:05 17:21	06:27 17:55	06:36 19:28	05:52 20:00	05:28 20:27	19:47 (6)   05:33	19:53 (6)   05:59	06:29	07:00	06:34	07:08
7	07:24 16:46	07:04 17:22	06:25 17:56	06:34 19:29	05:51 20:01	05:27 20:28	19:47 (6)   05:33	19:54 (6)   06:00	06:30	07:01	06:36	07:09
8	07:24 16:47	07:03 17:24	06:24 17:57	06:33 19:30	05:50 20:02	05:27 20:29	19:48 (6)   05:34	19:54 (6)   06:01	06:31	07:02	06:37	07:10
9	07:24 16:48	07:02 17:25	06:22 17:58	06:31 19:31	05:48 20:03	05:27 20:29	19:48 (6)   05:35	19:54 (6)   06:02	06:32	07:03	06:38	07:11
10	07:23 16:49	07:01 17:26	06:20 17:59	06:29 19:32	05:47 20:04	05:27 20:30	19:48 (6)   05:35	19:54 (6)   06:03	06:33	07:04	06:39	07:12
11	07:23 16:50	07:00 17:27	06:19 18:00	06:28 19:33	05:46 20:05	05:26 20:30	19:48 (6)   05:36	19:55 (6)   06:04	06:34	07:05	06:40	07:13
12	07:23 16:51	06:58 17:29	06:17 18:01	06:26 19:34	05:45 20:06	05:26 20:31	19:48 (6)   05:37	19:54 (6)   06:05	06:35	07:06	06:42	07:14
13	07:23 16:52	06:57 17:30	06:16 18:02	06:25 19:35	05:44 20:07	05:26 20:31	19:48 (6)   05:37	19:55 (6)   06:06	06:36	07:07	06:43	07:14
14	07:22 16:53	06:56 17:31	06:14 18:03	06:23 19:37	05:43 20:08	05:26 20:32	19:49 (6)   05:38	19:55 (6)   06:07	06:37	07:08	06:44	07:15
15	07:22 16:55	06:55 17:32	06:12 18:05	06:21 19:38	05:42 20:09	05:26 20:32	19:49 (6)   05:39	19:55 (6)   06:08	06:38	07:09	06:45	07:16
16	07:22 16:56	06:53 17:33	06:11 18:06	06:20 19:39	05:41 20:10	05:26 20:33	19:49 (6)   05:40	19:55 (6)   06:09	06:39	07:10	06:46	07:17
17	07:21 16:57	06:52 17:35	06:09 18:07	06:18 19:40	05:40 20:11	05:26 20:33	19:49 (6)   05:40	19:56 (6)   06:10	06:40	07:11	06:47	07:17
18	07:21 16:58	06:51 17:36	06:07 18:08	06:17 19:41	05:39 20:12	05:26 20:33	19:50 (6)   05:41	19:57 (6)   06:11	06:41	07:12	06:49	07:18
19	07:20 16:59	06:49 17:37	06:06 18:09	06:15 19:42	05:38 20:13	05:26 20:34	19:50 (6)   05:42	19:57 (6)   06:12	06:42	07:14	06:50	07:19
20	07:20 17:00	06:48 17:38	06:04 18:10	06:14 19:43	05:38 20:14	05:27 20:34	19:51 (6)   05:43	19:57 (6)   06:13	06:43	07:15	06:51	07:19
21	07:19 17:01	06:46 17:39	06:02 18:11	06:12 19:44	05:37 20:15	05:27 20:34	19:51 (6)   05:44	19:58 (6)   06:14	06:44	07:16	06:52	07:20
22	07:18 17:03	06:45 17:41	06:01 18:12	06:11 19:45	05:36 20:16	05:27 20:34	19:49 (6)   05:45	19:59 (6)   06:15	06:45	07:17	06:53	07:20
23	07:18 17:04	06:44 17:42	05:59 18:13	06:09 19:46	05:35 20:16	05:27 20:35	19:48 (6)   05:46	19:52 (6)   06:16	06:46	07:18	06:54	07:21
24	07:17 17:05	06:42 17:43	05:57 18:14	06:08 19:47	05:34 20:17	05:27 20:35	19:47 (6)   05:47	19:51 (6)   06:17	06:47	07:19	06:56	07:21
25	07:16 17:06	06:41 17:44	05:56 18:15	06:06 19:48	05:34 20:18	05:28 20:35	19:48 (6)   05:48	19:51 (6)   06:18	06:48	07:20	06:57	07:22
26	07:16 17:07	06:39 17:45	05:54 18:16	06:05 19:49	05:33 20:19	05:28 20:35	19:47 (6)   05:48	19:52 (6)   06:19	06:49	07:21	06:58	07:22
27	07:15 17:09	06:38 17:47	05:52 18:17	06:04 19:50	05:32 20:20	05:29 20:35	19:46 (6)   05:49	19:52 (6)   06:20	06:50	07:22	06:59	07:22
28	07:14 17:10	06:36 17:48	05:51 18:19	06:02 19:51	05:32 20:21	05:29 20:35	19:47 (6)   05:50	19:52 (6)   06:21	06:51	07:23	07:00	07:23
29	07:13 17:11	06:49 19:20	06:49 19:20	06:01 19:52	05:31 20:22	05:29 20:35	19:46 (6)   05:51	19:52 (6)   06:22	06:52	07:24	07:01	07:23
30	07:12 17:12	06:47 19:21	06:47 19:21	06:00 19:53	05:31 20:22	05:30 20:35	19:57 (6)   05:52	19:52 (6)   06:23	06:53	07:25	07:02	07:23
31	07:11 17:14	06:46 19:22	06:46 19:22	06:00 20:23	05:30 20:23	05:30 20:35	19:46 (6)   05:53	20:09 (6)   05:53	06:24	07:26	07:03	07:23
Potential sun hours	298	297	369	399	448	452	459	428	375	345	298	288
Total, worst case					80	503	254					

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

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





## SHADOW - Calendar

Calculation: ShadowShadow receptor: T - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (40)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	07:10 17:15	06:35 17:49	06:44 19:23	07:33 (3) 08:43 (3)	05:58 19:55
2	07:24 16:42	07:10 17:16	06:33 17:50	06:42 19:24	70 07:34 (3) 69 08:43 (3)	4 06:31 (1) 12 06:22 (1)
3	07:24 16:43	07:09 17:17	06:32 17:51	06:41 19:25	69 07:33 (3) 69 08:42 (3)	16 06:34 (1) 16 06:36 (1)
4	07:24 16:43	07:07 17:19	06:30 17:52	06:39 19:26	68 07:34 (3) 68 08:42 (3)	19 06:19 (1) 19 06:38 (1)
5	07:24 16:44	07:06 17:20	06:28 17:54	06:37 19:27	68 07:33 (3) 68 08:41 (3)	21 06:18 (1) 21 06:39 (1)
6	07:24 16:45	07:05 17:21	06:27 17:55	06:36 19:28	67 07:33 (3) 67 08:40 (3)	23 06:17 (1) 23 06:40 (1)
7	07:24 16:46	07:04 17:22	06:25 17:56	06:34 19:29	66 07:34 (3) 66 08:40 (3)	25 06:16 (1) 25 06:41 (1)
8	07:24 16:47	07:03 17:24	06:24 17:57	06:33 19:30	65 07:33 (3) 65 08:38 (3)	25 06:15 (1) 25 06:40 (1)
9	07:24 16:48	07:02 17:25	06:22 17:58	06:31 19:31	64 07:33 (3) 64 08:37 (3)	27 06:14 (1) 27 06:41 (1)
10	07:24 16:49	07:01 17:26	06:21 17:59	06:29 19:32	62 07:33 (3) 62 08:36 (3)	27 06:14 (1) 27 06:41 (1)
11	07:23 16:50	07:00 17:27	06:19 18:00	06:28 19:33	61 07:00 (3) 61 07:33 (3)	27 06:14 (1) 27 06:41 (1)
12	07:23 16:51	06:58 17:29	06:17 18:01	06:26 19:34	59 06:56 (3) 59 07:35 (3)	27 06:14 (1) 27 06:41 (1)
13	07:23 16:52	06:57 17:30	06:16 18:02	06:25 19:36	56 06:54 (3) 56 07:37 (3)	27 06:14 (1) 27 06:41 (1)
14	07:22 16:53	06:56 17:31	06:14 18:04	06:23 19:37	54 06:52 (3) 54 07:39 (3)	27 06:14 (1) 27 06:41 (1)
15	07:22 16:55	06:55 17:32	06:12 18:05	06:21 19:38	52 06:50 (3) 52 07:40 (3)	27 06:14 (1) 27 06:41 (1)
16	07:22 16:56	06:53 17:34	06:11 18:06	06:20 19:39	49 06:48 (3) 49 07:41 (3)	26 06:14 (1) 26 06:40 (1)
17	07:21 16:57	06:52 17:35	06:09 18:07	06:18 19:40	47 06:47 (3) 47 07:42 (3)	26 06:15 (1) 26 06:41 (1)
18	07:21 16:58	06:51 17:36	06:07 18:08	06:17 19:41	44 06:45 (3) 44 07:43 (3)	25 06:15 (1) 25 06:40 (1)
19	07:20 16:59	06:49 17:37	06:06 18:09	06:15 19:42	40 06:43 (3) 40 07:43 (3)	24 06:16 (1) 24 06:40 (1)
20	07:20 17:00	06:48 17:38	06:04 18:10	06:14 19:43	36 06:43 (3) 36 07:44 (3)	23 06:16 (1) 23 06:39 (1)
21	07:19 17:02	06:46 17:40	06:02 18:11	06:12 19:44	32 06:41 (3) 32 07:45 (3)	22 06:16 (1) 22 06:38 (1)
22	07:18 17:03	06:45 17:41	06:01 18:12	06:11 19:45	26 06:40 (3) 26 07:46 (3)	20 06:18 (1) 20 06:37 (1)
23	07:18 17:04	06:44 17:42	05:59 18:13	06:09 19:46	19 06:39 (3) 19 08:10 (3)	19 06:18 (1) 19 06:37 (1)
24	07:17 17:05	06:42 17:43	05:57 18:14	06:08 19:47	5 06:38 (3) 5 08:03 (3)	19 06:19 (1) 17 06:36 (1)
25	07:16 17:06	06:41 17:44	05:56 18:15	06:07 19:48	15 06:37 (3) 15 07:45 (3)	15 06:21 (1) 15 06:36 (1)
26	07:16 17:08	06:39 17:45	05:54 18:16	06:05 19:49	12 06:37 (3) 12 07:46 (3)	12 06:22 (1) 12 06:34 (1)
27	07:15 17:09	06:38 17:47	05:52 18:18	06:04 19:50	10 06:36 (3) 10 07:46 (3)	10 06:23 (1) 10 06:33 (1)
28	07:14 17:10	06:36 17:48	05:51 18:19	06:02 19:51	5 06:35 (3) 5 07:45 (3)	5 06:26 (1) 5 06:31 (1)
29	07:13 17:11		06:49 19:20	06:01 19:52		
30	07:12 17:12		06:47 19:21	06:00 19:54		
31	07:11 17:14		06:46 19:22	06:00 19:55		
Potential sun hours	298	297	369	399	448	452
Total, worst case		346	1293	1248	578	

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: T - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (40)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	05:30 20:35	05:54 20:16	06:25 (1) 06:25	06:25 19:33	07:33 (3) 06:54	07:34 (3) 06:29
2	05:31 20:35	05:55 20:15	06:25 (1) 06:26	06:26 19:31	07:32 (3) 06:55	07:37 (3) 06:30
3	05:31 20:35	05:56 20:14	06:25 (1) 06:27	06:27 19:30	07:31 (3) 06:57	07:40 (3) 06:31
4	05:32 20:34	05:57 20:13	06:25 (1) 06:28	06:28 19:28	07:31 (3) 06:58	07:43 (3) 06:32
5	05:32 20:34	05:58 20:12	06:26 (1) 06:29	06:29 19:27	07:30 (3) 06:59	07:52 (3) 06:33
6	05:33 20:34	05:59 20:10	06:26 (1) 06:30	06:30 19:25	07:29 (3) 07:00	07:56 (3) 16:51
7	05:33 20:34	06:00 20:09	06:27 (1) 06:31	06:31 19:23	07:28 (3) 07:01	06:34 16:50
8	05:34 20:33	06:01 20:08	06:28 (1) 06:32	06:32 19:22	07:28 (3) 07:02	06:36 16:50
9	05:35 20:33	06:02 20:07	06:29 (1) 06:33	06:33 19:20	07:27 (3) 07:03	06:37 16:48
10	05:35 20:33	06:03 20:05	06:29 (1) 06:33	06:33 19:18	07:27 (3) 07:04	06:38 16:47
11	05:36 20:32	06:04 20:04	06:32 (1) 06:34	06:34 19:16	07:26 (3) 07:05	06:39 16:46
12	05:37 20:32	06:05 20:03	06:35 19:15	06:35 19:15	07:26 (3) 07:06	06:40 16:45
13	05:37 20:31	06:06 20:01	06:36 19:13	06:36 19:13	07:26 (3) 07:07	06:42 16:44
14	05:38 20:31	06:07 20:00	06:37 19:11	06:37 19:11	07:26 (3) 07:08	06:43 16:43
15	05:39 20:30	06:08 19:59	06:38 19:10	06:38 19:10	07:25 (3) 07:09	06:44 16:42
16	05:40 20:30	06:33 (1) 06:41 (1)	06:09 19:57	06:39 19:08	07:25 (3) 07:10	06:45 16:41
17	05:41 20:29	06:32 (1) 06:43 (1)	06:10 19:56	06:40 19:06	07:25 (3) 07:11	06:46 16:40
18	05:41 20:28	06:31 (1) 06:45 (1)	06:11 19:54	06:41 19:05	07:25 (3) 07:13	06:48 16:40
19	05:42 20:28	06:30 (1) 06:46 (1)	06:12 19:53	06:42 19:03	07:25 (3) 07:14	06:49 16:39
20	05:43 20:27	06:28 (1) 06:46 (1)	06:13 19:52	06:43 19:01	07:25 (3) 07:15	06:50 16:38
21	05:44 20:26	06:28 (1) 06:47 (1)	06:14 19:50	06:44 19:00	07:25 (3) 07:16	06:51 16:37
22	05:45 20:25	06:27 (1) 06:48 (1)	06:15 19:49	06:45 18:58	07:25 (3) 07:17	06:52 16:37
23	05:46 20:25	06:27 (1) 06:49 (1)	06:16 19:47	06:46 18:56	07:25 (3) 07:18	06:53 16:36
24	05:47 20:24	06:26 (1) 06:50 (1)	06:17 19:46	06:47 18:54	07:26 (3) 07:19	06:54 16:35
25	05:47 20:23	06:26 (1) 06:51 (1)	06:18 19:44	06:48 18:53	07:27 (3) 06:20	06:55 16:35
26	05:48 20:22	06:26 (1) 06:51 (1)	06:19 19:43	06:49 18:51	07:28 (3) 06:22	06:56 16:34
27	05:49 20:21	06:25 (1) 06:51 (1)	06:20 19:41	06:50 18:49	07:29 (3) 06:23	06:57 16:34
28	05:50 20:20	06:24 (1) 06:51 (1)	06:21 19:39	06:51 18:48	07:30 (3) 06:24	06:58 16:33
29	05:51 20:19	06:24 (1) 06:51 (1)	06:22 19:38	06:52 18:46	07:31 (3) 06:25	06:59 16:33
30	05:52 20:18	06:24 (1) 06:52 (1)	06:23 19:36	06:53 18:44	07:32 (3) 06:26	06:50 (12) 07:00
31	05:53 20:17	06:24 (1) 06:52 (1)	06:24 19:35	06:54 18:44	07:33 (3) 06:27	06:51 (12) 07:01
Potential sun hours	459	428	375	345	298	288
Total, worst case	339	771	1915	409	64	

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

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

## SHADOW - Calendar

**Calculation:** Shadow receptor: U - Shadow Receptor: 1,0 × 1,0 Azimuth: -140,0° Slope: 90,0° (41)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	07:10 17:15	06:35 17:49	06:44 19:23	05:58 19:55	06:33 (13) 05:30 07:15 (13) 20:24
2	07:24 16:42	07:09 17:16	06:33 17:50	06:42 19:24	05:57 19:56	06:31 (13) 05:29 07:16 (13) 20:25
3	07:24 16:43	07:08 17:17	06:32 17:51	06:41 19:25	05:56 19:57	06:29 (13) 05:29 07:18 (13) 20:25
4	07:24 16:43	07:07 17:19	06:30 17:52	06:39 19:26	05:55 19:58	06:28 (13) 05:28 07:19 (13) 20:26
5	07:24 16:44	07:06 17:20	06:28 17:53	06:37 19:27	05:53 19:59	06:27 (13) 05:28 07:21 (13) 20:27
6	07:24 16:45	07:05 17:21	06:27 17:55	06:36 19:28	05:52 20:00	06:25 (13) 05:28 07:22 (13) 20:27
7	07:24 16:46	07:04 17:22	06:25 17:56	06:34 19:29	05:51 20:01	06:23 (13) 05:27 07:22 (13) 20:28
8	07:24 16:47	07:03 17:24	06:24 17:57	06:33 19:30	05:50 20:02	06:23 (13) 05:27 07:23 (13) 20:29
9	07:24 16:48	07:02 17:25	06:22 17:58	06:31 19:31	05:49 20:03	06:22 (13) 05:27 07:24 (13) 20:29
10	07:23 16:49	07:01 17:26	06:20 17:59	06:29 19:32	05:47 20:04	06:21 (13) 05:27 07:25 (13) 20:30
11	07:23 16:50	07:00 17:27	06:19 18:00	06:28 19:33	05:46 20:05	06:20 (13) 05:27 07:25 (13) 20:30
12	07:23 16:51	06:58 17:29	06:17 18:01	06:26 19:34	05:45 20:06	06:19 (13) 05:26 07:26 (13) 20:31
13	07:23 16:52	06:57 17:30	06:16 18:02	06:25 19:35	05:44 20:07	06:19 (13) 05:26 07:26 (13) 20:31
14	07:22 16:53	06:56 17:31	06:14 18:04	06:23 19:37	05:43 20:08	06:18 (13) 05:26 07:27 (13) 20:32
15	07:22 16:55	06:55 17:32	06:12 18:05	06:21 19:38	05:42 20:09	06:18 (13) 05:26 07:27 (13) 20:32
16	07:22 16:56	06:53 17:34	06:11 18:06	06:20 19:39	05:41 20:10	06:17 (13) 05:26 07:28 (13) 20:33
17	07:21 16:57	06:52 17:35	06:09 18:07	06:18 19:40	05:40 20:11	06:17 (13) 05:26 07:29 (13) 20:33
18	07:21 16:58	06:51 17:36	06:07 18:08	06:17 19:41	05:39 20:12	06:17 (13) 05:26 07:29 (13) 20:33
19	07:20 16:59	06:49 17:37	06:06 18:09	06:15 19:42	05:38 20:13	06:16 (13) 05:26 07:29 (13) 20:34
20	07:20 17:00	06:48 17:38	06:04 18:10	06:14 19:43	05:38 20:14	06:16 (13) 05:27 07:29 (13) 20:34
21	07:19 17:02	06:46 17:40	06:02 18:11	06:12 19:44	05:37 20:15	06:16 (13) 05:27 07:29 (13) 20:34
22	07:18 17:03	06:45 17:41	06:01 18:12	06:11 19:45	05:36 20:15	06:16 (13) 05:27 07:30 (13) 20:34
23	07:18 17:04	06:44 17:42	05:59 18:13	06:09 19:46	05:35 20:16	06:16 (13) 05:27 07:30 (13) 20:35
24	07:17 17:05	06:42 17:43	05:57 18:14	06:08 19:47	05:34 20:17	06:15 (13) 05:27 07:30 (13) 20:35
25	07:16 17:06	06:41 17:44	05:56 18:15	06:07 19:48	05:34 20:18	06:16 (13) 05:28 07:31 (13) 20:35
26	07:16 17:08	06:39 17:45	05:54 18:16	06:05 19:49	05:33 20:19	06:15 (13) 05:28 07:31 (13) 20:35
27	07:15 17:09	06:38 17:47	05:52 18:17	06:04 19:50	05:32 17:03 (13) 20:20	06:15 (13) 05:28 07:30 (13) 20:35
28	07:14 17:10	06:36 17:48	05:51 18:19	06:02 19:51	05:32 06:41 (13) 05:32 07:07 (13) 20:21	06:15 (13) 05:29 07:31 (13) 20:35
29	07:13 17:11		06:49 19:20	06:01 19:52	05:31 07:10 (13) 20:22	06:15 (13) 05:29 07:31 (13) 20:35
30	07:12 17:12		06:47 19:21	06:00 19:53	05:31 06:35 (13) 05:31 07:13 (13) 20:22	06:15 (13) 05:30 07:32 (13) 20:35
31	07:11 17:14		06:46 19:22		05:30 20:23	06:15 (13) 07:31 (13)
Potential sun hours	298	297	369	399	448	452
Total, worst case				113	2068	2283

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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**SHADOW - Calendar****Calculation: Shadow** Shadow receptor: U - Shadow Receptor: 1,0 × 1,0 Azimuth: -140,0° Slope: 90,0° (41)**Assumptions for shadow calculations**

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December	
1	05:30	06:22 (13)   05:54	06:30 (13)   06:25	06:54	06:28	07:03	
	20:35	07:38 (13)   20:16	07:36 (13)   19:33	18:43	16:56	16:32	
2	05:31	06:21 (13)   05:55	06:31 (13)   06:26	06:55	06:30	07:04	
	20:35	07:38 (13)   20:15	07:36 (13)   19:31	18:41	16:55	16:32	
3	05:31	06:22 (13)   05:56	06:32 (13)   06:27	06:56	06:31	07:05	
	20:35	07:38 (13)   20:14	07:35 (13)   19:30	18:39	16:54	16:31	
4	05:32	06:22 (13)   05:57	06:33 (13)   06:28	06:58	06:32	07:06	
	20:34	07:38 (13)   20:13	07:34 (13)   19:28	18:38	16:52	16:31	
5	05:32	06:22 (13)   05:58	06:34 (13)   06:29	06:59	06:33	07:07	
	20:34	07:39 (13)   20:11	07:33 (13)   19:26	18:36	16:51	16:31	
6	05:33	06:22 (13)   05:59	06:34 (13)   06:30	07:00	06:34	07:08	
	20:34	07:38 (13)   20:10	07:32 (13)   19:25	18:34	16:50	16:31	
7	05:33	06:23 (13)   06:00	06:36 (13)   06:31	07:01	06:36	07:09	
	20:34	07:39 (13)   20:09	07:31 (13)   19:23	18:33	16:49	16:31	
8	05:34	06:23 (13)   06:01	06:37 (13)   06:32	07:02	06:37	07:10	
	20:33	07:39 (13)   20:08	07:30 (13)   19:21	18:31	16:48	16:31	
9	05:35	06:23 (13)   06:02	06:38 (13)   06:32	07:03	06:38	07:11	
	20:33	07:39 (13)   20:07	07:29 (13)   19:20	18:29	16:47	16:31	
10	05:35	06:23 (13)   06:03	06:38 (13)   06:33	07:04	06:39	07:12	
	20:33	07:39 (13)   20:05	07:26 (13)   19:18	18:28	16:46	16:31	
11	05:36	06:24 (13)   06:04	06:40 (13)   06:34	07:05	06:40	07:13	
	20:32	07:40 (13)   20:04	07:24 (13)   19:16	18:26	16:45	16:31	
12	05:37	06:23 (13)   06:05	06:42 (13)   06:35	07:06	06:42	07:14	
	20:32	07:39 (13)   20:03	07:22 (13)   19:15	18:25	16:44	16:31	
13	05:37	06:24 (13)   06:06	06:44 (13)   06:36	07:07	06:43	07:14	
	20:31	07:40 (13)   20:01	07:20 (13)   19:13	18:23	16:43	16:31	
14	05:38	06:24 (13)   06:07	06:46 (13)   06:37	07:08	06:44	07:15	
	20:31	07:40 (13)   20:00	07:17 (13)   19:11	18:21	16:42	16:31	
15	05:39	06:24 (13)   06:08	06:49 (13)   06:38	07:09	06:45	07:16	
	20:30	07:40 (13)   19:59	07:14 (13)   19:10	18:20	16:41	16:31	
16	05:40	06:24 (13)   06:09	06:54 (13)   06:39	07:10	06:46	07:17	
	20:30	07:40 (13)   19:57	07:09 (13)   19:08	18:18	16:40	16:32	
17	05:41	06:25 (13)   06:10		06:40	07:11	06:47	07:17
	20:29	07:40 (13)   19:56		19:06	18:17	16:40	16:32
18	05:41	06:25 (13)   06:11		06:41	07:12	06:49	07:18
	20:28	07:40 (13)   19:54		19:05	18:15	16:39	16:32
19	05:42	06:25 (13)   06:12		06:42	07:14	06:50	07:19
	20:28	07:41 (13)   19:53		19:03	18:14	16:38	16:33
20	05:43	06:25 (13)   06:13		06:43	07:15	06:51	07:19
	20:27	07:40 (13)   19:52		19:01	18:12	16:37	16:33
21	05:44	06:25 (13)   06:14		06:44	07:16	06:52	07:20
	20:26	07:40 (13)   19:50		18:59	18:11	16:37	16:33
22	05:45	06:26 (13)   06:15		06:45	07:17	06:53	07:20
	20:25	07:40 (13)   19:49		18:58	18:09	16:36	16:34
23	05:46	06:26 (13)   06:16		06:46	07:18	06:54	07:21
	20:24	07:40 (13)   19:47		18:56	18:08	16:35	16:34
24	05:47	06:27 (13)   06:17		06:47	07:19	06:56	07:21
	20:24	07:40 (13)   19:46		18:54	18:07	16:35	16:35
25	05:47	06:27 (13)   06:18		06:48	06:20	06:57	07:22
	20:23	07:40 (13)   19:44		18:53	17:05	16:34	16:36
26	05:48	06:28 (13)   06:19		06:49	06:22	06:58	07:22
	20:22	07:40 (13)   19:42		18:51	17:04	16:34	16:36
27	05:49	06:27 (13)   06:20		06:50	06:23	06:59	07:22
	20:21	07:38 (13)   19:41		18:49	17:03	16:33	16:37
28	05:50	06:28 (13)   06:21		06:51	06:24	07:00	07:23
	20:20	07:38 (13)   19:39		18:48	17:01	16:33	16:38
29	05:51	06:28 (13)   06:22		06:52	06:25	07:01	07:23
	20:19	07:38 (13)   19:38		18:46	17:00	16:32	16:38
30	05:52	06:29 (13)   06:23		06:53	06:26	07:02	07:23
	20:18	07:37 (13)   19:36		18:44	16:59	16:32	16:39
31	05:53	06:30 (13)   06:24			06:27		07:23
	20:17	07:37 (13)   19:35			16:57		16:40
Potential sun hours	459	428	375	345	298	288	
Total, worst case	2306	770					

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: V - Shadow Receptor: 1,0 × 1,0 Azimuth: 90,0° Slope: 90,0° (42)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	05:30	19:45 (2)	05:54	19:49 (5)	06:25	06:54
2	20:35	25 20:10 (2)	20:16	3 19:52 (5)	19:33	18:43
3	05:31	19:44 (2)	05:55	19:49 (5)	06:26	17:47 (13)
4	20:35	25 20:09 (2)	20:15	2 19:51 (5)	19:31	18:00 (13)
5	05:31	19:45 (2)	05:56		06:27	18:41
6	20:35	25 20:10 (2)	20:14		19:30	84 18:18 (13)
7	05:32	19:45 (2)	05:57		06:28	16:55 (13)
8	20:34	24 20:09 (2)	20:13		19:28	9 16:31 (13)
9	05:32	19:46 (2)	05:58		06:29	06:31
10	20:34	23 20:09 (2)	20:11		19:26	16:53 (13)
11	05:33	19:45 (2)	05:59		06:29	16:54 (13)
12	20:34	23 20:08 (2)	20:10		19:25	06:32
13	05:33	19:46 (2)	06:00		06:30	81 18:15 (13)
14	20:34	22 20:08 (2)	20:09		19:23	16:52 (13)
15	05:34	19:47 (2)	06:01		06:31	06:33
16	20:33	22 20:09 (2)	20:08		19:21	06:34
17	05:35	19:46 (2)	06:02		06:32	79 18:12 (13)
18	20:33	22 20:08 (2)	20:07		19:20	16:50 (13)
19	05:35	19:47 (2)	06:03		06:33	06:36
20	20:33	21 20:08 (2)	20:05		19:18	06:37
21	05:36	19:48 (2)	06:04		06:34	77 18:10 (13)
22	20:32	20 20:08 (2)	20:04		19:16	16:49 (13)
23	05:37	19:48 (2)	06:05		06:35	06:37
24	20:32	18 20:06 (2)	20:03		19:15	75 18:08 (13)
25	05:37	19:48 (2)	06:06		06:36	16:48 (13)
26	20:31	18 20:06 (2)	20:01		19:13	06:38
27	05:38	19:49 (2)	06:07		06:37	74 18:07 (13)
28	20:31	17 20:06 (2)	20:00		19:11	16:47 (13)
29	05:39	19:49 (2)	06:08		06:38	06:42
30	20:30	16 20:05 (2)	19:59		19:10	67 18:01 (13)
31	05:40	19:50 (2)	06:09		06:39	16:44 (13)
32	20:29	15 20:05 (2)	19:57		19:08	68 18:01 (13)
33	05:41	19:50 (2)	06:10		06:40	69 18:00 (13)
34	20:29	14 20:04 (2)	19:56		19:06	67 18:00 (13)
35	05:41	19:51 (2)	06:11		06:41	66 17:58 (13)
36	20:28	13 20:04 (2)	19:54		19:05	65 17:58 (13)
37	05:42	19:52 (2)	06:12		06:42	64 17:57 (13)
38	20:28	11 20:03 (2)	19:53		19:03	63 17:57 (13)
39	05:43	19:50 (5)	06:13		06:43	62 17:57 (13)
40	20:27	12 20:02 (2)	19:51		19:01	61 18:20 (13)
41	05:44	19:50 (5)	06:14		06:44	60 18:20 (13)
42	20:26	11 20:01 (2)	19:50		18:59	59 18:20 (13)
43	05:45	19:50 (5)	06:15		06:45	58 18:20 (13)
44	20:25	11 20:01 (2)	19:49		18:58	57 18:20 (13)
45	05:46	19:49 (5)	06:16		06:46	56 18:20 (13)
46	20:24	11 20:00 (2)	19:47		18:56	55 18:20 (13)
47	05:46	19:49 (5)	06:17		06:47	54 18:20 (13)
48	20:24	11 20:00 (2)	19:46		18:54	53 18:20 (13)
49	05:47	19:49 (5)	06:18		06:48	52 18:20 (13)
50	20:23	10 19:59 (5)	19:44		18:53	51 18:20 (13)
51	05:48	19:49 (5)	06:19		06:49	50 18:20 (13)
52	20:22	9 19:58 (5)	19:42		18:51	49 18:20 (13)
53	05:49	19:48 (5)	06:20		06:50	48 18:20 (13)
54	20:21	8 19:56 (5)	19:41		18:49	47 18:20 (13)
55	05:50	19:48 (5)	06:21		06:51	46 18:20 (13)
56	20:20	8 19:56 (5)	19:39		18:48	45 18:20 (13)
57	05:51	19:48 (5)	06:22		06:52	44 18:20 (13)
58	20:19	7 19:55 (5)	19:38		18:46	43 18:20 (13)
59	05:52	19:48 (5)	06:23		06:53	42 18:20 (13)
60	20:18	6 19:54 (5)	19:36		18:44	41 18:20 (13)
61	05:53	19:48 (5)	06:24			40 18:20 (13)
62	20:17	5 19:53 (5)	19:35			39 18:20 (13)
63	Potential sun hours	459	428		375	345
64	Total, worst case	483	5	1999	1792	298
65						23
66						288

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

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

## SHADOW - Calendar

Calculation: ShadowShadow receptor: W - Shadow Receptor: 1,0 × 1,0 Azimuth: 90,0° Slope: 90,0° (43)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June			
1	07:24 16:41	07:10 17:15	06:35 17:49	65 17:28 (13)	06:44 19:23	43 18:18 (13)	05:58 19:54	25 20:24	19:34 (2) 19:59 (2)
2	07:24 16:42	07:09 17:16	06:33 17:50	67 17:29 (13)	06:42 19:24	38 18:16 (13)	05:57 19:56	25 20:25	19:35 (2) 20:00 (2)
3	07:24 16:42	07:08 17:17	06:32 17:51	68 17:29 (13)	06:41 19:25	33 18:13 (13)	05:56 19:57	26 20:25	19:34 (2) 20:00 (2)
4	07:24 16:43	07:07 17:19	06:30 17:52	70 17:31 (13)	06:39 19:26	25 18:08 (13)	05:54 19:58	26 20:26	19:35 (2) 20:01 (2)
5	07:24 16:44	07:06 17:20	06:28 17:53	72 17:32 (13)	06:37 19:27	12 18:02 (13)	05:53 19:59	27 20:27	19:35 (2) 20:02 (2)
6	07:24 16:45	07:05 17:21	06:27 17:55	73 17:34 (13)	06:36 19:28		05:52 20:00	28 20:27	19:34 (2) 20:02 (2)
7	07:24 16:46	07:04 17:22	06:25 17:56	75 17:35 (13)	06:34 19:29		05:51 20:01	28 20:28	19:35 (2) 20:03 (2)
8	07:24 16:47	07:03 17:24	16:57 (13) 17:57	76 17:01 (13)	06:33 19:30		05:50 20:02	29 20:29	19:35 (2) 20:04 (2)
9	07:24 16:48	07:02 17:25	16:52 (13) 17:58	77 17:37 (13)	06:31 19:31		05:49 20:03	28 20:30	19:36 (2) 20:04 (2)
10	07:23 16:49	07:01 17:26	16:48 (13) 17:59	79 17:38 (13)	06:29 19:32		05:47 20:04	29 20:30	19:36 (2) 20:05 (2)
11	07:23 16:50	07:00 17:27	16:45 (13) 18:00	80 17:40 (13)	06:28 19:33		05:46 20:05	30 20:30	19:35 (2) 20:05 (2)
12	07:23 16:51	06:58 17:29	16:43 (13) 18:01	81 17:40 (13)	06:26 19:34		05:45 20:06	29 20:31	19:36 (2) 20:05 (2)
13	07:23 16:52	06:57 17:30	16:41 (13) 18:02	82 17:41 (13)	06:25 19:35		05:44 20:07	30 20:31	19:36 (2) 20:06 (2)
14	07:22 16:53	06:56 17:31	16:39 (13) 18:03	83 17:43 (13)	06:23 19:37		05:43 20:08	30 20:32	19:36 (2) 20:06 (2)
15	07:22 16:55	06:55 17:32	16:37 (13) 18:05	82 17:42 (13)	06:21 19:38		05:42 20:09	30 20:32	19:36 (2) 20:06 (2)
16	07:22 16:56	06:53 17:33	16:36 (13) 18:06	81 17:41 (13)	06:20 19:39		05:41 20:10	30 20:33	19:37 (2) 20:07 (2)
17	07:21 16:57	06:52 17:35	16:34 (13) 18:07	80 17:41 (13)	06:18 19:40		05:40 20:11	30 20:33	19:38 (2) 20:08 (2)
18	07:21 16:58	06:51 17:36	16:33 (13) 18:08	79 17:40 (13)	06:17 19:41		05:39 20:12	30 20:33	19:38 (2) 20:08 (2)
19	07:20 16:59	06:49 17:37	16:31 (13) 18:09	78 17:39 (13)	06:15 19:42		05:38 20:13	30 20:34	19:38 (2) 20:08 (2)
20	07:20 17:00	06:48 17:38	16:30 (13) 18:10	77 17:39 (13)	06:14 19:43		05:38 20:14	30 20:34	19:38 (2) 20:08 (2)
21	07:19 17:01	06:46 17:39	16:29 (13) 18:11	75 17:37 (13)	06:12 19:44		05:37 20:15	30 20:34	19:38 (2) 20:08 (2)
22	07:18 17:03	06:45 17:41	16:28 (13) 18:12	73 17:36 (13)	06:11 19:45		05:36 20:15	30 20:34	19:38 (2) 20:08 (2)
23	07:18 17:04	06:44 17:42	16:27 (13) 18:13	71 17:34 (13)	06:09 19:46		05:35 20:16	30 20:34	19:39 (2) 20:09 (2)
24	07:17 17:05	06:42 17:43	16:26 (13) 18:14	70 17:34 (13)	06:08 19:47		05:34 20:17	30 20:35	19:39 (2) 20:09 (2)
25	07:16 17:06	06:41 17:44	16:26 (13) 18:15	67 17:32 (13)	06:07 19:48		05:34 20:18	30 20:35	19:39 (2) 20:09 (2)
26	07:16 17:07	06:39 17:45	16:24 (13) 18:16	64 17:30 (13)	06:05 19:49		05:33 20:19	30 20:35	19:40 (2) 20:10 (2)
27	07:15 17:09	06:38 17:47	16:24 (13) 18:17	61 17:29 (13)	06:04 19:50		05:32 20:20	31 20:35	19:39 (2) 20:10 (2)
28	07:14 17:10	06:36 17:48	16:23 (13) 18:19	59 17:27 (13)	06:02 19:51		05:32 20:21	30 20:35	19:39 (2) 20:09 (2)
29	07:13 17:11		16:23 (13) 18:19	59 17:27 (13)	06:01 19:51		05:31 20:21	30 20:35	19:40 (2) 20:10 (2)
30	07:12 17:12		16:23 (13) 18:19	56 18:25 (13)	06:00 19:52		05:31 20:22	30 20:35	19:40 (2) 20:10 (2)
31	07:11 17:14		16:23 (13) 18:19	52 18:24 (13)	06:00 19:53		05:30 20:22	29 20:35	19:40 (2) 20:09 (2)
Potential sun hours	298	297	369	399	448	452			
Total, worst case		814	2221	151	318	870			

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

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



## SHADOW - Calendar

Calculation: ShadowShadow receptor: W - Shadow Receptor: 1,0 × 1,0 Azimuth: 90,0° Slope: 90,0° (43)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	05:30	19:40 (2)   05:54	19:46 (5)   06:25	06:54	16:58 (13)   06:28	16:18 (13)   07:03
2	05:31	19:40 (2)   05:55	19:46 (5)   06:26	06:55	16:58 (13)   06:30	16:22 (13)   07:04
3	05:31	19:41 (2)   05:56	19:46 (5)   06:27	06:56	16:57 (13)   06:31	16:31 (13)   07:05
4	05:32	19:40 (2)   05:57	19:47 (5)   06:28	06:57	16:57 (13)   06:32	16:29 (13)   07:06
5	05:32	19:41 (2)   05:58	19:47 (5)   06:29	06:59	16:57 (13)   06:33	07:07
6	05:33	19:41 (2)   05:59	19:48 (5)   06:29	07:00	16:57 (13)   06:34	07:08
7	05:33	19:41 (2)   06:00	19:25	06:30	16:56 (13)   06:36	07:09
8	05:34	19:42 (2)   06:01	19:23	11 17:57 (13)   18:33	74 18:10 (13)   16:49	16:31
9	05:35	19:41 (2)   06:02	19:21	24 18:03 (13)   18:31	72 18:08 (13)   16:48	16:31
10	05:35	19:42 (2)   06:03	19:20	31 18:06 (13)   18:29	71 18:07 (13)   16:47	16:31
11	05:36	19:42 (2)   06:04	19:18	38 18:09 (13)   18:28	69 18:05 (13)   16:46	16:31
12	05:37	19:42 (2)   06:05	19:16	43 18:11 (13)   18:26	68 18:03 (13)   16:45	16:31
13	05:37	19:43 (2)   06:06	19:15	47 18:13 (13)   18:25	66 18:01 (13)   16:44	16:31
14	05:38	19:43 (2)   06:07	19:13	52 18:15 (13)   18:23	65 18:00 (13)   16:43	16:31
15	05:39	19:43 (2)   06:08	19:11	55 18:16 (13)   18:21	62 17:58 (13)   16:42	16:31
16	05:40	19:43 (2)   06:09	19:10	58 18:17 (13)   18:20	60 17:57 (13)   16:41	16:31
17	05:41	19:44 (2)   06:10	19:08	61 18:18 (13)   18:18	59 17:56 (13)   16:40	16:32
18	05:41	19:44 (2)   06:11	19:06	64 18:19 (13)   18:17	57 17:54 (13)   16:40	16:32
19	05:42	19:45 (2)   06:12	19:05	66 18:19 (13)   18:15	54 17:52 (13)   16:39	16:32
20	05:43	19:45 (2)   06:13	19:03	69 18:20 (13)   18:14	53 17:51 (13)   16:38	16:33
21	05:44	19:45 (2)   06:14	19:01	71 18:21 (13)   18:12	50 17:49 (13)   16:37	16:33
22	05:45	19:46 (2)   06:15	18:59	73 18:21 (13)   18:11	48 17:48 (13)   16:37	16:33
23	05:46	19:47 (2)   06:16	18:58	75 18:22 (13)   18:09	45 17:46 (13)   16:36	16:34
24	05:46	19:48 (2)   06:17	18:57	76 18:22 (13)   18:08	43 17:45 (13)   16:35	16:34
25	05:47	19:48 (2)   06:18	18:54	78 18:22 (13)   18:07	40 17:43 (13)   16:35	16:35
26	05:48	19:48 (5)   06:19	18:52	80 18:23 (13)   18:06	38 17:42 (13)   16:34	16:36
27	05:49	19:48 (5)   06:20	18:51	81 18:23 (13)   18:05	35 17:41 (13)   16:34	16:36
28	05:50	19:49 (5)   06:21	18:50	82 18:23 (13)   18:04	32 17:40 (13)   16:33	16:37
29	05:51	19:49 (5)   06:22	18:49	82 18:23 (13)   18:03	29 17:39 (13)   16:33	16:38
30	05:52	19:49 (5)   06:23	18:48	83 18:23 (13)   18:02	26 17:38 (13)   16:33	16:38
31	05:53	19:49 (5)   06:24	18:47	82 18:23 (13)   18:01	23 17:37 (13)   16:32	16:39
Potential sun hours	459	428	375	345	298	288
Total, worst case	615	18	1482	1729	25	

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

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



SHADOW - Calendar

Calculation: ShadowShadow receptor: Y - Shadow Receptor: 1,0 x 1,0 Azimuth: 150,0° Slope: 90,0° (45)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

Table with columns for months (January to December) and rows for days (1 to 31). Each cell contains time ranges and counts in parentheses. Summary row at the bottom shows total hours for each month and overall totals.

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

Matrix table with columns: 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).

## SHADOW - Calendar

Calculation: ShadowShadow receptor: Z - Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (46)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	60 07:46 (16)   07:10 08:46 (16)   17:15	85 07:30 (16)   06:35 08:55 (16)   17:49	06:44 19:23	05:58 19:55	05:30 20:24
2	07:24 16:42	60 07:46 (16)   07:09 08:46 (16)   17:16	86 07:29 (16)   06:33 08:55 (16)   17:50	06:42 19:24	05:57 19:56	05:29 20:25
3	07:24 16:43	61 07:46 (16)   07:08 08:47 (16)   17:18	87 07:28 (16)   06:32 08:55 (16)   17:51	06:41 19:25	05:56 19:57	05:29 20:25
4	07:24 16:44	62 07:46 (16)   07:07 08:48 (16)   17:19	88 07:27 (16)   06:30 08:55 (16)   17:52	06:39 19:26	05:55 19:58	05:29 20:26
5	07:24 16:44	62 07:46 (16)   07:06 08:48 (16)   17:20	88 07:26 (16)   06:28 08:54 (16)   17:54	06:38 19:27	05:53 19:59	05:28 20:27
6	07:24 16:45	63 07:46 (16)   07:05 08:49 (16)   17:21	89 07:25 (16)   06:27 08:54 (16)   17:55	06:36 19:28	05:52 20:00	05:28 20:27
7	07:24 16:46	64 07:46 (16)   07:04 08:50 (16)   17:23	90 07:24 (16)   06:25 08:54 (16)   17:56	06:34 19:29	05:51 20:01	05:28 20:28
8	07:24 16:47	64 07:46 (16)   07:03 08:50 (16)   17:24	88 07:25 (16)   06:24 08:53 (16)   17:57	06:33 19:30	05:50 20:02	05:27 20:29
9	07:24 16:48	65 07:45 (16)   07:02 08:50 (16)   17:25	87 07:26 (16)   06:22 08:53 (16)   17:58	06:31 19:31	05:49 20:03	05:27 20:29
10	07:23 16:49	66 07:45 (16)   07:01 08:51 (16)   17:26	85 07:26 (16)   06:21 08:51 (16)   17:59	06:29 19:32	05:48 20:04	05:27 20:30
11	07:23 16:50	67 07:45 (16)   07:00 08:52 (16)   17:28	84 07:27 (16)   06:19 08:51 (16)   18:00	06:28 19:33	05:46 20:05	05:27 20:30
12	07:23 16:51	67 07:44 (16)   06:58 08:51 (16)   17:29	82 07:28 (16)   06:17 08:50 (16)   18:01	06:26 19:34	05:45 20:06	05:27 20:31
13	07:23 16:53	68 07:44 (16)   06:57 08:52 (16)   17:30	80 07:29 (16)   06:16 08:49 (16)   18:02	06:25 19:36	05:44 20:07	05:27 20:31
14	07:22 16:54	69 07:44 (16)   06:56 08:53 (16)   17:31	78 07:29 (16)   06:14 08:47 (16)   18:04	06:23 19:37	05:43 20:08	05:26 20:32
15	07:22 16:55	70 07:43 (16)   06:55 08:53 (16)   17:32	76 07:31 (16)   06:12 08:47 (16)   18:05	06:22 19:38	05:42 20:09	05:26 20:32
16	07:22 16:56	71 07:43 (16)   06:53 08:54 (16)   17:34	74 07:32 (16)   06:11 08:46 (16)   18:06	06:20 19:39	05:41 20:10	05:26 20:33
17	07:21 16:57	72 07:42 (16)   06:52 08:54 (16)   17:35	71 07:33 (16)   06:09 08:44 (16)   18:07	06:18 19:40	05:40 20:11	05:26 20:33
18	07:21 16:58	73 07:42 (16)   06:51 08:55 (16)   17:36	68 07:34 (16)   06:07 08:42 (16)   18:08	06:17 19:41	05:40 20:12	05:27 20:33
19	07:20 16:59	74 07:41 (16)   06:49 08:55 (16)   17:37	65 07:35 (16)   06:06 08:40 (16)   18:09	06:15 19:42	05:39 20:13	05:27 20:34
20	07:20 17:00	75 07:40 (16)   06:48 08:55 (16)   17:38	62 07:37 (16)   06:04 08:39 (16)   18:10	06:14 19:43	05:38 20:14	05:27 20:34
21	07:19 17:02	76 07:40 (16)   06:46 08:56 (16)   17:40	58 07:39 (16)   06:02 08:37 (16)   18:11	06:12 19:44	05:37 20:15	05:27 20:34
22	07:18 17:03	76 07:39 (16)   06:45 08:55 (16)   17:41	54 07:40 (16)   06:01 08:34 (16)   18:12	06:11 19:45	05:36 20:15	05:27 20:34
23	07:18 17:04	77 07:38 (16)   06:44 08:55 (16)   17:42	50 07:43 (16)   05:59 08:33 (16)   18:13	06:10 19:46	05:35 20:16	05:27 20:35
24	07:17 17:05	78 07:38 (16)   06:42 08:56 (16)   17:43	44 07:45 (16)   05:57 08:29 (16)   18:14	06:08 19:47	05:35 20:17	05:28 20:35
25	07:16 17:06	79 07:37 (16)   06:41 08:56 (16)   17:44	39 07:48 (16)   05:56 08:27 (16)   18:15	06:07 19:48	05:34 20:18	05:28 20:35
26	07:16 17:08	80 07:36 (16)   06:39 08:56 (16)   17:46	31 07:51 (16)   05:54 08:22 (16)   18:16	06:05 19:49	05:33 20:19	05:28 20:35
27	07:15 17:09	81 07:35 (16)   06:38 08:56 (16)   17:47	22 07:56 (16)   05:52 08:18 (16)   18:18	06:04 19:50	05:33 20:20	05:29 20:35
28	07:14 17:10	82 07:34 (16)   06:36 08:56 (16)   17:48	18 05:51   06:03 18:19	06:03 19:51	05:32 20:21	05:29 20:35
29	07:13 17:11	83 07:33 (16)   06:35 08:56 (16)   17:49	14 06:49   06:01 19:20	06:01 19:52	05:31 20:22	05:29 20:35
30	07:12 17:13	84 07:32 (16)   06:34 08:56 (16)   17:50	10 06:47   06:00 19:21	06:00 19:53	05:31 20:22	05:30 20:35
31	07:11 17:14	85 07:31 (16)   06:33 08:56 (16)   17:51	6 06:46   06:00 19:22	06:00 19:54	05:30 20:23	05:30 20:35
Potential sun hours	298	297	369	398	448	452
Total, worst case	2214	1911				

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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## SHADOW - Calendar

**Calculation:** ShadowShadow receptor: AA - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (47)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June		
1	07:24 16:41	12:50 (16) 13:11 (16)	07:10 17:15	06:35 17:49	17:09 (11) 17:28 (11)	06:44 19:23	05:58 19:55	05:30 20:24
2	07:24 16:42	12:54 (16) 13:08 (16)	07:09 17:16	06:33 17:50	17:10 (11) 17:29 (11)	06:42 19:24	05:57 19:56	05:29 20:25
3	07:24 16:43	07:08 17:18	07:08 17:18	06:32 17:51	17:10 (11) 17:28 (11)	06:41 19:25	05:56 19:57	05:29 20:25
4	07:24 16:44	07:07 17:19	07:07 17:19	06:30 17:52	17:13 (11) 17:27 (11)	06:39 19:26	05:55 19:58	05:29 20:26
5	07:24 16:44	07:06 17:20	07:06 17:20	06:28 17:54	17:15 (11) 17:23 (11)	06:38 19:27	05:53 19:59	05:28 20:27
6	07:24 16:45	07:05 17:21	07:05 17:21	06:27 17:55	06:36 19:28	05:52 20:00	05:28 20:27	
7	07:24 16:46	07:04 17:23	07:04 17:23	06:25 17:56	06:34 19:29	05:51 20:01	05:28 20:28	
8	07:24 16:47	07:03 17:24	07:03 17:24	06:24 17:57	06:33 19:30	05:50 20:02	05:27 20:29	
9	07:24 16:48	07:02 17:25	07:02 17:25	06:22 17:58	06:31 19:31	05:49 20:03	05:27 20:29	
10	07:23 16:49	07:01 17:26	07:01 17:26	06:21 17:59	06:29 19:32	05:48 20:04	05:27 20:30	
11	07:23 16:50	07:00 17:27	07:00 17:27	06:19 18:00	06:28 19:33	05:46 20:05	05:27 20:30	
12	07:23 16:51	06:58 17:29	06:58 17:29	06:17 18:01	06:26 19:34	05:45 20:06	05:27 20:31	
13	07:23 16:53	06:57 17:30	06:57 17:30	06:16 18:02	06:25 19:36	05:44 20:07	05:26 20:31	
14	07:22 16:54	06:56 17:31	06:56 17:31	06:14 18:04	06:23 19:37	05:43 20:08	05:26 20:32	
15	07:22 16:55	06:55 17:32	06:55 17:32	06:12 18:05	06:22 19:38	05:42 20:09	05:26 20:32	
16	07:22 16:56	06:53 17:34	06:53 17:34	06:11 18:06	06:20 19:39	05:41 20:10	05:26 20:33	
17	07:21 16:57	06:52 17:35	06:52 17:35	06:09 18:07	06:18 19:40	05:40 20:11	05:26 20:33	
18	07:21 16:58	06:51 17:36	06:51 17:36	06:07 18:08	06:17 19:41	05:39 20:12	05:27 20:33	
19	07:20 16:59	06:49 17:37	06:49 17:12 (11) 17:15 (11)	06:06 18:09	06:15 19:42	05:39 20:13	05:27 20:34	
20	07:20 17:00	06:48 17:38	06:48 17:11 (11) 17:16 (11)	06:04 18:10	06:14 19:43	05:38 20:14	05:27 20:34	
21	07:19 17:02	06:46 17:40	06:46 17:10 (11) 17:18 (11)	06:02 18:11	06:12 19:44	05:37 20:15	05:27 20:34	
22	07:18 17:03	06:45 17:41	06:45 17:09 (11) 17:19 (11)	06:01 18:12	06:11 19:45	05:36 20:15	05:27 20:34	
23	07:18 17:04	06:44 17:42	06:44 17:09 (11) 17:21 (11)	05:59 18:13	06:10 19:46	05:35 20:16	05:27 20:34	
24	07:17 17:05	06:42 17:43	06:42 17:08 (11) 17:21 (11)	05:57 18:14	06:08 19:47	05:35 20:17	05:28 20:35	
25	07:16 17:06	06:41 17:44	06:41 17:08 (11) 17:23 (11)	05:56 18:15	06:07 19:48	05:34 20:18	05:28 20:35	
26	07:16 17:08	06:39 17:45	06:39 17:08 (11) 17:24 (11)	05:54 18:16	06:05 19:49	05:33 20:19	05:28 20:35	
27	07:15 17:09	06:38 17:47	06:38 17:08 (11) 17:25 (11)	05:52 18:18	06:04 19:50	05:33 20:20	05:29 20:35	
28	07:14 17:10	06:36 17:48	06:36 17:08 (11) 17:26 (11)	05:51 18:19	06:02 19:51	05:32 20:21	05:29 20:35	
29	07:13 17:11			06:49 19:20	06:01 19:52	05:31 20:22	05:29 20:35	
30	07:12 17:13			06:47 19:21	06:00 19:53	05:31 20:22	05:30 20:35	
31	07:11 17:14			06:46 19:22		05:30 20:23		
Potential sun hours	298	297	369	398	448	452		
Total, worst case	35	117	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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## SHADOW - Calendar

**Calculation:** ShadowShadow receptor: AA - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (47)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October		November	December		
1	05:30 20:35	05:54 20:16	06:25 19:33	06:54 18:43		06:29 16:56	07:03 16:32		
2	05:31 20:35	05:55 20:15	06:26 19:31	06:56 18:41		06:30 16:55	07:04 16:32		
3	05:31 20:35	05:56 20:14	06:27 19:30	06:57 18:39		06:31 16:54	07:05 16:31		
4	05:32 20:34	05:57 20:13	06:28 19:28	06:58 18:38		06:32 16:53	07:06 16:31		
5	05:32 20:34	05:58 20:11	06:29 19:26	06:59 18:36		06:33 16:51	07:07 16:31		
6	05:33 20:34	05:59 20:10	06:30 19:25	07:00 18:34		06:34 16:50	07:08 16:31		
7	05:34 20:34	06:00 20:09	06:31 19:23	07:01 18:33		06:36 16:49	07:09 16:31		
8	05:34 20:33	06:01 20:08	06:32 19:22	07:02 18:31		06:37 16:48	07:10 16:31		
9	05:35 20:33	06:02 20:07	06:33 19:20	07:03 18:29	11	17:49 (11) 18:00 (11)	06:38 16:47	07:11 16:31	
10	05:36 20:33	06:03 20:05	06:34 19:18	07:04 18:28	16	17:46 (11) 18:02 (11)	06:39 16:46	07:12 16:31	12 12:44 (16) 12 12:56 (16)
11	05:36 20:32	06:04 20:04	06:35 19:16	07:05 18:26	19	17:44 (11) 18:03 (11)	06:40 16:45	07:13 16:31	21 12:40 (16) 21 13:01 (16)
12	05:37 20:32	06:05 20:03	06:36 19:15	07:06 18:25	19	17:43 (11) 18:02 (11)	06:42 16:44	07:14 16:31	26 12:38 (16) 26 13:04 (16)
13	05:38 20:31	06:06 20:01	06:36 19:13	07:07 18:23	19	17:41 (11) 18:00 (11)	06:43 16:43	07:14 16:31	30 12:37 (16) 30 13:07 (16)
14	05:38 20:31	06:07 20:00	06:37 19:11	07:08 18:22	18	17:40 (11) 17:58 (11)	06:44 16:42	07:15 16:31	33 12:36 (16) 33 13:09 (16)
15	05:39 20:30	06:08 19:59	06:38 19:10	07:09 18:20	16	17:41 (11) 17:57 (11)	06:45 16:41	07:16 16:32	36 12:34 (16) 36 13:10 (16)
16	05:40 20:29	06:09 19:57	06:39 19:08	07:10 18:18	16	17:40 (11) 17:56 (11)	06:46 16:40	07:17 16:32	38 12:34 (16) 38 13:12 (16)
17	05:41 20:29	06:10 19:56	06:40 19:06	07:11 18:17	14	17:40 (11) 17:54 (11)	06:47 16:40	07:17 16:32	39 12:34 (16) 39 13:13 (16)
18	05:42 20:28	06:11 19:54	06:41 19:05	07:13 18:15	13	17:39 (11) 17:52 (11)	06:49 16:39	07:18 16:32	41 12:33 (16) 41 13:14 (16)
19	05:42 20:28	06:12 19:53	06:42 19:03	07:14 18:14	12	17:39 (11) 17:51 (11)	06:50 16:38	07:19 16:33	42 12:33 (16) 42 13:15 (16)
20	05:43 20:27	06:13 19:52	06:43 19:01	07:15 18:12	9	17:40 (11) 17:49 (11)	06:51 16:37	07:19 16:33	42 12:33 (16) 42 13:15 (16)
21	05:44 20:26	06:14 19:50	06:44 19:00	07:16 18:11	7	17:41 (11) 17:48 (11)	06:52 16:37	07:20 16:34	43 12:33 (16) 43 13:16 (16)
22	05:45 20:25	06:15 19:49	06:45 18:58	07:17 18:10	5	17:42 (11) 17:47 (11)	06:53 16:36	07:20 16:34	43 12:33 (16) 43 13:16 (16)
23	05:46 20:24	06:16 19:47	06:46 18:56	07:18 18:08	2	17:43 (11) 17:45 (11)	06:54 16:35	07:21 16:35	42 12:35 (16) 42 13:17 (16)
24	05:47 20:24	06:17 19:46	06:47 18:54	07:19 18:07			06:56 16:35	07:21 16:35	42 12:35 (16) 42 13:17 (16)
25	05:48 20:23	06:18 19:44	06:48 18:53	07:20 17:05			06:57 16:34	07:22 16:36	42 12:36 (16) 42 13:18 (16)
26	05:48 20:22	06:19 19:42	06:49 18:51	07:22 17:04			06:58 16:34	07:22 16:36	40 12:37 (16) 40 13:17 (16)
27	05:49 20:21	06:20 19:41	06:50 18:49	07:23 17:03			06:59 16:33	07:22 16:37	40 12:38 (16) 39 13:17 (16)
28	05:50 20:20	06:21 19:39	06:51 18:48	07:24 17:01			07:00 16:33	07:23 16:38	37 12:39 (16) 37 13:16 (16)
29	05:51 20:19	06:22 19:38	06:52 18:46	07:25 17:00			07:01 16:33	07:23 16:38	34 12:42 (16) 34 13:16 (16)
30	05:52 20:18	06:23 19:36	06:53 18:44	07:26 16:59			07:02 16:32	07:23 16:39	31 12:44 (16) 31 13:15 (16)
31	05:53 20:17	06:24 19:35		06:27 16:57				07:23 16:40	28 12:46 (16) 28 13:14 (16)
Potential sun hours	459	428	375	345		298	288		
Total, worst case					196			781	

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: AC - Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (49)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	07:10 17:15	06:35 17:49	06:44 19:23	07:03 (16) 05:59 07:38 (16) 19:55	06:18 (16) 05:30 07:51 (16) 20:24
2	07:24 16:42	07:09 17:16	06:33 17:50	06:42 19:24	07:01 (16) 05:57 07:40 (16) 19:56	06:16 (16) 05:29 07:50 (16) 20:25
3	07:24 16:43	07:08 17:18	06:32 17:51	06:41 19:25	06:59 (16) 05:56 07:41 (16) 19:57	06:15 (16) 05:29 07:49 (16) 20:25
4	07:24 16:44	07:07 17:19	06:30 17:52	06:39 19:26	06:58 (16) 05:55 07:43 (16) 19:58	06:14 (16) 05:29 07:49 (16) 20:26
5	07:24 16:44	07:06 17:20	06:28 17:54	06:38 19:27	06:56 (16) 05:53 07:44 (16) 19:59	06:14 (16) 05:28 07:49 (16) 20:27
6	07:24 16:45	07:05 17:21	06:27 17:55	06:36 19:28	06:54 (16) 05:52 07:45 (16) 20:00	06:14 (16) 05:28 07:49 (16) 20:27
7	07:24 16:46	07:04 17:23	06:25 17:56	06:34 19:29	06:53 (16) 05:51 07:46 (16) 20:01	06:14 (16) 05:28 07:49 (16) 20:28
8	07:24 16:47	07:03 17:24	06:24 17:57	06:33 19:30	06:51 (16) 05:50 07:47 (16) 20:02	06:14 (16) 05:27 07:48 (16) 20:29
9	07:24 16:48	07:02 17:25	06:22 17:58	06:31 19:31	06:50 (16) 05:49 07:48 (16) 20:03	06:14 (16) 05:27 07:47 (16) 20:29
10	07:23 16:49	07:01 17:26	06:21 17:59	06:29 19:32	06:48 (16) 05:48 07:49 (16) 20:04	06:14 (16) 05:27 07:47 (16) 20:30
11	07:23 16:50	07:00 17:28	06:19 18:00	06:28 19:33	06:46 (16) 05:46 07:49 (16) 20:05	06:14 (16) 05:27 07:46 (16) 20:30
12	07:23 16:51	06:58 17:29	06:17 18:01	06:26 19:34	06:45 (16) 05:45 07:50 (16) 20:06	06:14 (16) 05:27 07:46 (16) 20:31
13	07:23 16:53	06:57 17:30	06:16 18:02	06:25 19:36	06:43 (16) 05:44 07:50 (16) 20:07	06:15 (16) 05:27 07:45 (16) 20:31
14	07:22 16:54	06:56 17:31	06:14 18:04	06:23 19:37	06:42 (16) 05:43 07:51 (16) 20:08	06:15 (16) 05:26 07:45 (16) 20:32
15	07:22 16:55	06:55 17:32	06:12 18:05	06:22 19:38	06:40 (16) 05:42 07:51 (16) 20:09	06:15 (16) 05:26 07:44 (16) 20:32
16	07:22 16:56	06:53 17:34	06:11 18:06	06:20 19:39	06:39 (16) 05:41 07:52 (16) 20:10	06:17 (16) 05:26 07:45 (16) 20:33
17	07:21 16:57	06:52 17:35	06:09 18:07	06:18 19:40	06:37 (16) 05:40 07:51 (16) 20:11	06:17 (16) 05:26 07:44 (16) 20:33
18	07:21 16:58	06:51 17:36	06:07 18:08	06:17 19:41	06:36 (16) 05:40 07:52 (16) 20:12	06:17 (16) 05:27 07:43 (16) 20:33
19	07:20 16:59	06:49 17:37	06:06 18:09	06:15 19:42	06:34 (16) 05:39 07:52 (16) 20:13	06:17 (16) 05:27 07:43 (16) 20:34
20	07:20 17:00	06:48 17:38	06:04 18:10	06:14 19:43	06:33 (16) 05:38 07:52 (16) 20:14	06:18 (16) 05:27 07:42 (16) 20:34
21	07:19 17:02	06:46 17:40	06:02 18:11	06:12 19:44	06:31 (16) 05:37 07:52 (16) 20:15	06:19 (16) 05:27 07:42 (16) 20:34
22	07:18 17:03	06:45 17:41	06:01 18:12	06:11 19:45	06:30 (16) 05:36 07:52 (16) 20:15	06:19 (16) 05:27 07:42 (16) 20:34
23	07:18 17:04	06:44 17:42	05:59 18:13	06:10 19:46	06:28 (16) 05:35 07:51 (16) 20:16	06:19 (16) 05:27 07:41 (16) 20:35
24	07:17 17:05	06:42 17:43	05:57 18:14	06:08 19:47	06:27 (16) 05:35 07:52 (16) 20:17	06:20 (16) 05:28 07:40 (16) 20:35
25	07:16 17:06	06:41 17:44	05:56 18:15	06:07 19:48	06:26 (16) 05:34 07:52 (16) 20:18	06:21 (16) 05:28 07:40 (16) 20:35
26	07:16 17:08	06:39 17:46	05:54 18:16	06:05 19:49	06:24 (16) 05:33 07:51 (16) 20:19	06:21 (16) 05:28 07:39 (16) 20:35
27	07:15 17:09	06:38 17:47	05:52 18:18	06:04 19:50	06:23 (16) 05:33 07:51 (16) 20:20	06:22 (16) 05:29 07:40 (16) 20:35
28	07:14 17:10	06:36 17:48	05:51 18:19	06:03 19:51	06:22 (16) 05:32 07:52 (16) 20:21	06:22 (16) 05:29 07:39 (16) 20:35
29	07:13 17:11		06:49 19:20	06:01 19:52	06:20 (16) 05:31 07:51 (16) 20:22	06:23 (16) 05:29 07:39 (16) 20:35
30	07:12 17:13		06:47 19:21	06:00 19:53	06:19 (16) 05:31 07:51 (16) 20:22	06:23 (16) 05:30 07:38 (16) 20:35
31	07:11 17:14		06:46 19:22	06:00 19:53	05:30 20:23	06:25 (16) 07:38 (16)
Potential sun hours	298	297	369	398	448	452
Total, worst case			107	2068	2689	1923

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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## SHADOW - Calendar

**Calculation:** ShadowShadow receptor: AE - Shadow Receptor: 1,0 × 1,0 Azimuth: 45,0° Slope: 90,0° (51)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	
1	07:24 16:41	07:10 17:15	06:35 17:49	16:47 (11) 17:28 (11)	06:44 19:23	17:47 (11) 19:55	05:30 20:24
2	07:24 16:42	07:09 17:16	06:33 17:50	16:45 (11) 17:29 (11)	06:42 19:24	17:48 (11) 19:56	05:29 20:25
3	07:24 16:43	07:08 17:18	06:32 17:51	16:45 (11) 17:31 (11)	06:41 19:25	17:50 (11) 19:57	05:29 20:25
4	07:24 16:44	07:07 17:19	06:30 17:52	16:43 (11) 17:31 (11)	06:39 19:26	17:53 (11) 19:58	05:29 20:26
5	07:24 16:45	07:06 17:20	06:29 17:54	16:42 (11) 17:32 (11)	06:38 19:27	17:56 (11) 19:59	05:28 20:27
6	07:24 16:45	07:05 17:21	06:27 17:55	16:42 (11) 17:34 (11)	06:36 19:28	18:02 (11) 20:00	05:28 20:27
7	07:24 16:46	07:04 17:23	06:25 17:56	16:40 (11) 17:35 (11)	06:34 19:29	05:51 20:01	05:28 20:28
8	07:24 16:47	07:03 17:24	06:24 17:57	16:40 (11) 17:36 (11)	06:33 19:30	05:50 20:02	05:27 20:29
9	07:24 16:48	07:02 17:25	06:22 17:58	16:39 (11) 17:37 (11)	06:31 19:31	05:49 20:03	05:27 20:29
10	07:23 16:49	07:01 17:26	06:21 17:59	16:38 (11) 17:38 (11)	06:29 19:32	05:48 20:04	05:27 20:30
11	07:23 16:50	07:00 17:28	06:19 18:00	16:39 (11) 17:40 (11)	06:28 19:33	05:47 20:05	05:27 20:30
12	07:23 16:51	06:58 17:29	06:17 18:01	16:38 (11) 17:40 (11)	06:26 19:34	05:45 20:06	05:27 20:31
13	07:23 16:53	06:57 17:30	06:16 18:03	16:37 (11) 17:41 (11)	06:25 19:36	05:44 20:07	05:27 20:31
14	07:22 16:54	06:56 17:31	06:14 18:04	16:37 (11) 17:43 (11)	06:23 19:37	05:43 20:08	05:26 20:32
15	07:22 16:55	06:55 17:32	06:12 18:05	16:37 (11) 17:44 (11)	06:22 19:38	05:42 20:09	05:26 20:32
16	07:22 16:56	06:53 17:34	06:11 18:06	16:36 (11) 17:45 (11)	06:20 19:39	05:41 20:10	05:26 20:33
17	07:21 16:57	06:52 17:35	06:09 18:07	16:37 (11) 17:46 (11)	06:19 19:40	05:40 20:11	05:27 20:33
18	07:21 16:58	06:51 17:36	06:07 18:08	16:37 (11) 17:46 (11)	06:17 19:41	05:40 20:12	05:27 20:33
19	07:20 16:59	06:49 17:37	06:06 18:09	16:36 (11) 17:45 (11)	06:15 19:42	05:39 20:13	05:27 20:34
20	07:20 17:01	06:48 17:38	17:09 (11) 17:16 (11)	06:04 18:10	16:37 (11) 17:45 (11)	06:14 19:43	05:38 20:34
21	07:19 17:02	06:46 17:40	17:04 (11) 17:18 (11)	06:02 18:11	16:37 (11) 17:44 (11)	06:12 19:44	05:37 20:34
22	07:18 17:03	06:45 17:41	17:00 (11) 17:19 (11)	06:01 18:12	16:37 (11) 17:43 (11)	06:11 19:45	05:36 20:34
23	07:18 17:04	06:44 17:42	16:58 (11) 17:21 (11)	05:59 18:13	16:38 (11) 17:43 (11)	06:10 19:46	05:35 20:35
24	07:17 17:05	06:42 17:43	16:55 (11) 17:21 (11)	05:57 18:14	16:38 (11) 17:41 (11)	06:08 19:47	05:28 20:35
25	07:16 17:06	06:41 17:44	16:53 (11) 17:23 (11)	05:56 18:15	16:39 (11) 17:40 (11)	06:07 19:48	05:28 20:35
26	07:16 17:08	06:39 17:46	16:51 (11) 17:24 (11)	05:54 18:17	16:40 (11) 17:40 (11)	06:05 19:49	05:28 20:35
27	07:15 17:09	06:38 17:47	16:50 (11) 17:25 (11)	05:52 18:18	16:40 (11) 17:38 (11)	06:04 19:50	05:29 20:35
28	07:14 17:10	06:36 17:48	16:48 (11) 17:26 (11)	05:51 18:19	16:41 (11) 17:36 (11)	06:03 19:51	05:29 20:35
29	07:13 17:11			06:49 19:20	17:43 (11) 18:35 (11)	06:01 19:52	05:29 20:35
30	07:12 17:13			06:47 19:21	17:43 (11) 18:33 (11)	06:00 19:53	05:30 20:35
31	07:11 17:14			06:46 19:22	17:44 (11) 18:31 (11)		05:30 20:35
Potential sun hours	298	297	369	398	448	452	
Total, worst case		225	1818	174			

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: AE - Shadow Receptor: 1,0 × 1,0 Azimuth: 45,0° Slope: 90,0° (51)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December		
1	05:30 20:35	05:54 20:16	06:25 19:33	06:55 18:43	17:17 (11) 18:21 (11)	06:29 16:56	07:03 16:32	
2	05:31 20:35	05:55 20:15	06:26 19:31	06:56 18:41	17:17 (11) 18:19 (11)	06:30 16:55	07:04 16:32	
3	05:31 20:35	05:56 20:14	06:27 19:30	06:57 18:39	17:17 (11) 18:17 (11)	06:31 16:54	07:05 16:31	
4	05:32 20:34	05:57 20:13	06:28 19:28	06:58 18:38	17:17 (11) 18:15 (11)	06:32 16:53	07:06 16:31	
5	05:32 20:34	05:58 20:11	06:29 19:27	06:59 18:36	17:17 (11) 18:14 (11)	06:33 16:51	07:07 16:31	
6	05:33 20:34	05:59 20:10	06:30 19:25	17:59 (11) 18:06 (11)	07:00 18:34	17:17 (11) 18:12 (11)	06:34 16:50	07:08 16:31
7	05:34 20:34	06:00 20:09	06:31 19:23	17:51 (11) 18:12 (11)	07:01 18:33	17:17 (11) 18:10 (11)	06:36 16:49	07:09 16:31
8	05:34 20:33	06:01 20:08	06:32 19:22	17:47 (11) 18:16 (11)	07:02 18:31	17:17 (11) 18:08 (11)	06:37 16:48	07:10 16:31
9	05:35 20:33	06:02 20:07	06:33 19:20	17:44 (11) 18:18 (11)	07:03 18:30	17:18 (11) 18:07 (11)	06:38 16:47	07:11 16:31
10	05:36 20:33	06:03 20:05	06:34 19:18	17:41 (11) 18:20 (11)	07:04 18:28	17:18 (11) 18:05 (11)	06:39 16:46	07:12 16:31
11	05:36 20:32	06:04 20:04	06:35 19:17	17:39 (11) 18:22 (11)	07:05 18:26	17:19 (11) 18:03 (11)	06:40 16:45	07:13 16:31
12	05:37 20:32	06:05 20:03	06:36 19:15	17:37 (11) 18:23 (11)	07:06 18:25	17:19 (11) 18:02 (11)	06:42 16:44	07:14 16:31
13	05:38 20:31	06:06 20:01	06:37 19:13	17:35 (11) 18:24 (11)	07:07 18:23	17:20 (11) 18:00 (11)	06:43 16:43	07:14 16:31
14	05:38 20:31	06:07 20:00	06:38 19:11	17:33 (11) 18:25 (11)	07:08 18:22	17:22 (11) 17:59 (11)	06:44 16:42	07:15 16:31
15	05:39 20:30	06:08 19:59	06:39 19:10	17:31 (11) 18:26 (11)	07:09 18:20	17:23 (11) 17:57 (11)	06:45 16:41	07:16 16:32
16	05:40 20:30	06:09 19:57	06:39 19:08	17:30 (11) 18:27 (11)	07:10 18:19	17:24 (11) 17:56 (11)	06:46 16:41	07:17 16:32
17	05:41 20:29	06:10 19:56	06:40 19:06	17:28 (11) 18:28 (11)	07:11 18:17	17:26 (11) 17:54 (11)	06:48 16:40	07:17 16:32
18	05:42 20:28	06:11 19:54	06:41 19:05	17:27 (11) 18:28 (11)	07:13 18:15	17:27 (11) 17:52 (11)	06:49 16:39	07:18 16:32
19	05:42 20:28	06:12 19:53	06:42 19:03	17:26 (11) 18:29 (11)	07:14 18:14	17:29 (11) 17:51 (11)	06:50 16:38	07:19 16:33
20	05:43 20:27	06:13 19:52	06:43 19:01	17:25 (11) 18:29 (11)	07:15 18:13	17:32 (11) 17:49 (11)	06:51 16:37	07:19 16:33
21	05:44 20:26	06:14 19:50	06:44 19:00	17:24 (11) 18:29 (11)	07:16 18:11	17:36 (11) 17:48 (11)	06:52 16:37	07:20 16:34
22	05:45 20:25	06:15 19:49	06:45 18:58	17:22 (11) 18:28 (11)	07:17 18:10	17:42 (11) 17:47 (11)	06:53 16:36	07:20 16:34
23	05:46 20:25	06:16 19:47	06:46 18:56	17:21 (11) 18:28 (11)	07:18 18:08	06:54 16:36	07:21 16:35	
24	05:47 20:24	06:17 19:46	06:47 18:54	17:20 (11) 18:28 (11)	07:19 18:07	06:56 16:35	07:21 16:35	
25	05:48 20:23	06:18 19:44	06:48 18:53	17:19 (11) 18:28 (11)	06:20 17:05	06:57 16:34	07:22 16:36	
26	05:48 20:22	06:19 19:43	06:49 18:51	17:19 (11) 18:28 (11)	06:22 17:04	06:58 16:34	07:22 16:36	
27	05:49 20:21	06:20 19:41	06:50 18:49	17:18 (11) 18:26 (11)	06:23 17:03	06:59 16:33	07:22 16:37	
28	05:50 20:20	06:21 19:39	06:51 18:48	17:17 (11) 18:25 (11)	06:24 17:01	07:00 16:33	07:23 16:38	
29	05:51 20:19	06:22 19:38	06:52 18:46	17:17 (11) 18:23 (11)	06:25 17:00	07:01 16:33	07:23 16:38	
30	05:52 20:18	06:23 19:36	06:53 18:44	17:17 (11) 18:21 (11)	06:26 16:59	07:02 16:32	07:23 16:39	
31	05:53 20:17	06:24 19:35		06:27 16:57			07:23 16:40	
Potential sun hours	459	428	375	345	298	288		
Total, worst case			1350	895				

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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## SHADOW - Calendar

**Calculation:** ShadowShadow receptor: AF - Shadow Receptor: 1,0 × 1,0 Azimuth: -160,0° Slope: 90,0° (52)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June		
1	07:24 16:41	07:10 17:15	06:35 17:49	06:44 19:23	05:59 19:55	05:30 20:24	54	06:56 (11) 07:50 (11)
2	07:24 16:42	07:10 17:16	06:33 17:50	06:43 19:24	05:57 19:56	05:29 20:25	57	06:55 (11) 07:52 (11)
3	07:24 16:43	07:09 17:18	06:32 17:51	06:41 19:25	06:59 (16) 07:00 (16)	05:56 19:57	60	06:53 (11) 07:53 (11)
4	07:24 16:44	07:08 17:19	06:30 17:52	06:39 19:26	06:58 (16) 07:03 (16)	05:55 19:58	62	06:52 (11) 07:54 (11)
5	07:24 16:45	07:06 17:20	06:29 17:54	06:38 19:27	06:56 (16) 07:04 (16)	05:53 19:59	64	06:52 (11) 07:56 (11)
6	07:24 16:45	07:05 17:21	06:27 17:55	06:36 19:28	06:50 (16) 07:05 (16)	05:52 20:00	66	06:51 (11) 07:57 (11)
7	07:24 16:46	07:04 17:23	06:25 17:56	06:34 19:29	06:53 (16) 07:06 (16)	05:51 20:01	68	06:50 (11) 07:58 (11)
8	07:24 16:47	07:03 17:24	06:24 17:57	06:33 19:30	06:51 (16) 07:06 (16)	05:50 20:02	70	06:49 (11) 07:59 (11)
9	07:24 16:48	07:02 17:25	06:22 17:58	06:31 19:31	06:50 (16) 07:07 (16)	05:49 20:03	71	06:49 (11) 08:00 (11)
10	07:23 16:49	07:01 17:26	06:21 17:59	06:29 19:32	06:48 (16) 07:06 (16)	05:48 20:04	72	06:49 (11) 08:01 (11)
11	07:23 16:50	07:00 17:28	06:19 18:00	06:28 19:33	06:46 (16) 07:05 (16)	05:47 20:05	73	06:49 (11) 08:02 (11)
12	07:23 16:52	06:58 17:29	06:17 18:01	06:26 19:35	06:45 (16) 07:05 (16)	05:45 20:06	74	06:48 (11) 08:02 (11)
13	07:23 16:53	06:57 17:30	06:16 18:03	06:25 19:36	06:43 (16) 07:04 (16)	05:44 20:07	75	06:48 (11) 08:03 (11)
14	07:22 16:54	06:56 17:31	07:15 (14) 07:16 (14)	06:14 18:04	06:23 19:37	05:27 20:08	76	06:48 (11) 08:04 (11)
15	07:22 16:55	06:55 17:32	07:14 (15) 07:17 (14)	06:12 18:05	06:22 19:38	05:26 20:09	76	06:48 (11) 08:04 (11)
16	07:22 16:56	06:53 17:34	07:13 (15) 07:19 (14)	06:11 18:06	06:20 19:39	05:27 20:10	77	06:48 (11) 08:05 (11)
17	07:21 16:57	06:52 17:35	07:11 (15) 07:20 (14)	06:09 18:07	06:19 19:40	05:27 20:11	77	06:48 (11) 08:05 (11)
18	07:21 16:58	06:51 17:36	07:10 (15) 07:22 (14)	06:07 18:08	06:17 19:41	05:27 20:12	78	06:47 (11) 08:05 (11)
19	07:20 16:59	06:49 17:37	07:09 (15) 07:24 (14)	06:06 18:09	06:16 19:42	05:39 20:13	78	06:47 (11) 08:05 (11)
20	07:20 17:01	06:48 17:38	07:07 (15) 07:25 (14)	06:04 18:10	06:14 19:43	05:38 20:14	79	06:47 (11) 08:06 (11)
21	07:19 17:02	06:46 17:40	07:06 (15) 07:27 (14)	06:02 18:11	06:13 19:44	05:37 20:15	79	06:47 (11) 08:06 (11)
22	07:18 17:03	06:45 17:41	07:04 (15) 07:27 (14)	06:01 18:12	06:11 19:45	05:36 20:16	79	06:48 (11) 08:07 (11)
23	07:18 17:04	06:44 17:42	07:03 (15) 07:29 (14)	05:59 18:13	06:10 19:46	05:35 20:16	79	06:48 (11) 08:07 (11)
24	07:17 17:05	06:42 17:43	07:01 (15) 07:30 (14)	05:57 18:14	06:08 19:47	05:35 20:17	78	06:48 (11) 08:06 (11)
25	07:16 17:07	06:41 17:44	07:00 (15) 07:06 (15)	05:56 18:15	06:07 19:48	05:34 20:18	11	07:17 (11) 05:28 08:06 (11)
26	07:16 17:08	06:39 17:46	05:54 18:17	06:05 19:49	05:33 20:19	05:28 20:35	77	06:50 (11) 08:07 (11)
27	07:15 17:09	06:38 17:47	05:52 18:18	06:04 19:50	05:33 20:20	05:29 20:35	76	06:50 (11) 08:06 (11)
28	07:14 17:10	06:36 17:48	05:51 18:19	06:03 19:51	05:32 20:21	05:29 20:35	76	06:51 (11) 08:07 (11)
29	07:13 17:11	06:35 17:49	05:50 18:20	06:02 19:52	05:31 20:22	05:29 20:35	75	06:51 (11) 08:06 (11)
30	07:12 17:13	06:34 17:50	05:49 18:21	06:01 19:53	05:30 20:23	05:29 20:35	75	06:51 (11) 08:06 (11)
31	07:11 17:14	06:33 17:51	05:48 18:22	06:00 19:54	05:29 20:24	05:29 20:35	51	06:51 (11) 07:49 (11)
Potential sun hours	298	297	369	398	448	452		
Total, worst case		107		221	247		2179	

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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## SHADOW - Calendar

Calculation: ShadowShadow receptor: AF - Shadow Receptor: 1,0 × 1,0 Azimuth: -160,0° Slope: 90,0° (52)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	05:30 20:35 74	06:52 (11) 08:06 (11) 20:16	06:25 19:33	06:46 (16) 07:05 (16) 18:43	06:55 18:33	06:29 16:56 16:32
2	05:31 20:35 72	06:53 (11) 08:05 (11) 20:15	06:26 19:31	06:46 (16) 07:04 (16) 18:41	06:56 18:31	06:30 16:55 16:32
3	05:31 20:35 71	06:54 (11) 08:05 (11) 20:14	06:27 19:30	06:47 (16) 07:04 (16) 18:39	06:57 18:39	06:31 16:54 16:31
4	05:32 20:34 70	06:54 (11) 08:04 (11) 20:13	06:28 19:28	06:48 (16) 07:03 (16) 18:38	06:58 18:38	06:32 16:53 16:31
5	05:32 20:34 68	06:56 (11) 08:04 (11) 20:12	06:29 19:27	06:49 (16) 07:02 (16) 18:36	06:59 18:36	06:33 16:51 16:31
6	05:33 20:34 67	06:57 (11) 08:04 (11) 20:10	06:30 19:25	06:50 (16) 07:01 (16) 18:34	07:00 18:34	06:34 16:50 16:31
7	05:34 20:34 65	06:58 (11) 08:03 (11) 20:09	06:31 19:23	06:51 (16) 07:00 (16) 18:33	07:01 18:33	06:36 16:49 16:31
8	05:34 20:33 63	06:59 (11) 08:02 (11) 20:08	06:32 19:22	06:52 (16) 06:58 (16) 18:31	07:02 18:31	06:37 16:48 16:31
9	05:35 20:33 61	07:00 (11) 08:01 (11) 20:07	06:33 19:20	06:53 (16) 06:55 (16) 18:30	07:03 18:30	06:38 16:47 16:31
10	05:36 20:33 58	07:02 (11) 08:00 (11) 20:05	06:34 19:18	07:04 18:28	07:04 18:28	06:39 16:46 16:31
11	05:36 20:32 56	07:03 (11) 07:59 (11) 20:04	06:35 19:17	07:05 18:26	07:05 18:26	06:40 16:45 16:31
12	05:37 20:32 53	07:05 (11) 07:58 (11) 20:03	06:36 19:15	07:06 18:25	07:06 18:25	06:42 16:44 16:31
13	05:38 20:31 49	07:07 (11) 07:56 (11) 20:01	06:37 19:13	07:07 18:23	07:07 18:23	06:43 16:43 16:31
14	05:38 20:31 45	07:09 (11) 07:54 (11) 20:00	06:38 19:11	07:08 18:22	07:08 18:22	06:44 16:42 16:31
15	05:39 20:30 40	07:12 (11) 07:52 (11) 19:59	06:39 19:10	07:09 18:20	07:09 18:20	06:45 16:41 16:32
16	05:40 20:30 35	07:14 (11) 07:49 (11) 19:57	06:40 19:08	07:10 18:19	07:10 18:19	06:46 16:41 16:32
17	05:41 20:29 29	07:17 (11) 07:46 (11) 19:56	06:41 19:06	07:11 18:17	07:11 18:17	06:48 16:40 16:32
18	05:42 20:28 19	07:22 (11) 07:41 (11) 19:54	06:41 19:05	07:13 18:16	07:13 18:16	06:49 16:39 16:32
19	05:42 20:28	06:12 19:53	06:42 19:03	07:14 18:14	07:14 18:14	06:50 16:38 16:33
20	05:43 20:27	06:13 19:52	06:43 19:01	07:15 18:13	07:15 18:13	06:51 16:38 16:33
21	05:44 20:26	06:14 19:50	06:44 19:00	07:16 18:11	07:16 18:11	06:52 16:37 16:34
22	05:45 20:25	06:15 19:49	06:45 18:58	07:17 18:10	07:17 18:10	06:53 16:36 16:34
23	05:46 20:25	06:16 19:47	06:46 18:56	07:18 18:08	07:18 18:08	06:55 16:36 16:35
24	05:47 20:24	06:17 19:46	06:47 18:54	07:19 18:07	07:19 18:07	06:56 16:35 16:35
25	05:48 20:23	06:18 19:44	06:48 18:53	07:20 17:05	07:20 17:05	06:57 16:34 16:36
26	05:49 20:22	06:19 19:43	06:49 18:51	07:22 17:04	07:22 17:04	06:58 16:34 16:36
27	05:49 20:21	06:20 19:41	06:50 18:49	07:23 17:03	07:23 17:03	06:59 16:34 16:37
28	05:50 20:20	06:21 19:39	06:51 18:48	07:24 17:01	07:24 17:01	07:00 16:33 16:38
29	05:51 20:19	06:22 19:38	06:53 18:46	07:25 17:00	07:25 17:00	07:01 16:33 16:38
30	05:52 20:18	06:23 19:36	06:54 18:44	07:26 16:59	07:26 16:59	07:02 16:32 16:39
31	05:53 20:17	06:24 19:35	06:45 (16) 07:05 (16)	06:27 16:57	06:27 16:57	07:23 16:40
Potential sun hours	459	428	375	345	298	288
Total, worst case	995	115	110	105		

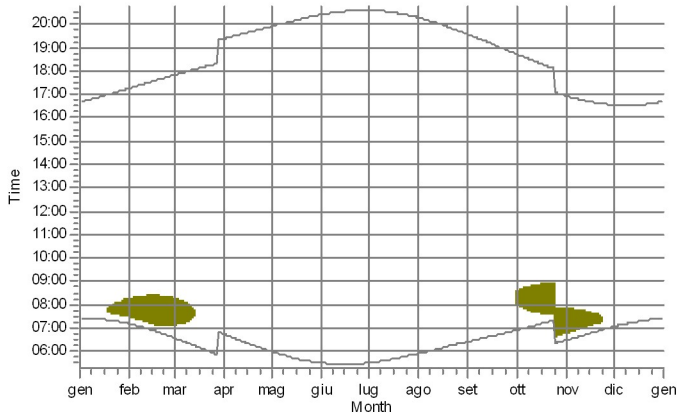
Table layout: For each day in each month the following matrix apply

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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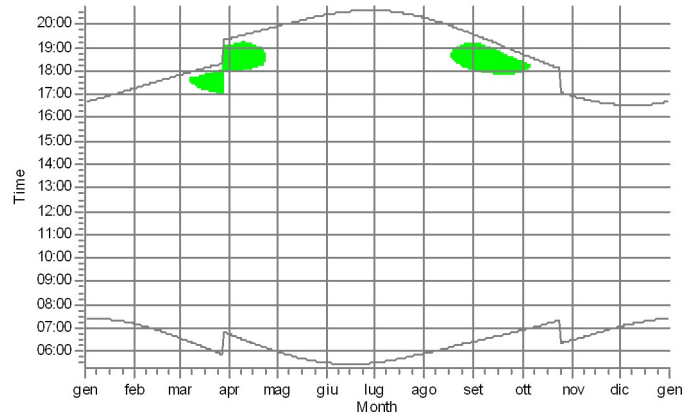
## SHADOW - Calendar, graphical

Calculation: Shadow

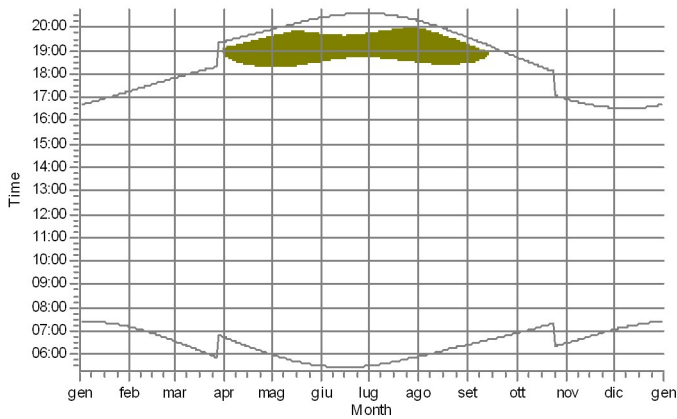
A: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)



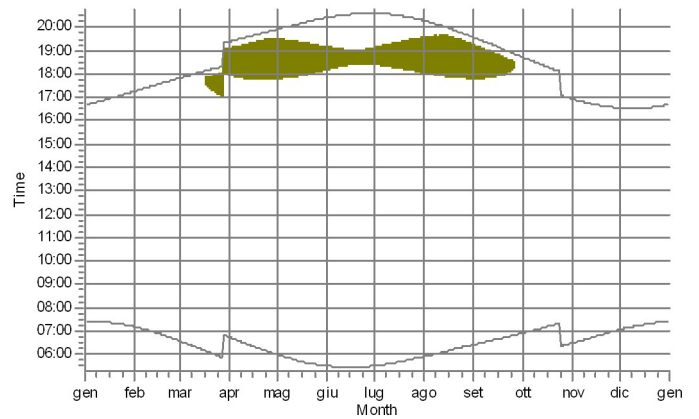
B: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)



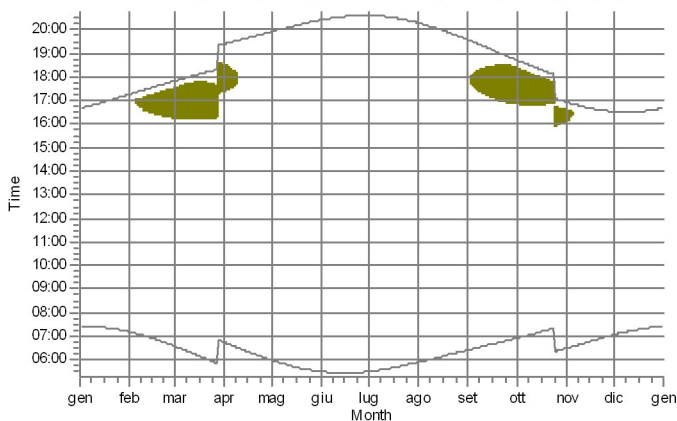
C: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)



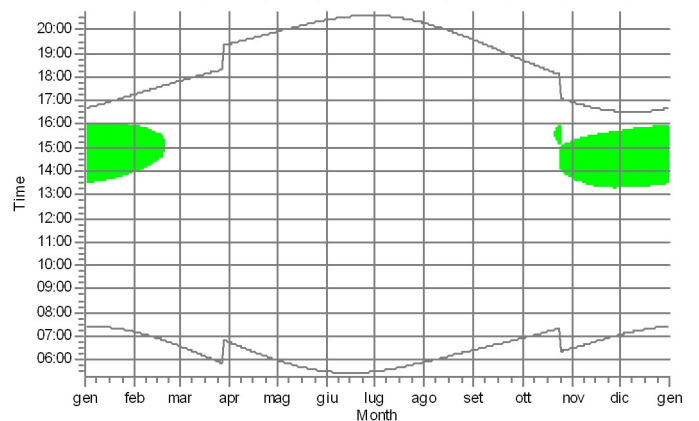
D: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)



E: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)



F: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (26)



WTGs

9: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (19)

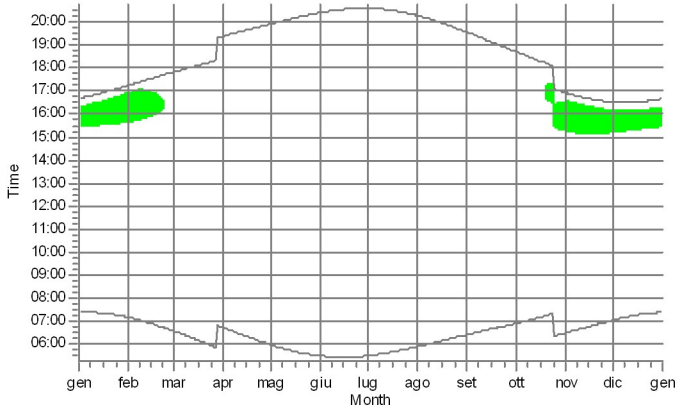
10: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (20)



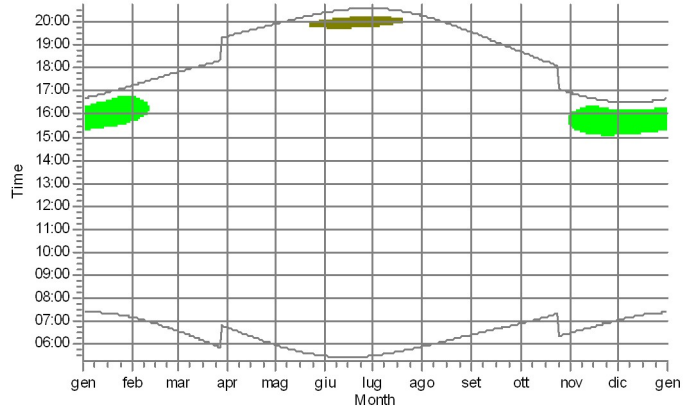
## SHADOW - Calendar, graphical

Calculation: Shadow

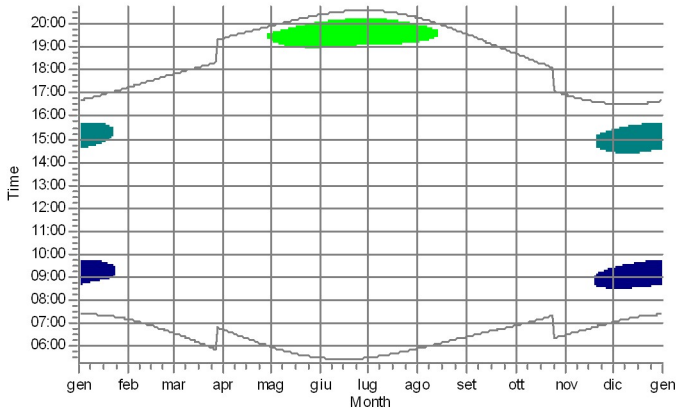
G: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)



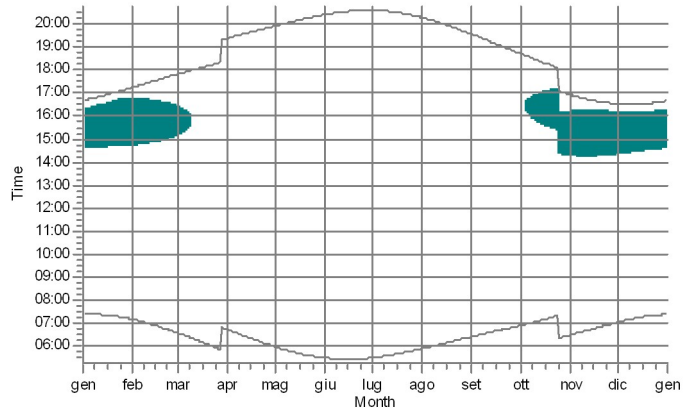
H: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (28)



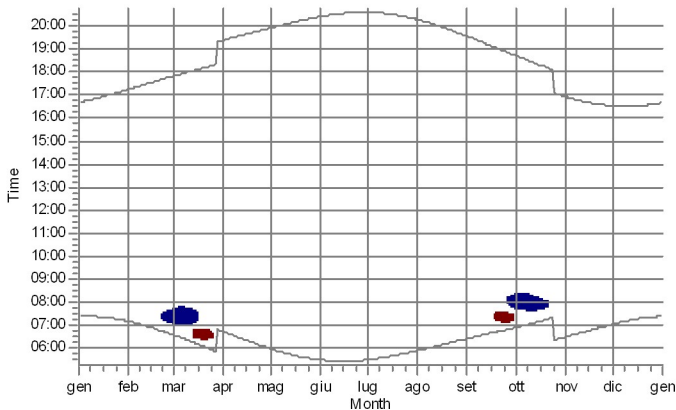
I: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (29)



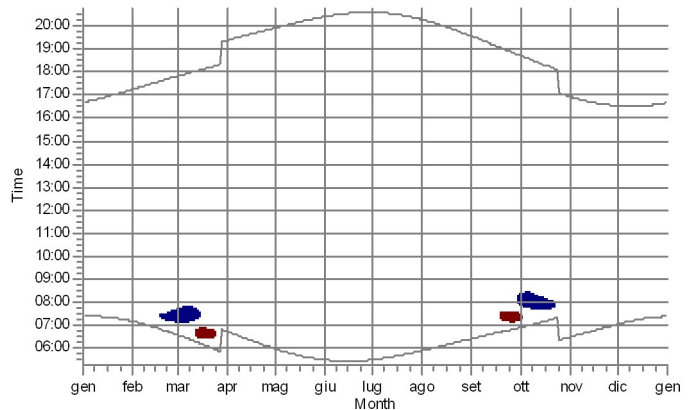
J: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (30)



K: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (31)



L: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (32)



WTGs

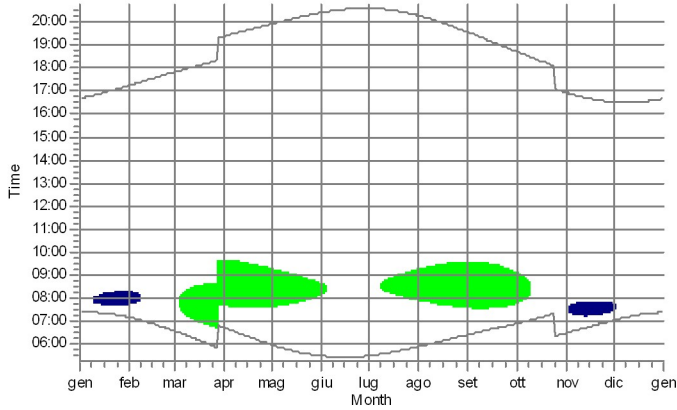
- 6: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (16)
- 7: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (17)
- 8: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (18)

- 9: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (19)
- 10: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (20)

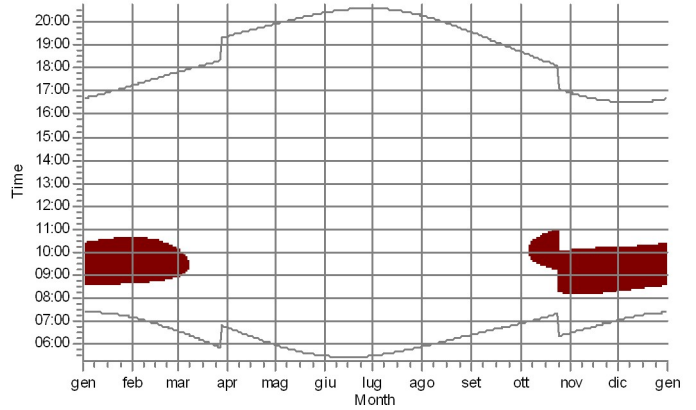
## SHADOW - Calendar, graphical

Calculation: Shadow

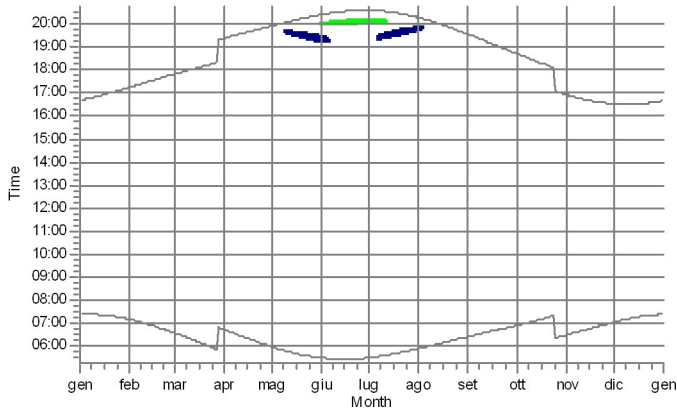
M: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (33)



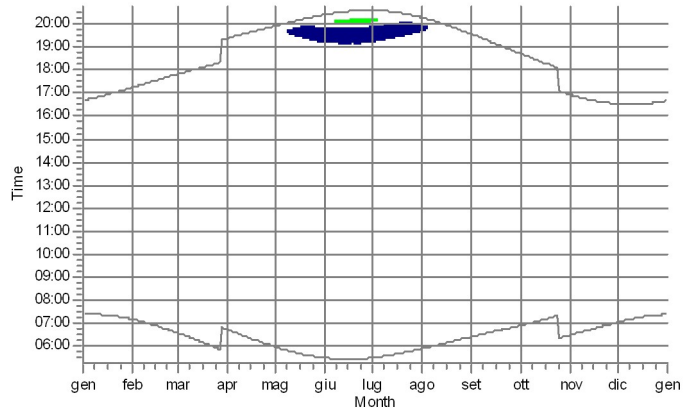
N: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (34)



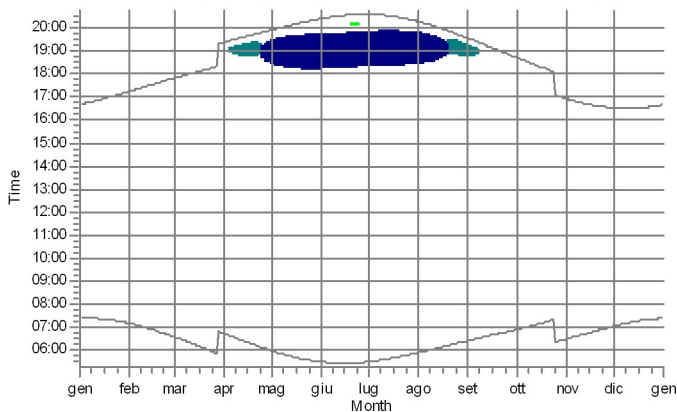
O: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (35)



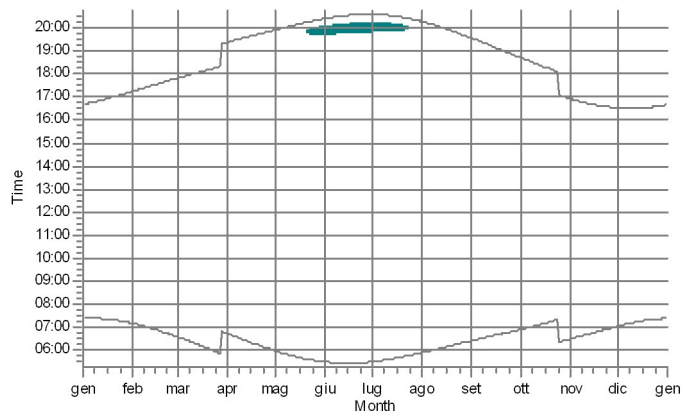
P: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (36)



Q: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (37)



R: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (38)



### WTGs

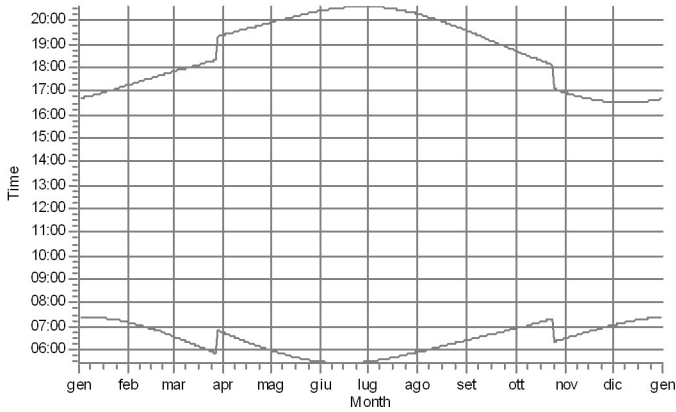
6: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (16)  
7: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (17)

8: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (18)  
9: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (19)

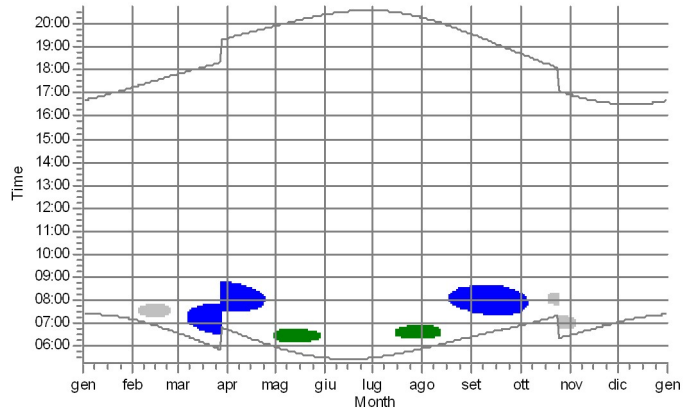
## SHADOW - Calendar, graphical

Calculation: Shadow

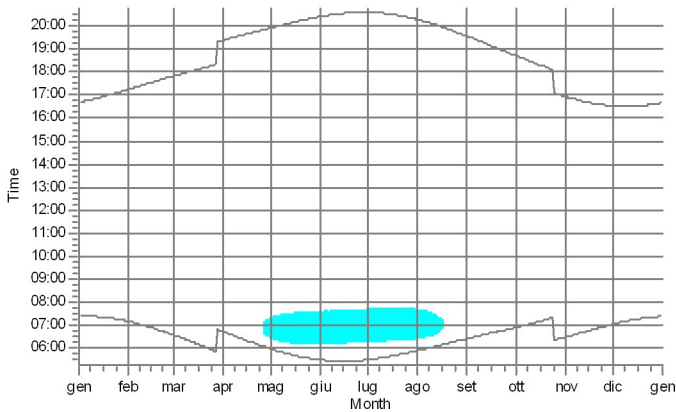
S: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (39)



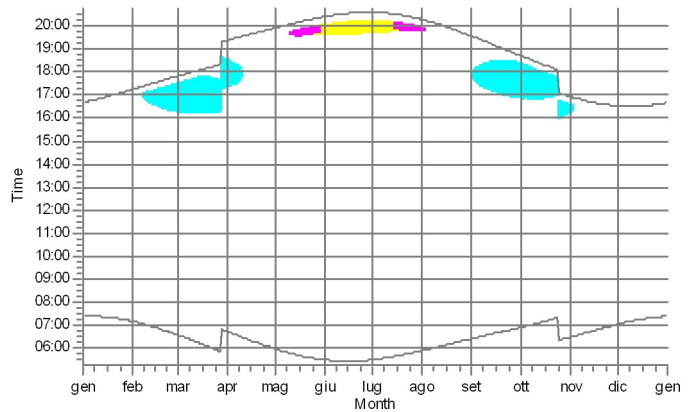
T: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (40)



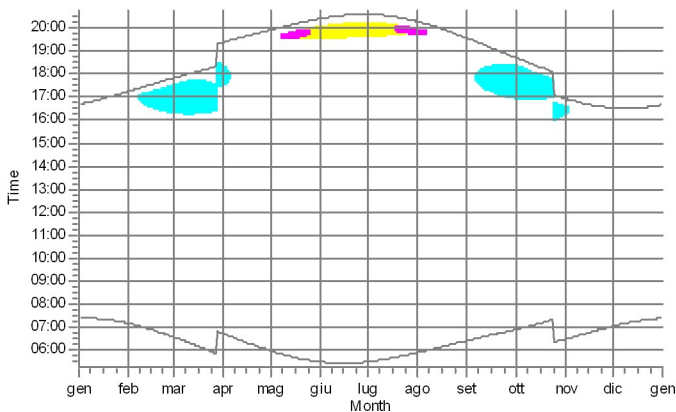
U: Shadow Receptor: 1,0 × 1,0 Azimuth: -140,0° Slope: 90,0° (41)



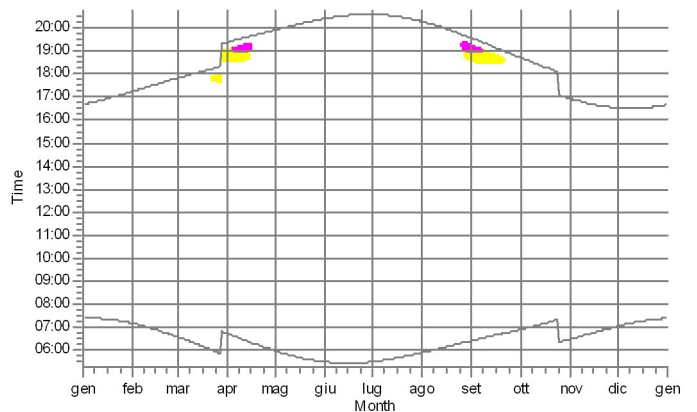
V: Shadow Receptor: 1,0 × 1,0 Azimuth: 90,0° Slope: 90,0° (42)



W: Shadow Receptor: 1,0 × 1,0 Azimuth: 90,0° Slope: 90,0° (43)



X: Shadow Receptor: 1,0 × 1,0 Azimuth: 150,0° Slope: 90,0° (44)



### WTGs

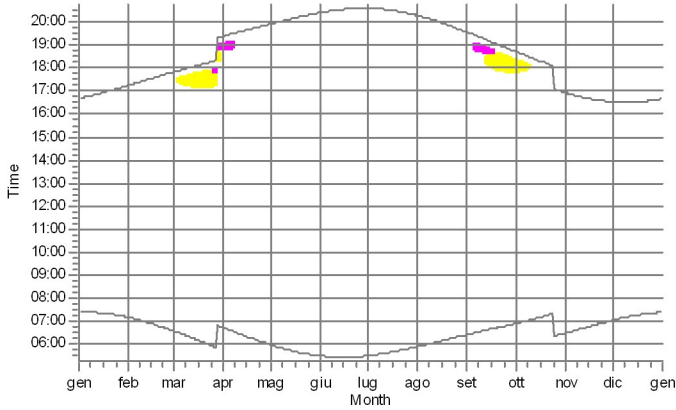
- 1: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (11)
- 2: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (12)
- 3: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (13)

- 5: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (15)
- 12: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (22)
- 13: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (23)

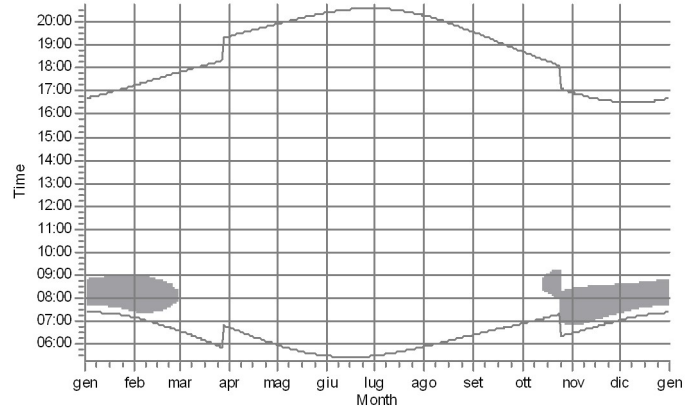
## SHADOW - Calendar, graphical

Calculation: Shadow

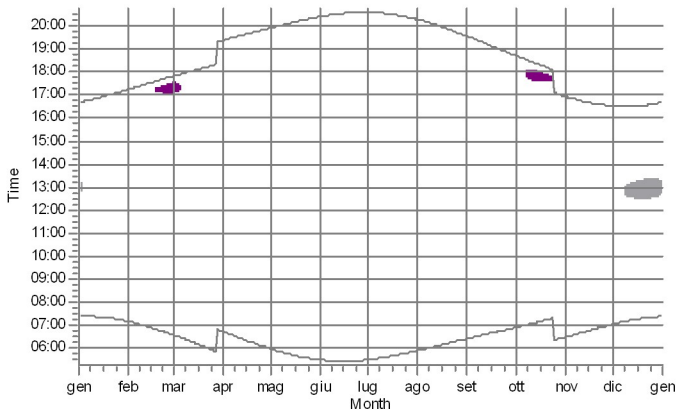
Y: Shadow Receptor: 1,0 × 1,0 Azimuth: 150,0° Slope: 90,0° (45)



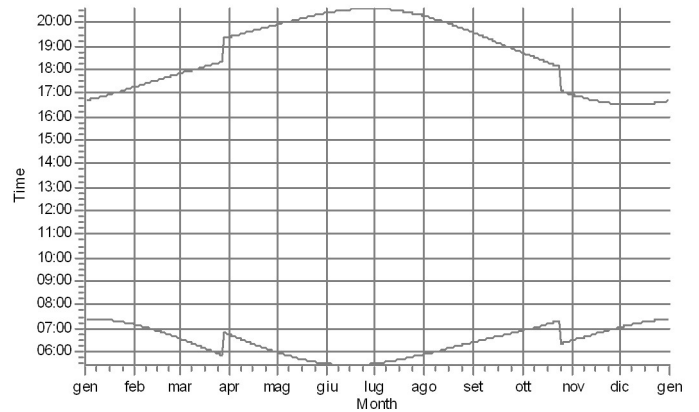
Z: Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (46)



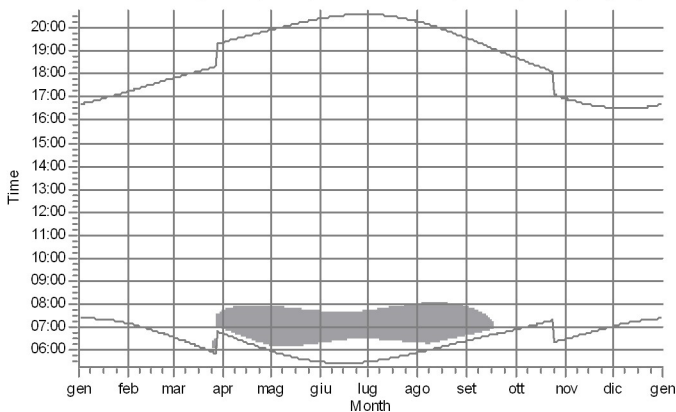
AA: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (47)



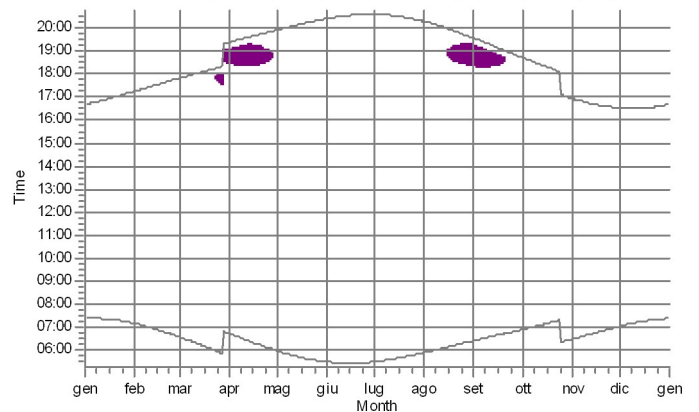
AB: Shadow Receptor: 1,0 × 1,0 Azimuth: 120,0° Slope: 90,0° (48)



AC: Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (49)



AD: Shadow Receptor: 1,0 × 1,0 Azimuth: 20,0° Slope: 90,0° (50)



### WTGs

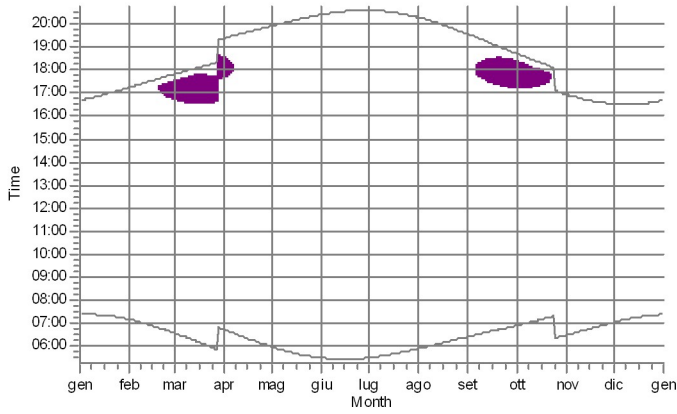
2: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (12)  
 5: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (15)

11: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (21)  
 16: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (26)

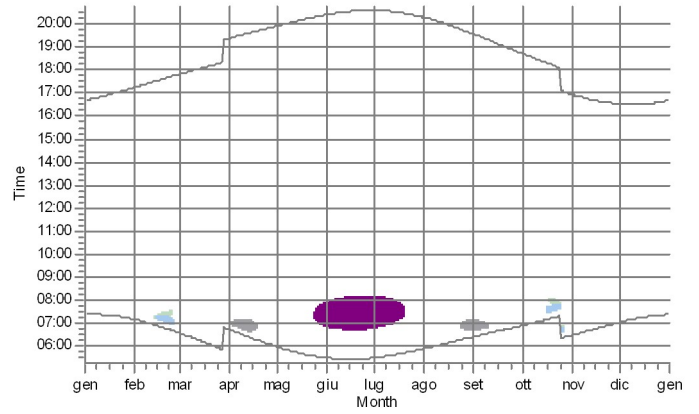
## SHADOW - Calendar, graphical

Calculation: Shadow

AE: Shadow Receptor: 1,0 × 1,0 Azimuth: 45,0° Slope: 90,0° (51)



AF: Shadow Receptor: 1,0 × 1,0 Azimuth: -160,0° Slope: 90,0° (52)



### WTGs

- 11: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (21)
- 14: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (24)

- 15: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (25)
- 16: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (26)



## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 2 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (12)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	07:10 17:15	06:35 17:49	06:44 19:23	18:36-19:01/25 19:55	05:58 20:24
2	07:24 16:42	07:09 17:16	06:33 17:50	06:42 19:24	18:36-19:03/27 19:56	05:57 20:25
3	07:24 16:43	07:08 17:17	06:32 17:51	06:41 19:25	18:35-19:03/28 19:57	05:56 20:25
4	07:24 16:43	07:07 17:19	06:30 17:52	06:39 19:26	18:35-19:04/29 19:58	05:55 20:26
5	07:24 16:44	07:06 17:20	06:28 17:53	06:37 19:27	18:35-19:06/31 19:59	05:53 20:27
6	07:24 16:45	07:05 17:21	06:27 17:55	06:36 19:28	18:35-19:06/31 20:00	05:52 20:27
7	07:24 16:46	07:04 17:22	06:25 17:56	06:34 19:29	18:36-19:08/32 20:01	05:51 20:28
8	07:24 16:47	07:03 17:24	06:24 17:57	06:33 19:30	18:35-19:09/34 20:02	05:50 20:29
9	07:24 16:48	07:02 17:25	06:22 17:58	06:31 19:31	18:36-19:09/33 20:03	05:49 20:29
10	07:23 16:49	07:01 17:26	06:20 17:59	06:29 19:32	18:37-19:09/32 20:04	05:47 20:30
11	07:23 16:50	07:00 17:27	06:19 18:00	06:28 19:33	18:37-19:07/30 20:05	05:46 20:30
12	07:23 16:51	06:58 17:29	06:17 18:01	06:26 19:34	18:39-19:06/27 20:06	05:45 20:31
13	07:23 16:52	06:57 17:30	06:16 18:02	06:25 19:36	18:40-19:03/23 20:07	05:44 20:31
14	07:22 16:53	06:56 17:31	06:14 18:04	06:23 19:37	18:42-19:01/19 20:08	05:43 20:32
15	07:22 16:55	06:55 17:32	06:12 18:05	06:21 19:38	18:45-18:57/12 20:09	05:42 20:32
16	07:22 16:56	06:53 17:34	06:11 18:06	06:20 19:39	19:41-19:45/4 20:10	05:26 20:33
17	07:21 16:57	06:52 17:35	06:09 18:07	06:18 19:40	19:40-19:47/7 20:11	05:26 20:33
18	07:21 16:58	06:51 17:36	06:07 18:08	06:17 19:41	19:39-19:48/9 20:12	05:26 20:33
19	07:20 16:59	06:49 17:37	06:06 18:09	06:15 19:42	19:38-19:49/11 20:13	05:26 20:34
20	07:20 17:00	06:48 17:38	06:04 18:10	06:14 19:43	19:37-19:49/12 20:14	05:27 20:34
21	07:19 17:02	06:46 17:40	06:02 18:11	06:12 19:44	19:36-19:50/14 20:15	05:27 20:34
22	07:18 17:03	06:45 17:41	06:01 18:12	06:11 19:45	19:36-19:52/16 20:16	05:27 20:34
23	07:18 17:04	06:44 17:42	05:59 18:13	06:09 19:46	19:36-19:52/16 20:16	05:27 20:35
24	07:17 17:05	06:42 17:43	05:57 18:14	06:08 19:47	19:35-19:53/18 20:17	05:27 20:35
25	07:16 17:06	06:41 17:44	05:56 18:15	06:07 19:48	19:35-19:54/19 20:18	05:28 20:35
26	07:16 17:08	06:39 17:45	05:54 18:16	06:05 19:49	19:35-19:54/19 20:19	05:28 20:35
27	07:15 17:09	06:38 17:47	05:52 18:17	06:04 19:50	19:34-19:55/21 20:20	05:28 20:35
28	07:14 17:10	06:36 17:48	05:51 18:19	06:02 19:51	19:34-19:56/22 20:21	05:29 20:35
29	07:13 17:11		06:49 19:20	06:01 19:52	19:34-19:56/22 20:22	05:29 20:35
30	07:12 17:12		06:47 19:21	06:00 19:53	19:34-19:58/24 20:22	05:30 20:35
31	07:11 17:14		06:46 19:22		19:34-19:58/24 20:23	
Potential sun hours	298	297	369	399	448	452
Sum of minutes with flicker	0	0	837	413	261	870

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

## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 2 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (12)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:30 19:40-20:10/30 20:35	05:54 20:16	06:25 18:36-19:06/30 19:33	06:54 17:52-18:20/28 18:43	06:29 16:56	07:03 16:32
2	05:31 19:40-20:09/29 20:35	05:55 20:15	06:26 18:35-19:07/32 19:31	06:55 17:53-18:18/25 18:41	06:30 16:55	07:04 16:32
3	05:31 19:41-20:10/29 20:35	05:56 20:14	06:27 18:34-19:07/33 19:30	06:56 17:53-18:16/23 18:39	06:31 16:54	07:05 16:31
4	05:32 19:40-20:09/29 20:34	05:57 20:13	06:28 18:33-19:06/33 19:28	06:58 17:55-18:15/20 18:38	06:32 16:52	07:06 16:31
5	05:32 19:41-20:09/28 20:34	05:58 20:11	06:29 18:32-19:04/32 19:26	06:59 17:55-18:14/19 18:36	06:33 16:51	07:07 16:31
6	05:33 19:41-20:08/27 20:34	05:59 20:10	06:30 18:31-19:03/32 19:25	07:00 17:56-18:12/16 18:34	06:34 16:50	07:08 16:31
7	05:33 19:41-20:08/27 20:34	06:00 20:09	06:31 18:30-19:01/31 19:23	07:01 17:57-18:10/13 18:33	06:36 16:49	07:09 16:31
8	05:34 19:42-20:09/27 20:33	06:01 20:08	06:31 18:30-18:59/29 19:21	07:02 17:59-18:08/9 18:31	06:37 16:48	07:10 16:31
9	05:35 19:41-20:08/27 20:33	06:02 20:07	06:32 18:29-18:58/29 19:20	07:03 18:01-18:07/6 18:29	06:38 16:47	07:11 16:31
10	05:35 19:42-20:08/26 20:33	06:03 20:05	06:33 18:29-18:56/27 19:18	07:04 18:04-18:05/1 18:28	06:39 16:46	07:12 16:31
11	05:36 19:42-20:08/26 20:32	06:04 20:04	06:34 18:29-18:54/25 19:16	07:05 18:26	06:40 16:45	07:13 16:31
12	05:37 19:42-20:06/24 20:32	06:05 20:03	06:35 18:29-18:53/24 19:15	07:06 18:25	06:42 16:44	07:14 16:31
13	05:37 19:43-20:06/23 20:31	06:06 20:01	06:36 18:14-18:28/14 19:13	07:07 18:23	06:43 16:43	07:14 16:31
14	05:38 19:43-20:06/23 20:31	06:07 20:00	06:37 18:10-18:50/40 19:11	07:08 18:21	06:44 16:42	07:15 16:31
15	05:39 19:43-20:05/22 20:30	06:08 19:59	06:38 18:08-18:48/40 19:10	07:09 18:20	06:45 16:41	07:16 16:31
16	05:40 19:43-20:05/22 20:30	06:09 19:57	06:39 18:05-18:46/41 19:08	07:10 18:18	06:46 16:40	07:17 16:32
17	05:41 19:44-20:04/20 20:29	06:10 19:56	06:40 18:03-18:45/42 19:06	07:11 18:17	06:47 16:40	07:17 16:32
18	05:41 19:44-20:04/20 20:28	06:11 19:54	06:41 18:01-18:42/41 19:05	07:12 18:15	06:49 16:39	07:18 16:32
19	05:42 19:45-20:03/18 20:28	06:12 19:53	06:42 17:59-18:40/41 19:03	07:14 18:14	06:50 16:38	07:19 16:33
20	05:43 19:45-20:02/17 20:27	06:13 19:52	06:43 17:58-18:38/40 19:01	07:15 18:12	06:51 16:37	07:19 16:33
21	05:44 19:45-20:01/16 20:26	06:14 19:50	06:44 17:57-18:37/40 18:59	07:16 18:11	06:52 16:37	07:20 16:33
22	05:45 19:46-20:01/15 20:25	06:15 19:49	06:45 17:56-18:35/39 18:58	07:17 18:09	06:53 16:36	07:20 16:34
23	05:46 19:47-20:00/13 20:25	06:16 19:47	06:46 17:55-18:33/38 18:56	07:18 18:08	06:54 16:35	07:21 16:34
24	05:47 19:48-20:00/12 20:24	06:17 19:46	06:47 17:54-18:32/38 18:54	07:19 18:07	06:56 16:35	07:21 16:35
25	05:47 19:49-19:59/10 20:23	06:18 19:44	06:48 17:54-18:30/36 18:53	06:20 17:05	06:57 16:34	07:22 16:36
26	05:48 19:50-19:58/8 20:22	06:19 19:42	06:49 17:53-18:28/35 18:51	06:22 17:04	06:58 16:34	07:22 16:36
27	05:49 19:50-19:56/6 20:21	06:20 19:41	06:50 17:53-18:26/33 18:49	06:23 17:03	06:59 16:33	07:22 16:37
28	05:50 19:52-19:56/4 20:20	06:21 18:46-19:00/14 19:39	06:51 17:53-18:25/32 18:48	06:24 17:01	07:00 16:33	07:23 16:38
29	05:51 19:53-19:55/2 20:19	06:22 18:42-19:01/19 19:38	06:52 17:52-18:23/31 18:46	06:25 17:00	07:01 16:32	07:23 16:38
30	05:52 20:18	06:23 18:40-19:03/23 19:36	06:53 17:52-18:21/29 18:44	06:26 16:59	07:02 16:32	07:23 16:39
31	05:53 20:17	06:24 18:38-19:05/27 19:35		06:27 16:57		07:23 16:40
Potential sun hours	459	428	375	345	298	288
Sum of minutes with flicker	580	83	1029	160	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







## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 5 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (15)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	07:10 17:15	06:35 17:49	06:44 19:23	18:50-19:01/11 05:58 19:55	05:30 20:24
2	07:24 16:42	07:09 17:16	06:33 17:50	06:42 19:24	18:50-19:03/13 05:57 19:56	05:29 20:25
3	07:24 16:43	07:08 17:17	06:32 17:51	06:41 19:25	18:50-19:03/13 05:56 19:57	05:29 20:25
4	07:24 16:43	07:07 17:19	06:30 17:52	06:39 19:26	18:50-19:04/14 05:55 19:58	05:28 20:26
5	07:24 16:44	07:06 17:20	06:28 17:54	06:37 19:27	18:52-19:06/14 05:53 19:59	05:28 20:27
6	07:24 16:45	07:05 17:21	06:27 17:55	06:36 19:28	18:53-19:06/13 05:52 20:00	05:28 20:27
7	07:24 16:46	07:04 17:22	06:25 17:56	06:34 19:29	18:55-19:08/13 05:51 20:01	05:27 20:28
8	07:24 16:47	07:03 17:24	06:24 17:57	06:33 19:30	19:02-19:09/7 05:50 20:02	19:36-19:38/2 05:27 20:29
9	07:24 16:48	07:02 17:25	06:22 17:58	06:31 19:31	19:01-19:09/8 05:49 20:03	19:36-19:39/3 05:27 20:29
10	07:23 16:49	07:01 17:26	06:20 17:59	06:29 19:32	19:02-19:11/9 05:47 20:04	19:35-19:40/5 05:27 20:30
11	07:23 16:50	07:00 17:27	06:19 18:00	06:28 19:33	19:01-19:11/10 05:46 20:05	19:35-19:41/6 05:27 20:30
12	07:23 16:51	06:58 17:29	06:17 18:01	06:26 19:34	19:02-19:13/11 05:45 20:06	19:35-19:42/7 05:26 20:31
13	07:23 16:52	06:57 17:30	06:16 18:02	06:25 19:36	19:02-19:14/12 05:44 20:07	19:35-19:43/8 05:26 20:31
14	07:22 16:54	06:56 17:31	06:14 18:04	06:23 19:37	19:04-19:15/11 05:43 20:08	19:35-19:44/9 05:26 20:32
15	07:22 16:55	06:55 17:32	06:12 18:05	06:21 19:38	19:04-19:16/12 05:42 20:09	19:35-19:45/10 05:26 20:32
16	07:22 16:56	06:53 17:34	06:11 18:06	06:20 19:39	19:06-19:16/10 05:41 20:10	19:36-19:45/9 05:26 20:33
17	07:21 16:57	06:52 17:35	06:09 18:07	06:18 19:40	05:40 20:11	19:37-19:47/10 05:26 20:33
18	07:21 16:58	06:51 17:36	06:07 18:08	06:17 19:41	05:39 20:12	19:37-19:48/11 05:26 20:33
19	07:20 16:59	06:49 17:37	06:06 18:09	06:15 19:42	05:38 20:13	19:38-19:49/11 05:27 20:34
20	07:20 17:00	06:48 17:38	06:04 18:10	06:14 19:43	05:38 20:14	19:38-19:49/11 05:27 20:34
21	07:19 17:02	06:46 17:40	06:02 18:11	06:12 19:44	05:37 20:15	19:39-19:50/11 05:27 20:34
22	07:18 17:03	06:45 17:41	06:01 18:12	06:11 19:45	05:36 20:16	19:40-19:52/12 05:27 20:34
23	07:18 17:04	06:44 17:42	05:59 18:13	06:09 19:46	05:35 20:16	19:41-19:52/11 05:27 20:35
24	07:17 17:05	06:42 17:43	05:57 18:14	06:08 19:47	05:34 20:17	19:41-19:53/12 05:27 20:35
25	07:16 17:06	06:41 17:44	05:56 18:15	06:07 19:48	05:34 20:18	19:43-19:54/11 05:28 20:35
26	07:16 17:08	06:39 17:45	05:54 18:16	06:05 19:49	05:33 20:19	19:43-19:54/11 05:28 20:35
27	07:15 17:09	06:38 17:47	05:52 18:18	06:04 19:50	05:32 20:20	19:44-19:55/11 05:28 20:35
28	07:14 17:10	06:36 17:48	05:51 18:19	06:02 19:51	05:32 20:21	19:46-19:55/9 05:29 20:35
29	07:13 17:11		06:49 19:20	06:01 19:52	05:31 20:22	19:48-19:53/5 05:29 20:35
30	07:12 17:12		06:47 19:21	06:00 19:53	05:31 20:22	18:51-19:00/9 05:30 20:35
31	07:11 17:14		06:46 19:22		05:30 20:23	18:50-19:00/10 05:30 20:35
Potential sun hours	298	297	369	399	448	452
Sum of minutes with flicker	0	0	36	181	195	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

## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 5 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (15)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	05:30 20:35	05:54 19:46-19:52/6 20:16	06:25 19:00-19:10/10 19:33	06:54 18:43	06:29 16:56	07:03 16:32
2	05:31 20:35	05:55 19:46-19:51/5 20:15	06:26 19:00-19:09/9 19:31	06:55 18:41	06:30 16:55	07:04 16:32
3	05:31 20:35	05:56 19:46-19:50/4 20:14	06:27 18:59-19:07/8 19:30	06:57 18:39	06:31 16:54	07:05 16:31
4	05:32 20:34	05:57 19:47-19:49/2 20:13	06:28 18:59-19:06/7 19:28	06:58 18:38	06:32 16:52	07:06 16:31
5	05:32 20:34	05:58 19:47-19:48/1 20:11	06:29 18:52-19:04/12 19:26	06:59 18:36	06:33 16:51	07:07 16:31
6	05:33 20:34	05:59 20:10	06:30 18:49-19:03/14 19:25	07:00 18:34	06:34 16:50	07:08 16:31
7	05:33 20:34	06:00 20:09	06:31 18:47-19:01/14 19:23	07:01 18:33	06:36 16:49	07:09 16:31
8	05:34 20:33	06:01 20:08	06:32 18:46-18:59/13 19:22	07:02 18:31	06:37 16:48	07:10 16:31
9	05:35 20:33	06:02 20:07	06:33 18:44-18:58/14 19:20	07:03 18:29	06:38 16:47	07:11 16:31
10	05:35 20:33	06:03 20:05	06:33 18:44-18:56/12 19:18	07:04 18:28	06:39 16:46	07:12 16:31
11	05:36 20:32	06:04 20:04	06:34 18:43-18:54/11 19:16	07:05 18:26	06:40 16:45	07:13 16:31
12	05:37 20:32	06:05 20:03	06:35 18:42-18:53/11 19:15	07:06 18:25	06:42 16:44	07:14 16:31
13	05:38 20:31	06:06 20:01	06:36 18:42-18:51/9 19:13	07:07 18:23	06:43 16:43	07:14 16:31
14	05:38 20:31	06:07 20:00	06:37 18:42-18:50/8 19:11	07:08 18:22	06:44 16:42	07:15 16:31
15	05:39 19:55-20:03/8 20:30	06:08 19:59	06:38 18:42-18:48/6 19:10	07:09 18:20	06:45 16:41	07:16 16:31
16	05:40 19:54-20:05/11 20:30	06:09 19:57	06:39 18:42-18:46/4 19:08	07:10 18:18	06:46 16:40	07:17 16:32
17	05:41 19:53-20:04/11 20:29	06:10 19:56	06:40 18:43-18:45/2 19:06	07:11 18:17	06:48 16:40	07:17 16:32
18	05:41 19:52-20:04/12 20:28	06:11 19:54	06:41 19:05	07:13 18:15	06:49 16:39	07:18 16:32
19	05:42 19:52-20:03/11 20:28	06:12 19:53	06:42 19:03	07:14 18:14	06:50 16:38	07:19 16:33
20	05:43 19:50-20:02/12 20:27	06:13 19:52	06:43 19:01	07:15 18:12	06:51 16:37	07:19 16:33
21	05:44 19:50-20:01/11 20:26	06:14 19:50	06:44 19:00	07:16 18:11	06:52 16:37	07:20 16:33
22	05:45 19:50-20:01/11 20:25	06:15 19:49	06:45 18:58	07:17 18:09	06:53 16:36	07:20 16:34
23	05:46 19:49-20:00/11 20:25	06:16 19:47	06:46 18:56	07:18 18:08	06:55 16:35	07:21 16:34
24	05:47 19:48-20:00/12 20:24	06:17 19:46	06:47 18:54	07:19 18:07	06:56 16:35	07:21 16:35
25	05:47 19:48-19:59/11 20:23	06:18 19:44	06:48 18:53	06:20 17:05	06:57 16:34	07:22 16:36
26	05:48 19:48-19:58/10 20:22	06:19 19:14-19:15/1 19:43	06:49 18:51	06:22 17:04	06:58 16:34	07:22 16:36
27	05:49 19:46-19:56/10 20:21	06:20 19:08-19:19/11 19:41	06:50 18:49	06:23 17:03	06:59 16:33	07:22 16:37
28	05:50 19:46-19:56/10 20:20	06:21 19:06-19:18/12 19:39	06:51 18:48	06:24 17:01	07:00 16:33	07:23 16:38
29	05:51 19:46-19:55/9 20:19	06:22 19:03-19:15/12 19:38	06:52 18:46	06:25 17:00	07:01 16:32	07:23 16:38
30	05:52 19:46-19:54/8 20:18	06:23 19:02-19:13/11 19:36	06:53 18:44	06:26 16:59	07:02 16:32	07:23 16:39
31	05:53 19:46-19:53/7 20:17	06:24 19:01-19:12/11 19:35		06:27 16:57		07:23 16:40
Potential sun hours	459	428	375	345	298	288
Sum of minutes with flicker	175	76	164	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

## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 6 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (16)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 14:39-16:15/96 16:41	07:10 14:49-16:41/112 17:15	06:35 15:15-16:22/67 17:49	06:44 19:23	05:58 19:55	05:30 19:47-19:59/12 20:24
2	07:24 14:40-16:15/95 16:42	07:10 14:49-16:41/112 17:16	06:33 15:17-16:20/63 17:50	06:42 19:24	05:57 19:56	05:29 19:47-20:00/13 20:25
3	07:24 14:41-16:16/95 16:42	07:09 14:49-16:41/112 17:17	06:32 15:19-16:17/58 17:51	06:41 19:25	05:56 19:57	05:29 19:46-20:00/14 20:25
4	07:24 14:41-16:17/96 16:43	07:08 14:50-16:41/111 17:19	06:30 15:22-16:16/54 17:52	06:39 19:26	05:55 19:58	05:28 19:47-20:01/14 20:26
5	07:24 14:42-16:18/96 16:44	07:06 14:50-16:41/111 17:20	06:28 15:24-16:12/48 17:53	06:37 19:02-19:06/4 19:27	05:53 19:59	05:28 19:47-20:02/15 20:27
6	07:24 14:43-16:19/96 16:45	07:05 14:51-16:41/110 17:21	06:27 15:28-16:10/42 17:55	06:36 18:59-19:06/7 19:28	05:52 20:00	05:28 19:47-20:02/15 20:28
7	07:24 14:43-16:20/97 16:46	07:04 14:51-16:41/110 17:22	06:25 15:31-16:06/35 17:56	06:34 18:58-19:08/10 19:29	05:51 20:01	05:27 19:47-20:03/16 20:28
8	07:24 14:44-16:22/98 16:47	07:03 14:52-16:41/109 17:24	06:24 15:36-16:00/24 17:57	06:33 18:56-19:09/13 19:30	05:50 20:02	05:27 19:48-20:04/16 20:29
9	07:24 14:43-16:22/99 16:48	07:02 14:53-16:41/108 17:25	06:22 15:47-15:50/3 17:58	06:31 18:55-19:09/14 19:31	05:49 20:03	05:27 19:48-20:04/16 20:29
10	07:24 14:43-16:23/100 16:49	07:01 14:53-16:40/107 17:26	06:20 17:59	06:29 18:54-19:11/17 19:32	05:47 20:04	05:27 19:48-20:05/17 20:30
11	07:23 14:44-16:25/101 16:50	07:00 14:54-16:40/106 17:27	06:19 18:00	06:28 18:53-19:12/19 19:33	05:46 20:05	05:27 19:48-20:05/17 20:30
12	07:23 14:45-16:26/101 16:51	06:58 14:55-16:39/104 17:29	06:17 18:01	06:26 18:53-19:13/20 19:34	05:45 20:06	05:26 19:48-20:05/17 20:31
13	07:23 14:44-16:27/103 16:52	06:57 14:56-16:39/103 17:30	06:16 18:02	06:25 18:52-19:14/22 19:36	05:44 20:07	05:26 19:48-20:06/18 20:31
14	07:22 14:45-16:28/103 16:53	06:56 14:56-16:38/102 17:31	06:14 18:04	06:23 18:52-19:15/23 19:37	05:43 20:08	05:26 19:49-20:06/17 20:32
15	07:22 14:44-16:29/105 16:55	06:55 14:57-16:38/101 17:32	06:12 18:05	06:21 18:51-19:16/25 19:38	05:42 20:09	05:26 19:49-20:07/18 20:32
16	07:22 14:45-16:31/106 16:56	06:53 14:58-16:38/100 17:33	06:11 18:06	06:20 18:51-19:16/25 19:39	05:41 20:10	05:26 19:49-20:07/18 20:33
17	07:21 14:45-16:31/106 16:57	06:52 14:58-16:36/98 17:35	06:09 18:07	06:18 18:51-19:18/27 19:40	05:40 20:11	05:26 19:49-20:07/18 20:33
18	07:21 14:46-16:33/107 16:58	06:51 15:00-16:36/96 17:36	06:07 18:08	06:17 18:51-19:18/27 19:41	05:39 20:12	05:26 19:50-20:08/18 20:33
19	07:20 14:45-16:34/109 16:59	06:49 15:00-16:34/94 17:37	06:06 18:09	06:15 18:52-19:20/28 19:42	05:38 20:13	05:26 19:50-20:08/18 20:34
20	07:20 14:46-16:36/110 17:00	06:48 15:01-16:34/93 17:38	06:04 18:10	06:14 18:52-19:21/29 19:43	05:38 20:14	05:27 19:51-20:09/18 20:34
21	07:19 14:46-16:37/111 17:01	06:46 15:03-16:33/90 17:40	06:02 18:11	06:12 18:53-19:20/27 19:44	05:37 19:49-19:50/1 20:15	05:27 19:51-20:09/18 20:34
22	07:18 14:46-16:38/112 17:03	06:45 15:04-16:32/88 17:41	06:01 18:12	06:11 18:54-19:19/25 19:45	05:36 19:49-19:52/3 20:16	05:27 19:51-20:09/18 20:34
23	07:18 14:46-16:38/112 17:04	06:44 15:05-16:31/86 17:42	05:59 18:13	06:09 18:54-19:17/23 19:46	05:35 19:48-19:52/4 20:16	05:27 19:52-20:10/18 20:35
24	07:17 14:47-16:40/113 17:05	06:42 15:06-16:29/83 17:43	05:57 18:14	06:08 18:56-19:15/19 19:47	05:34 19:47-19:53/6 20:17	05:27 19:51-20:09/18 20:35
25	07:16 14:47-16:40/113 17:06	06:41 15:08-16:29/81 17:44	05:56 18:15	06:07 18:57-19:12/15 19:48	05:34 19:48-19:54/6 20:18	05:28 19:51-20:09/18 20:35
26	07:16 14:47-16:40/113 17:07	06:39 15:09-16:27/78 17:45	05:54 18:16	06:05 19:01-19:09/8 19:49	05:33 19:47-19:55/8 20:19	05:28 19:52-20:10/18 20:35
27	07:15 14:47-16:40/113 17:09	06:38 15:11-16:26/75 17:47	05:52 18:18	06:04 19:50	05:32 19:46-19:55/9 20:20	05:28 19:52-20:10/18 20:35
28	07:14 14:47-16:40/113 17:10	06:36 15:13-16:24/71 17:48	05:51 18:19	06:02 19:51	05:31 19:47-19:56/9 20:21	05:29 19:52-20:09/17 20:35
29	07:13 14:47-16:40/113 17:11		06:49 19:20	06:01 19:52	05:31 19:46-19:57/11 20:22	05:29 19:52-20:10/18 20:35
30	07:12 14:48-16:40/112 17:12		06:47 19:21	06:00 19:54	05:31 19:47-19:58/11 20:22	05:30 19:52-20:09/17 20:35
31	07:11 14:49-16:41/112 17:14		06:46 19:22		05:30 19:46-19:58/12 20:23	
Potential sun hours	298	297	369	399	448	452
Sum of minutes with flicker	3256	2751	394	427	80	503

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

SHADOW - Calendar per WTG

Calculation: ShadowWTG: 6 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (16)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

Table with columns for months (July, August, September, October, November, December) and rows for days (1-31), showing sun rise/set times and shadow calculation parameters.

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

Matrix with 2 rows: 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.

Project:

Aren\_Calitri

Licensed user:

Vega sas

Via delli Carri, 48

IT-71100 Foggia

+39 0881 756251

Vega sas / info@studiovega.org

Calculated:

16/05/2022 15:49/3.4.405

## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 7 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (17)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 08:47-09:39/52 16:41	07:10 07:48-08:14/26 17:15	06:35 07:09-07:38/29 17:49	06:44 19:23	05:58 18:33-19:24/51 19:55	05:30 18:19-19:46/87 20:24
2	07:24 08:47-09:40/53 16:42	07:09 07:49-08:14/25 17:16	06:33 07:08-07:39/31 17:50	06:42 19:24	05:57 18:30-19:25/55 19:56	05:29 18:19-19:46/87 20:25
3	07:24 08:48-09:40/52 16:42	07:08 07:49-08:12/23 17:17	06:32 07:08-07:41/33 17:51	06:41 19:25	05:56 18:29-19:26/57 19:57	05:29 18:19-19:46/87 20:25
4	07:24 08:49-09:40/51 16:43	07:07 07:50-08:11/21 17:19	06:30 07:07-07:42/35 17:52	06:39 19:26	05:54 18:28-19:27/59 19:58	05:28 18:20-19:46/86 20:26
5	07:24 08:50-09:40/50 16:44	07:06 07:51-08:10/19 17:20	06:28 07:06-07:43/37 17:53	06:37 19:27	05:53 18:27-19:29/62 19:59	05:28 18:20-19:46/86 20:27
6	07:24 08:51-09:40/49 16:45	07:05 07:53-08:09/16 17:21	06:27 07:07-07:45/38 17:55	06:36 19:28	05:52 18:26-19:30/64 20:00	05:28 18:20-19:45/85 20:27
7	07:24 08:52-09:40/48 16:46	07:04 07:56-08:07/11 17:22	06:25 07:06-07:46/40 17:56	06:34 19:29	05:51 18:24-19:30/66 20:01	05:27 18:20-19:45/85 20:28
8	07:24 08:53-09:40/47 16:47	07:03 17:24	06:24 07:06-07:46/40 17:57	06:33 19:30	05:50 18:24-19:31/67 20:02	05:27 18:20-19:45/85 20:29
9	07:24 08:53-09:39/46 16:48	07:02 17:25	06:22 07:07-07:45/38 17:58	06:31 19:31	05:49 18:23-19:31/68 20:03	05:27 18:21-19:45/84 20:29
10	07:24 08:54-09:39/45 16:49	07:01 17:26	06:20 07:07-07:43/36 17:59	06:29 19:32	05:47 18:22-19:32/70 20:04	05:27 18:21-19:45/84 20:30
11	07:23 07:51-07:59/8 16:50	07:00 17:27	06:19 07:08-07:42/34 18:00	06:28 19:33	05:46 18:22-19:33/71 20:05	05:26 18:21-19:44/83 20:30
12	07:23 07:50-08:01/11 16:51	06:58 17:29	06:17 07:08-07:40/32 18:01	06:26 19:34	05:45 18:21-19:33/72 20:06	05:26 18:21-19:44/83 20:31
13	07:23 07:48-08:02/14 16:52	06:57 17:30	06:16 07:09-07:36/27 18:02	06:25 19:36	05:44 18:20-19:43/83 20:07	05:26 18:21-19:44/83 20:31
14	07:22 07:48-08:04/16 16:53	06:56 17:31	06:14 07:11-07:35/24 18:03	06:23 19:37	05:43 18:20-19:44/84 20:08	05:26 18:21-19:44/83 20:32
15	07:22 07:47-08:05/18 16:55	06:55 17:32	06:12 07:13-07:32/19 18:05	06:21 19:38	05:42 18:19-19:45/86 20:09	05:26 18:22-19:44/82 20:32
16	07:22 07:47-08:07/20 16:56	06:53 17:33	06:11 07:15-07:28/13 18:06	06:20 19:39	05:41 18:19-19:46/87 20:10	05:26 18:22-19:44/82 20:33
17	07:21 07:46-08:08/22 16:57	06:52 17:35	06:09 18:07	06:18 19:40	05:40 18:19-19:46/87 20:11	05:26 18:22-19:44/82 20:33
18	07:21 07:46-08:09/23 16:58	06:51 17:36	06:07 18:08	06:17 19:41	05:39 18:19-19:48/89 20:12	05:26 18:23-19:45/82 20:33
19	07:20 07:45-08:10/25 16:59	06:49 07:23-07:24/1 17:37	06:06 18:09	06:15 19:42	05:38 18:19-19:49/90 20:13	05:26 18:23-19:45/82 20:34
20	07:20 07:46-08:11/25 17:00	06:48 07:21-07:25/4 17:38	06:04 18:10	06:14 19:43	05:38 18:18-19:48/90 20:14	05:27 18:23-19:45/82 20:34
21	07:19 07:45-08:12/27 17:01	06:46 07:19-07:27/8 17:39	06:02 18:11	06:12 19:44	05:37 18:18-19:48/90 20:15	05:27 18:23-19:45/82 20:34
22	07:18 07:45-08:12/27 17:03	06:45 07:17-07:27/10 17:41	06:01 18:12	06:11 19:45	05:36 18:19-19:48/89 20:16	05:27 18:23-19:45/82 20:34
23	07:18 07:44-08:12/28 17:04	06:44 07:17-07:29/12 17:42	05:59 18:13	06:09 19:46	05:35 18:18-19:48/90 20:16	05:27 18:24-19:46/82 20:35
24	07:17 07:45-08:14/29 17:05	06:42 07:14-07:30/16 17:43	05:57 18:14	06:08 19:47	05:34 18:18-19:48/90 20:17	05:27 18:24-19:46/82 20:35
25	07:16 07:45-08:14/29 17:06	06:41 07:13-07:32/19 17:44	05:56 18:15	06:07 18:48-19:09/21 19:48	05:34 18:19-19:48/89 20:18	05:28 18:24-19:46/82 20:35
26	07:16 07:45-08:14/29 17:07	06:39 07:11-07:33/22 17:45	05:54 18:16	06:05 18:44-19:13/29 19:49	05:33 18:18-19:47/89 20:19	05:28 18:24-19:46/82 20:35
27	07:15 07:45-08:14/29 17:09	06:38 07:11-07:35/24 17:47	05:52 18:17	06:04 18:41-19:16/35 19:50	05:32 18:18-19:47/89 20:20	05:28 18:25-19:47/82 20:35
28	07:14 07:45-08:14/29 17:10	06:36 07:09-07:36/27 17:48	05:51 18:19	06:02 18:38-19:18/40 19:51	05:32 18:19-19:47/88 20:21	05:29 18:24-19:47/83 20:35
29	07:13 07:45-08:14/29 17:11		06:49 19:20	06:01 18:36-19:20/44 19:52	05:31 18:18-19:47/89 20:22	05:29 18:25-19:48/83 20:35
30	07:12 07:47-08:15/28 17:12		06:47 19:21	06:00 18:34-19:22/48 19:53	05:31 18:19-19:47/88 20:22	05:30 18:25-19:48/83 20:35
31	07:11 07:47-08:15/28 17:14		06:46 19:22		05:30 18:18-19:46/88 20:23	
Potential sun hours	298	297	369	399	448	452
Sum of minutes with flicker	1394	284	506	217	2453	2503

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

## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 7 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (17)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	05:30 18:26-19:49/83 20:35	05:54 18:32-19:44/72 20:16 19:46-19:52/6	06:25 19:33	06:54 07:48-08:17/29 18:43	06:29 16:56	07:03 07:33-07:41/8 16:32 08:37-09:21/44
2	05:31 18:25-19:49/84 20:35	05:55 18:32-19:43/71 20:15 19:47-19:51/4	06:26 19:31	06:55 07:47-08:20/33 18:41	06:30 16:55	07:04 08:37-09:22/45 16:31
3	05:31 18:26-19:50/84 20:35	05:56 18:33-19:42/69 20:14 19:48-19:50/2	06:27 19:30	06:56 07:46-08:21/35 18:39	06:31 16:54	07:05 08:37-09:23/46 16:31
4	05:32 18:26-19:50/84 20:34	05:57 18:34-19:42/68 20:13	06:28 19:28	06:58 07:45-08:22/37 18:38	06:32 07:25-07:37/12 16:52	07:06 08:37-09:24/47 16:31
5	05:32 18:26-19:51/85 20:34	05:58 18:34-19:41/67 20:11	06:29 19:26	06:59 07:44-08:23/39 18:36	06:33 07:23-07:39/16 16:51	07:07 08:37-09:25/48 16:31
6	05:33 18:26-19:51/85 20:34	05:59 18:35-19:40/65 20:10	06:29 19:25	07:00 07:43-08:23/40 18:34	06:34 07:21-07:40/19 16:50	07:08 08:37-09:26/49 16:31
7	05:33 18:26-19:52/86 20:34	06:00 18:36-19:39/63 20:09	06:30 19:23	07:01 07:43-08:21/38 18:33	06:36 07:21-07:42/21 16:49	07:09 08:37-09:27/50 16:31
8	05:34 18:27-19:52/85 20:33	06:01 18:36-19:37/61 20:08	06:31 19:21	07:02 07:42-08:19/37 18:31	06:37 07:20-07:43/23 16:48	07:10 08:37-09:28/51 16:31
9	05:35 18:26-19:53/87 20:33	06:02 18:37-19:36/59 20:07	06:32 19:20	07:03 07:42-08:17/35 18:29	06:38 07:19-07:44/25 16:47	07:11 08:37-09:29/52 16:31
10	05:35 18:27-19:54/87 20:33	06:03 18:38-19:35/57 20:05	06:33 19:18	07:04 07:42-08:15/33 18:28	06:39 07:19-07:45/26 16:46	07:12 08:37-09:30/53 16:31
11	05:36 18:26-19:53/87 20:32	06:04 18:39-19:33/54 20:04	06:34 19:16	07:05 07:41-08:14/33 18:26	06:40 07:18-07:46/28 16:45	07:13 08:37-09:29/52 16:31
12	05:37 18:27-19:54/87 20:32	06:05 18:41-19:31/50 20:03	06:35 19:15	07:06 07:41-08:12/31 18:25	06:42 07:18-07:46/28 16:44	07:14 08:37-09:30/53 16:31
13	05:37 18:27-19:55/88 20:31	06:06 18:42-19:30/48 20:01	06:36 19:13	07:07 07:42-08:10/28 18:23	06:43 07:17-07:46/29 16:43	07:14 08:38-09:31/53 16:31
14	05:38 18:27-19:56/89 20:31	06:07 18:44-19:28/44 20:00	06:37 19:11	07:08 07:43-08:09/26 18:21	06:44 07:18-07:47/29 16:42	07:15 08:38-09:32/54 16:31
15	05:39 18:27-19:55/88 20:30	06:08 18:46-19:25/39 19:59	06:38 19:10	07:09 07:44-08:07/23 18:20	06:45 07:18-07:47/29 16:41	07:16 08:39-09:33/54 16:31
16	05:40 18:27-19:56/89 20:30	06:09 18:49-19:23/34 19:57	06:39 19:08	07:10 07:44-08:05/21 18:18	06:46 07:18-07:47/29 16:40	07:17 08:38-09:33/55 16:32
17	05:40 18:28-19:57/89 20:29	06:10 18:52-19:19/27 19:56	06:40 19:06	07:11 07:45-08:03/18 18:17	06:48 07:18-07:47/29 16:39	07:17 08:39-09:34/55 16:32
18	05:41 18:28-19:57/89 20:28	06:11 18:56-19:14/18 19:54	06:41 19:05	07:13 07:47-08:01/14 18:15	06:49 07:19-07:47/28 16:39	07:18 08:39-09:34/55 16:32
19	05:42 18:28-19:58/90 20:28	06:12 18:58-19:10/15 19:53	06:42 19:03	07:14 07:47-07:59/12 18:14	06:50 07:19-07:47/28 16:38	07:19 08:40-09:35/55 16:33
20	05:43 18:28-19:57/89 20:27	06:13 18:59-19:10/14 19:52	06:43 19:01	07:15 07:48-07:58/10 18:12	06:51 07:20-07:47/27 16:37	07:19 08:40-09:36/56 16:33
21	05:44 18:28-19:58/90 20:26	06:14 18:59-19:10/13 19:50	06:44 18:59	07:16 07:50-07:57/7 18:11	06:52 07:20-07:47/27 16:37	07:20 08:40-09:36/56 16:33
22	05:45 18:28-19:58/90 20:25	06:15 18:59-19:10/12 19:49	06:45 18:58	07:17 07:52-07:55/3 18:09	06:53 07:22-07:47/25 16:36	07:20 08:41-09:37/56 16:34
23	05:46 18:29-19:59/90 20:25	06:16 18:59-19:10/11 19:47	06:46 18:56	07:18 07:53-07:56/2 18:08	06:55 07:22-07:47/25 16:35	07:21 08:41-09:37/56 16:34
24	05:46 18:29-19:59/90 20:24	06:17 18:59-19:10/10 19:46	06:47 18:54	07:19 07:54-07:57/1 18:07	06:56 07:23-07:46/23 16:35	07:21 08:41-09:37/56 16:35
25	05:47 18:30-19:59/89 20:23	06:18 18:59-19:10/9 19:44	06:48 18:53	06:20 17:05	06:57 07:24-07:46/22 16:34	07:22 08:43-09:38/55 16:36
26	05:48 18:29-19:57/88 20:22	06:19 18:59-19:10/8 19:42	06:49 18:51	06:22 17:04	06:58 07:25-07:45/20 16:34	07:22 08:43-09:38/55 16:36
27	05:49 18:29-19:57/88 20:21	06:20 18:59-19:10/7 19:41	06:50 18:49	06:23 17:02	06:59 07:27-07:45/18 16:33	07:22 08:43-09:38/55 16:37
28	05:50 18:30-19:56/86 20:20	06:21 18:59-19:10/6 19:39	06:51 18:48	06:24 17:01	07:00 07:28-07:45/17 16:33	07:23 08:45-09:39/54 16:37
29	05:51 18:30-19:55/85 20:19	06:22 18:59-19:10/5 19:38	06:52 18:46	06:25 17:00	07:01 07:29-07:44/15 16:32	07:23 08:45-09:39/54 16:38
30	05:52 18:31-19:54/83 20:18	06:23 18:59-19:10/4 19:36	06:53 18:44	06:26 16:59	07:02 07:31-07:42/11 16:32	07:23 08:45-09:39/54 16:39
31	05:53 18:31-19:44/73 20:17	06:24 18:59-19:10/3 19:35	06:27 16:57	06:27 16:57	 	07:23 08:46-09:39/53 16:40
Potential sun hours	459	428	375	345	298	288
Sum of minutes with flicker	2695	978	77	582	990	1639

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



## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 8 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (18)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 08:39-10:20/101 16:41	07:10 08:44-10:33/109 17:15	06:35 09:02-10:02/60 17:49	06:44 19:23	05:58 19:54	05:30 20:24
2	07:24 08:39-10:20/101 16:42	07:09 08:44-10:33/109 17:16	06:33 09:04-09:59/55 17:50	06:42 19:24	05:57 19:56	05:29 20:25
3	07:24 08:39-10:21/102 16:42	07:08 08:44-10:33/109 17:17	06:32 09:05-09:55/50 17:51	06:41 19:25	05:56 19:57	05:29 20:25
4	07:24 08:39-10:22/103 16:43	07:07 08:45-10:33/108 17:19	06:30 09:08-09:52/44 17:52	06:39 19:26	05:54 19:58	05:28 20:26
5	07:24 08:40-10:22/102 16:44	07:06 08:45-10:33/108 17:20	06:28 09:11-09:47/36 17:53	06:37 19:27	05:53 19:59	05:28 20:27
6	07:24 08:40-10:23/103 16:45	07:05 08:45-10:33/108 17:21	06:27 09:15-09:42/27 17:55	06:36 19:28	05:52 20:00	05:28 20:27
7	07:24 08:40-10:24/104 16:46	07:04 08:46-10:33/107 17:22	06:25 09:22-09:33/11 17:56	06:34 19:29	05:51 20:01	05:27 20:28
8	07:24 08:41-10:25/104 16:47	07:03 08:46-10:33/107 17:24	06:24 17:57	06:32 19:30	05:50 20:02	05:27 20:29
9	07:24 08:40-10:25/105 16:48	07:02 08:47-10:32/105 17:25	06:22 17:58	06:31 19:31	05:48 20:03	05:27 20:29
10	07:23 08:41-10:26/105 16:49	07:01 08:46-10:31/105 17:26	06:20 17:59	06:29 19:32	05:47 20:04	05:27 20:30
11	07:23 08:41-10:26/105 16:50	07:00 08:47-10:31/104 17:27	06:19 18:00	06:28 19:33	05:46 20:05	05:26 20:30
12	07:23 08:42-10:27/105 16:51	06:58 08:48-10:30/102 17:29	06:17 18:01	06:26 19:34	05:45 20:06	05:26 20:31
13	07:23 08:41-10:27/106 16:52	06:57 08:48-10:30/102 17:30	06:16 06:36-06:45/9 18:02	06:24 19:35	05:44 20:07	05:26 20:31
14	07:22 08:42-10:28/106 16:53	06:56 08:48-10:28/100 17:31	06:14 06:35-06:48/13 18:03	06:23 19:37	05:43 20:08	05:26 20:32
15	07:22 08:41-10:28/107 16:54	06:55 08:49-10:27/98 17:32	06:12 06:33-06:48/15 18:05	06:21 19:38	05:42 20:09	05:26 20:32
16	07:22 08:42-10:29/107 16:56	06:53 08:50-10:27/97 17:33	06:11 06:31-06:49/18 18:06	06:20 19:39	05:41 20:10	05:26 20:33
17	07:21 08:42-10:29/107 16:57	06:52 08:50-10:25/95 17:35	06:09 06:30-06:49/19 18:07	06:18 19:40	05:40 20:11	05:26 20:33
18	07:21 08:42-10:30/108 16:58	06:51 08:51-10:24/93 17:36	06:07 06:29-06:49/20 18:08	06:17 19:41	05:39 20:12	05:26 20:33
19	07:20 08:42-10:31/109 16:59	06:49 08:51-10:22/91 17:37	06:06 06:28-06:48/20 18:09	06:15 19:42	05:38 20:13	05:26 20:34
20	07:20 08:42-10:31/109 17:00	06:48 08:52-10:21/89 17:38	06:04 06:29-06:48/19 18:10	06:14 19:43	05:37 20:14	05:26 20:34
21	07:19 08:43-10:32/109 17:01	06:46 08:53-10:20/87 17:39	06:02 06:28-06:47/19 18:11	06:12 19:44	05:37 20:15	05:27 20:34
22	07:18 08:42-10:32/110 17:03	06:45 08:54-10:18/84 17:41	06:01 06:28-06:45/17 18:12	06:11 19:45	05:36 20:16	05:27 20:34
23	07:18 08:42-10:32/110 17:04	06:44 08:55-10:16/81 17:42	05:59 06:29-06:44/15 18:13	06:09 19:46	05:35 20:16	05:27 20:35
24	07:17 08:43-10:33/110 17:05	06:42 08:55-10:14/79 17:43	05:57 06:30-06:42/12 18:14	06:08 19:47	05:34 20:17	05:27 20:35
25	07:16 08:43-10:33/110 17:06	06:41 08:57-10:12/75 17:44	05:56 06:33-06:38/5 18:15	06:06 19:48	05:34 20:18	05:28 20:35
26	07:16 08:43-10:33/110 17:07	06:39 08:58-10:09/71 17:45	05:54 18:16	06:05 19:49	05:33 20:19	05:28 20:35
27	07:15 08:43-10:33/110 17:09	06:38 08:59-10:07/68 17:47	05:52 18:17	06:04 19:50	05:32 20:20	05:28 20:35
28	07:14 08:43-10:33/110 17:10	06:36 09:00-10:04/64 17:48	05:51 18:19	06:02 19:51	05:32 20:21	05:29 20:35
29	07:13 08:43-10:33/110 17:11		06:49 19:20	06:01 19:52	05:31 20:22	05:29 20:35
30	07:12 08:43-10:33/110 17:12		06:47 19:21	06:00 19:53	05:31 20:22	05:30 20:35
31	07:11 08:44-10:33/109 17:14		06:46 19:22		05:30 20:23	
Potential sun hours	298	297	369	399	448	452
Sum of minutes with flicker	3307	2655	484	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

## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 8 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (18)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	05:30 20:35	05:54 20:16	06:25 19:33	06:54 07:18-07:22/4 18:43	06:28 08:16-10:01/105 16:56	07:03 08:23-10:08/105 16:32
2	05:30 20:35	05:55 20:15	06:25 19:31	06:55 18:41	06:30 08:16-10:01/105 16:55	07:04 08:24-10:09/105 16:31
3	05:31 20:35	05:56 20:14	06:26 19:30	06:56 18:39	06:31 08:16-10:02/106 16:54	07:05 08:24-10:09/105 16:31
4	05:32 20:34	05:57 20:13	06:27 19:28	06:57 18:38	06:32 08:16-10:03/107 16:52	07:06 08:25-10:09/104 16:31
5	05:32 20:34	05:58 20:11	06:28 19:26	06:59 18:36	06:33 08:15-10:03/108 16:51	07:07 08:25-10:09/104 16:31
6	05:33 20:34	05:59 20:10	06:29 19:25	07:00 18:34	06:34 08:15-10:03/108 16:50	07:08 08:26-10:09/103 16:31
7	05:33 20:34	06:00 20:09	06:30 19:23	07:01 09:54-10:14/20 18:33	06:36 08:15-10:04/109 16:49	07:09 08:27-10:10/103 16:31
8	05:34 20:33	06:01 20:08	06:31 19:21	07:02 09:48-10:20/32 18:31	06:37 08:15-10:04/109 16:48	07:10 08:27-10:10/103 16:31
9	05:35 20:33	06:02 20:07	06:32 19:20	07:03 09:44-10:24/40 18:29	06:38 08:15-10:04/109 16:47	07:11 08:28-10:10/102 16:30
10	05:35 20:33	06:03 20:05	06:33 19:18	07:04 09:41-10:28/47 18:28	06:39 08:15-10:04/109 16:46	07:12 08:29-10:11/102 16:31
11	05:36 20:32	06:04 20:04	06:34 19:16	07:05 09:39-10:31/52 18:26	06:40 08:15-10:05/110 16:45	07:13 08:29-10:10/101 16:31
12	05:37 20:32	06:05 20:03	06:35 19:15	07:06 09:36-10:33/57 18:25	06:42 08:15-10:05/110 16:44	07:14 08:29-10:10/101 16:31
13	05:37 20:31	06:06 20:01	06:36 19:13	07:07 09:34-10:36/62 18:23	06:43 08:15-10:05/110 16:43	07:14 08:30-10:11/101 16:31
14	05:38 20:31	06:07 20:00	06:37 19:11	07:08 09:32-10:38/66 18:21	06:44 08:16-10:06/110 16:42	07:15 08:31-10:12/101 16:31
15	05:39 20:30	06:08 19:59	06:38 19:10	07:09 09:31-10:41/70 18:20	06:45 08:16-10:06/110 16:41	07:16 08:31-10:11/100 16:31
16	05:40 20:30	06:09 19:57	06:39 19:08	07:10 09:30-10:43/73 18:18	06:46 08:16-10:06/110 16:40	07:17 08:32-10:12/100 16:31
17	05:40 20:29	06:10 19:56	06:40 19:06	07:11 09:28-10:44/76 18:17	06:47 08:16-10:06/110 16:39	07:17 08:33-10:13/100 16:32
18	05:41 20:28	06:11 19:54	06:41 07:22-07:25/3 19:05	07:12 09:26-10:46/80 18:15	06:49 08:17-10:07/110 16:39	07:18 08:33-10:12/99 16:32
19	05:42 20:28	06:12 19:53	06:42 07:18-07:29/11 19:03	07:14 09:25-10:47/82 18:14	06:50 08:17-10:07/110 16:38	07:19 08:33-10:13/100 16:32
20	05:43 20:27	06:13 19:52	06:43 07:15-07:29/14 19:01	07:15 09:24-10:49/85 18:12	06:51 08:17-10:07/110 16:37	07:19 08:34-10:14/100 16:33
21	05:44 20:26	06:14 19:50	06:44 07:14-07:30/16 18:59	07:16 09:24-10:51/87 18:11	06:52 08:18-10:07/109 16:37	07:20 08:34-10:14/100 16:33
22	05:45 20:25	06:15 19:49	06:45 07:13-07:31/18 18:58	07:17 09:22-10:52/90 18:09	06:53 08:19-10:08/109 16:36	07:20 08:35-10:15/100 16:34
23	05:46 20:25	06:16 19:47	06:46 07:12-07:32/20 18:56	07:18 09:21-10:53/92 18:08	06:54 08:19-10:08/109 16:35	07:21 08:35-10:15/100 16:34
24	05:46 20:24	06:17 19:46	06:47 07:12-07:32/20 18:54	07:19 09:20-10:54/94 18:07	06:56 08:19-10:08/109 16:35	07:21 08:35-10:15/100 16:35
25	05:47 20:23	06:18 19:44	06:48 07:11-07:31/20 18:53	06:20 08:19-09:55/96 17:05	06:57 08:20-10:07/107 16:34	07:22 08:36-10:16/100 16:35
26	05:48 20:22	06:19 19:42	06:49 07:11-07:31/20 18:51	06:21 08:19-09:57/98 17:04	06:58 08:20-10:07/107 16:34	07:22 08:37-10:16/99 16:36
27	05:49 20:21	06:20 19:41	06:50 07:12-07:30/18 18:49	06:23 08:19-09:57/98 17:02	06:59 08:20-10:07/107 16:33	07:22 08:37-10:17/100 16:37
28	05:50 20:20	06:21 19:39	06:51 07:13-07:29/16 18:48	06:24 08:18-09:58/100 17:01	07:00 08:22-10:08/106 16:33	07:23 08:38-10:18/100 16:37
29	05:51 20:19	06:22 19:38	06:52 07:14-07:28/14 18:46	06:25 08:17-09:58/101 17:00	07:01 08:22-10:08/106 16:32	07:23 08:38-10:18/100 16:38
30	05:52 20:18	06:23 19:36	06:53 07:15-07:26/11 18:44	06:26 08:17-10:00/103 16:58	07:02 08:23-10:08/105 16:32	07:23 08:38-10:19/101 16:39
31	05:53 20:17	06:24 19:35		06:27 08:17-10:00/103 16:57		07:23 08:38-10:19/101 16:40
Potential sun hours	459	428	375	345	298	288
Sum of minutes with flicker	0	0	201	1908	3249	3140

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



SHADOW - Calendar per WTG

Calculation: ShadowWTG: 9 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (19)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

Table with 6 columns (July to December) and 31 rows. Each row contains two columns of times for each month, representing sunrise and sunset or shadow start and end. Summary rows at the bottom show 'Potential sun hours' and 'Sum of minutes with flicker' for each month and a grand total.

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

Matrix defining table layout: 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.





## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 11 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (21)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	07:10 17:15	06:35 16:47-17:28/41 17:49	06:44 17:47-18:30/43 19:23 18:32-19:02/30	05:59 19:55	05:30 06:56-07:50/54 20:24
2	07:24 16:42	07:10 17:16	06:33 16:45-17:29/44 17:50	06:42 17:48-18:27/39 19:24 18:30-19:03/33	05:57 19:56	05:29 06:55-07:52/57 20:25
3	07:24 16:43	07:09 17:18	06:32 16:45-17:31/46 17:51	06:41 17:50-18:24/34 19:25 18:29-19:03/34	05:56 19:57	05:29 06:53-07:53/60 20:25
4	07:24 16:44	07:07 17:19	06:30 16:43-17:31/48 17:52	06:39 17:53-18:22/29 19:26 18:29-19:05/36	05:55 19:58	05:29 06:52-07:54/62 20:26
5	07:24 16:45	07:06 17:20	06:29 16:42-17:32/50 17:54	06:38 17:56-18:17/21 19:27 18:28-19:06/38	05:53 19:59	05:28 06:52-07:56/64 20:27
6	07:24 16:45	07:05 17:21	06:27 16:42-17:34/52 17:55	06:36 18:02-18:10/8 19:28 18:27-19:06/39	05:52 20:00	05:28 06:51-07:57/66 20:27
7	07:24 16:46	07:04 17:23	06:25 16:40-17:35/55 17:56	06:34 18:27-19:08/41 19:29	05:51 20:01	05:28 06:50-07:58/68 20:28
8	07:24 16:47	07:03 17:24	06:24 16:40-17:36/56 17:57	06:33 18:26-19:09/43 19:30	05:50 20:02	05:27 06:49-07:59/70 20:29
9	07:24 16:48	07:02 17:25	06:22 16:39-17:37/58 17:58	06:31 18:26-19:10/44 19:31	05:49 20:03	05:27 06:49-08:00/71 20:29
10	07:23 16:49	07:01 17:26	06:21 16:38-17:38/60 17:59	06:29 18:26-19:11/45 19:32	05:48 20:04	05:27 06:49-08:01/72 20:30
11	07:23 16:50	07:00 17:28	06:19 16:39-17:40/61 18:00	06:28 18:25-19:11/46 19:33	05:47 20:05	05:27 06:49-08:02/73 20:30
12	07:23 16:52	06:58 17:29	06:17 16:38-17:40/62 18:01	06:26 18:26-19:13/47 19:35	05:45 20:06	05:27 06:48-08:02/74 20:31
13	07:23 16:53	06:57 17:30	06:16 16:37-17:41/64 18:03	06:25 18:25-19:14/49 19:36	05:44 20:07	05:27 06:48-08:03/75 20:31
14	07:22 16:54	06:56 17:31	06:14 16:37-17:43/66 18:04	06:23 18:26-19:15/49 19:37	05:43 20:08	05:27 06:48-08:04/76 20:32
15	07:22 16:55	06:55 17:32	06:12 16:37-17:44/67 18:05	06:22 18:26-19:14/48 19:38	05:42 20:09	05:26 06:48-08:04/76 20:32
16	07:22 16:56	06:53 17:34	06:11 16:36-17:45/69 18:06	06:20 18:27-19:13/46 19:39	05:41 20:10	05:26 06:48-08:05/77 20:33
17	07:21 16:57	06:52 17:35	06:09 16:37-17:46/69 18:07	06:19 18:27-19:12/45 19:40	05:40 20:11	05:27 06:48-08:05/77 20:33
18	07:21 16:58	06:51 17:36	06:07 16:37-17:46/69 18:08	06:17 18:28-19:11/43 19:41	05:40 20:12	05:27 06:47-08:05/78 20:33
19	07:20 16:59	06:49 17:12-17:15/3 17:37	06:06 16:36-17:45/69 18:09	06:15 18:28-19:10/42 19:42	05:39 20:13	05:27 06:47-08:05/78 20:34
20	07:20 17:01	06:48 17:09-17:16/7 17:38	06:04 16:37-17:45/68 18:10	06:14 18:29-19:09/40 19:43	05:38 20:14	05:27 06:47-08:06/79 20:34
21	07:19 17:02	06:46 17:04-17:18/14 17:40	06:02 16:37-17:44/67 18:11	06:13 18:30-19:07/37 19:44	05:37 20:15	05:27 06:47-08:06/79 20:34
22	07:18 17:03	06:45 17:00-17:19/19 17:41	06:01 16:37-17:43/66 18:12	06:11 18:31-19:06/35 19:45	05:36 20:16	05:27 06:48-08:07/79 20:34
23	07:18 17:04	06:44 16:58-17:21/23 17:42	05:59 16:38-17:43/65 18:13	06:10 18:32-19:03/31 19:46	05:35 20:16	05:27 06:48-08:07/79 20:35
24	07:17 17:05	06:42 16:55-17:21/26 17:43	05:57 16:38-17:41/63 18:14	06:08 18:34-19:02/28 19:47	05:35 20:17	05:28 06:48-08:06/78 20:35
25	07:16 17:07	06:41 16:53-17:23/30 17:44	05:56 16:39-17:40/61 18:15	06:07 18:37-19:00/23 19:48	05:34 20:18	07:17-07:28/11 05:28 06:48-08:06/78 20:35
26	07:16 17:08	06:39 16:51-17:24/33 17:46	05:54 16:40-17:40/60 18:17	06:05 18:39-18:56/17 19:49	05:33 20:19	07:10-07:34/24 05:28 06:50-08:07/77 20:35
27	07:15 17:09	06:38 16:50-17:25/35 17:47	05:52 16:40-17:38/58 18:18	06:04 18:45-18:50/5 19:50	05:33 20:20	07:07-07:39/32 05:29 06:50-08:06/76 20:35
28	07:14 17:10	06:36 16:48-17:26/38 17:48	05:51 16:41-17:36/55 18:19	06:03 17:37-17:57/20 19:51	05:32 20:21	07:03-07:42/39 05:29 06:51-08:07/76 20:35
29	07:13 17:11		06:49 17:43-18:35/52 19:20	06:01 18:36-18:59/23 19:52	05:31 20:22	07:02-07:45/43 05:29 06:51-08:06/75 20:35
30	07:12 17:13		06:47 17:43-18:33/50 19:21	06:00 18:34-19:00/26 19:54	05:31 20:22	06:59-07:46/47 05:30 06:51-08:06/75 20:35
31	07:11 17:14		06:46 17:44-18:31/47 19:22		05:30 20:23	06:58-07:49/51 05:30 20:23
Potential sun hours	298	297	369	398	448	452
Sum of minutes with flicker	0	228	1958	1188	247	2179

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

## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 11 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (21)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October	November	December
1	05:30 06:52-08:06/74 20:35	05:54 20:16	06:25 18:24-19:10/46 19:33	06:55 17:17-18:21/64 18:43	06:29 16:56	07:03 16:32
2	05:31 06:53-08:05/72 20:35	05:55 20:15	06:26 18:24-19:09/45 19:31	06:56 17:17-18:19/62 18:41	06:30 16:55	07:04 16:32
3	05:31 06:54-08:05/71 20:35	05:56 20:14	06:27 18:23-19:07/44 19:30	06:57 17:17-18:17/60 18:39	06:31 16:54	07:05 16:31
4	05:32 06:54-08:04/70 20:34	05:57 20:13	06:28 18:23-19:06/43 19:28	06:58 17:17-18:15/58 18:38	06:32 16:53	07:06 16:31
5	05:32 06:56-08:04/68 20:34	05:58 20:12	06:29 18:23-19:04/41 19:27	06:59 17:17-18:14/57 18:36	06:33 16:51	07:07 16:31
6	05:33 06:57-08:04/67 20:34	05:59 20:10	06:30 17:59-18:06/7 19:25	07:00 17:17-18:12/55 18:34	06:34 16:50	07:08 16:31
7	05:34 06:58-08:03/65 20:34	06:00 20:09	06:31 17:51-18:12/21 19:23	07:01 17:17-18:10/53 18:33	06:36 16:49	07:09 16:31
8	05:34 06:59-08:02/63 20:33	06:01 20:08	06:32 17:47-18:16/29 19:22	07:02 17:17-18:08/51 18:31	06:37 16:48	07:10 16:31
9	05:35 07:00-08:01/61 20:33	06:02 20:07	06:33 17:44-18:18/34 19:20	07:03 17:18-18:07/49 18:30	06:38 16:47	07:11 16:31
10	05:36 07:02-08:00/58 20:33	06:03 20:05	06:34 17:41-18:20/39 19:18	07:04 17:18-18:05/47 18:28	06:39 16:46	07:12 16:31
11	05:36 07:03-07:59/56 20:32	06:04 20:04	06:35 17:39-18:22/43 19:17	07:05 17:19-18:03/44 18:26	06:40 16:45	07:13 16:31
12	05:37 07:05-07:58/53 20:32	06:05 20:03	06:36 17:37-18:23/46 19:15	07:06 17:19-18:02/43 18:25	06:42 16:44	07:14 16:31
13	05:38 07:07-07:56/49 20:31	06:06 20:01	06:37 17:35-18:24/49 19:13	07:07 17:20-18:00/40 18:23	06:43 16:43	07:14 16:31
14	05:38 07:09-07:54/45 20:31	06:07 20:00	06:38 17:33-18:25/52 19:11	07:08 17:22-17:59/37 18:22	06:44 16:42	07:15 16:31
15	05:39 07:12-07:52/40 20:30	06:08 19:59	06:39 17:31-18:26/55 19:10	07:09 17:23-17:57/34 18:20	06:45 16:41	07:16 16:32
16	05:40 07:14-07:49/35 20:30	06:09 18:50-18:59/9 19:57	06:40 17:30-18:27/57 19:08	07:10 17:24-17:56/32 18:19	06:46 16:41	07:17 16:32
17	05:41 07:17-07:46/29 20:29	06:10 18:45-19:03/18 19:56	06:40 17:28-18:28/60 19:06	07:11 17:26-17:54/28 18:17	06:48 16:40	07:17 16:32
18	05:42 07:22-07:41/19 20:28	06:11 18:42-19:06/24 19:54	06:41 17:27-18:28/61 19:05	07:13 17:27-17:52/25 18:16	06:49 16:39	07:18 16:32
19	05:42 20:28 20:28	06:12 18:40-19:08/28 19:53	06:42 17:26-18:29/63 19:03	07:14 17:29-17:51/22 18:14	06:50 16:38	07:19 16:33
20	05:43 20:27 20:27	06:13 18:38-19:09/31 19:52	06:43 17:25-18:29/64 19:01	07:15 17:32-17:49/17 18:13	06:51 16:37	07:19 16:33
21	05:44 20:26 20:26	06:14 18:36-19:11/35 19:50	06:44 17:24-18:29/65 19:00	07:16 17:36-17:48/12 18:11	06:52 16:37	07:20 16:34
22	05:45 20:25 20:25	06:15 18:34-19:12/38 19:49	06:45 17:22-18:28/66 18:58	07:17 17:42-17:47/5 18:10	06:53 16:36	07:20 16:34
23	05:46 20:25 20:25	06:16 18:33-19:13/40 19:47	06:46 17:21-18:28/67 18:56	07:18 17:43-17:45/2 18:08	06:54 16:36	07:21 16:35
24	05:47 20:24 20:24	06:17 18:32-19:14/42 19:46	06:47 17:20-18:28/68 18:54	07:19 17:43-17:45/2 18:07	06:56 16:35	07:21 16:35
25	05:48 20:23 20:23	06:18 18:31-19:14/43 19:44	06:48 17:19-18:28/69 18:53	07:20 17:43-17:45/2 17:05	06:57 16:34	07:22 16:36
26	05:49 20:22 20:22	06:19 18:30-19:15/45 19:43	06:49 17:19-18:28/69 18:51	07:21 17:43-17:45/2 17:04	06:58 16:34	07:22 16:36
27	05:49 20:21 20:21	06:20 18:29-19:15/46 19:41	06:50 17:18-18:26/68 18:49	07:22 17:43-17:45/2 17:03	06:59 16:33	07:22 16:37
28	05:50 20:20 20:20	06:21 18:28-19:16/48 19:39	06:51 17:17-18:25/68 18:48	07:23 17:43-17:45/2 17:01	07:00 16:33	07:23 16:38
29	05:51 20:19 20:19	06:22 18:27-19:16/49 19:38	06:52 17:17-18:23/66 18:46	07:24 17:43-17:45/2 17:00	07:01 16:33	07:23 16:38
30	05:52 20:18 20:18	06:23 18:26-19:14/48 19:36	06:54 17:17-18:21/64 18:44	07:25 17:43-17:45/2 16:59	07:02 16:32	07:23 16:39
31	05:53 20:17 20:17	06:24 18:26-19:13/47 19:35		07:26 17:43-17:45/2 16:57		07:23 16:40
Potential sun hours	459	428	375	345	298	288
Sum of minutes with flicker	995	591	1928	897	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





## SHADOW - Calendar per WTG

**Calculation: ShadowWTG: 13 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (23)**

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:24 16:41	07:10 17:15	06:35 16:20-17:28/68 17:49	06:44 17:25-18:29/64 19:23	05:58 06:33-07:15/42 19:54	05:30 06:15-07:32/77 20:24
2	07:24 16:42	07:09 17:16	06:33 16:19-17:29/70 17:50	06:42 17:27-18:28/61 19:24	05:57 06:31-07:16/45 19:56	05:29 06:16-07:32/76 20:25
3	07:24 16:43	07:08 17:17	06:32 16:18-17:29/71 17:51	06:41 17:28-18:25/57 19:25	05:56 06:29-07:18/49 19:57	05:29 06:15-07:32/77 20:25
4	07:24 16:43	07:07 17:19	06:30 16:18-17:31/73 17:52	06:39 17:29-18:23/54 19:26	05:55 06:28-07:19/51 19:58	05:28 06:16-07:32/76 20:26
5	07:24 16:44	07:06 17:20	06:28 16:17-17:32/75 17:53	06:37 17:32-18:21/49 19:27	05:53 06:27-07:21/54 19:59	05:28 06:16-07:33/77 20:27
6	07:24 16:45	07:05 17:21	06:27 16:18-17:34/76 17:55	06:36 17:33-18:18/45 19:28	05:52 06:25-07:22/57 20:00	05:28 06:16-07:32/76 20:27
7	07:24 16:46	07:04 17:22	06:25 16:17-17:35/78 17:56	06:34 17:36-18:16/40 19:29	05:51 06:23-07:22/59 20:01	05:27 06:16-07:32/76 20:28
8	07:24 16:47	07:03 16:57-17:01/4 17:24	06:24 16:16-17:35/79 17:57	06:33 17:39-18:12/33 19:30	05:50 06:23-07:23/60 20:02	05:27 06:17-07:33/76 20:29
9	07:24 16:48	07:02 16:52-17:02/10 17:25	06:22 16:16-17:37/81 17:58	06:31 17:42-18:08/26 19:31	05:49 06:22-07:24/62 20:03	05:27 06:17-07:33/76 20:29
10	07:23 16:49	07:01 16:48-17:03/15 17:26	06:20 16:16-17:38/82 17:59	06:29 17:49-18:02/13 19:32	05:47 06:21-07:25/64 20:04	05:27 06:17-07:33/76 20:30
11	07:23 16:50	07:00 16:45-17:04/19 17:27	06:19 16:16-17:40/84 18:00	06:28 19:33	05:46 06:20-07:25/65 20:05	05:27 06:18-07:34/76 20:30
12	07:23 16:51	06:58 16:43-17:06/23 17:29	06:17 16:16-17:40/84 18:01	06:26 19:34	05:45 06:19-07:26/67 20:06	05:26 06:17-07:33/76 20:31
13	07:23 16:52	06:57 16:41-17:08/27 17:30	06:16 16:15-17:41/86 18:02	06:25 19:35	05:44 06:19-07:26/67 20:07	05:26 06:17-07:33/76 20:31
14	07:22 16:53	06:56 16:38-17:08/30 17:31	06:14 16:16-17:43/87 18:03	06:23 19:37	05:43 06:18-07:27/69 20:08	05:26 06:17-07:33/76 20:32
15	07:22 16:55	06:55 16:36-17:10/34 17:32	06:12 16:16-17:44/88 18:05	06:21 19:38	05:42 06:18-07:27/69 20:09	05:26 06:18-07:34/76 20:32
16	07:22 16:56	06:53 16:35-17:12/37 17:33	06:11 16:15-17:44/89 18:06	06:20 19:39	05:41 06:17-07:28/71 20:10	05:26 06:18-07:34/76 20:33
17	07:21 16:57	06:52 16:33-17:12/39 17:35	06:09 16:16-17:46/90 18:07	06:18 19:40	05:40 06:17-07:29/72 20:11	05:26 06:19-07:35/76 20:33
18	07:21 16:58	06:51 16:32-17:14/42 17:36	06:07 16:16-17:45/89 18:08	06:17 19:41	05:39 06:17-07:29/72 20:12	05:26 06:19-07:35/76 20:33
19	07:20 16:59	06:49 16:30-17:15/45 17:37	06:06 16:16-17:44/88 18:09	06:15 19:42	05:38 06:16-07:29/73 20:13	05:26 06:19-07:35/76 20:34
20	07:20 17:00	06:48 16:29-17:16/47 17:38	06:04 16:17-17:44/87 18:10	06:14 19:43	05:38 06:16-07:29/73 20:14	05:27 06:19-07:35/76 20:34
21	07:19 17:01	06:46 16:28-17:18/50 17:40	06:02 16:17-17:43/86 18:11	06:12 19:44	05:37 06:16-07:29/73 20:15	05:27 06:19-07:35/76 20:34
22	07:18 17:03	06:45 16:26-17:19/53 17:41	06:01 16:17-17:42/85 18:12	06:11 19:45	05:36 06:16-07:30/74 20:15	05:27 06:19-07:35/76 20:34
23	07:18 17:04	06:44 16:26-17:20/54 17:42	05:59 16:17-17:41/84 18:13	06:09 19:46	05:35 06:16-07:30/74 20:16	05:27 06:20-07:36/76 20:35
24	07:17 17:05	06:42 16:24-17:21/57 17:43	05:57 16:18-17:40/82 18:14	06:08 19:47	05:34 06:15-07:30/75 20:17	05:27 06:20-07:36/76 20:35
25	07:16 17:06	06:41 16:24-17:23/59 17:44	05:56 16:19-17:39/80 18:15	06:07 19:48	05:34 06:16-07:31/75 20:18	05:28 06:20-07:36/76 20:35
26	07:16 17:08	06:39 16:22-17:24/62 17:45	05:54 16:19-17:38/79 18:16	06:05 19:49	05:33 06:15-07:31/76 20:19	05:28 06:21-07:37/76 20:35
27	07:15 17:09	06:38 16:22-17:25/63 17:47	05:52 16:20-17:37/77 18:17	06:04 06:46-07:03/17 19:50	05:32 06:15-07:30/75 20:20	05:28 06:21-07:37/76 20:35
28	07:14 17:10	06:36 16:21-17:26/65 17:48	05:51 16:21-17:35/74 18:19	06:02 06:41-07:07/26 19:51	05:32 06:15-07:31/76 20:21	05:29 06:20-07:36/76 20:35
29	07:13 17:11		06:49 17:22-18:34/72 19:20	06:01 06:38-07:10/32 19:52	05:31 06:15-07:31/76 20:22	05:29 06:21-07:37/76 20:35
30	07:12 17:12		06:47 17:23-18:33/70 19:21	06:00 06:35-07:13/38 19:53	05:31 06:15-07:32/77 20:22	05:30 06:21-07:37/76 20:35
31	07:11 17:14		06:46 17:24-18:31/67 19:22		05:30 06:15-07:31/76 20:23	
Potential sun hours	298	297	369	399	448	452
Sum of minutes with flicker	0	835	2481	555	2068	2283

**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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### SHADOW - Calendar per WTG

Calculation: ShadowWTG: 13 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (23)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:  
 The sun is shining all the day, from sunrise to sunset  
 The rotor plane is always perpendicular to the line from the WTG to the sun  
 The WTG is always operating

	July	August	September	October	November	December	
1	05:30 06:22-07:38/76 20:35	05:54 06:30-07:36/66 20:16	06:25 19:33	06:54 16:54-18:20/86 18:43	06:28 16:18-16:32/14 16:56	07:03 16:32	
2	05:31 06:21-07:38/77 20:35	05:55 06:31-07:36/65 20:15	06:26 17:47-18:00/13 19:31	06:55 16:54-18:18/84 18:41	06:30 16:22-16:31/9 16:55	07:04 16:31	
3	05:31 06:22-07:38/76 20:35	05:56 06:32-07:35/63 20:14	06:27 17:40-18:06/26 19:30	06:56 16:53-18:16/83 18:39	06:31 16:27-16:29/2 16:54	07:05 16:31	
4	05:32 06:22-07:38/76 20:34	05:57 06:33-07:34/61 20:13	06:28 17:36-18:09/33 19:28	06:58 16:54-18:15/81 18:38	06:32 16:52 16:52	07:06 16:31	
5	05:32 06:22-07:39/77 20:34	05:58 06:34-07:33/59 20:11	06:29 17:33-18:12/39 19:26	06:59 16:54-18:14/80 18:36	06:33 16:51 16:50	07:07 16:31	
6	05:33 06:22-07:38/76 20:34	05:59 06:34-07:32/58 20:10	06:30 17:30-18:14/44 19:25	07:00 16:53-18:12/79 18:34	06:34 16:50 16:50	07:08 16:31	
7	05:33 06:23-07:39/76 20:34	06:00 06:36-07:31/55 20:09	06:30 17:27-18:16/49 19:23	07:01 16:53-18:10/77 18:33	06:36 16:49 16:49	07:09 16:31	
8	05:34 06:23-07:39/76 20:33	06:01 06:37-07:30/53 20:08	06:31 17:24-18:18/54 19:21	07:02 16:53-18:08/75 18:31	06:37 16:48 16:48	07:10 16:31	
9	05:35 06:23-07:39/76 20:33	06:02 06:38-07:29/51 20:07	06:32 17:22-18:19/57 19:20	07:03 16:53-18:07/74 18:29	06:38 16:47 16:47	07:11 16:31	
10	05:35 06:23-07:39/76 20:33	06:03 06:38-07:26/48 20:05	06:33 17:20-18:21/61 19:18	07:04 16:53-18:05/72 18:28	06:39 16:46 16:46	07:12 16:31	
11	05:36 06:24-07:40/76 20:32	06:04 06:40-07:24/44 20:04	06:34 17:18-18:22/64 19:16	07:05 16:53-18:03/70 18:26	06:40 16:45 16:45	07:13 16:31	
12	05:37 06:23-07:39/76 20:32	06:05 06:42-07:22/40 20:03	06:35 17:16-18:23/67 19:15	07:06 16:53-18:01/68 18:25	06:42 16:44 16:44	07:14 16:31	
13	05:37 06:24-07:40/76 20:31	06:06 06:44-07:20/36 20:01	06:36 17:15-18:24/69 19:13	07:07 16:53-18:00/67 18:23	06:43 16:43 16:43	07:14 16:31	
14	05:38 06:24-07:40/76 20:31	06:07 06:46-07:17/31 20:00	06:37 17:13-18:25/72 19:11	07:08 16:53-17:58/65 18:21	06:44 16:42 16:42	07:15 16:31	
15	05:39 06:24-07:40/76 20:30	06:08 06:49-07:14/25 19:59	06:38 17:11-18:25/74 19:10	07:09 16:55-17:57/62 18:20	06:45 16:41 16:41	07:16 16:31	
16	05:40 06:24-07:40/76 20:29	06:09 06:54-07:09/15 19:57	06:39 17:10-18:26/76 19:08	07:10 16:55-17:56/61 18:18	06:46 16:40 16:40	07:17 16:32	
17	05:41 06:25-07:40/75 20:29	06:10 19:56	06:40 17:08-18:27/79 19:06	07:11 16:55-17:54/59 18:17	06:47 16:40 16:40	07:17 16:32	
18	05:41 06:25-07:40/75 20:28	06:11 19:54	06:41 17:06-18:26/80 19:05	07:12 16:56-17:52/56 18:15	06:49 16:39 16:39	07:18 16:32	
19	05:42 06:25-07:41/76 20:28	06:12 19:53	06:42 17:05-18:27/82 19:03	07:14 16:56-17:51/55 18:14	06:50 16:38 16:38	07:19 16:33	
20	05:43 06:25-07:40/75 20:27	06:13 19:52	06:43 17:04-18:27/83 19:01	07:15 16:57-17:49/52 18:12	06:51 16:37 16:37	07:19 16:33	
21	05:44 06:25-07:40/75 20:26	06:14 19:50	06:44 17:03-18:27/84 18:59	07:16 16:59-17:48/49 18:11	06:52 16:37 16:37	07:20 16:33	
22	05:45 06:26-07:40/74 20:25	06:15 19:49	06:45 17:01-18:27/86 18:58	07:17 17:00-17:46/46 18:09	06:53 16:36 16:36	07:20 16:34	
23	05:46 06:26-07:40/74 20:24	06:16 19:47	06:46 17:00-18:28/88 18:56	07:18 17:01-17:45/44 18:08	06:54 16:35 16:35	07:21 16:34	
24	05:47 06:27-07:40/73 20:24	06:17 19:46	06:47 16:59-18:28/89 18:54	07:19 17:02-17:43/41 18:07	06:56 16:35 16:35	07:21 16:35	
25	05:47 06:27-07:40/73 20:23	06:18 19:44	06:48 16:59-18:28/89 18:53	06:20 16:03-16:42/39 17:05	06:57 16:34 16:34	07:22 16:36	
26	05:48 06:28-07:40/72 20:22	06:19 19:42	06:49 16:58-18:28/90 18:51	06:21 16:05-16:41/36 17:04	06:58 16:34 16:34	07:22 16:36	
27	05:49 06:27-07:38/71 20:21	06:20 19:41	06:50 16:57-18:26/89 18:49	06:23 16:06-16:39/33 17:02	06:59 16:33 16:33	07:22 16:37	
28	05:50 06:28-07:38/70 20:20	06:21 19:39	06:51 16:56-18:25/89 18:48	06:24 16:08-16:38/30 17:01	07:00 16:33 16:33	07:23 16:38	
29	05:51 06:28-07:38/70 20:19	06:22 19:38	06:52 16:56-18:23/87 18:46	06:25 16:10-16:36/26 17:00	07:01 16:32 16:32	07:23 16:38	
30	05:52 06:29-07:37/68 20:18	06:23 19:36	06:53 16:55-18:21/86 18:44	06:26 16:12-16:35/23 16:59	07:02 16:32 16:32	07:23 16:39	
31	05:53 06:30-07:37/67 20:17	06:24 19:35	 	06:27 16:15-16:34/19 16:57	 	07:23 16:40	
	Potential sun hours Sum of minutes with flicker	459 2306	428 770	375 1999	345 1792	298 25	288 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





## SHADOW - Calendar per WTG

Calculation: ShadowWTG: 16 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (26)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	07:24 12:50-13:11/21 16:41 07:46-08:46/60	07:10 07:30-08:55/85 17:15	06:35 17:49	06:44 07:03-07:38/35 19:23	05:58 06:18-07:51/93 19:55	05:30 06:25-07:37/72 20:24
2	07:24 12:54-13:08/14 16:42 07:46-08:46/60	07:09 07:29-08:55/86 17:16	06:33 17:50	06:42 07:01-07:40/39 19:24	05:57 06:16-07:50/94 19:56	05:29 06:26-07:37/71 20:25
3	07:24 07:46-08:47/61 16:43	07:08 07:28-08:55/87 17:18	06:32 17:51	06:41 06:59-07:41/42 19:25	05:56 06:15-07:49/94 19:57	05:29 06:26-07:36/70 20:25
4	07:24 07:46-08:48/62 16:44	07:07 07:27-08:55/88 17:19	06:30 17:52	06:39 06:58-07:43/45 19:26	05:55 06:14-07:49/95 19:58	05:29 06:26-07:36/70 20:26
5	07:24 07:46-08:48/62 16:44	07:06 07:26-08:54/88 17:20	06:28 17:54	06:38 06:56-07:44/48 19:27	05:53 06:14-07:49/95 19:59	05:28 06:27-07:36/69 20:27
6	07:24 07:46-08:49/63 16:45	07:05 07:25-08:54/89 17:21	06:27 17:55	06:36 06:54-07:45/51 19:28	05:52 06:14-07:49/95 20:00	05:28 06:28-07:36/68 20:27
7	07:24 07:46-08:50/64 16:46	07:04 07:24-08:54/90 17:23	06:25 17:56	06:34 06:53-07:46/53 19:29	05:51 06:14-07:49/95 20:01	05:28 06:28-07:35/67 20:28
8	07:24 07:46-08:50/64 16:47	07:03 07:25-08:53/88 17:24	06:24 17:57	06:33 06:51-07:47/56 19:30	05:50 06:14-07:48/94 20:02	05:27 06:29-07:35/66 20:29
9	07:24 07:45-08:50/65 16:48	07:02 07:26-08:53/87 17:25	06:22 17:58	06:31 06:50-07:48/58 19:31	05:49 06:14-07:47/93 20:03	05:27 06:30-07:35/65 20:29
10	07:23 07:45-08:51/66 16:49	07:01 07:26-08:51/85 17:26	06:21 17:59	06:29 06:48-07:49/61 19:32	05:48 06:14-07:47/93 20:04	05:27 06:30-07:35/65 20:30
11	07:23 07:45-08:52/67 16:50	07:00 07:27-08:51/84 17:27	06:19 18:00	06:28 06:46-07:49/63 19:33	05:46 06:14-07:46/92 20:05	05:27 06:31-07:35/64 20:30
12	07:23 07:44-08:51/67 16:51	06:58 07:28-08:50/82 17:29	06:17 18:01	06:26 06:45-07:50/65 19:34	05:45 06:14-07:46/92 20:06	05:27 06:31-07:35/64 20:31
13	07:23 07:44-08:52/68 16:53	06:57 07:29-08:49/80 17:30	06:16 18:02	06:25 06:43-07:50/67 19:36	05:44 06:15-07:45/90 20:07	05:27 06:32-07:35/63 20:31
14	07:22 07:44-08:53/69 16:54	06:56 07:29-08:47/78 17:31	06:14 18:04	06:23 06:42-07:51/69 19:37	05:43 06:15-07:45/90 20:08	05:26 06:32-07:35/63 20:32
15	07:22 07:43-08:53/70 16:55	06:55 07:31-08:47/76 17:32	06:12 18:05	06:22 06:40-07:51/71 19:38	05:42 06:15-07:44/89 20:09	05:26 06:33-07:35/62 20:32
16	07:22 07:43-08:54/71 16:56	06:53 07:32-08:46/74 17:34	06:11 18:06	06:20 06:39-07:52/73 19:39	05:41 06:17-07:45/88 20:10	05:26 06:33-07:35/62 20:33
17	07:21 07:42-08:54/72 16:57	06:52 07:33-08:44/71 17:35	06:09 18:07	06:18 06:37-07:51/74 19:40	05:40 06:17-07:44/87 20:11	05:26 06:33-07:35/62 20:33
18	07:21 07:42-08:55/73 16:58	06:51 07:34-08:42/68 17:36	06:07 18:08	06:17 06:36-07:52/76 19:41	05:39 06:17-07:43/86 20:12	05:27 06:34-07:35/61 20:33
19	07:20 07:41-08:55/74 16:59	06:49 07:35-08:40/65 17:37	06:06 18:09	06:15 06:34-07:52/78 19:42	05:39 06:17-07:43/86 20:13	05:27 06:34-07:35/61 20:34
20	07:20 07:40-08:55/75 17:00	06:48 07:37-08:39/62 17:38	06:04 18:10	06:14 06:33-07:52/79 19:43	05:38 06:18-07:42/84 20:14	05:27 06:34-07:35/61 20:34
21	07:19 07:40-08:56/76 17:02	06:46 07:39-08:37/58 17:40	06:02 18:11	06:12 06:31-07:52/81 19:44	05:37 06:19-07:42/83 20:15	05:27 06:34-07:35/61 20:34
22	07:18 07:39-08:55/76 17:03	06:45 07:40-08:34/54 17:41	06:01 18:12	06:11 06:30-07:52/82 19:45	05:36 06:19-07:42/83 20:15	05:27 06:35-07:36/61 20:34
23	07:18 07:38-08:55/77 17:04	06:44 07:43-08:33/50 17:42	05:59 18:13	06:10 06:28-07:51/83 19:46	05:35 06:19-07:41/82 20:16	05:27 06:35-07:36/61 20:34
24	07:17 07:38-08:56/78 17:05	06:42 07:45-08:29/44 17:43	05:57 18:14	06:08 06:27-07:52/85 19:47	05:35 06:20-07:40/80 20:17	05:28 06:35-07:36/61 20:35
25	07:16 07:37-08:56/79 17:06	06:41 07:48-08:27/39 17:44	05:56 18:15	06:07 06:26-07:52/86 19:48	05:34 06:21-07:40/79 20:18	05:28 06:35-07:36/61 20:35
26	07:16 07:36-08:56/80 17:08	06:39 07:51-08:22/31 17:46	05:54 18:16	06:05 06:24-07:51/87 19:49	05:33 06:21-07:39/78 20:19	05:28 06:35-07:37/62 20:35
27	07:15 07:35-08:56/81 17:09	06:38 07:56-08:18/22 17:47	05:52 06:11-06:20/9 18:18	06:04 06:23-07:51/88 19:50	05:33 06:22-07:40/78 20:20	05:29 06:35-07:37/62 20:35
28	07:14 07:34-08:56/82 17:10	06:36 17:48	05:51 06:09-06:26/17 18:19	06:02 06:22-07:52/90 19:51	05:32 06:22-07:39/77 20:21	05:29 06:36-07:38/62 20:35
29	07:13 07:33-08:56/83 17:11		06:49 07:08-07:31/23 19:20	06:01 06:20-07:51/91 19:52	05:31 06:23-07:39/76 20:22	05:29 06:35-07:38/63 20:35
30	07:12 07:32-08:56/84 17:13		06:47 07:06-07:33/27 19:21	06:00 06:19-07:51/92 19:53	05:31 06:23-07:38/75 20:22	05:30 06:35-07:38/63 20:35
31	07:11 07:31-08:56/85 17:14		06:46 07:04-07:35/31 19:22		05:30 06:25-07:38/73 20:23	
	Potential sun hours 298	297	369	398	448	452
	Sum of minutes with flicker 2249	1911	107	2068	2689	1923

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

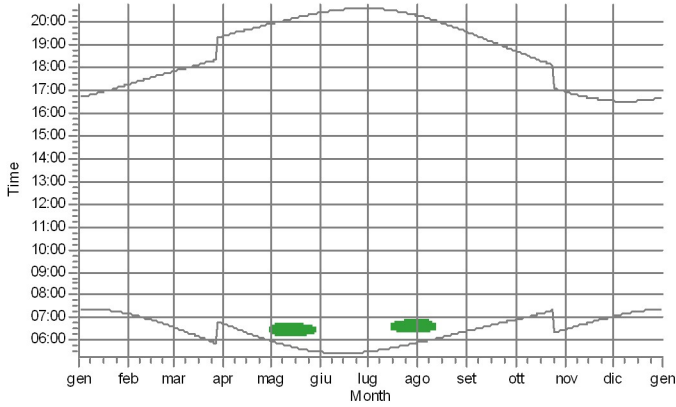
Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



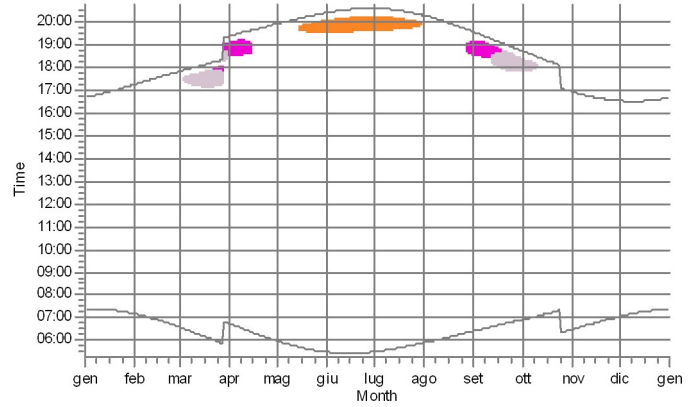
## SHADOW - Calendar per WTG, graphical

Calculation: Shadow

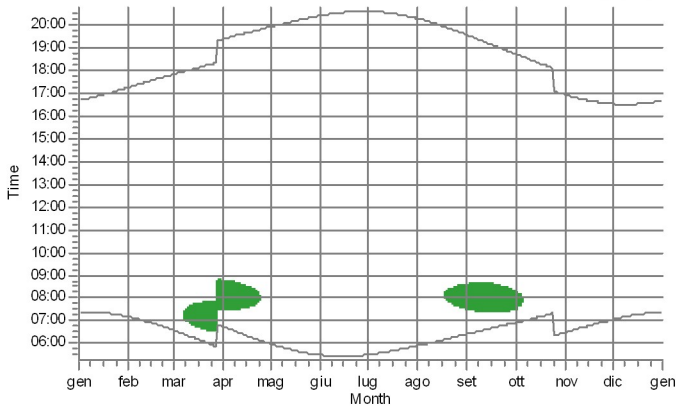
1: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (11)



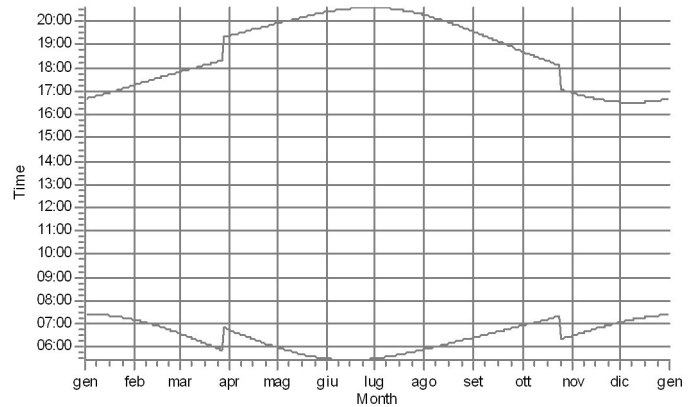
2: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (12)



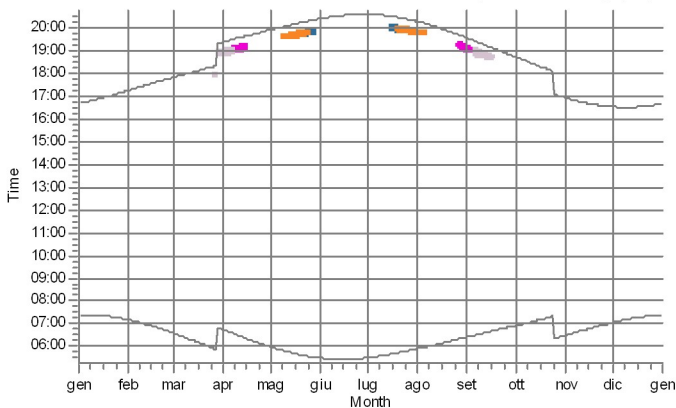
3: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (13)



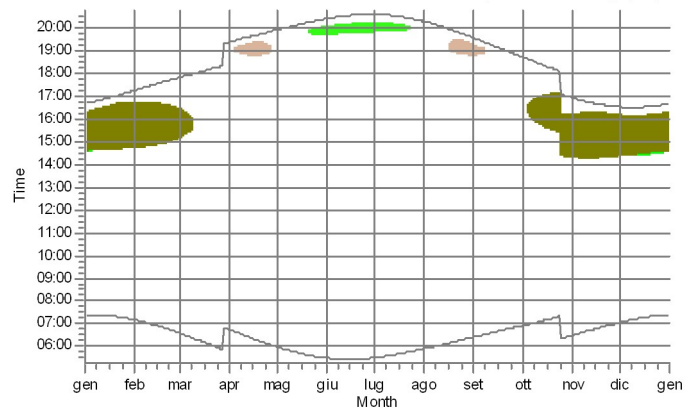
4: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (14)












5: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (15)



6: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (16)



Shadow receptors

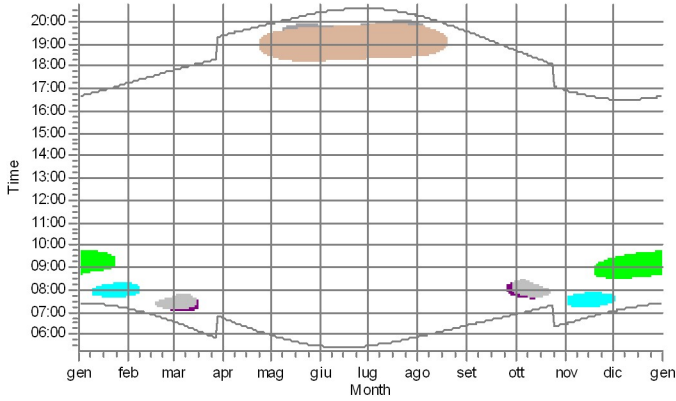
 I: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (29)	 R: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (38)	 W: Shadow Receptor: 1,0 × 1,0 Azimuth: 90,0° Slope: 90,0° (43)
 J: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (30)	 T: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (40)	 X: Shadow Receptor: 1,0 × 1,0 Azimuth: 150,0° Slope: 90,0° (44)
 Q: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (37)	 V: Shadow Receptor: 1,0 × 1,0 Azimuth: 90,0° Slope: 90,0° (42)	 Y: Shadow Receptor: 1,0 × 1,0 Azimuth: 150,0° Slope: 90,0° (45)



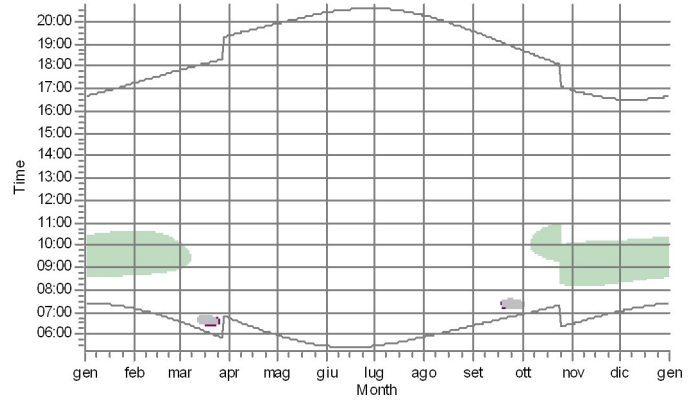
## SHADOW - Calendar per WTG, graphical

Calculation: Shadow

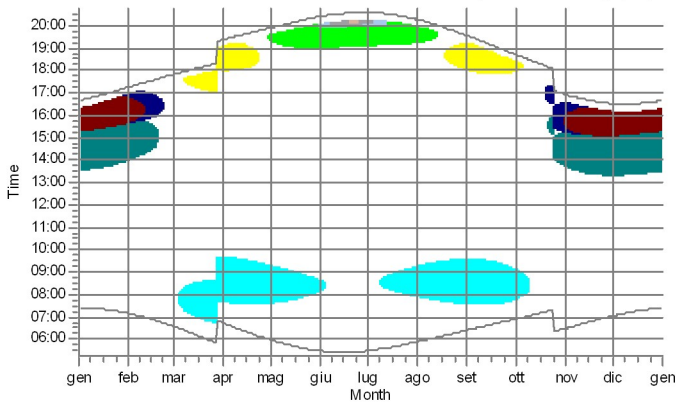
7: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (17)



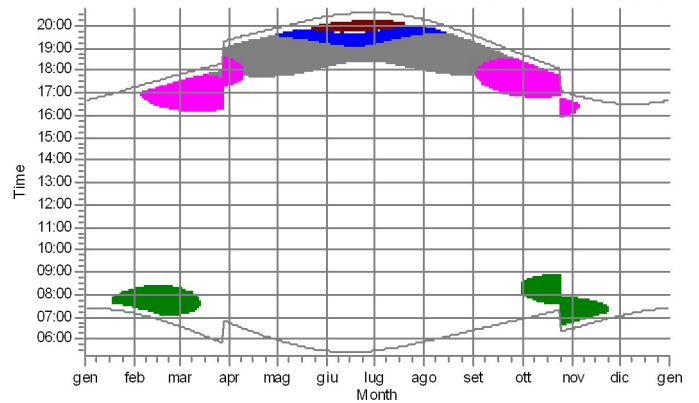
8: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (18)



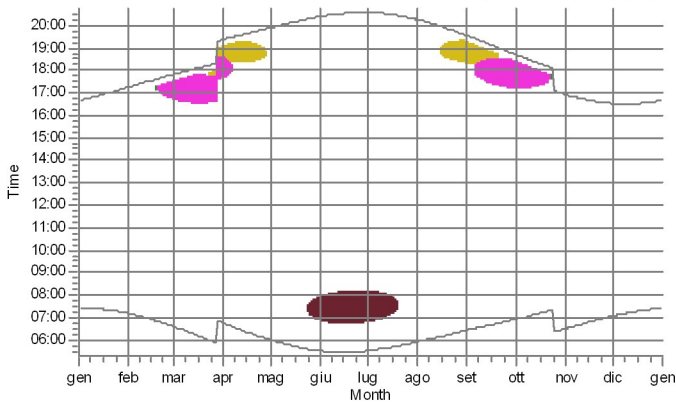
9: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (19)



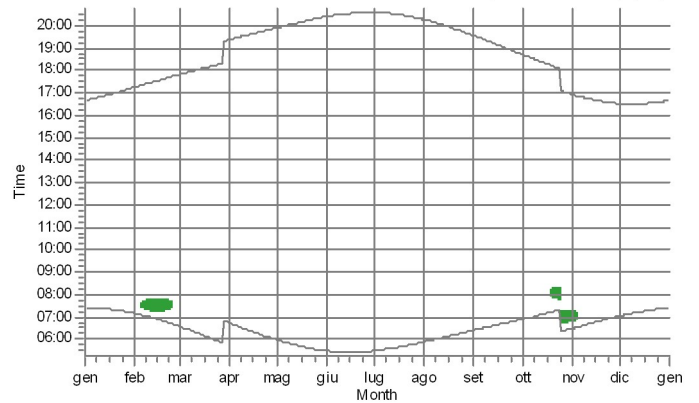
10: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (20)
























11: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (21)



12: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (22)



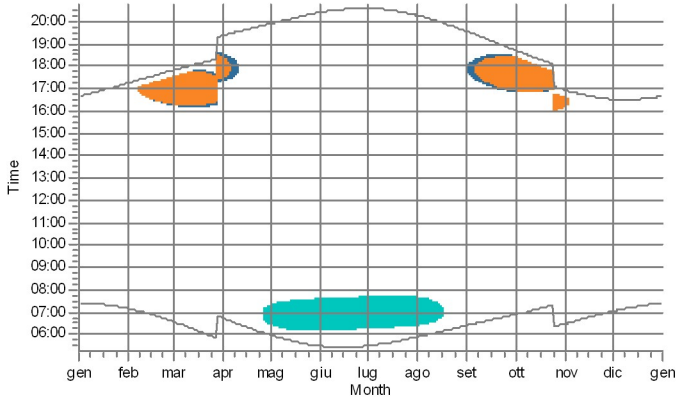
Shadow receptors

 A: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (21)	 H: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (28)	 P: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (36)
 B: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (22)	 I: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (29)	 Q: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (37)
 C: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (23)	 K: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (31)	 T: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (40)
 D: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (24)	 L: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (32)	 AA: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (47)
 E: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (25)	 M: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (33)	 AD: Shadow Receptor: 1,0 x 1,0 Azimuth: 20,0° Slope: 90,0° (50)
 F: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (26)	 N: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (34)	 AE: Shadow Receptor: 1,0 x 1,0 Azimuth: 45,0° Slope: 90,0° (51)
 G: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (27)	 O: Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (35)	 AF: Shadow Receptor: 1,0 x 1,0 Azimuth: -160,0° Slope: 90,0° (52)

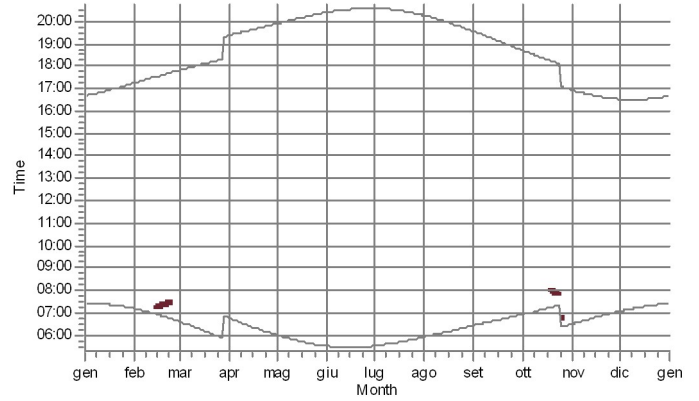
## SHADOW - Calendar per WTG, graphical

Calculation: Shadow

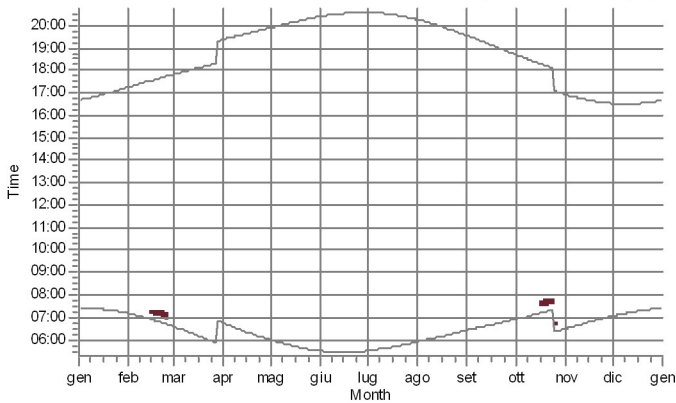
13: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (23)



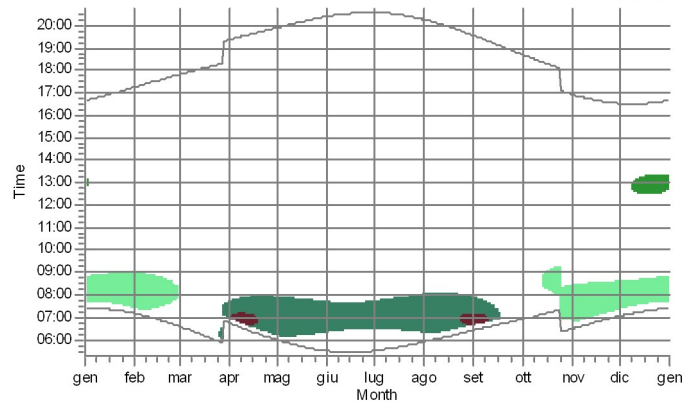
14: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (24)



15: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (25)



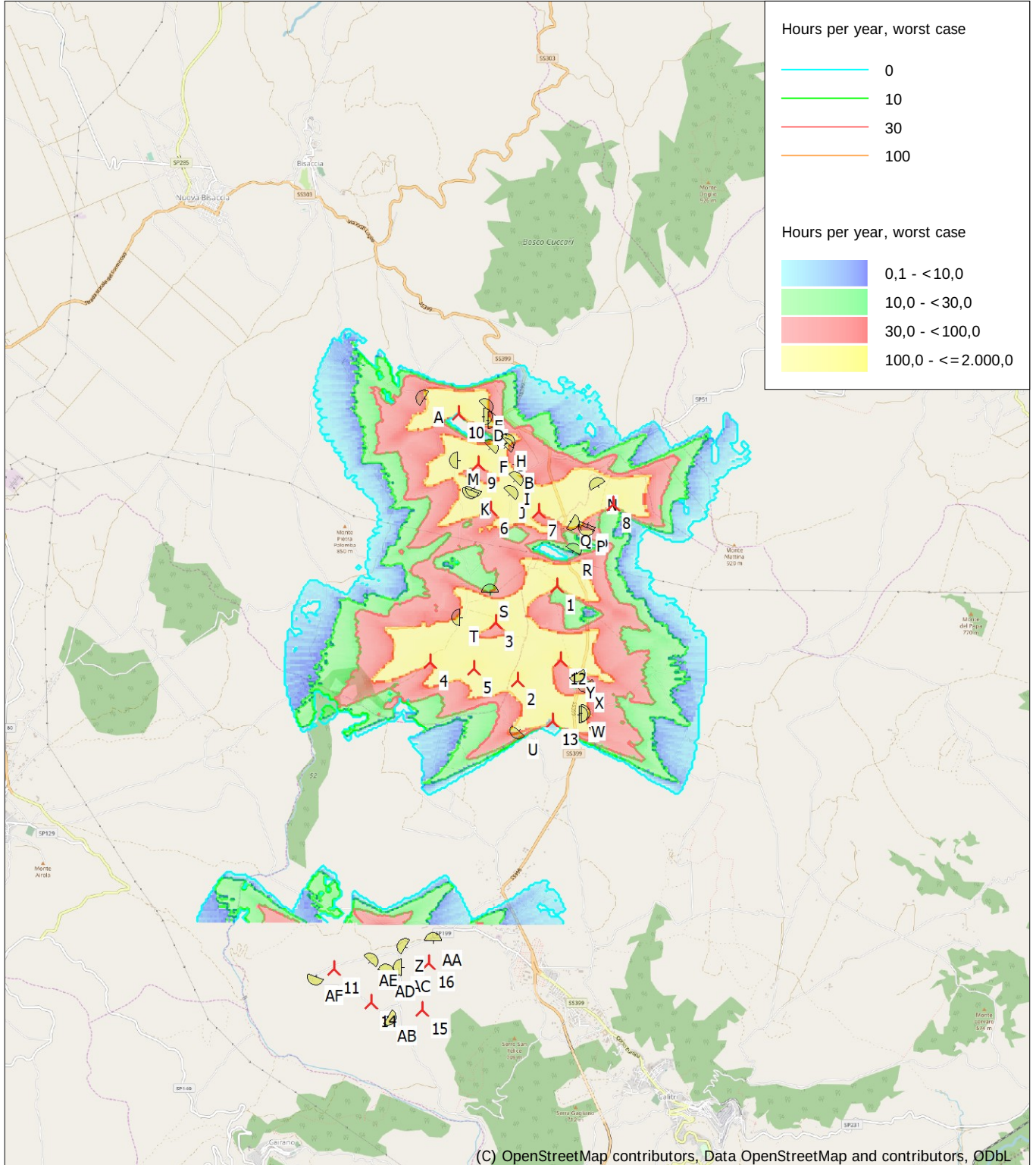
16: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (26)



Shadow receptors

- U: Shadow Receptor: 1,0 × 1,0 Azimuth: -140,0° Slope: 90,0° (41)
- V: Shadow Receptor: 1,0 × 1,0 Azimuth: 90,0° Slope: 90,0° (42)
- W: Shadow Receptor: 1,0 × 1,0 Azimuth: 90,0° Slope: 90,0° (43)
- Z: Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (46)
- AA: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (47)
- AC: Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (49)
- AF: Shadow Receptor: 1,0 × 1,0 Azimuth: -160,0° Slope: 90,0° (52)

**SHADOW - Map**  
Calculation: Shadow



0 1 2 3 4 km

Map: EMD OpenStreetMap , Print scale 1:75.000, Map center UTM (north)-WGS84 Zone: 33 East: 534.210 North: 4.534.631

New WTG Shadow receptor

Flicker map level: Elevation Grid Data Object: Aren\_Calitri\_EMDGrid\_0.wpg (1)