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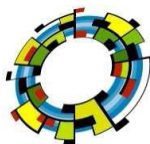
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COMUNI DI ASCOLI SATRIANO, CASTELLUCCIO DEI SAURI E  
DELICETO (FG)  
LOCALITA' "CONCA D'ORO"

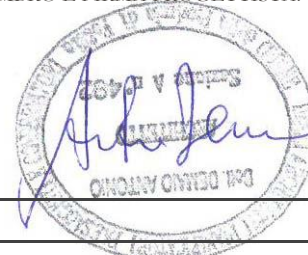
# PROGETTO PER LA REALIZZAZIONE DI IMPIANTO EOLICO "CONCA D'ORO"

REDAZIONE / PROGETTISTA:



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TIMBRO E FIRMA PROGETTISTA:



TITOLO ELABORATO:

RELAZIONE SULL'EVOLUZIONE DELL'OMBRA – FENOMENO  
SHADOW FLICKERING

CODICE ELABORATO:

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FASE:

**PROGETTO  
DEFINITIVO**

REV.	DESCRIZIONE	DATA	REDATTO	VERIFICATO	APPROVATO
00	Prima emissione	11/03/2024			
01					
02					
03					
04					

## 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 tra i comuni di Ascoli Satriano e Castelluccio dei Sauri (Fg) in località "Conca D'Oro" ubicato da quest'ultimo a 3km dal centro abitato, costituito da n. 8 aerogeneratori da 6 MW per una potenza complessiva di 48 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.

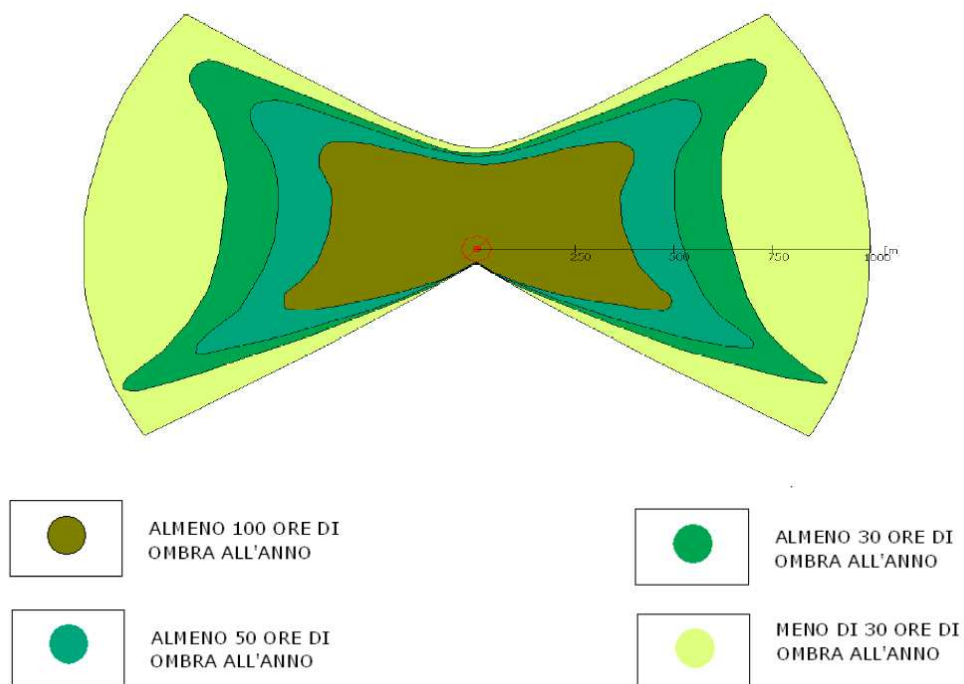
Lo Shadow-Flickering è l'espressione comunemente impiegata in ambito specialistico per descrivere l'effetto stroboscopico delle ombre proiettate dalle pale rotanti degli aerogeneratori eolici quando sussistono le condizioni meteorologiche opportune; infatti la possibilità e la durata di tali effetti 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 15 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.

NAME	EST	NORD
A	541007	4569867
B	541041	4569825
C	540944	4570631
D	540994	4570696
E	541336	4570611
F	544416	4569455
G	544526	4569324
H	543751	4569269
I	543693	4569090
J	543643	4569104
K	543654	4568984
L	543633	4568914
M	543581	4568928
N	543573	4568737
O	543526	4568750

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:

- a) **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.
- b) **Posizioni geografiche di recettori 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.
- c) **Posizioni geografiche delle turbine eoliche e loro caratteristiche dimensionali**  
Gli aerogeneratori di progetto con le loro caratteristiche dimensionali e tecnologiche
- d) **Nessun ostacolo naturale o artificiale è stato modellato.**

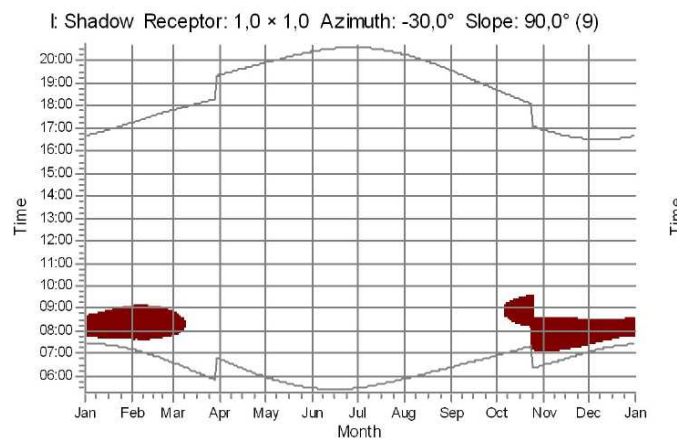
#### 4. I RISULTATI DEL CALCOLO DELL'EVOLUZIONE DELL'OMBRA

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 "I, J, K, L, N e O" individuati nell'analisi che, nelle ipotesi di "Worst case", subiscono il fenomeno per un periodo che supera 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 solo il recettore "I" supera di poco le 100 ore/anno, tra l'altro il recettore "I" trattasi di rudere e quindi la probabilità di accadimento si riduce quasi al nulla.**

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 Gennaio/Marzo, e Ottobre/Dicembre 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: oMBRA

### 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\_Castelluccio\_EMDGrid  
Receptor grid resolution: 1,0 m

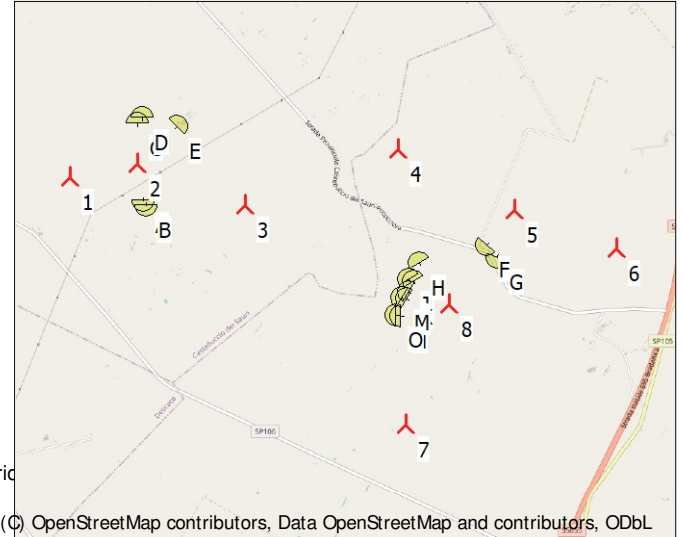
All coordinates are in  
UTM (north)-WGS84 Zone: 33

### 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 [RPM]
			[m]									
1	540.274	4.570.096	208,1	VESTAS V150-6.0 6000 150.0 !O! h...	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	-
2	540.947	4.570.236	210,2	VESTAS V150-6.0 6000 150.0 !O! h...	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	-
3	542.022	4.569.829	208,4	VESTAS V150-6.0 6000 150.0 !O! h...	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	-
4	543.535	4.570.391	241,4	VESTAS V150-6.0 6000 150.0 !O! h...	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	-
5	544.698	4.569.800	190,1	VESTAS V150-6.0 6000 150.0 !O! h...	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	-
6	545.717	4.569.425	171,2	VESTAS V150-6.0 6000 150.0 !O! h...	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	-
7	543.629	4.567.663	177,0	VESTAS V150-6.0 6000 150.0 !O! h...	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	-
8	544.049	4.568.856	180,5	VESTAS V150-6.0 6000 150.0 !O! h...	Yes	VESTAS	V150-6.0-6.000	6.000	150,0	105,0	1.902	-

### Shadow receptor-Input

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]
A	541.007	4.569.867	205,8	1,0	1,0	1,0	180,0	90,0	Fixed direction	2,0
B	541.041	4.569.825	205,5	1,0	1,0	1,0	180,0	90,0	Fixed direction	2,0
C	540.944	4.570.631	228,8	1,0	1,0	1,0	0,0	90,0	Fixed direction	2,0
D	540.994	4.570.696	233,4	1,0	1,0	1,0	0,0	90,0	Fixed direction	2,0
E	541.336	4.570.611	240,1	1,0	1,0	1,0	45,0	90,0	Fixed direction	2,0
F	544.416	4.569.455	192,9	1,0	1,0	1,0	-140,0	90,0	Fixed direction	2,0
G	544.526	4.569.324	191,9	1,0	1,0	1,0	-160,0	90,0	Fixed direction	2,0
H	543.751	4.569.269	188,2	1,0	1,0	1,0	-30,0	90,0	Fixed direction	2,0
I	543.693	4.569.090	184,6	1,0	1,0	1,0	-30,0	90,0	Fixed direction	2,0
J	543.643	4.569.104	185,0	1,0	1,0	1,0	-30,0	90,0	Fixed direction	2,0
K	543.654	4.568.984	181,7	1,0	1,0	1,0	-60,0	90,0	Fixed direction	2,0
L	543.633	4.568.914	181,4	1,0	1,0	1,0	-60,0	90,0	Fixed direction	2,0
M	543.581	4.568.928	182,9	1,0	1,0	1,0	-60,0	90,0	Fixed direction	2,0
N	543.573	4.568.737	181,2	1,0	1,0	1,0	-90,0	90,0	Fixed direction	2,0
O	543.526	4.568.750	181,4	1,0	1,0	1,0	-90,0	90,0	Fixed direction	2,0



(C) OpenStreetMap contributors, Data OpenStreetMap and contributors, ODbL

Scale 1:75.000  
New WTG Shadow receptor



## SHADOW - Main Result

Calculation: oMBRA

### 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	69:35	139	0:47
B	73:24	140	0:45
C	60:11	72	1:07
D	29:45	56	0:38
E	87:16	110	1:08
F	7:14	31	0:21
G	9:46	36	0:24
H	57:03	107	0:57
I	160:11	152	1:22
J	126:18	148	1:14
K	110:51	107	1:21
L	108:12	107	1:20
M	85:09	92	1:11
N	139:01	136	1:12
O	106:43	140	1:06

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) (1)	133:30
2	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (2)	76:27
3	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (3)	26:17
4	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (4)	0:00
5	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (5)	15:02
6	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (6)	16:32
7	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (7)	0:00
8	VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (8)	516:33

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: oMBRA Shadow receptor: A - Shadow Receptor: 1,0 × 1,0 Azimuth: -180,0° Slope: 90,0° (1)

### 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 16:39	07:11 17:14	06:35 17:48	06:43 19:23	07:13 (3) 19:55	18:59 (1) 20:25	05:28 19:01 (1)
2	07:25 16:40	07:10 17:15	06:33 17:49	06:42 19:24	07:13 (3) 19:56	18:58 (1) 19:32 (1)	05:28 20:25
3	07:25 16:41	07:09 17:16	06:31 17:51	06:40 19:25	07:15 (3) 19:57	18:57 (1) 19:34 (1)	05:27 20:26
4	07:25 16:42	07:08 17:18	06:30 17:52	06:38 19:26	07:17 (3) 19:58	18:56 (1) 19:35 (1)	05:27 20:27
5	07:25 16:43	07:07 17:19	06:28 17:53	06:37 19:27	07:19 (3) 19:59	18:56 (1) 19:36 (1)	05:27 20:27
6	07:25 16:44	07:06 17:20	06:27 17:54	06:35 19:28	05:51 20:00	18:56 (1) 19:37 (1)	05:26 20:28
7	07:25 16:45	07:05 17:21	06:25 17:55	06:34 19:29	05:50 20:01	18:55 (1) 19:38 (1)	05:26 20:29
8	07:24 16:46	07:03 17:23	06:24 17:56	06:32 19:30	05:49 20:02	18:54 (1) 19:38 (1)	05:26 20:29
9	07:24 16:47	07:02 17:24	06:22 17:57	06:30 19:31	05:47 20:03	18:54 (1) 19:39 (1)	05:25 20:30
10	07:24 16:48	07:01 17:25	06:20 17:59	06:29 19:32	05:46 20:04	18:54 (1) 19:40 (1)	05:25 20:31
11	07:24 16:49	07:00 17:26	06:19 18:00	06:27 19:33	05:45 20:05	18:53 (1) 19:40 (1)	05:25 20:31
12	07:24 16:50	06:59 17:28	06:17 18:01	06:25 19:34	05:44 20:06	18:53 (1) 19:40 (1)	05:25 20:32
13	07:23 16:51	06:57 17:29	06:15 18:02	06:24 19:36	05:43 20:07	18:53 (1) 19:40 (1)	05:25 20:32
14	07:23 16:52	06:56 17:30	06:14 18:03	06:22 19:37	05:42 20:08	18:53 (1) 19:40 (1)	05:25 20:33
15	07:23 16:53	06:55 17:31	06:12 18:04	06:21 19:38	05:41 20:09	18:53 (1) 19:40 (1)	05:25 20:33
16	07:22 16:54	06:53 17:33	06:10 18:05	06:19 19:39	05:40 20:10	18:53 (1) 19:40 (1)	05:25 20:33
17	07:22 16:56	06:52 17:34	06:09 18:06	06:18 19:40	05:39 20:11	18:53 (1) 19:40 (1)	05:25 20:34
18	07:21 16:57	06:51 17:35	06:07 18:08	06:16 19:41	05:38 20:12	18:54 (1) 19:40 (1)	05:25 20:34
19	07:21 16:58	06:49 17:36	06:05 18:09	06:15 19:42	05:37 20:13	18:55 (1) 19:40 (1)	05:25 20:34
20	07:20 16:59	06:48 17:38	06:04 18:10	06:13 19:43	05:36 20:14	18:55 (1) 19:40 (1)	05:25 20:35
21	07:20 17:00	06:47 17:39	06:02 18:11	06:12 19:44	05:36 20:15	18:55 (1) 19:39 (1)	05:25 20:35
22	07:19 17:02	06:45 17:40	06:00 18:12	06:10 19:45	05:35 20:16	18:56 (1) 19:40 (1)	05:26 20:35
23	07:18 17:03	06:44 17:41	05:59 18:13	06:09 19:46	05:34 20:17	18:56 (1) 19:39 (1)	05:26 20:35
24	07:18 17:04	06:42 17:42	05:57 18:14	06:07 19:47	05:33 19:17 (1) 20:18	18:56 (1) 19:38 (1)	05:26 20:35
25	07:17 17:05	06:41 17:44	05:55 18:15	06:06 19:48	05:32 19:11 (1) 20:19	18:56 (1) 19:38 (1)	05:26 20:36
26	07:16 17:06	06:39 17:45	05:54 18:16	06:04 19:50	05:32 19:07 (1) 20:20	18:57 (1) 19:38 (1)	05:27 20:36
27	07:15 17:08	06:38 17:46	05:52 18:17	06:03 19:51	05:31 19:05 (1) 20:21	18:57 (1) 19:37 (1)	05:27 20:36
28	07:14 17:09	06:36 17:47	05:50 18:18	06:01 19:52	05:30 19:04 (1) 20:21	18:59 (1) 19:38 (1)	05:27 20:36
29	07:14 17:10		06:49 19:19	06:00 19:53	05:30 19:01 (1) 20:22	18:59 (1) 19:37 (1)	05:28 20:36
30	07:13 17:11		06:47 19:21	05:59 19:54	05:29 19:00 (1) 20:23	19:00 (1) 19:37 (1)	05:28 20:36
31	07:12 17:13		06:45 19:22	05:59 19:54	05:29 19:00 (1) 20:24	19:00 (1) 19:36 (1)	
Potential sun hours	297	297	369	399	449	453	731
Total, worst case			36	198	1313		

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: oMBRA Shadow receptor: A - Shadow Receptor: 1,0 × 1,0 Azimuth: -180,0° Slope: 90,0° (1)  
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	05:29 20:36	19:12 (1) 05:53	20:16 47	19:04 (1) 06:24	06:54	06:29 07:04
2	05:29 20:35	19:12 (1) 05:54	20:15 47	19:04 (1) 06:25	06:55	06:30 07:05
3	05:30 20:35	19:11 (1) 05:55	20:14 46	19:04 (1) 06:26	06:56	06:31 07:06
4	05:30 20:35	19:11 (1) 05:56	20:13 46	19:04 (1) 06:27	06:57	06:32 07:07
5	05:31 20:35	19:11 (1) 05:57	20:12 44	19:05 (1) 06:28	06:58	06:34 07:08
6	05:31 20:35	19:11 (1) 05:58	20:11 43	19:05 (1) 06:29	06:59	06:35 07:09
7	05:32 20:34	19:11 (1) 05:59	20:09 41	19:05 (1) 06:30	07:16 (3)	06:36 07:10
8	05:33 20:34	19:10 (1) 06:00	20:08 39	19:06 (1) 06:31	07:24 (3)	06:37 07:11
9	05:33 20:34	19:10 (1) 06:01	20:07 38	19:06 (1) 06:32	07:11 (3)	06:37 07:11
10	05:34 20:33	19:10 (1) 06:02	20:06 36	19:07 (1) 06:33	07:21 (3)	06:38 07:12
11	05:35 20:33	19:09 (1) 06:03	20:04 34	19:08 (1) 06:34	07:09 (3)	06:38 07:12
12	05:35 20:32	19:43 (1) 06:04	20:03 32	19:07 (1) 06:35	07:19 (3)	06:41 07:13
13	05:36 20:32	19:43 (1) 06:05	20:02 30	19:08 (1) 06:36	07:15 (3)	06:42 07:14
14	05:37 20:31	19:45 (1) 06:06	20:01 28	19:08 (1) 06:36	07:04 (3)	06:43 07:15
15	05:38 20:31	19:45 (1) 06:07	19:59 25	19:09 (1) 06:37	07:13 (3)	06:44 07:16
16	05:38 20:30	19:46 (1) 06:08	19:58 22	19:09 (1) 06:37	07:02 (3)	06:44 07:16
17	05:39 20:30	19:47 (1) 06:09	19:56 19	19:11 (1) 06:38	07:09 (3)	06:45 07:17
18	05:40 20:29	19:47 (1) 06:10	19:55 15	19:12 (1) 06:39	07:01 (3)	06:46 07:17
19	05:41 20:28	19:48 (1) 06:11	19:54 15	19:13 (1) 06:40	07:07 (3)	06:47 07:18
20	05:42 20:27	19:48 (1) 06:12	19:53 15	19:14 (1) 06:40	07:11 (3)	06:48 07:18
21	05:43 20:27	19:48 (1) 06:13	19:52 15	19:15 (1) 06:41	07:03 (3)	06:49 07:19
22	05:43 20:26	19:05 (1) 06:14	19:51 15	19:16 (1) 06:42	07:11 (3)	06:50 07:20
23	05:44 20:25	19:05 (1) 06:15	19:50 15	19:17 (1) 06:43	07:13 (3)	06:51 07:21
24	05:45 20:24	19:05 (1) 06:16	19:49 15	19:18 (1) 06:44	07:15 (3)	06:52 07:22
25	05:46 20:23	19:05 (1) 06:17	19:48 15	19:19 (1) 06:45	07:17 (3)	06:53 07:23
26	05:47 20:22	19:51 (1) 06:18	19:47 15	19:20 (1) 06:46	07:19 (3)	06:54 07:24
27	05:48 20:22	19:04 (1) 06:19	19:46 15	19:21 (1) 06:47	07:21 (3)	06:55 07:25
28	05:49 20:21	19:04 (1) 06:20	19:45 15	19:22 (1) 06:48	07:23 (3)	06:56 07:26
29	05:50 20:20	19:04 (1) 06:21	19:44 15	19:23 (1) 06:49	07:25 (3)	06:57 07:27
30	05:51 20:19	19:04 (1) 06:22	19:43 15	19:24 (1) 06:50	07:27 (3)	06:58 07:28
31	05:52 20:18	19:04 (1) 06:23	19:42 15	19:25 (1) 06:51	07:29 (3)	06:59 07:29
Potential sun hours	460	428	375	345	297	287
Total, worst case	1181	632	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: oMBRA Shadow receptor: B - Shadow Receptor: 1,0 × 1,0 Azimuth: -180,0° Slope: 90,0° (2)  
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	06:35	06:43	07:03 (3)	05:57	19:15 (1)	05:28	19:06 (1)					
	16:39	17:14	17:48	19:23	20	07:23 (3)	19:55	17	19:32 (1)	20:25	40	19:46 (1)		
2	07:25	07:10	06:33	06:42	07:03 (3)	05:56	19:12 (1)	05:28	19:06 (1)					
	16:40	17:15	17:49	19:24	21	07:24 (3)	19:56	20	19:32 (1)	20:25	39	19:45 (1)		
3	07:25	07:09	06:31	06:40	07:04 (3)	05:55	19:10 (1)	05:27	19:06 (1)					
	16:41	17:16	17:51	19:25	22	07:26 (3)	19:57	24	19:34 (1)	20:26	39	19:45 (1)		
4	07:25	07:08	06:30	06:38	07:04 (3)	05:54	19:09 (1)	05:27	19:07 (1)					
	16:42	17:18	17:52	19:26	23	07:27 (3)	19:58	26	19:35 (1)	20:27	39	19:46 (1)		
5	07:25	07:07	06:28	06:37	07:04 (3)	05:52	19:08 (1)	05:27	19:07 (1)					
	16:43	17:19	17:53	19:27	24	07:28 (3)	19:59	28	19:36 (1)	20:27	38	19:45 (1)		
6	07:25	07:06	06:27	06:35	07:05 (3)	05:51	19:07 (1)	05:26	19:08 (1)					
	16:44	17:20	17:54	19:28	25	07:30 (3)	20:00	30	19:37 (1)	20:28	37	19:45 (1)		
7	07:25	07:05	06:25	06:34	07:05 (3)	05:50	19:06 (1)	05:26	19:08 (1)					
	16:45	17:21	17:55	19:29	26	07:31 (3)	20:01	32	19:38 (1)	20:29	37	19:45 (1)		
8	07:24	07:03	06:24	06:32	07:06 (3)	05:49	19:05 (1)	05:26	19:09 (1)					
	16:46	17:23	17:56	19:30	24	07:30 (3)	20:02	33	19:38 (1)	20:29	36	19:45 (1)		
9	07:24	07:02	06:22	06:30	07:08 (3)	05:47	19:04 (1)	05:25	19:10 (1)					
	16:47	17:24	17:57	19:31	20	07:28 (3)	20:03	35	19:39 (1)	20:30	35	19:45 (1)		
10	07:24	07:01	06:20	06:29	07:10 (3)	05:46	19:04 (1)	05:25	19:09 (1)					
	16:48	17:25	17:59	19:32	15	07:25 (3)	20:04	36	19:40 (1)	20:31	35	19:44 (1)		
11	07:24	07:00	06:19	06:27	07:15 (3)	05:45	19:03 (1)	05:25	19:10 (1)					
	16:49	17:26	18:00	19:33	6	07:21 (3)	20:05	38	19:41 (1)	20:31	34	19:44 (1)		
12	07:24	06:59	06:17	06:25	05:44	19:03 (1)	05:25	19:10 (1)						
	16:50	17:28	18:01	19:34	20:06	39	19:42 (1)	20:32	34	19:44 (1)				
13	07:23	06:57	06:15	06:24	05:43	19:02 (1)	05:25	19:11 (1)						
	16:51	17:29	18:02	19:36	20:07	41	19:43 (1)	20:32	33	19:44 (1)				
14	07:23	06:56	06:14	06:22	05:42	19:02 (1)	05:25	19:11 (1)						
	16:52	17:30	18:03	19:37	20:08	42	19:44 (1)	20:33	33	19:44 (1)				
15	07:23	06:55	06:12	06:21	05:41	19:02 (1)	05:25	19:12 (1)						
	16:53	17:31	18:04	19:38	20:09	43	19:45 (1)	20:33	32	19:44 (1)				
16	07:22	06:53	06:10	06:19	05:40	19:02 (1)	05:25	19:12 (1)						
	16:54	17:33	18:05	19:39	20:10	44	19:46 (1)	20:33	32	19:44 (1)				
17	07:22	06:52	06:09	06:18	05:39	19:01 (1)	05:25	19:12 (1)						
	16:56	17:34	18:06	19:40	20:11	45	19:46 (1)	20:34	32	19:44 (1)				
18	07:21	06:51	06:07	06:16	05:38	19:02 (1)	05:25	19:13 (1)						
	16:57	17:35	18:08	19:41	20:12	45	19:47 (1)	20:34	31	19:44 (1)				
19	07:21	06:49	06:05	06:15	05:37	19:02 (1)	05:25	19:14 (1)						
	16:58	17:36	18:09	19:42	20:13	45	19:47 (1)	20:34	31	19:45 (1)				
20	07:20	06:48	06:04	06:13	05:36	19:02 (1)	05:25	19:14 (1)						
	16:59	17:38	18:10	19:43	20:14	44	19:46 (1)	20:35	31	19:45 (1)				
21	07:20	06:47	06:02	06:12	05:36	19:02 (1)	05:25	19:14 (1)						
	17:00	17:39	18:11	19:44	20:15	44	19:46 (1)	20:35	31	19:45 (1)				
22	07:19	06:45	06:00	06:10	05:35	19:03 (1)	05:26	19:14 (1)						
	17:02	17:40	18:12	19:45	20:16	44	19:47 (1)	20:35	31	19:45 (1)				
23	07:18	06:44	05:59	06:09	05:34	19:03 (1)	05:26	19:14 (1)						
	17:03	17:41	18:13	19:46	20:17	44	19:47 (1)	20:35	31	19:45 (1)				
24	07:18	06:42	05:57	06:07	05:33	19:03 (1)	05:26	19:15 (1)						
	17:04	17:42	18:14	19:47	20:18	43	19:46 (1)	20:35	31	19:46 (1)				
25	07:17	06:41	05:55	06:06	05:32	19:02 (1)	05:26	19:14 (1)						
	17:05	17:44	18:15	19:48	20:19	44	19:46 (1)	20:36	32	19:46 (1)				
26	07:16	06:39	05:54	06:12 (3)	06:04	05:32	19:03 (1)	05:27	19:14 (1)					
	17:06	17:45	18:16	2	06:14 (3)	19:50	20:20	43	19:46 (1)	20:36	32	19:46 (1)		
27	07:15	06:38	05:52	06:10 (3)	06:03	05:31	19:03 (1)	05:27	19:15 (1)					
	17:08	17:46	18:17	5	06:15 (3)	19:51	20:21	43	19:46 (1)	20:36	32	19:47 (1)		
28	07:14	06:36	05:50	06:09 (3)	06:01	05:30	19:04 (1)	05:27	19:15 (1)					
	17:09	17:47	18:18	8	06:17 (3)	19:52	20:21	42	19:46 (1)	20:36	32	19:47 (1)		
29	07:14		06:49	07:07 (3)	06:00	05:30	19:04 (1)	05:28	19:14 (1)					
	17:10		19:19	11	07:18 (3)	19:53	20:22	42	19:46 (1)	20:36	33	19:47 (1)		
30	07:13		06:47	07:05 (3)	05:59	19:18 (1)	05:29	19:05 (1)	05:28	19:15 (1)				
	17:11		19:21	14	07:19 (3)	19:54	13	19:31 (1)	20:23	41	19:46 (1)	20:36	33	19:48 (1)
31	07:12		06:45	07:04 (3)		05:29	19:05 (1)							
	17:13		19:22	17	07:21 (3)		20:24	40	19:45 (1)					
Potential sun hours	297	297	369	399	449	453	1016							
Total, worst case			57	239	1177									

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: oMBRA Shadow receptor: B - Shadow Receptor: 1,0 × 1,0 Azimuth: -180,0° Slope: 90,0° (2)

### 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	05:29 20:36	19:14 (1) 19:48 (1)	05:53 20:16	19:13 (1) 19:53 (1)	06:24 19:33	6 07:14 (3)	06:54 18:42	06:29 16:55	07:04 16:31
2	05:29 20:35	19:15 (1) 19:49 (1)	05:54 20:15	19:14 (1) 19:52 (1)	06:25 19:31	15 07:09 (3)	06:55 18:40	06:30 16:54	07:05 16:30
3	05:30 20:35	19:14 (1) 19:49 (1)	05:55 20:14	19:14 (1) 19:51 (1)	06:26 19:30	20 07:06 (3)	06:56 18:39	06:31 16:53	07:06 16:30
4	05:30 20:35	19:14 (1) 19:50 (1)	05:56 20:13	19:15 (1) 19:50 (1)	06:27 19:28	24 07:04 (3)	06:57 18:37	06:32 16:51	07:07 16:30
5	05:31 20:35	19:15 (1) 19:51 (1)	05:57 20:12	19:16 (1) 19:49 (1)	06:28 19:26	26 07:02 (3)	06:58 18:35	06:34 16:50	07:08 16:30
6	05:31 20:35	19:14 (1) 19:51 (1)	05:58 20:11	19:16 (1) 19:48 (1)	06:29 19:25	25 07:01 (3)	06:59 18:34	06:35 16:49	07:09 16:29
7	05:32 20:34	19:14 (1) 19:52 (1)	05:59 20:09	19:17 (1) 19:46 (1)	06:30 19:23	24 07:00 (3)	07:01 18:32	06:36 16:48	07:10 16:29
8	05:33 20:34	19:14 (1) 19:52 (1)	06:00 20:08	19:18 (1) 19:45 (1)	06:31 19:21	23 06:58 (3)	07:02 18:30	06:37 16:47	07:11 16:29
9	05:33 20:34	19:14 (1) 19:52 (1)	06:01 20:07	19:19 (1) 19:44 (1)	06:32 19:20	22 06:57 (3)	07:03 18:29	06:38 16:46	07:12 16:29
10	05:34 20:33	19:14 (1) 19:53 (1)	06:02 20:06	19:21 (1) 19:43 (1)	06:33 19:18	21 06:56 (3)	07:04 18:27	06:40 16:45	07:13 16:29
11	05:35 20:33	19:13 (1) 19:53 (1)	06:03 20:04	19:22 (1) 19:42 (1)	06:34 19:16	19 06:55 (3)	07:05 18:26	06:41 16:44	07:13 16:29
12	05:35 20:32	19:13 (1) 19:54 (1)	06:04 20:03	19:23 (1) 19:39 (1)	06:35 19:15	18 06:55 (3)	07:06 18:24	06:42 16:43	07:14 16:29
13	05:36 20:32	19:13 (1) 19:54 (1)	06:05 20:02	19:27 (1) 19:38 (1)	06:36 19:13	15 06:56 (3)	07:07 18:22	06:43 16:42	07:15 16:30
14	05:37 20:31	19:14 (1) 19:55 (1)	06:06 20:00	19:38 (1) 19:11	06:37 19:11	12 06:57 (3)	07:08 18:21	06:44 16:41	07:16 16:30
15	05:38 20:31	19:13 (1) 19:55 (1)	06:07 19:59	19:13 (1) 19:10	06:38 19:10	9 06:58 (3)	07:09 18:19	06:46 16:40	07:17 16:30
16	05:38 20:30	19:13 (1) 19:55 (1)	06:08 19:58	19:13 (1) 19:08	06:39 19:08	5 06:59 (3)	07:10 18:18	06:47 16:39	07:17 16:30
17	05:39 20:30	19:13 (1) 19:56 (1)	06:09 19:56	19:13 (1) 19:06	06:40 19:06	2 07:00 (3)	07:11 18:16	06:48 16:38	07:18 16:31
18	05:40 20:29	19:13 (1) 19:56 (1)	06:10 19:55	19:13 (1) 19:04	06:41 19:04	18 07:02 (3)	07:13 18:15	06:49 16:38	07:19 16:31
19	05:41 20:28	19:12 (1) 19:56 (1)	06:11 19:53	19:12 (1) 19:03	06:42 19:03	17 07:03 (3)	07:14 18:13	06:50 16:37	07:19 16:31
20	05:42 20:27	19:12 (1) 19:56 (1)	06:12 19:52	19:12 (1) 19:01	06:43 19:01	16 07:04 (3)	07:15 18:12	06:52 16:36	07:20 16:32
21	05:43 20:27	19:12 (1) 19:56 (1)	06:13 19:50	19:12 (1) 18:59	06:44 18:59	15 07:05 (3)	07:16 18:10	06:53 16:35	07:20 16:32
22	05:43 20:26	19:12 (1) 19:57 (1)	06:14 19:49	19:12 (1) 18:57	06:45 18:57	14 07:06 (3)	07:17 18:09	06:54 16:35	07:21 16:33
23	05:44 20:25	19:12 (1) 19:57 (1)	06:15 19:47	19:12 (1) 18:56	06:46 18:56	13 07:07 (3)	07:18 18:07	06:55 16:34	07:21 16:33
24	05:45 20:24	19:13 (1) 19:57 (1)	06:16 19:46	19:13 (1) 18:54	06:47 18:54	12 07:08 (3)	07:19 18:06	06:56 16:34	07:22 16:34
25	05:46 20:23	19:13 (1) 19:57 (1)	06:17 19:44	19:13 (1) 18:52	06:48 18:52	11 07:09 (3)	06:21 17:04	06:57 16:33	07:22 16:34
26	05:47 20:22	19:12 (1) 19:56 (1)	06:18 19:43	19:12 (1) 18:51	06:49 18:51	10 07:10 (3)	06:22 17:03	06:58 16:33	07:23 16:35
27	05:48 20:22	19:12 (1) 19:56 (1)	06:19 19:41	19:12 (1) 18:49	06:50 18:49	9 07:11 (3)	06:23 17:02	07:00 16:32	07:23 16:35
28	05:49 20:21	19:12 (1) 19:56 (1)	06:20 19:39	19:12 (1) 18:47	06:51 18:47	8 07:12 (3)	06:24 17:00	07:01 16:32	07:23 16:36
29	05:50 20:20	19:13 (1) 19:55 (1)	06:21 19:38	19:13 (1) 18:46	06:52 18:46	7 07:13 (3)	06:25 16:59	07:02 16:31	07:24 16:37
30	05:51 20:19	19:13 (1) 19:54 (1)	06:22 19:36	19:13 (1) 18:44	06:53 18:44	6 07:14 (3)	06:26 16:58	07:03 16:31	07:24 16:38
31	05:52 20:18	19:13 (1) 19:54 (1)	06:23 19:35	19:13 (1) 19:35	06:54 19:35	5 07:15 (3)	06:28 16:56	07:04 16:31	07:24 16:38
Potential sun hours	460	428	375	345	297	287			
Total, worst case	1264	365	286	345	297	287			

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: oMBRA Shadow receptor: C - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)

### 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 16:39	07:47 (3) 16:13 (1)	07:11 17:14	06:35 17:48	06:43 19:23	05:57 19:55	05:28 20:25	05:29 20:36	05:53 20:16	06:24 19:33	06:54 18:42	06:29 16:55	07:04 16:30	07:34 (3) 16:01 (1)
2	07:25 16:40	07:47 (3) 16:14 (1)	07:10 17:15	06:33 17:49	06:42 19:24	05:56 19:56	05:28 20:25	05:29 20:36	05:54 20:15	06:25 19:31	06:55 18:40	06:30 16:54	07:05 16:30	07:34 (3) 16:02 (1)
3	07:25 16:41	07:47 (3) 16:14 (1)	07:09 17:16	06:32 17:51	06:42 19:25	05:55 19:57	05:27 20:26	05:30 20:35	05:55 20:14	06:26 19:30	06:56 18:39	06:31 16:53	07:06 16:30	07:33 (3) 16:02 (1)
4	07:25 16:41	07:47 (3) 16:14 (1)	07:08 17:16	06:30 17:51	06:38 19:26	05:53 19:58	05:27 20:27	05:30 20:35	05:56 20:13	06:27 19:28	06:57 18:37	06:32 16:51	07:07 16:30	07:33 (3) 16:03 (1)
5	07:25 16:43	07:47 (3) 16:14 (1)	07:07 17:18	06:28 17:52	06:37 19:27	05:52 19:59	05:27 20:28	05:31 20:35	05:57 20:12	06:28 19:26	06:58 18:35	06:34 16:50	07:08 16:30	07:33 (3) 16:04 (1)
6	07:25 16:43	07:47 (3) 16:14 (1)	07:06 17:19	06:27 17:53	06:35 19:27	05:51 19:59	05:26 20:28	05:31 20:35	05:58 20:11	06:29 19:25	06:59 18:34	06:35 16:49	07:09 16:30	07:33 (3) 16:04 (1)
7	07:25 16:45	07:48 (3) 16:15 (1)	07:05 17:21	06:25 17:55	06:34 19:29	05:50 20:01	05:26 20:29	05:32 20:34	05:59 20:10	06:30 19:23	07:01 18:32	06:36 16:48	07:10 16:29	07:34 (3) 16:04 (1)
8	07:24 16:46	07:48 (3) 16:15 (1)	07:03 17:23	06:24 17:56	06:32 19:30	05:49 20:02	05:26 20:29	05:33 20:34	06:00 20:08	06:31 19:21	07:02 18:30	06:37 16:47	07:11 16:29	07:35 (3) 16:04 (1)
9	07:24 16:47	07:49 (3) 16:16 (1)	07:02 17:24	06:22 17:57	06:30 19:31	05:47 20:03	05:25 20:30	05:33 20:34	06:01 20:07	06:32 19:20	07:03 18:29	06:38 16:46	07:12 16:29	07:36 (3) 16:04 (1)
10	07:24 16:48	07:51 (3) 16:17 (1)	07:01 17:25	06:20 17:59	06:29 19:32	05:46 20:04	05:25 20:31	05:34 20:33	06:02 20:06	06:33 19:18	07:04 18:27	06:40 16:45	07:13 16:29	07:36 (3) 16:03 (1)
11	07:24 16:49	07:52 (3) 16:18 (1)	07:00 17:26	06:19 18:00	06:27 19:33	05:45 20:05	05:25 20:31	05:35 20:33	06:03 20:04	06:34 19:16	07:05 18:26	06:41 16:44	07:13 16:29	07:37 (3) 16:03 (1)
12	07:24 16:50	07:53 (3) 16:19 (1)	06:59 17:28	06:17 18:01	06:25 19:34	05:44 20:06	05:25 20:32	05:35 20:33	06:04 20:03	06:35 19:15	07:06 18:24	06:42 16:43	07:14 16:29	07:38 (3) 16:04 (1)
13	07:23 16:51	07:54 (3) 16:20 (1)	06:57 17:29	06:15 18:02	06:24 19:36	05:43 20:07	05:25 20:32	05:36 20:32	06:05 20:02	06:36 19:13	07:07 18:22	06:43 16:42	07:15 16:30	07:39 (3) 16:04 (1)
14	07:23 16:52	07:56 (3) 16:21 (1)	06:56 17:30	06:14 18:03	06:22 19:37	05:42 20:08	05:25 20:33	05:37 20:31	06:06 20:00	06:37 19:11	07:08 18:21	06:44 16:41	07:16 16:30	07:40 (3) 16:04 (1)
15	07:23 16:53	07:59 (3) 16:22 (1)	06:55 17:31	06:12 18:04	06:21 19:38	05:41 20:09	05:25 20:33	05:38 20:31	06:07 19:59	06:38 19:10	07:09 18:19	06:46 16:40	07:17 16:30	07:40 (3) 16:04 (1)
16	07:22 16:54	08:02 (3) 16:23 (1)	06:53 17:33	06:10 18:05	06:19 19:39	05:40 20:10	05:25 20:33	05:38 20:30	06:08 19:58	06:39 19:08	07:10 18:18	06:47 16:39	07:18 16:30	07:41 (3) 16:04 (1)
17	07:22 16:56	08:03 (3) 16:24 (1)	06:52 17:34	06:09 18:06	06:18 19:40	05:39 20:11	05:25 20:34	05:39 20:30	06:09 19:56	06:40 19:06	07:11 18:16	06:48 16:38	07:19 16:30	07:42 (3) 16:05 (1)
18	07:21 16:57	08:04 (3) 16:25 (1)	06:51 17:35	06:07 18:08	06:16 19:41	05:38 20:12	05:25 20:34	05:40 20:29	06:10 19:55	06:41 19:04	07:13 18:15	06:49 16:38	07:20 16:30	07:42 (3) 16:05 (1)
19	07:21 16:58	08:05 (3) 16:26 (1)	06:49 17:36	06:05 18:09	06:15 19:42	05:37 20:13	05:25 20:34	05:41 20:28	06:11 19:53	06:42 19:03	07:14 18:13	06:50 16:37	07:21 16:30	07:43 (3) 16:05 (1)
20	07:20 16:59	08:06 (3) 16:27 (1)	06:48 17:38	06:04 18:10	06:13 19:43	05:36 20:14	05:25 20:35	05:42 20:27	06:12 19:52	06:43 19:01	07:15 18:12	06:52 16:36	07:22 16:30	07:43 (3) 16:05 (1)
21	07:20 17:00	08:07 (3) 16:28 (1)	06:47 17:39	06:02 18:11	06:12 19:44	05:36 20:15	05:25 20:35	05:43 20:27	06:13 19:50	06:44 18:59	07:16 18:10	06:53 16:35	07:23 16:30	07:44 (3) 16:06 (1)
22	07:19 17:02	08:08 (3) 16:29 (1)	06:45 17:40	06:00 18:12	06:10 19:45	05:35 20:16	05:26 20:35	05:43 20:26	06:14 19:49	06:45 18:57	07:17 18:09	06:54 16:35	07:24 16:30	07:44 (3) 16:06 (1)
23	07:18 17:03	08:09 (3) 16:30 (1)	06:44 17:41	05:59 18:13	06:09 19:46	05:34 20:17	05:26 20:35	05:44 20:25	06:15 19:47	06:46 18:56	07:18 18:07	06:55 16:34	07:25 16:30	07:45 (3) 16:07 (1)
24	07:18 17:04	08:10 (3) 16:31 (1)	06:42 17:42	05:57 18:14	06:07 19:47	05:33 20:18	05:26 20:36	05:45 20:24	06:16 19:46	06:47 18:54	07:19 18:06	06:56 16:34	07:26 16:30	07:45 (3) 16:07 (1)
25	07:17 17:05	08:11 (3) 16:32 (1)	06:41 17:44	05:55 18:15	06:06 19:48	05:32 20:19	05:26 20:36	05:46 20:23	06:17 19:44	06:48 18:52	07:20 18:04	06:57 16:33	07:27 16:30	07:46 (3) 16:09 (1)
26	07:16 17:06	08:12 (3) 16:33 (1)	06:39 17:45	05:54 18:16	06:04 19:50	05:32 20:20	05:27 20:36	05:47 20:22	06:18 19:43	06:49 18:51	07:21 18:03	06:58 16:32	07:28 16:30	07:46 (3) 16:09 (1)
27	07:15 17:08	08:13 (3) 16:34 (1)	06:38 17:46	05:52 18:17	06:03 19:51	05:31 20:21	05:27 20:36	05:48 20:22	06:19 19:41	06:50 18:49	07:22 18:02	07:00 16:32	07:29 16:30	07:46 (3) 16:09 (1)
28	07:14 17:09	08:14 (3) 16:35 (1)	06:36 17:47	05:50 18:18	06:01 19:52	05:30 20:21	05:27 20:36	05:49 20:21	06:20 19:39	06:51 18:47	07:23 18:01	07:01 16:32	07:30 16:30	07:46 (3) 16:10 (1)
29	07:14 17:10	08:15 (3) 16:36 (1)	06:35 17:48	05:49 18:19	06:00 19:53	05:30 20:22	05:28 20:36	05:50 20:20	06:21 19:38	06:52 18:46	07:24 18:00	07:02 16:31	07:31 16:30	07:47 (3) 16:11 (1)
30	07:13 17:11	08:16 (3) 16:37 (1)	06:34 17:49	05:48 18:20	05:59 19:54	05:29 20:23	05:28 20:36	05:51 20:19	06:22 19:36	06:53 18:44	07:25 18:01	07:03 16:31	07:32 16:30	07:47 (3) 16:12 (1)
31	07:12 17:13	08:17 (3) 16:38 (1)	06:33 17:50	05:47 18:21	05:58 19:55	05:28 20:24	05:27 20:36	05:52 20:18	06:23 19:35	06:54 18:45	07:26 18:02	07:04 16:31	07:33 16:30	07:47 (3) 16:12 (1)
Potential sun hours	297	297	369	399	449	453	460	428	375	345	297	287	287	1912
Total, worst case	1198										501			

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: oMBRA Shadow receptor: D - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)  
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 16:39	15:34 (1) 16:11 (1)	07:11 17:14	06:35 17:48	06:43 19:23	05:57 19:55	05:28 20:25	05:29 20:36	05:53 20:16	06:24 19:33	06:54 18:42	06:29 16:55	07:04 16:30	15:25 (1) 15:54 (1)
2	07:25 16:40	15:35 (1) 16:11 (1)	07:10 17:15	06:33 17:49	06:42 19:24	05:56 19:56	05:28 20:25	05:29 20:36	05:54 20:15	06:25 19:31	06:55 18:40	06:30 16:54	07:05 16:30	15:24 (1) 15:55 (1)
3	07:25 16:41	15:36 (1) 16:11 (1)	07:09 17:16	06:32 17:51	06:40 19:25	05:55 19:57	05:27 20:26	05:30 20:35	05:55 20:14	06:26 19:30	06:56 18:39	06:31 16:53	07:06 16:30	15:24 (1) 15:55 (1)
4	07:25 16:42	15:36 (1) 16:11 (1)	07:08 17:18	06:30 17:52	06:38 19:26	05:53 19:58	05:27 20:27	05:30 20:35	05:56 20:13	06:27 19:28	06:57 18:37	06:32 16:51	07:07 16:30	15:24 (1) 15:56 (1)
5	07:25 16:43	15:37 (1) 16:12 (1)	07:07 17:19	06:28 17:53	06:37 19:27	05:52 19:59	05:27 20:28	05:31 20:35	05:57 20:12	06:28 19:26	06:58 18:35	06:34 16:50	07:08 16:30	15:24 (1) 15:57 (1)
6	07:25 16:44	15:38 (1) 16:12 (1)	07:06 17:20	06:27 17:54	06:35 19:28	05:51 20:00	05:26 20:28	05:31 20:35	05:58 20:11	06:29 19:25	06:59 18:34	06:35 16:49	07:09 16:29	15:24 (1) 15:58 (1)
7	07:25 16:45	15:39 (1) 16:12 (1)	07:05 17:21	06:25 17:55	06:34 19:29	05:50 20:01	05:26 20:29	05:32 20:34	05:59 20:10	06:30 19:23	07:01 18:32	06:36 16:48	07:10 16:29	15:24 (1) 15:59 (1)
8	07:24 16:46	15:39 (1) 16:11 (1)	07:03 17:23	06:24 17:56	06:32 19:30	05:49 20:02	05:26 20:29	05:33 20:34	06:00 20:08	06:31 19:21	07:02 18:30	06:37 16:47	07:11 16:29	15:24 (1) 15:59 (1)
9	07:24 16:47	15:40 (1) 16:11 (1)	07:02 17:24	06:22 17:57	06:30 19:31	05:47 20:03	05:25 20:30	05:33 20:34	06:01 20:07	06:32 19:20	07:03 18:29	06:38 16:46	07:12 16:29	15:25 (1) 16:00 (1)
10	07:24 16:48	15:41 (1) 16:12 (1)	07:01 17:25	06:20 17:59	06:29 19:32	05:46 20:04	05:25 20:31	05:34 20:33	06:02 20:06	06:33 19:18	07:04 18:27	06:40 16:45	07:13 16:29	15:24 (1) 16:00 (1)
11	07:24 16:49	15:43 (1) 16:12 (1)	07:00 17:26	06:19 18:00	06:27 19:33	05:45 20:05	05:25 20:31	05:35 20:33	06:03 20:04	06:34 19:16	07:05 18:26	06:41 16:44	07:13 16:29	15:24 (1) 16:01 (1)
12	07:24 16:50	15:43 (1) 16:11 (1)	06:59 17:28	06:17 18:01	06:25 19:34	05:44 20:06	05:25 20:32	05:35 20:32	06:04 20:03	06:35 19:15	07:06 18:24	06:42 16:43	07:14 16:29	15:25 (1) 16:01 (1)
13	07:23 16:51	15:45 (1) 16:11 (1)	06:57 17:29	06:15 18:02	06:24 19:36	05:43 20:07	05:25 20:32	05:36 20:32	06:05 20:02	06:36 19:13	07:07 18:22	06:43 16:42	07:15 16:30	15:25 (1) 16:02 (1)
14	07:23 16:52	15:45 (1) 16:10 (1)	06:56 17:30	06:14 18:03	06:22 19:37	05:42 20:08	05:25 20:33	05:37 20:31	06:06 20:00	06:37 19:11	07:08 18:21	06:44 16:41	07:16 16:30	15:26 (1) 16:03 (1)
15	07:23 16:53	15:47 (1) 16:09 (1)	06:55 17:31	06:12 18:04	06:21 19:38	05:41 20:09	05:25 20:33	05:38 20:31	06:07 19:59	06:38 19:10	07:09 18:19	06:46 16:40	07:17 16:30	15:25 (1) 16:03 (1)
16	07:22 16:54	15:48 (1) 16:08 (1)	06:53 17:33	06:10 18:05	06:19 19:39	05:40 20:10	05:25 20:33	05:38 20:30	06:08 19:58	06:39 19:08	07:10 18:18	06:47 16:39	07:17 16:30	15:26 (1) 16:04 (1)
17	07:22 16:56	15:51 (1) 16:07 (1)	06:52 17:34	06:09 18:06	06:18 19:40	05:39 20:11	05:25 20:34	05:39 20:30	06:09 19:56	06:40 19:06	07:11 18:16	06:48 16:38	07:18 16:31	15:27 (1) 16:05 (1)
18	07:21 16:57	15:53 (1) 16:05 (1)	06:51 17:35	06:07 18:08	06:16 19:41	05:38 20:12	05:25 20:34	05:40 20:29	06:10 19:55	06:41 19:04	07:13 18:15	06:49 16:38	07:19 16:31	15:27 (1) 16:05 (1)
19	07:21 16:58	16:05 (1) 17:36	06:49 18:09	06:05 18:13	06:15 19:42	05:37 20:13	05:25 20:34	05:41 20:28	06:11 19:53	06:42 19:03	07:14 18:13	06:50 16:37	07:19 16:31	15:27 (1) 16:05 (1)
20	07:20 16:59	16:06 (1) 17:38	06:48 18:10	06:04 18:14	06:13 19:43	05:36 20:14	05:25 20:35	05:42 20:27	06:12 19:52	06:43 19:01	07:15 18:12	06:52 16:36	07:20 16:32	15:27 (1) 16:05 (1)
21	07:20 17:00	16:07 (1) 17:39	06:47 18:11	06:02 18:15	06:11 19:44	05:35 20:15	05:25 20:35	05:43 20:27	06:13 19:50	06:44 18:59	07:16 18:10	06:53 16:35	07:20 16:32	15:28 (1) 16:06 (1)
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24	07:18 17:04	16:10 (1) 17:42	06:42 18:14	05:57 18:18	06:07 19:47	05:33 20:18	05:26 20:36	05:45 20:24	06:16 19:46	06:47 18:54	07:19 18:06	06:56 16:34	07:22 16:34	15:29 (1) 16:07 (1)
25	07:17 17:05	16:11 (1) 17:44	06:41 18:15	05:55 18:19	06:06 19:48	05:32 20:19	05:26 20:36	05:46 20:23	06:17 19:44	06:48 18:52	07:20 17:04	06:57 16:33	07:22 16:35	15:31 (1) 16:09 (1)
26	07:16 17:06	16:12 (1) 17:45	06:40 18:16	05:54 18:20	06:04 19:50	05:32 20:20	05:27 20:36	05:47 20:22	06:18 19:43	06:49 18:51	07:21 17:03	06:58 16:32	07:23 16:36	15:31 (1) 16:09 (1)
27	07:15 17:08	16:13 (1) 17:46	06:38 18:17	05:52 18:21	06:03 19:51	05:31 20:21	05:27 20:36	05:48 20:22	06:19 19:41	06:50 18:49	07:22 17:02	07:00 16:32	07:24 16:37	15:31 (1) 16:10 (1)
28	07:14 17:09	16:14 (1) 17:47	06:36 18:18	05:50 18:22	06:01 19:52	05:30 20:21	05:27 20:36	05:49 20:21	06:20 19:39	06:51 18:47	07:23 17:00	07:01 16:32	07:25 16:38	15:31 (1) 16:10 (1)
29	07:14 17:10	16:15 (1) 17:48	06:35 18:19	05:49 18:23	06:00 19:53	05:30 20:22	05:28 20:36	05:50 20:20	06:21 19:38	06:52 18:46	07:24 17:01	07:02 16:31	07:26 16:37	15:31 (1) 16:11 (1)
30	07:13 17:11	16:16 (1) 17:49	06:34 18:20	05:47 18:24	05:59 19:54	05:29 20:23	05:28 20:36	05:51 20:19	06:22 19:36	06:53 18:44	07:25 17:01	07:03 16:31	07:27 16:38	15:33 (1) 16:10 (1)
31	07:12 17:13	16:17 (1) 17:50	06:33 18:21	05:46 18:25	05:58 19:55	05:28 20:24	05:28 20:36	05:52 20:18	06:23 19:35	06:54 18:45	07:26 17:02	07:04 16:31	07:28 16:38	15:34 (1) 16:11 (1)
Potential sun hours	297		297	369	399	449	453	460	428	375	345	297	287	1120
Total, worst case		517										148		

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: oMBRA Shadow receptor: E - Shadow Receptor: 1,0 × 1,0 Azimuth: 45,0° Slope: 90,0° (5)

### 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 16:39	14:57 (2)   07:11 16:04 (2)   17:14	16:35 (1)   06:35 16:50 (1)   17:48	06:43 19:23	05:57 19:55	05:28 20:25	05:29 20:36	05:53 20:16	06:24 19:33	06:54 18:42	06:29 16:55	16:08 (1)   07:04 16:31 (1)   16:30	07:04 14:46 (2)
2	07:25 16:40	14:57 (2)   07:10 16:04 (2)   17:15	16:35 (1)   06:33 16:51 (1)   17:49	06:42 19:24	05:56 19:56	05:28 20:25	05:29 20:35	05:54 20:15	06:25 19:31	06:55 18:40	06:30 16:54	16:08 (1)   07:05 16:30 (1)   16:30	07:05 14:46 (2)
3	07:25 16:41	14:58 (2)   07:09 16:04 (2)   17:16	16:35 (1)   06:31 16:53 (1)   17:51	06:40 19:25	05:55 19:57	05:27 20:26	05:30 20:35	05:55 20:14	06:26 19:30	06:56 18:39	06:31 16:53	16:07 (1)   07:06 16:29 (1)   16:30	07:06 14:46 (2)
4	07:25 16:42	14:59 (2)   07:08 16:04 (2)   17:18	16:36 (1)   06:30 16:54 (1)   17:52	06:38 19:26	05:53 19:58	05:27 20:27	05:30 20:35	05:56 20:13	06:27 19:28	06:57 18:37	06:32 16:51	16:06 (1)   07:07 16:27 (1)   16:30	07:07 14:46 (2)
5	07:25 16:43	14:59 (2)   07:07 16:05 (2)   17:19	16:36 (1)   06:28 16:56 (1)   17:53	06:37 19:27	05:52 19:59	05:27 20:28	05:31 20:35	05:57 20:12	06:28 19:26	06:58 18:35	06:34 16:50	16:06 (1)   07:08 16:27 (1)   16:30	07:08 14:46 (2)
6	07:25 16:44	15:00 (2)   07:06 16:05 (2)   17:20	16:37 (1)   06:27 16:57 (1)   17:54	06:35 19:28	05:51 20:00	05:26 20:28	05:31 20:35	05:58 20:11	06:29 19:25	06:59 18:34	06:35 16:49	16:06 (1)   07:09 16:25 (1)   16:29	07:09 14:46 (2)
7	07:25 16:45	15:01 (2)   07:05 16:06 (2)   17:21	16:36 (1)   06:25 16:58 (1)   17:55	06:34 19:29	05:50 20:01	05:26 20:29	05:32 20:34	05:59 20:09	06:30 19:23	07:01 18:32	06:36 16:48	16:06 (1)   07:10 16:24 (1)   16:29	07:10 14:46 (2)
8	07:24 16:46	15:01 (2)   07:03 16:05 (2)   17:23	16:37 (1)   06:24 16:59 (1)   17:56	06:32 19:30	05:49 20:02	05:26 20:29	05:33 20:34	06:00 20:08	06:31 19:21	07:02 18:30	06:37 16:47	16:05 (1)   07:11 16:23 (1)   16:29	07:11 14:47 (2)
9	07:24 16:47	15:02 (2)   07:02 16:05 (2)   17:24	16:38 (1)   06:22 17:01 (1)   17:57	06:30 19:31	05:47 20:03	05:25 20:30	05:33 20:34	06:01 20:07	06:32 19:20	07:03 18:29	06:38 16:46	16:06 (1)   07:12 16:22 (1)   16:29	07:12 14:47 (2)
10	07:24 16:48	15:03 (2)   07:01 16:06 (2)   17:25	16:39 (1)   06:20 17:02 (1)   17:59	06:29 19:32	05:46 20:04	05:25 20:31	05:34 20:33	06:02 20:06	06:33 19:18	07:04 18:27	06:40 16:45	16:06 (1)   07:13 16:21 (1)   16:29	07:13 14:48 (2)
11	07:24 16:49	15:04 (2)   07:00 16:06 (2)   17:26	16:40 (1)   06:19 17:02 (1)   18:00	06:27 19:33	05:45 20:05	05:25 20:31	05:35 20:33	06:03 20:04	06:34 19:16	07:05 18:26	06:41 16:44	15:07 (2)   07:13 16:19 (1)   16:29	07:13 14:47 (2)
12	07:24 16:49	15:04 (2)   06:59 16:05 (2)   17:28	16:41 (1)   06:17 17:01 (1)   18:01	06:25 19:34	05:44 20:06	05:25 20:32	05:35 20:32	06:04 20:03	06:35 19:15	07:06 18:24	06:42 16:43	15:03 (2)   07:14 16:19 (1)   16:29	07:14 14:47 (2)
13	07:23 16:50	15:05 (2)   06:57 16:06 (2)   17:29	16:44 (1)   06:15 16:59 (1)   18:02	06:24 19:36	05:43 20:07	05:26 20:32	05:36 20:32	06:05 20:02	06:36 19:13	07:07 18:22	06:43 16:42	15:00 (2)   07:15 16:18 (1)   16:30	07:15 14:48 (2)
14	07:23 16:51	15:05 (2)   06:56 16:05 (2)   17:30	16:47 (1)   06:14 16:57 (1)   18:03	06:22 19:37	05:42 20:08	05:25 20:33	05:37 20:31	06:06 20:00	06:37 19:11	07:08 18:21	06:44 16:41	14:57 (2)   07:16 16:17 (1)   16:30	07:16 14:49 (2)
15	07:23 16:52	15:07 (2)   06:55 16:06 (2)   17:31	06:12 18:04	06:21 19:38	05:41 20:09	05:25 20:33	05:38 20:31	06:07 19:59	06:38 19:09	07:09 18:19	06:46 16:40	14:55 (2)   07:17 16:15 (1)   16:30	07:17 14:48 (2)
16	07:22 16:53	15:07 (2)   06:53 16:05 (2)   17:33	06:10 18:05	06:19 19:39	05:40 20:10	05:25 20:33	05:38 20:30	06:08 19:58	06:39 19:08	07:10 18:18	06:47 16:39	14:54 (2)   07:17 16:15 (1)   16:30	07:17 14:49 (2)
17	07:22 16:54	15:09 (2)   06:52 16:05 (2)   17:34	06:09 18:06	06:18 19:40	05:39 20:11	05:25 20:34	05:39 20:30	06:09 19:56	06:40 19:06	07:11 18:16	06:48 16:38	14:53 (2)   07:18 16:14 (1)   16:31	07:18 14:50 (2)
18	07:21 16:55	15:09 (2)   06:51 16:04 (2)   17:35	06:07 18:07	06:16 19:41	05:38 20:12	05:25 20:34	05:40 20:29	06:10 19:55	06:41 19:04	07:13 18:15	06:49 16:38	14:51 (2)   07:19 16:13 (1)   16:31	07:19 14:49 (2)
19	07:21 16:56	15:11 (2)   06:49 16:05 (2)   17:36	06:05 18:09	06:14 19:42	05:37 20:13	05:25 20:34	05:41 20:28	06:11 19:53	06:42 19:03	07:14 18:13	06:50 16:37	14:50 (2)   07:19 15:36 (2)   16:31	07:19 14:50 (2)
20	07:20 16:57	15:12 (2)   06:48 16:04 (2)   17:38	06:04 18:10	06:13 19:43	05:36 20:14	05:25 20:35	05:42 20:27	06:12 19:52	06:43 19:01	07:15 18:12	06:52 16:36	14:50 (2)   07:20 15:38 (2)   16:32	07:20 14:51 (2)
21	07:20 17:00	15:13 (2)   06:47 16:03 (2)   17:39	06:02 18:11	06:11 19:44	05:35 20:15	05:25 20:35	05:43 20:27	06:13 19:50	06:44 18:59	07:16 18:10	06:53 16:35	14:49 (2)   07:20 15:39 (2)   16:32	07:20 14:51 (2)
22	07:19 17:01	15:15 (2)   06:45 16:03 (2)   17:40	06:00 18:12	06:10 19:45	05:35 20:16	05:25 20:35	05:43 20:26	06:14 19:49	06:45 18:57	07:17 18:09	06:54 16:35	14:48 (2)   07:21 15:40 (2)   16:33	07:21 14:51 (2)
23	07:18 17:03	15:16 (2)   06:44 16:02 (2)   17:41	05:59 18:13	06:09 19:46	05:34 20:17	05:26 20:35	05:44 20:25	06:15 19:47	06:46 18:56	07:18 18:07	06:55 16:34	14:47 (2)   07:21 15:41 (2)   16:33	07:21 14:52 (2)
24	07:18 17:04	15:17 (2)   06:42 16:04 (2)   17:42	05:57 18:14	06:07 19:47	05:33 20:18	05:26 20:35	05:45 20:24	06:16 19:46	06:47 18:54	07:19 18:06	06:56 16:34	14:47 (2)   07:22 15:42 (2)   16:34	07:22 14:52 (2)
25	07:17 17:05	15:19 (2)   06:41 16:40 (1)   17:44	05:55 18:15	06:06 19:48	05:32 20:19	05:26 20:36	05:46 20:23	06:17 19:44	06:48 18:52	07:21 17:04	06:57 16:33	14:47 (2)   07:22 15:43 (2)   16:34	07:22 14:53 (2)
26	07:16 17:06	15:21 (2)   06:39 16:42 (1)   17:45	05:54 18:16	06:04 19:49	05:32 20:20	05:27 20:36	05:47 20:22	06:18 19:43	06:49 18:51	07:22 17:03	06:58 16:32	14:46 (2)   07:23 15:44 (2)   16:35	07:23 14:54 (2)
27	07:15 17:08	15:23 (2)   06:38 16:43 (1)   17:46	05:52 18:17	06:03 19:51	05:31 20:21	05:27 20:36	05:48 20:22	06:19 19:41	06:50 18:49	07:23 17:02	06:59 16:32	14:46 (2)   07:23 15:45 (2)   16:35	07:23 14:54 (2)
28	07:14 17:09	15:25 (2)   06:36 16:45 (1)   17:47	05:50 18:18	06:01 19:52	05:30 20:21	05:27 20:36	05:49 20:21	06:20 19:39	06:51 18:47	07:24 17:00	07:01 16:26 (1)	16:15 (1)   07:01 16:26 (1)   16:32	07:24 14:51 (2)
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31	07:12 17:13	15:37 (2)   06:33 16:49 (1)   17:50	06:45 19:22	05:29 20:24	05:29 20:24	05:29 20:18	05:52 20:18	06:23 19:35	06:28 18:56	07:27 16:56	23 16:32 (1)	16:09 (1)   07:04 16:32 (1)   16:32	07:27 14:56 (2)
Potential sun hours	297	297	369	399	449	453	460	428	375	345	297	297	2064
Total, worst case	1678	264	369	399	449	453	460	428	375	345	71	1159	2064

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: oMBRA Shadow receptor: F - Shadow Receptor: 1,0 × 1,0 Azimuth: -140,0° Slope: 90,0° (6)  
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 16:39	07:11 17:14	06:34 17:48	06:43 19:23	05:57 19:55	05:28 20:24	05:29 20:35	05:53 20:16	06:24 19:33	06:54 18:42	06:29 16:55	07:04 16:30
2	07:24 16:40	07:10 17:15	06:33 17:49	06:42 19:24	05:56 19:56	05:28 20:25	05:29 20:35	05:54 20:15	06:25 19:31	06:55 18:40	06:30 16:54	07:05 16:30
3	07:24 16:41	07:09 17:16	06:31 17:50	06:40 19:25	05:55 19:57	05:27 20:26	05:30 20:35	05:55 20:14	06:26 19:30	06:56 18:39	06:31 16:53	07:06 16:30
4	07:24 16:42	07:08 17:18	06:30 17:52	06:38 19:26	05:53 19:58	05:27 20:27	05:30 20:35	05:56 20:13	06:27 19:28	06:57 18:37	06:32 16:51	07:07 16:30
5	07:24 16:43	07:07 17:19	06:28 17:53	06:37 19:27	05:52 19:59	05:26 20:27	05:31 20:35	05:57 20:12	06:28 19:26	06:58 18:35	06:33 16:50	07:08 16:29
6	07:24 16:44	07:05 17:20	06:27 17:54	06:35 19:28	05:51 20:00	05:26 20:28	05:31 20:34	05:58 20:11	06:29 19:25	06:59 18:34	06:35 16:49	07:09 16:29
7	07:24 16:45	07:04 17:21	06:25 17:55	06:33 19:29	05:50 20:01	05:26 20:29	05:32 20:34	05:59 20:09	06:30 19:23	07:00 18:32	06:36 16:48	07:10 16:29
8	07:24 16:46	07:03 17:23	06:23 17:56	06:32 19:30	05:48 20:02	05:26 20:29	05:32 20:34	06:00 20:08	06:31 19:21	07:01 18:30	06:37 16:47	07:11 16:29
9	07:24 16:47	07:02 17:24	06:22 17:57	06:30 19:31	05:47 20:03	05:25 20:30	05:33 20:34	06:01 20:07	06:32 19:20	07:02 18:29	06:38 16:46	07:12 16:29
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12	07:23 16:50	06:58 17:28	06:17 18:01	06:25 19:34	05:44 20:06	05:25 20:31	05:35 20:32	06:04 20:03	06:35 19:14	07:06 18:24	06:42 16:43	07:14 16:29
13	07:23 16:51	06:57 17:29	06:15 18:02	06:24 19:35	05:43 20:07	05:25 20:32	05:36 20:32	06:05 20:02	06:36 19:13	07:07 18:22	06:43 16:42	07:15 16:29
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16	07:22 16:54	06:53 17:33	06:10 18:05	06:19 19:39	05:40 20:10	05:25 20:33	05:38 20:30	06:08 19:57	06:39 19:08	07:10 18:18	06:47 16:39	07:17 16:30
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18	07:21 16:57	06:51 17:35	06:07 18:07	06:26 19:41	05:38 20:12	05:25 20:34	05:40 20:29	06:10 19:55	06:41 19:04	07:12 18:15	06:49 16:37	07:18 16:31
19	07:21 16:58	06:49 17:36	06:05 18:08	06:24 19:42	05:37 20:13	05:25 20:34	05:41 20:28	06:11 19:53	06:42 19:02	07:13 18:13	06:50 16:37	07:19 16:31
20	07:20 16:59	06:48 17:37	06:04 18:10	06:22 19:43	05:36 20:14	05:25 20:35	05:42 20:27	06:12 19:52	06:43 19:01	07:14 18:11	06:51 16:36	07:20 16:31
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22	07:19 17:01	06:45 17:40	06:00 18:12	06:19 19:45	05:35 20:16	05:25 20:35	05:43 20:26	06:14 19:49	06:45 18:57	07:16 18:09	06:54 16:35	07:21 16:32
23	07:18 17:03	06:43 17:41	05:58 18:13	06:17 19:46	05:34 20:17	05:26 20:35	05:44 20:25	06:15 19:47	06:46 18:56	07:17 18:07	06:55 16:34	07:21 16:33
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26	07:16 17:06	06:39 17:45	05:53 18:16	06:12 19:49	05:32 20:20	05:26 20:36	05:47 20:22	06:18 19:42	06:49 18:50	07:20 18:03	06:58 16:32	07:23 16:35
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29	07:13 17:10	06:48 19:19	06:08 19:19	07:08 20:28	06:00 19:53	05:30 20:22	05:28 20:36	06:21 19:38	06:52 18:45	07:23 18:00	07:02 16:31	07:24 16:37
30	07:13 17:11	06:47 19:20	06:07 19:20	07:09 20:29	05:59 19:54	05:29 20:23	05:28 20:36	06:22 19:36	06:53 18:44	07:24 18:00	07:03 16:31	07:24 16:37
31	07:12 17:12	06:45 19:21	06:05 19:21	07:12 20:23	05:59 19:54	05:29 20:24	05:28 20:36	06:23 19:34	06:54 18:44	07:25 18:00	07:04 16:31	07:24 16:38
Potential sun hours	297	297	369	399	449	453	460	428	375	345	297	287
Total, worst case			216						218			

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: oMBRA Shadow receptor: G - Shadow Receptor: 1,0 × 1,0 Azimuth: -160,0° Slope: 90,0° (7)  
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 16:39	07:11 17:14	06:34 17:48	06:43 19:23	07:02 (6) 19:55	05:57 20:24	05:28 20:35	05:29 20:16	05:53 20:16	06:24 19:33	06:47 (6) 18:42	06:54 16:55	06:29 16:30
2	07:24 16:40	07:10 17:15	06:33 17:49	06:42 19:24	07:00 (6) 19:56	05:56 20:25	05:28 20:35	05:29 20:15	05:54 20:15	06:25 19:31	06:46 (6) 18:40	06:55 16:54	06:30 16:30
3	07:24 16:41	07:09 17:16	06:31 17:50	06:40 19:25	06:59 (6) 19:57	05:55 20:26	05:27 20:35	05:55 20:14	05:55 20:14	06:26 19:30	06:47 (6) 18:39	06:56 16:53	06:31 16:30
4	07:24 16:42	07:08 17:18	06:30 17:52	06:38 19:26	07:16 (6) 19:58	05:53 20:27	05:27 20:35	05:56 20:13	05:56 20:13	06:27 19:28	06:47 (6) 18:37	06:57 16:51	06:32 16:30
5	07:24 16:43	07:07 17:19	06:28 17:53	06:37 19:27	06:55 (6) 19:59	05:52 20:27	05:26 20:35	05:57 20:12	05:57 20:12	06:28 19:26	06:48 (6) 18:35	06:58 16:50	06:33 16:29
6	07:24 16:44	07:05 17:20	06:27 17:54	06:35 19:28	06:54 (6) 20:00	05:51 20:28	05:26 20:34	05:58 20:11	05:58 20:11	06:29 19:25	06:49 (6) 18:34	06:59 16:49	06:35 16:29
7	07:24 16:45	07:04 17:21	06:25 17:55	06:33 19:29	06:52 (6) 20:01	05:50 20:29	05:26 20:34	05:59 20:09	05:59 20:09	06:30 19:23	06:50 (6) 18:32	07:00 16:48	06:36 16:29
8	07:24 16:46	07:03 17:23	06:23 17:56	06:32 19:30	06:50 (6) 20:02	05:48 20:29	05:26 20:34	06:00 20:08	06:00 20:08	06:31 19:21	06:51 (6) 18:30	07:01 16:47	06:37 16:29
9	07:24 16:47	07:02 17:24	06:22 17:57	06:30 19:31	06:49 (6) 20:03	05:47 20:30	05:25 20:33	06:01 20:07	06:01 20:07	06:32 19:20	06:52 (6) 18:29	07:02 16:46	06:38 16:29
10	07:24 16:48	07:01 17:25	06:20 17:58	06:29 19:32	06:47 (6) 20:04	05:46 20:30	05:25 20:33	06:02 20:06	06:02 20:06	06:33 19:18	06:53 (6) 18:27	07:04 16:45	06:39 16:29
11	07:24 16:49	07:00 17:26	06:18 18:00	06:27 19:33	06:47 (6) 20:05	05:45 20:31	05:25 20:33	06:03 20:04	06:03 20:04	06:34 19:16	06:54 (6) 18:25	07:05 16:44	06:41 16:29
12	07:23 16:50	06:58 17:28	06:17 18:01	06:25 19:34	06:49 (6) 20:06	05:44 20:31	05:25 20:32	06:04 20:03	06:04 20:03	06:35 19:14	06:55 (6) 18:24	07:06 16:43	06:42 16:29
13	07:23 16:51	06:57 17:29	06:15 18:02	06:24 19:35	06:50 (6) 20:07	05:43 20:32	05:25 20:32	06:05 20:02	06:05 20:02	06:36 19:13	06:56 (6) 18:22	07:07 16:42	06:43 16:29
14	07:23 16:52	06:56 17:30	06:14 18:03	06:22 19:36	06:53 (6) 20:08	05:42 20:32	05:25 20:31	06:06 20:00	06:06 20:00	06:37 19:11	06:57 (6) 18:21	07:08 16:41	06:44 16:30
15	07:22 16:53	06:55 17:31	06:12 18:04	06:21 19:38	06:51 20:09	05:41 20:33	05:25 20:31	06:07 19:59	06:07 19:59	06:38 19:09	06:58 (6) 18:19	07:09 16:40	06:45 16:30
16	07:22 16:54	06:53 17:33	06:10 18:05	06:19 19:39	06:49 (6) 20:10	05:40 20:33	05:25 20:30	06:08 19:57	06:08 19:57	06:39 19:08	07:01 (6) 18:18	07:10 16:39	06:46 16:30
17	07:22 16:55	06:52 17:34	06:09 18:06	06:17 19:40	06:47 (6) 20:11	05:39 20:34	05:25 20:29	06:09 19:56	06:09 19:56	06:40 19:06	06:59 (6) 18:16	07:11 16:38	06:47 16:30
18	07:21 16:57	06:51 17:35	06:07 18:07	06:16 19:41	06:45 (6) 20:12	05:38 20:34	05:25 20:29	06:10 19:55	06:10 19:55	06:41 19:04	06:57 (6) 18:14	07:12 16:37	06:48 16:31
19	07:21 16:58	06:49 17:36	06:05 18:08	06:14 19:42	06:43 (6) 20:13	05:37 20:34	05:25 20:28	06:11 19:53	06:11 19:53	06:42 19:02	06:54 (6) 18:13	07:13 16:37	06:49 16:31
20	07:20 16:59	06:48 17:37	06:04 18:10	06:13 19:43	06:41 (6) 20:14	05:36 20:35	05:25 20:27	06:12 19:52	06:12 19:52	06:43 19:01	06:53 (6) 18:11	07:14 16:36	06:50 16:31
21	07:19 17:00	06:46 17:39	06:02 18:11	06:11 19:44	06:39 (6) 20:15	05:35 20:35	05:25 20:27	06:13 19:50	06:13 19:50	06:44 18:59	06:52 (6) 18:10	07:15 16:35	06:51 16:32
22	07:19 17:01	06:45 17:40	06:00 18:12	06:10 19:45	06:37 (6) 20:16	05:34 20:35	05:25 20:26	06:14 19:49	06:14 19:49	06:45 18:57	06:51 (6) 18:09	07:16 16:35	06:52 16:32
23	07:18 17:03	06:43 17:41	05:58 18:13	06:08 19:46	06:35 (6) 20:17	05:34 20:35	05:26 20:25	06:15 19:47	06:15 19:47	06:46 18:56	06:50 (6) 18:07	07:17 16:34	06:53 16:31
24	07:17 17:04	06:42 17:42	05:57 18:14	06:07 19:47	06:33 (6) 20:18	05:33 20:35	05:26 20:24	06:16 19:46	06:16 19:46	06:47 18:54	06:49 (6) 18:06	07:18 16:33	06:54 16:33
25	07:17 17:05	06:41 17:43	05:55 18:15	06:05 19:48	06:31 (6) 20:19	05:32 20:35	05:26 20:23	06:17 19:44	06:17 19:44	06:48 18:52	06:47 (6) 18:05	07:19 16:33	06:55 16:34
26	07:16 17:06	06:39 17:45	05:53 18:16	06:04 19:49	06:29 (6) 20:20	05:32 20:36	05:26 20:22	06:18 19:42	06:18 19:42	06:49 18:50	06:46 (6) 18:03	07:20 16:32	06:56 16:35
27	07:15 17:07	06:37 17:46	05:52 18:17	06:03 19:50	06:27 (6) 20:21	05:31 20:36	05:27 20:21	06:19 19:41	06:19 19:41	06:50 18:49	06:45 (6) 18:02	07:21 16:32	06:57 16:35
28	07:14 17:09	06:36 17:47	05:50 18:18	06:01 19:51	06:25 (6) 20:22	05:30 20:36	05:27 20:20	06:20 19:39	06:20 19:39	06:51 18:47	06:44 (6) 18:01	07:22 16:31	06:58 16:36
29	07:13 17:10	06:35 17:48	05:48 18:19	06:00 19:52	06:23 (6) 20:23	05:29 20:36	05:28 20:19	06:21 19:38	06:21 19:38	06:52 18:45	06:43 (6) 18:00	07:23 16:30	06:59 16:37
30	07:13 17:11	06:34 17:49	05:47 18:20	05:59 19:53	06:21 (6) 20:24	05:28 20:36	05:27 20:18	06:22 19:36	06:22 19:36	06:53 18:44	06:42 (6) 18:00	07:24 16:30	07:00 16:37
31	07:12 17:12	06:33 17:50	05:45 18:21	05:58 19:54	06:19 (6) 20:25	05:27 20:36	05:26 20:17	06:23 19:34	06:23 19:34	06:54 (6) 18:43	06:41 (6) 18:00	07:25 16:30	07:01 16:38
Potential sun hours	297	297	369	399	449	453	460	428	375	249	345	297	287
Total, worst case			28	264				45					

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: oMBRA Shadow receptor: H - Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (8)  
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 16:39 53	08:51 (8) 09:44 (8)	07:11 17:14	06:34 17:48	06:43 19:23	05:57 19:55
2	07:24 16:40 53	08:51 (8) 09:44 (8)	07:10 17:15	06:33 17:49	06:42 19:24	05:56 19:56
3	07:24 16:41 52	08:52 (8) 09:44 (8)	07:09 17:16	06:31 17:50	06:40 19:25	05:55 19:57
4	07:24 16:42 51	08:53 (8) 09:44 (8)	07:08 17:18	06:30 17:52	06:38 19:26	05:53 19:58
5	07:24 16:43 49	08:54 (8) 09:43 (8)	07:07 17:19	06:28 17:53	06:37 19:27	05:52 19:59
6	07:24 16:44 48	08:55 (8) 09:43 (8)	07:06 17:20	06:27 17:54	06:35 19:28	05:51 20:00
7	07:24 16:45 47	08:55 (8) 09:42 (8)	07:04 17:21	06:25 17:55	06:33 19:29	05:50 20:01
8	07:24 16:46 45	08:57 (8) 09:42 (8)	07:03 17:23	06:23 17:56	06:32 19:30	05:49 20:02
9	07:24 16:47 44	08:58 (8) 09:42 (8)	07:02 17:24	06:22 17:57	06:30 19:31	05:47 20:03
10	07:24 16:48 41	09:00 (8) 09:41 (8)	07:01 17:25	06:20 17:58	06:29 19:32	05:46 20:04
11	07:24 16:49 40	09:00 (8) 09:40 (8)	07:00 17:26	06:19 18:00	06:27 19:33	05:45 20:05
12	07:23 16:50 37	09:02 (8) 09:39 (8)	06:58 17:28	06:17 18:01	06:25 19:34	05:44 20:06
13	07:23 16:51 35	09:04 (8) 09:39 (8)	06:57 17:29	06:15 18:02	06:24 19:35	05:43 20:07
14	07:23 16:52 31	09:06 (8) 09:37 (8)	06:56 17:30	06:14 18:03	06:22 19:36	05:42 20:08
15	07:22 16:53 28	09:08 (8) 09:36 (8)	06:55 17:31	06:12 18:04	06:21 19:38	05:41 20:09
16	07:22 16:54 23	09:10 (8) 09:33 (8)	06:53 17:33	06:10 18:05	06:19 19:39	05:40 20:10
17	07:22 16:55 17	09:14 (8) 09:31 (8)	06:52 17:34	06:09 18:06	06:17 19:40	05:39 20:11
18	07:21 16:57 7	09:19 (8) 09:26 (8)	06:51 17:35	06:07 18:07	06:16 19:41	05:38 20:12
19	07:21 16:58	06:49 17:36	06:05 18:08	06:14 18:08	05:37 19:42	20:13
20	07:20 16:59	06:48 17:37	06:04 18:10	06:13 19:43	05:36 20:14	20:14
21	07:19 17:00	06:46 17:39	06:02 18:11	06:11 19:44	05:35 20:15	20:15
22	07:19 17:01	06:45 17:40	06:00 18:12	06:10 19:45	05:35 20:16	20:16
23	07:18 17:03	06:43 17:41	05:58 18:13	06:08 19:46	05:34 20:17	20:17
24	07:17 17:04	06:42 17:42	05:57 18:14	06:07 19:47	05:33 20:18	20:18
25	07:17 17:05	06:41 17:43	05:55 18:15	06:06 19:48	05:32 20:19	20:19
26	07:16 17:06	06:39 17:45	05:53 18:16	06:04 19:49	05:32 20:20	20:20
27	07:15 17:08	06:38 17:46	05:52 18:17	06:03 19:50	05:31 20:20	2 05:52 (5) 05:54 (5)
28	07:14 17:09	06:36 17:47	05:50 18:18	06:01 19:52	05:30 20:21	5 05:52 (5) 05:57 (5)
29	07:13 17:10		06:48 19:19	06:00 19:53	05:30 20:22	8 05:51 (5) 05:59 (5)
30	07:13 17:11		06:47 19:20	05:59 19:54	05:29 20:23	10 05:51 (5) 06:01 (5)
31	07:12 17:13		06:45 19:21		05:29 20:24	11 05:50 (5) 06:01 (5)
Potential sun hours	297	297	369	399	449	453
Total, worst case	701				36	629

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: oMBRA Shadow receptor: H - Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (8)  
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	05:29 20:35	05:51 (5) 06:12 (5)	05:53 20:16	06:24 19:33	06:54 18:42	06:29 16:55
2	05:29 20:35	05:52 (5) 06:13 (5)	05:54 20:15	06:25 19:31	06:55 18:40	06:30 16:54
3	05:30 20:35	05:52 (5) 06:12 (5)	05:55 20:14	06:26 19:30	06:56 18:39	06:31 16:53
4	05:30 20:35	05:53 (5) 06:13 (5)	05:56 20:13	06:27 19:28	06:57 18:37	06:32 16:51
5	05:31 20:35	05:53 (5) 06:12 (5)	05:57 20:12	06:28 19:26	06:58 18:35	06:33 16:50
6	05:31 20:35	05:54 (5) 06:12 (5)	05:58 20:11	06:29 19:25	06:59 18:34	06:35 16:49
7	05:32 20:34	05:55 (5) 06:12 (5)	05:59 20:09	06:30 19:23	07:00 18:32	06:36 16:48
8	05:33 20:34	05:55 (5) 06:12 (5)	06:00 20:08	06:31 19:21	07:01 18:30	06:37 16:47
9	05:33 20:34	05:56 (5) 06:12 (5)	06:01 20:07	06:32 19:20	07:03 18:29	06:38 16:46
10	05:34 20:33	05:57 (5) 06:11 (5)	06:02 20:06	06:33 19:18	07:04 18:27	06:39 16:45
11	05:35 20:33	05:57 (5) 06:10 (5)	06:03 20:04	06:34 19:16	07:05 18:25	06:41 16:44
12	05:35 20:32	05:58 (5) 06:10 (5)	06:04 20:03	06:35 19:15	07:06 18:24	06:42 16:43
13	05:36 20:32	05:59 (5) 06:09 (5)	06:05 20:02	06:36 19:13	07:07 18:22	06:43 16:42
14	05:37 20:31	05:59 (5) 06:08 (5)	06:06 20:00	06:37 19:11	07:08 18:21	06:44 16:41
15	05:38 20:31	06:00 (5) 06:06 (5)	06:07 19:59	06:38 19:09	07:09 18:19	06:45 16:40
16	05:38 20:30	06:01 (5) 06:05 (5)	06:08 19:57	06:39 19:08	07:10 18:18	06:47 16:39
17	05:39 20:29	06:09 19:56	06:09 19:06	06:40 18:16	07:11 16:38	06:48 16:30
18	05:40 20:29	06:10 19:55	06:41 19:04	06:41 18:15	07:12 16:38	06:49 16:31
19	05:41 20:28	06:11 19:53	06:42 19:03	06:42 18:13	07:14 16:37	06:50 16:31
20	05:42 20:27	06:12 19:52	06:43 19:01	06:43 18:12	07:15 16:36	06:51 16:32
21	05:42 20:27	06:13 19:50	06:44 18:59	06:44 18:10	07:16 16:35	06:53 16:32
22	05:43 20:26	06:14 19:49	06:45 18:57	06:45 18:09	07:17 16:35	06:54 16:32
23	05:44 20:25	06:15 19:47	06:46 18:56	06:46 18:07	07:18 16:34	06:55 16:33
24	05:45 20:24	06:16 19:46	06:47 18:54	06:47 18:06	07:19 16:33	06:56 08:56 (8)
25	05:46 20:23	06:17 19:44	06:48 18:52	06:20 17:04	06:57 16:33	07:22 08:52 (8)
26	05:47 20:22	06:18 19:42	06:49 18:50	06:22 17:03	06:58 16:32	07:23 08:49 (8)
27	05:48 20:21	06:19 19:41	06:50 18:49	06:23 17:02	06:59 16:32	07:23 08:47 (8)
28	05:49 20:20	06:20 19:39	06:51 18:47	06:24 17:00	07:00 16:31	07:23 08:46 (8)
29	05:50 20:19	06:21 19:38	06:52 18:45	06:25 16:59	07:02 16:31	07:24 08:44 (8)
30	05:51 20:18	06:22 19:36	06:53 18:44	06:26 16:58	07:03 16:31	07:24 08:43 (8)
31	05:52 20:17	06:23 19:35	06:27 16:56	06:27 16:56	07:04 16:31	07:24 16:38
Potential sun hours	460	428	375	345	297	287
Total, worst case	237				178	1642

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: oMBRA Shadow receptor: I - Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (9)

### 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 16:39 47	07:49 (8) 08:36 (8) 17:14	07:11 08:03 (8) 17:48	07:43 (8) 09:03 (8) 17:48	07:55 (8) 08:46 (8) 19:23	05:57 19:55 20:24
2	07:24 16:40 48	07:49 (8) 08:37 (8) 17:15	07:10 08:09 (8) 17:49	07:42 (8) 09:03 (8) 17:49	07:56 (8) 08:44 (8) 19:24	05:56 19:56 20:25
3	07:24 16:41 49	07:49 (8) 08:38 (8) 17:16	07:09 08:04 (8) 17:50	07:43 (8) 09:04 (8) 17:50	07:57 (8) 08:41 (8) 19:25	05:55 19:57 20:26
4	07:24 16:42 50	07:49 (8) 08:39 (8) 17:18	07:08 08:04 (8) 17:52	07:43 (8) 09:04 (8) 17:52	08:00 (8) 08:38 (8) 19:26	05:53 19:58 20:27
5	07:24 16:43 51	07:49 (8) 08:40 (8) 17:19	07:07 08:04 (8) 17:53	07:43 (8) 09:04 (8) 17:53	08:02 (8) 08:35 (8) 19:27	05:52 19:59 20:27
6	07:24 16:44 53	07:48 (8) 08:41 (8) 17:20	07:06 08:03 (8) 17:54	07:42 (8) 09:03 (8) 17:54	08:06 (8) 08:31 (8) 19:28	05:51 20:00 20:28
7	07:24 16:45 55	07:47 (8) 08:42 (8) 17:21	07:04 08:04 (8) 17:55	07:42 (8) 09:04 (8) 17:55	08:11 (8) 08:25 (8) 19:29	05:50 20:01 20:29
8	07:24 16:46 56	07:47 (8) 08:43 (8) 17:23	07:03 08:04 (8) 17:56	07:42 (8) 09:04 (8) 17:56	06:32 19:30 20:02	05:49 20:02 20:29
9	07:24 16:47 57	07:47 (8) 08:44 (8) 17:24	07:02 08:04 (8) 17:57	07:43 (8) 09:04 (8) 17:57	06:30 19:31 20:03	05:47 20:03 20:30
10	07:24 16:48 58	07:47 (8) 08:45 (8) 17:25	07:01 08:04 (8) 17:58	07:43 (8) 09:04 (8) 17:58	06:29 19:32 20:04	05:46 20:04 20:30
11	07:24 16:49 60	07:46 (8) 08:46 (8) 17:26	07:00 08:03 (8) 18:00	07:42 (8) 09:03 (8) 18:00	06:27 19:33 20:05	05:45 20:05 20:31
12	07:23 16:50 60	07:47 (8) 08:47 (8) 17:28	06:58 08:03 (8) 18:01	07:43 (8) 09:03 (8) 18:01	06:25 19:34 20:06	05:44 20:06 20:31
13	07:23 16:51 62	07:47 (8) 08:49 (8) 17:29	06:57 08:04 (8) 18:02	07:43 (8) 09:03 (8) 18:02	06:24 19:35 20:07	05:43 20:07 20:32
14	07:23 16:52 63	07:46 (8) 08:49 (8) 17:30	06:56 08:02 (8) 18:03	07:43 (8) 09:02 (8) 18:03	06:22 19:36 20:08	05:42 20:08 20:32
15	07:22 16:53 64	07:46 (8) 08:50 (8) 17:31	06:55 08:02 (8) 18:04	07:44 (8) 09:02 (8) 18:04	06:21 19:38 20:09	05:41 20:09 20:33
16	07:22 16:54 66	07:45 (8) 08:51 (8) 17:33	06:53 08:01 (8) 18:05	07:44 (8) 09:02 (8) 18:05	06:19 19:39 20:10	05:40 20:10 20:33
17	07:22 16:56 66	07:46 (8) 08:52 (8) 17:34	06:52 08:01 (8) 18:06	07:44 (8) 09:01 (8) 18:06	06:17 19:40 20:11	05:39 20:11 20:34
18	07:21 16:57 68	07:45 (8) 08:53 (8) 17:35	06:51 08:00 (8) 18:07	07:45 (8) 09:00 (8) 18:07	06:16 19:41 20:12	05:38 20:12 20:34
19	07:21 16:58 69	07:45 (8) 08:54 (8) 17:36	06:49 08:00 (8) 18:08	07:46 (8) 09:00 (8) 18:08	06:14 19:42 20:13	05:37 20:13 20:34
20	07:20 16:59 70	07:45 (8) 08:55 (8) 17:37	06:48 08:00 (8) 18:10	07:46 (8) 08:59 (8) 18:10	06:13 19:43 20:14	05:36 20:14 20:35
21	07:19 17:00 71	07:44 (8) 08:55 (8) 17:39	06:46 08:00 (8) 18:11	07:47 (8) 08:58 (8) 18:11	06:11 19:44 20:15	05:35 20:15 20:35
22	07:19 17:01 73	07:44 (8) 08:57 (8) 17:40	06:45 08:00 (8) 18:12	07:47 (8) 08:57 (8) 18:12	06:10 19:45 20:16	05:35 20:16 20:35
23	07:18 17:03 73	07:44 (8) 08:57 (8) 17:41	06:43 08:00 (8) 18:13	07:48 (8) 08:56 (8) 18:13	06:08 19:46 20:17	05:34 20:17 20:35
24	07:17 17:04 74	07:44 (8) 08:58 (8) 17:42	06:42 08:00 (8) 18:14	07:48 (8) 08:54 (8) 18:14	06:07 19:47 20:18	05:33 20:18 20:35
25	07:17 17:05 76	07:43 (8) 08:59 (8) 17:43	06:41 08:00 (8) 18:15	07:50 (8) 08:53 (8) 18:15	06:06 19:48 20:19	05:32 20:19 20:35
26	07:16 17:06 76	07:43 (8) 08:59 (8) 17:45	06:39 08:00 (8) 18:16	07:50 (8) 08:51 (8) 18:16	06:04 19:49 20:20	05:32 20:20 20:36
27	07:15 17:08 78	07:43 (8) 09:01 (8) 17:46	06:38 08:00 (8) 18:17	07:52 (8) 08:50 (8) 18:17	06:03 19:50 20:20	05:31 20:20 20:36
28	07:14 17:09 78	07:43 (8) 09:01 (8) 17:47	06:36 08:00 (8) 18:18	07:53 (8) 08:48 (8) 18:18	06:01 19:52 20:21	05:30 20:21 20:37
29	07:13 17:10 78	07:43 (8) 09:01 (8) 17:48	06:35 08:00 (8) 18:19	07:54 (8) 08:47 (8) 18:19	06:00 19:53 20:22	05:29 20:22 20:38
30	07:13 17:11 79	07:43 (8) 09:02 (8) 17:49	06:34 08:00 (8) 18:20	07:55 (8) 08:46 (8) 18:20	05:59 19:54 20:23	05:29 20:23 20:38
31	07:12 17:13 79	07:43 (8) 09:02 (8) 17:50	06:33 08:00 (8) 18:21	07:56 (8) 08:45 (8) 18:21	05:58 19:55 20:24	05:28 20:24 20:39
Potential sun hours	297	297	369	399	449	453
Total, worst case	2007	2098	253			

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: oMBRA Shadow receptor: I - Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (9)

### 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	05:29	05:53	06:24	06:54	06:29	07:12 (8)   07:04	07:28 (8)
	20:35	20:16	19:33	18:42	16:55	81   16:30	60   08:28 (8)
2	05:29	05:54	06:25	06:55	06:30	07:12 (8)   07:05	07:30 (8)
	20:35	20:15	19:31	18:40	16:54	82   08:34 (8)   16:30	59   08:29 (8)
3	05:30	05:55	06:26	06:56	06:31	07:12 (8)   07:06	07:31 (8)
	20:35	20:14	19:30	18:39	16:53	82   08:34 (8)   16:30	57   08:28 (8)
4	05:30	05:56	06:27	06:57	06:32	07:12 (8)   07:07	07:32 (8)
	20:35	20:13	19:28	18:37	16:51	82   08:34 (8)   16:30	56   08:28 (8)
5	05:31	05:57	06:28	06:58	06:33	07:12 (8)   07:08	07:33 (8)
	20:35	20:12	19:26	18:35	16:50	81   08:33 (8)   16:29	55   08:28 (8)
6	05:31	05:58	06:29	06:59	06:35	07:13 (8)   07:09	07:34 (8)
	20:35	20:11	19:25	18:34	16:49	81   08:34 (8)   16:29	53   08:27 (8)
7	05:32	05:59	06:30	07:00	08:44 (8)   06:36	07:12 (8)   07:10	07:36 (8)
	20:34	20:09	19:23	18:32	20   09:04 (8)   16:48	82   08:34 (8)   16:29	51   08:27 (8)
8	05:33	06:00	06:31	07:01	08:40 (8)   06:37	07:12 (8)   07:11	07:36 (8)
	20:34	20:08	19:21	18:30	29   09:09 (8)   16:47	81   08:33 (8)   16:29	50   08:26 (8)
9	05:33	06:01	06:32	07:03	08:36 (8)   06:38	07:13 (8)   07:12	07:37 (8)
	20:34	20:07	19:20	18:29	36   09:12 (8)   16:46	81   08:34 (8)   16:29	49   08:26 (8)
10	05:34	06:02	06:33	07:04	08:33 (8)   06:39	07:13 (8)   07:12	07:38 (8)
	20:33	20:06	19:18	18:27	41   09:14 (8)   16:45	81   08:34 (8)   16:29	48   08:26 (8)
11	05:35	06:03	06:34	07:05	08:31 (8)   06:41	07:14 (8)   07:13	07:39 (8)
	20:33	20:04	19:16	18:25	45   09:16 (8)   16:44	79   08:33 (8)   16:29	47   08:26 (8)
12	05:35	06:04	06:35	07:06	08:29 (8)   06:42	07:14 (8)   07:14	07:40 (8)
	20:32	20:03	19:15	18:24	49   09:18 (8)   16:43	79   08:33 (8)   16:29	46   08:26 (8)
13	05:36	06:05	06:36	07:07	08:27 (8)   06:43	07:15 (8)   07:15	07:41 (8)
	20:32	20:02	19:13	18:22	53   09:20 (8)   16:42	78   08:33 (8)   16:29	46   08:27 (8)
14	05:37	06:06	06:37	07:08	08:25 (8)   06:44	07:15 (8)   07:16	07:41 (8)
	20:31	20:00	19:11	18:21	56   09:21 (8)   16:41	78   08:33 (8)   16:30	45   08:26 (8)
15	05:38	06:07	06:38	07:09	08:24 (8)   06:45	07:15 (8)   07:16	07:42 (8)
	20:31	19:59	19:09	18:19	59   09:23 (8)   16:40	77   08:32 (8)   16:30	44   08:26 (8)
16	05:38	06:08	06:39	07:10	08:22 (8)   06:47	07:17 (8)   07:17	07:43 (8)
	20:30	19:57	19:08	18:18	62   09:24 (8)   16:39	76   08:33 (8)   16:30	44   08:27 (8)
17	05:39	06:09	06:40	07:11	08:21 (8)   06:48	07:17 (8)   07:18	07:44 (8)
	20:29	19:56	19:06	18:16	64   09:25 (8)   16:38	76   08:33 (8)   16:30	42   08:26 (8)
18	05:40	06:10	06:41	07:12	08:20 (8)   06:49	07:18 (8)   07:18	07:45 (8)
	20:29	19:55	19:04	18:15	66   09:26 (8)   16:38	74   08:32 (8)   16:31	42   08:27 (8)
19	05:41	06:11	06:42	07:14	08:18 (8)   06:50	07:18 (8)   07:19	07:46 (8)
	20:28	19:53	19:03	18:13	69   09:27 (8)   16:37	73   08:31 (8)   16:31	41   08:27 (8)
20	05:42	06:12	06:43	07:15	08:17 (8)   06:51	07:19 (8)   07:20	07:46 (8)
	20:27	19:52	19:01	18:12	70   09:27 (8)   16:36	73   08:32 (8)   16:32	41   08:27 (8)
21	05:42	06:13	06:44	07:16	08:17 (8)   06:53	07:20 (8)   07:20	07:47 (8)
	20:27	19:50	18:59	18:10	72   09:29 (8)   16:35	71   08:31 (8)   16:32	41   08:28 (8)
22	05:43	06:14	06:45	07:17	08:16 (8)   06:54	07:21 (8)   07:21	07:47 (8)
	20:26	19:49	18:57	18:09	73   09:29 (8)   16:35	70   08:31 (8)   16:32	41   08:28 (8)
23	05:44	06:15	06:46	07:18	08:15 (8)   06:55	07:21 (8)   07:21	07:48 (8)
	20:25	19:47	18:56	18:07	75   09:30 (8)   16:34	69   08:30 (8)   16:33	41   08:29 (8)
24	05:45	06:16	06:47	07:19	08:14 (8)   06:56	07:22 (8)   07:22	07:48 (8)
	20:24	19:46	18:54	18:06	76   09:30 (8)   16:33	68   08:30 (8)   16:34	41   08:29 (8)
25	05:46	06:17	06:48	06:20	07:14 (8)   06:57	07:24 (8)   07:22	07:48 (8)
	20:23	19:44	18:52	17:04	77   08:31 (8)   16:33	66   08:30 (8)   16:34	42   08:30 (8)
26	05:47	06:18	06:49	06:22	07:14 (8)   06:58	07:24 (8)   07:23	07:49 (8)
	20:22	19:42	18:51	17:03	78   08:32 (8)   16:32	66   08:30 (8)   16:35	42   08:31 (8)
27	05:48	06:19	06:50	06:23	07:13 (8)   06:59	07:25 (8)   07:23	07:48 (8)
	20:21	19:41	18:49	17:02	79   08:32 (8)   16:32	65   08:30 (8)   16:35	43   08:31 (8)
28	05:49	06:20	06:51	06:24	07:13 (8)   07:00	07:26 (8)   07:23	07:48 (8)
	20:20	19:39	18:47	17:00	79   08:32 (8)   16:31	63   08:29 (8)   16:36	44   08:32 (8)
29	05:50	06:21	06:52	06:25	07:12 (8)   07:02	07:27 (8)   07:24	07:48 (8)
	20:19	19:38	18:45	16:59	80   08:32 (8)   16:31	62   08:29 (8)   16:37	45   08:33 (8)
30	05:51	06:22	06:53	06:26	07:13 (8)   07:03	07:28 (8)   07:24	07:49 (8)
	20:18	19:36	18:44	16:58	80   08:33 (8)   16:31	60   08:28 (8)   16:38	45   08:34 (8)
31	05:52	06:23	06:54	06:27	07:12 (8)	07:24	07:49 (8)
	20:17	19:35	18:43	16:56	81   08:33 (8)	16:38	46   08:35 (8)
Potential sun hours	460	428	375	345	297	287	1447
Total, worst case				1569	2237		

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: oMBRA Shadow receptor: J - Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (10)

### 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 16:39	07:50 (8) 08:16 (8)	07:11 17:14	07:38 (8) 08:49 (8)	06:34 17:48	07:51 (8) 08:32 (8)	06:43 19:23	05:57 19:55	05:28 20:24
2	07:24 16:40	07:49 (8) 08:17 (8)	07:10 17:15	07:37 (8) 08:49 (8)	06:33 17:49	07:52 (8) 08:29 (8)	06:42 19:24	05:56 19:56	05:28 20:25
3	07:24 16:41	07:49 (8) 08:19 (8)	07:09 17:16	07:37 (8) 08:50 (8)	06:31 17:50	07:55 (8) 08:25 (8)	06:40 19:25	05:55 19:57	05:27 20:26
4	07:24 16:42	07:48 (8) 08:20 (8)	07:08 17:18	07:37 (8) 08:50 (8)	06:30 17:52	07:58 (8) 08:22 (8)	06:38 19:26	05:53 19:58	05:27 20:27
5	07:24 16:43	07:48 (8) 08:22 (8)	07:07 17:19	07:37 (8) 08:50 (8)	06:28 17:53	08:03 (8) 08:16 (8)	06:37 19:27	05:52 19:59	05:27 20:27
6	07:24 16:44	07:47 (8) 08:23 (8)	07:06 17:20	07:37 (8) 08:50 (8)	06:27 17:54		06:35 19:28	05:51 20:00	05:26 20:28
7	07:24 16:45	07:46 (8) 08:24 (8)	07:04 17:21	07:37 (8) 08:50 (8)	06:25 17:55		06:33 19:29	05:50 20:01	05:26 20:29
8	07:24 16:46	07:46 (8) 08:25 (8)	07:03 17:23	07:37 (8) 08:50 (8)	06:23 17:56		06:32 19:30	05:49 20:02	05:26 20:29
9	07:24 16:47	07:46 (8) 08:27 (8)	07:02 17:24	07:37 (8) 08:51 (8)	06:22 17:57		06:30 19:31	05:47 20:03	05:25 20:30
10	07:24 16:48	07:46 (8) 08:28 (8)	07:01 17:25	07:38 (8) 08:51 (8)	06:20 17:58		06:29 19:32	05:46 20:04	05:25 20:30
11	07:24 16:49	07:45 (8) 08:29 (8)	07:00 17:26	07:37 (8) 08:50 (8)	06:19 18:00		06:27 19:33	05:45 20:05	05:25 20:31
12	07:23 16:50	07:45 (8) 08:31 (8)	06:58 17:28	07:37 (8) 08:50 (8)	06:17 18:01		06:25 19:34	05:44 20:06	05:25 20:31
13	07:23 16:51	07:45 (8) 08:32 (8)	06:57 17:29	07:38 (8) 08:50 (8)	06:15 18:02		06:24 19:35	05:43 20:07	05:25 20:32
14	07:23 16:52	07:44 (8) 08:33 (8)	06:56 17:30	07:38 (8) 08:49 (8)	06:14 18:03		06:22 19:36	05:42 20:08	05:25 20:32
15	07:22 16:53	07:44 (8) 08:35 (8)	06:55 17:31	07:38 (8) 08:49 (8)	06:12 18:04		06:21 19:38	05:41 20:09	05:25 20:33
16	07:22 16:54	07:43 (8) 08:35 (8)	06:53 17:33	07:39 (8) 08:49 (8)	06:10 18:05		06:19 19:39	05:40 20:10	05:25 20:33
17	07:22 16:56	07:43 (8) 08:37 (8)	06:52 17:34	07:39 (8) 08:47 (8)	06:09 18:06		06:17 19:40	05:39 20:11	05:25 20:34
18	07:21 16:57	07:42 (8) 08:37 (8)	06:51 17:35	07:40 (8) 08:47 (8)	06:07 18:07		06:16 19:41	05:38 20:12	05:25 20:34
19	07:21 16:58	07:42 (8) 08:39 (8)	06:49 17:36	07:40 (8) 08:47 (8)	06:05 18:08		06:14 19:42	05:37 20:13	05:25 20:34
20	07:20 16:59	07:41 (8) 08:40 (8)	06:48 17:37	07:40 (8) 08:45 (8)	06:04 18:10		06:13 19:43	05:36 20:14	05:25 20:35
21	07:19 17:00	07:40 (8) 08:40 (8)	06:46 17:39	07:42 (8) 08:45 (8)	06:02 18:11		06:11 19:44	05:35 20:15	05:25 20:35
22	07:19 17:01	07:40 (8) 08:42 (8)	06:45 17:40	07:42 (8) 08:43 (8)	06:00 18:12		06:10 19:45	05:35 20:16	05:25 20:35
23	07:18 17:03	07:40 (8) 08:43 (8)	06:43 17:41	07:43 (8) 08:42 (8)	05:59 18:13		06:08 19:46	05:34 20:17	05:26 20:35
24	07:17 17:04	07:39 (8) 08:43 (8)	06:42 17:42	07:44 (8) 08:41 (8)	05:57 18:14		06:07 19:47	05:33 20:18	05:26 20:35
25	07:17 17:05	07:39 (8) 08:44 (8)	06:41 17:43	07:45 (8) 08:40 (8)	05:55 18:15		06:06 19:48	05:32 20:19	05:26 20:35
26	07:16 17:06	07:38 (8) 08:45 (8)	06:39 17:45	07:46 (8) 08:38 (8)	05:53 18:16		06:04 19:49	05:32 20:20	05:27 20:36
27	07:15 17:08	07:39 (8) 08:46 (8)	06:38 17:46	07:48 (8) 08:36 (8)	05:52 18:17		06:03 19:50	05:31 20:20	05:27 20:36
28	07:14 17:09	07:38 (8) 08:47 (8)	06:36 17:47	07:49 (8) 08:34 (8)	05:50 18:18		06:01 19:52	05:30 20:21	05:27 20:37
29	07:13 17:10	07:38 (8) 08:47 (8)			06:48 19:19		06:00 19:53	05:30 20:22	05:28 20:38
30	07:13 17:11	07:38 (8) 08:48 (8)			06:47 19:20		05:59 19:54	05:29 20:23	05:28 20:36
31	07:12 17:13	07:38 (8) 08:48 (8)			06:45 19:21			05:29 20:24	
Potential sun hours	297		297	369		399	449	453	
Total, worst case	1586		1865	145					

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

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

Calculation: oMBRA Shadow receptor: J - Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (10)

### 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	05:29 20:35	05:53 20:16	06:24 19:33	06:54 18:42	06:29 16:55	07:06 (8) 08:20 (8)
2	05:29 20:35	05:54 20:15	06:25 19:31	06:55 18:40	06:30 16:54	07:07 (8) 08:20 (8)
3	05:30 20:35	05:55 20:14	06:26 19:30	06:56 18:39	06:31 16:53	07:07 (8) 08:20 (8)
4	05:30 20:35	05:56 20:13	06:27 19:28	06:57 18:37	06:32 16:51	07:07 (8) 08:20 (8)
5	05:31 20:35	05:57 20:12	06:28 19:26	06:58 18:35	06:33 16:50	07:06 (8) 08:20 (8)
6	05:31 20:35	05:58 20:11	06:29 19:25	06:59 18:34	06:35 16:49	07:07 (8) 08:20 (8)
7	05:32 20:34	05:59 20:09	06:30 19:23	07:00 18:32	06:36 16:48	07:07 (8) 08:20 (8)
8	05:33 20:34	06:00 20:08	06:31 19:21	07:01 18:30	06:37 16:47	07:07 (8) 08:20 (8)
9	05:33 20:34	06:01 20:07	06:32 19:20	07:03 18:29	08:35 (8) 08:54 (8)	06:38 16:46
10	05:34 20:33	06:02 20:06	06:33 19:18	07:04 18:27	06:39 16:45	07:08 (8) 08:20 (8)
11	05:35 20:33	06:03 20:04	06:34 19:16	07:05 18:25	06:41 16:44	07:09 (8) 08:19 (8)
12	05:35 20:32	06:04 20:03	06:35 19:15	07:06 18:24	06:42 16:43	07:09 (8) 08:19 (8)
13	05:36 20:32	06:05 20:02	06:36 19:13	07:07 18:22	06:43 16:42	07:10 (8) 08:19 (8)
14	05:37 20:31	06:06 20:00	06:37 19:11	07:08 18:21	06:44 16:41	07:10 (8) 08:19 (8)
15	05:38 20:31	06:07 19:59	06:38 19:09	07:09 18:19	06:45 16:40	07:11 (8) 08:18 (8)
16	05:38 20:30	06:08 19:57	06:39 19:08	07:10 18:18	06:47 16:39	07:12 (8) 08:19 (8)
17	05:39 20:29	06:09 19:56	06:40 19:06	07:11 18:16	06:48 16:38	07:13 (8) 08:18 (8)
18	05:40 20:29	06:10 19:55	06:41 19:04	07:12 18:15	06:49 16:38	07:13 (8) 08:17 (8)
19	05:41 20:28	06:11 19:53	06:42 19:03	07:14 18:13	06:50 16:37	07:14 (8) 08:17 (8)
20	05:42 20:27	06:12 19:52	06:43 19:01	07:15 18:12	06:51 16:36	07:15 (8) 08:17 (8)
21	05:42 20:27	06:13 19:50	06:44 18:59	07:16 18:10	06:53 16:35	07:16 (8) 08:16 (8)
22	05:43 20:26	06:14 19:49	06:45 18:57	07:17 18:09	06:54 16:35	07:17 (8) 08:16 (8)
23	05:44 20:25	06:15 19:47	06:46 18:56	07:18 18:07	06:55 16:34	07:18 (8) 08:15 (8)
24	05:45 20:24	06:16 19:46	06:47 18:54	07:19 18:06	06:56 16:33	07:19 (8) 08:15 (8)
25	05:46 20:23	06:17 19:44	06:48 18:52	07:20 17:04	06:57 16:33	07:21 (8) 08:15 (8)
26	05:47 20:22	06:18 19:42	06:49 18:51	07:22 17:03	06:58 16:32	07:22 (8) 08:14 (8)
27	05:48 20:21	06:19 19:41	06:50 18:49	07:23 17:02	06:59 16:32	07:23 (8) 08:14 (8)
28	05:49 20:20	06:20 19:39	06:51 18:47	07:24 17:00	07:00 16:31	07:24 (8) 08:13 (8)
29	05:50 20:19	06:21 19:38	06:52 18:45	07:25 16:59	07:02 16:31	07:25 (8) 08:12 (8)
30	05:51 20:18	06:22 19:36	06:53 18:44	07:26 16:58	07:03 16:31	07:26 (8) 08:12 (8)
31	05:52 20:17	06:23 19:35	06:54 18:43	07:27 16:57	07:04 16:30	07:27 (8) 16:38
Potential sun hours	460	428	375	345	297	287
Total, worst case				1310	1927	745

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: oMBRA Shadow receptor: K - Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (11)  
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 16:39	07:11 17:14	06:34 17:48	07:02 (8) 08:18 (8)	06:43 19:23	08:09 (8) 19:55	05:28 20:24	05:29 20:35	05:53 20:16	06:24 19:33	06:54 18:42	07:36 (8) 08:55 (8)	06:29 16:30	07:04 16:30
2	07:24 16:40	07:10 17:15	06:33 17:49	07:01 (8) 08:18 (8)	06:42 19:24	08:11 (8) 19:56	05:28 20:25	05:29 20:35	05:54 20:15	06:25 19:31	06:55 18:40	07:35 (8) 08:55 (8)	06:30 16:54	07:05 16:30
3	07:24 16:41	07:09 17:16	06:31 17:50	07:00 (8) 08:18 (8)	06:40 19:25	08:15 (8) 19:57	05:27 20:26	05:30 20:35	05:55 20:14	06:26 19:30	06:56 18:39	07:35 (8) 08:55 (8)	06:31 16:53	07:06 16:30
4	07:24 16:42	07:08 17:18	06:30 17:52	07:00 (8) 08:19 (8)	06:38 19:26	08:19 (8) 19:58	05:27 20:27	05:30 20:35	05:56 20:13	06:27 19:28	06:57 18:35	07:34 (8) 08:55 (8)	06:32 16:51	07:07 16:30
5	07:24 16:43	07:07 17:19	06:28 17:53	06:59 (8) 08:18 (8)	06:37 19:27	08:18 (8) 19:59	05:27 20:27	05:31 20:35	05:57 20:12	06:28 19:26	06:58 18:35	07:34 (8) 08:55 (8)	06:33 16:50	07:08 16:29
6	07:24 16:44	07:06 17:20	06:27 17:54	06:59 (8) 08:19 (8)	06:35 19:28	08:19 (8) 20:00	05:26 20:28	05:31 20:35	05:58 20:11	06:29 19:25	06:59 18:34	07:35 (8) 08:55 (8)	06:35 16:49	07:09 16:29
7	07:24 16:45	07:04 17:21	06:25 17:55	06:58 (8) 08:18 (8)	06:33 19:29	08:18 (8) 20:01	05:26 20:29	05:32 20:34	05:59 20:09	06:30 19:23	07:00 18:32	07:35 (8) 08:55 (8)	06:36 16:48	07:10 16:29
8	07:24 16:46	07:03 17:23	06:23 17:56	06:58 (8) 08:18 (8)	06:32 19:30	08:18 (8) 20:02	05:26 20:29	05:33 20:34	06:00 20:08	06:31 19:21	07:01 18:30	07:35 (8) 08:55 (8)	06:37 16:47	07:11 16:29
9	07:24 16:47	07:02 17:24	06:22 17:57	06:58 (8) 08:18 (8)	06:30 19:31	08:19 (8) 20:03	05:25 20:30	05:33 20:34	06:01 20:07	06:32 19:20	07:03 18:29	07:34 (8) 08:55 (8)	06:38 16:46	07:12 16:29
10	07:24 16:48	07:01 17:25	06:20 17:58	06:57 (8) 08:18 (8)	06:29 19:32	08:19 (8) 20:04	05:25 20:30	05:34 20:33	06:02 20:06	06:33 19:18	07:04 18:27	07:34 (8) 08:55 (8)	06:39 16:45	07:12 16:29
11	07:24 16:49	07:00 17:26	06:19 17:58	06:57 (8) 08:17 (8)	06:27 19:33	08:19 (8) 20:05	05:25 20:31	05:35 20:33	06:03 20:04	06:34 19:16	07:05 18:25	07:34 (8) 08:55 (8)	06:41 16:44	07:13 16:29
12	07:23 16:50	06:58 17:28	06:17 17:59	06:57 (8) 08:17 (8)	06:25 19:34	08:19 (8) 20:06	05:25 20:31	05:35 20:32	06:04 20:03	06:35 19:15	07:06 18:24	07:35 (8) 08:55 (8)	06:42 16:43	07:14 16:29
13	07:23 16:51	06:57 17:29	06:15 18:00	06:57 (8) 08:16 (8)	06:24 19:35	08:19 (8) 20:07	05:25 20:32	05:36 20:32	06:05 20:02	06:36 19:13	07:07 18:22	07:35 (8) 08:55 (8)	06:43 16:42	07:15 16:29
14	07:23 16:52	06:56 17:30	06:14 18:01	06:56 (8) 08:15 (8)	06:22 19:36	08:19 (8) 20:08	05:25 20:32	05:37 20:31	06:06 20:00	06:37 19:11	07:08 18:21	07:35 (8) 08:55 (8)	06:44 16:41	07:16 16:30
15	07:22 16:53	06:55 17:31	06:12 18:02	06:57 (8) 08:15 (8)	06:21 19:38	08:19 (8) 20:09	05:25 20:33	05:38 20:31	06:07 19:59	06:38 19:09	07:09 18:19	07:36 (8) 08:55 (8)	06:45 16:40	07:16 16:30
16	07:22 16:54	06:53 17:33	06:10 18:03	06:57 (8) 08:14 (8)	06:19 19:39	08:19 (8) 20:10	05:25 20:33	05:38 20:30	06:08 19:57	06:39 19:08	07:10 18:18	07:37 (8) 08:55 (8)	06:47 16:39	07:17 16:30
17	07:22 16:55	06:52 17:34	06:09 18:04	06:57 (8) 08:13 (8)	06:17 19:40	08:19 (8) 20:11	05:25 20:34	05:39 20:29	06:09 19:56	06:40 19:06	07:11 18:16	07:37 (8) 08:55 (8)	06:48 16:38	07:18 16:30
18	07:21 16:57	06:51 17:35	06:07 18:05	06:57 (8) 08:12 (8)	06:16 19:41	08:19 (8) 20:12	05:25 20:34	05:40 20:29	06:10 19:55	06:41 19:04	07:12 18:15	07:38 (8) 08:55 (8)	06:49 16:38	07:18 16:31
19	07:21 16:58	06:49 17:36	06:05 18:06	06:57 (8) 08:11 (8)	06:14 19:42	08:19 (8) 20:13	05:25 20:34	05:41 20:28	06:11 19:53	06:42 19:03	07:13 18:13	07:38 (8) 08:55 (8)	06:50 16:37	07:19 16:31
20	07:20 16:59	06:48 17:37	06:04 18:07	06:57 (8) 08:10 (8)	06:13 19:43	08:19 (8) 20:14	05:25 20:35	05:42 20:27	06:12 19:52	06:43 19:01	07:14 18:12	07:39 (8) 08:55 (8)	06:51 16:36	07:20 16:32
21	07:19 17:00	06:46 17:39	06:02 18:08	06:57 (8) 08:09 (8)	06:11 19:44	08:19 (8) 20:15	05:25 20:35	05:42 20:27	06:13 19:50	06:44 18:59	07:16 18:10	07:40 (8) 08:55 (8)	06:52 16:35	07:20 16:32
22	07:19 17:01	06:45 17:40	06:00 18:09	06:59 (8) 08:08 (8)	06:10 19:45	08:19 (8) 20:16	05:25 20:35	05:43 20:26	06:14 19:49	06:45 18:57	07:17 18:09	07:41 (8) 08:55 (8)	06:54 16:35	07:21 16:32
23	07:18 17:03	06:43 17:41	05:59 18:10	06:59 (8) 08:07 (8)	06:08 19:46	08:19 (8) 20:17	05:26 20:35	05:44 20:25	06:15 19:47	06:46 18:56	07:18 18:07	07:42 (8) 08:55 (8)	06:55 16:34	07:21 16:33
24	07:17 17:04	06:42 17:42	05:57 18:11	06:59 (8) 08:06 (8)	06:07 19:47	08:19 (8) 20:18	05:26 20:35	05:45 20:24	06:16 19:46	06:47 18:54	07:19 18:06	07:43 (8) 08:55 (8)	06:56 16:33	07:22 16:34
25	07:17 17:05	06:41 17:43	05:55 18:12	07:01 (8) 08:05 (8)	06:06 19:48	08:19 (8) 20:19	05:26 20:35	05:46 20:23	06:17 19:44	06:48 18:52	07:20 17:04	07:44 (8) 08:55 (8)	06:57 16:33	07:22 16:34
26	07:16 17:06	06:39 17:45	05:53 18:13	07:01 (8) 08:04 (8)	06:04 19:49	08:19 (8) 20:20	05:27 20:36	05:47 20:22	06:18 19:42	06:49 18:51	07:21 17:03	07:45 (8) 08:55 (8)	06:58 16:32	07:23 16:35
27	07:15 17:08	06:38 17:46	05:52 18:14	07:02 (8) 08:07 (8)	06:03 19:50	08:19 (8) 20:21	05:27 20:36	05:48 20:21	06:19 19:41	06:50 18:49	07:22 17:02	07:46 (8) 08:55 (8)	06:59 16:32	07:23 16:35
28	07:14 17:09	06:36 17:47	05:50 18:15	07:03 (8) 08:08 (8)	06:01 19:52	08:19 (8) 20:22	05:27 20:36	05:49 20:19	06:20 19:38	06:51 18:45	07:23 16:59	07:47 (8) 08:55 (8)	06:59 16:31	07:23 16:37
29	07:13 17:10	06:35 17:48	05:49 18:16	07:04 (8) 08:09 (8)	06:00 19:53	08:19 (8) 20:23	05:28 20:36	05:50 20:18	06:21 19:36	06:52 18:44	07:24 16:58	07:48 (8) 08:55 (8)	06:59 16:31	07:24 16:38
30	07:13 17:11	06:34 17:49	05:48 18:17	07:05 (8) 08:10 (8)	05:59 19:54	08:19 (8) 20:24	05:28 20:36	05:51 20:17	06:22 19:35	06:53 18:44	07:25 16:57	07:49 (8) 08:55 (8)	06:59 16:31	07:24 16:38
31	07:12 17:13	06:33 17:50	05:47 18:18	07:06 (8) 08:13 (8)	05:58 19:55	08:19 (8) 20:25	05:29 20:36	05:52 20:16	06:23 19:35	06:54 18:43	07:26 16:56	07:50 (8) 08:55 (8)	06:59 16:31	07:24 16:38
Potential sun hours	297	297	369	399	449	453	460	428	375	1360	345	1991	297	287
Total, worst case		978	2208	114										

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: oMBRA Shadow receptor: L - Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (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	July	August	September	October	November	December	
1	07:24 16:39	07:11 17:14	06:34 17:48	06:43 19:23	07:25 (8) 19:55	05:57 20:24	05:28 20:35	05:29 20:16	05:53 19:33	06:24 08:32 (8)	06:54 18:42	07:18 (8) 16:55	06:29 16:30
2	07:24 16:40	07:10 17:15	06:33 17:49	06:42 19:24	07:24 (8) 19:56	05:56 20:25	05:28 20:35	05:29 20:15	05:54 19:31	06:25 08:32 (8)	06:55 18:40	07:19 (8) 16:54	06:30 16:30
3	07:24 16:41	07:09 17:16	06:31 17:50	06:40 19:25	07:05 (8) 19:57	06:40 20:26	05:55 20:35	05:27 20:14	05:55 19:30	06:26 08:33 (8)	06:56 18:39	07:20 (8) 16:53	06:31 16:30
4	07:24 16:42	07:08 17:18	06:30 17:52	06:38 19:26	06:59 (8) 19:58	06:38 20:27	05:53 20:35	05:27 20:13	05:56 19:28	06:27 08:33 (8)	06:57 18:37	07:21 (8) 16:51	06:32 16:30
5	07:24 16:43	07:07 17:19	06:28 17:53	06:37 19:27	06:55 (8) 19:59	06:37 20:27	05:52 20:35	05:27 20:12	05:57 19:28	06:28 08:33 (8)	06:58 18:35	07:22 (8) 16:50	06:33 16:29
6	07:24 16:44	07:06 17:20	06:27 17:54	06:35 19:28	06:52 (8) 19:58	06:35 20:28	05:51 20:35	05:26 20:11	05:58 19:25	06:29 08:33 (8)	06:59 18:34	07:25 (8) 16:49	06:35 16:29
7	07:24 16:45	07:04 17:21	06:25 17:55	06:33 19:29	06:49 (8) 19:59	06:33 20:01	05:50 20:29	05:26 20:09	05:59 19:23	06:30 08:34 (8)	07:00 18:32	07:27 (8) 16:48	06:36 16:29
8	07:24 16:46	07:03 17:23	06:23 17:56	06:32 19:30	06:47 (8) 19:56	06:32 20:02	05:49 20:29	05:26 20:08	06:00 19:21	06:31 08:34 (8)	07:01 18:30	07:29 (8) 16:47	06:37 16:29
9	07:24 16:47	07:02 17:24	06:22 17:57	06:30 19:31	06:45 (8) 19:57	06:26 (8) 20:03	05:47 20:30	05:25 20:07	06:01 19:20	06:32 08:34 (8)	07:03 18:29	07:32 (8) 16:46	06:38 16:29
10	07:24 16:48	07:01 17:25	06:20 17:58	06:29 19:32	06:43 (8) 19:58	06:26 (8) 20:04	05:46 20:30	05:25 20:06	06:02 19:18	06:33 08:34 (8)	07:04 18:27	07:36 (8) 16:45	06:39 16:29
11	07:24 16:49	07:00 17:26	06:19 18:00	06:27 19:33	06:41 (8) 19:59	06:27 (8) 20:05	05:45 20:31	05:25 20:04	06:03 19:16	06:34 08:35 (8)	07:05 18:25	07:45 (8) 16:44	06:41 16:29
12	07:23 16:50	06:58 17:28	06:17 18:01	06:25 19:34	06:40 (8) 19:58	06:25 (8) 20:06	05:44 20:31	05:35 20:03	06:04 19:15	06:35 08:35 (8)	07:06 18:24	07:49 (8) 16:43	06:42 16:29
13	07:23 16:51	06:57 17:29	06:15 18:02	06:24 19:35	06:38 (8) 19:59	06:24 (8) 20:07	05:43 20:32	05:36 20:02	06:05 19:13	06:36 08:35 (8)	07:07 18:22	07:50 (8) 16:42	06:43 16:29
14	07:23 16:52	06:56 17:30	06:14 18:03	06:22 19:36	06:36 (8) 19:58	06:22 (8) 20:08	05:42 20:32	05:37 20:00	06:06 19:11	06:37 08:34 (8)	07:08 18:21	07:51 (8) 16:41	06:44 16:30
15	07:22 16:53	06:55 17:31	06:12 18:04	06:21 19:38	06:36 (8) 19:58	06:21 (8) 20:09	05:41 20:33	05:38 20:31	06:07 19:09	06:38 08:34 (8)	07:09 18:19	07:52 (8) 16:40	06:45 16:30
16	07:22 16:54	06:53 17:33	06:10 18:05	06:19 19:39	06:34 (8) 19:59	06:19 (8) 20:10	05:40 20:33	05:38 20:30	06:08 19:08	06:39 08:34 (8)	07:10 18:18	07:53 (8) 16:39	06:47 16:30
17	07:22 16:55	06:52 17:34	06:09 18:06	06:17 19:40	06:33 (8) 19:58	06:17 (8) 20:11	05:39 20:34	05:25 20:29	06:09 19:06	06:40 08:34 (8)	07:11 18:16	07:54 (8) 16:38	06:48 16:30
18	07:21 16:57	06:51 17:35	06:07 18:07	06:16 19:41	06:32 (8) 19:58	06:16 (8) 20:12	05:38 20:34	05:40 20:29	06:10 19:04	06:41 08:33 (8)	07:12 18:15	07:55 (8) 16:38	06:49 16:31
19	07:21 16:58	06:49 17:36	06:05 18:08	06:14 19:42	06:31 (8) 19:58	06:14 (8) 20:13	05:37 20:34	05:41 20:28	06:11 19:53	06:42 08:06 (8)	07:14 (8) 18:13	07:56 (8) 16:37	06:50 16:31
20	07:20 16:59	06:48 17:37	06:04 18:10	06:13 19:43	06:30 (8) 19:58	06:13 (8) 20:14	05:36 20:35	05:42 20:27	06:12 19:52	06:43 08:12 (8)	07:15 (8) 18:12	07:57 (8) 16:36	06:51 16:32
21	07:19 17:00	06:46 17:39	06:02 18:11	06:11 19:44	06:29 (8) 19:58	06:11 (8) 20:15	05:35 20:35	05:43 20:27	06:13 19:50	06:44 08:15 (8)	07:16 (8) 18:10	07:58 (8) 16:35	06:53 16:32
22	07:19 17:01	06:45 17:40	06:00 18:12	06:10 19:45	06:28 (8) 19:58	06:10 (8) 20:16	05:35 20:35	05:43 20:26	06:14 19:49	06:45 08:18 (8)	07:17 (8) 18:09	07:59 (8) 16:35	06:54 16:32
23	07:18 17:03	06:43 17:41	05:59 18:13	06:08 19:46	06:28 (8) 19:58	06:08 (8) 20:17	05:34 20:35	05:44 20:25	06:15 19:47	06:46 08:20 (8)	07:18 (8) 18:07	08:00 (8) 16:34	06:55 16:33
24	07:17 17:04	06:42 17:42	05:57 18:14	06:07 19:47	06:27 (8) 19:58	06:07 (8) 20:18	05:33 20:35	05:45 20:24	06:16 19:46	06:47 08:22 (8)	07:19 (8) 18:06	08:01 (8) 16:33	06:56 16:34
25	07:17 17:05	06:41 17:43	05:55 18:15	06:06 19:48	06:27 (8) 19:58	06:06 (8) 20:19	05:32 20:35	05:46 20:23	06:17 19:44	06:48 08:24 (8)	07:15 (8) 18:04	08:02 (8) 16:33	06:57 16:34
26	07:16 17:06	06:39 17:45	05:53 18:16	06:04 19:49	06:26 (8) 19:58	06:04 (8) 20:20	05:32 20:36	05:47 20:22	06:18 19:42	06:49 08:25 (8)	07:15 (8) 18:03	08:03 (8) 16:32	06:58 16:35
27	07:15 17:08	06:38 17:46	05:52 18:17	06:03 19:50	06:25 (8) 19:58	06:03 (8) 20:20	05:31 20:36	05:48 20:21	06:19 19:41	06:50 08:26 (8)	07:15 (8) 18:02	08:04 (8) 16:32	06:59 16:35
28	07:14 17:09	06:36 17:47	05:50 18:18	06:01 19:52	06:24 (8) 19:58	06:01 (8) 20:21	05:30 20:36	05:49 20:20	06:20 19:39	06:51 08:28 (8)	07:16 (8) 18:01	08:05 (8) 16:31	07:00 16:36
29	07:13 17:10	06:35 17:48	05:49 18:19	06:00 19:53	06:23 (8) 19:58	05:59 (8) 20:22	05:29 20:36	05:50 20:19	06:21 19:38	06:52 08:29 (8)	07:16 (8) 18:00	08:06 (8) 16:31	07:02 16:37
30	07:13 17:11	06:34 17:49	05:48 18:20	05:59 19:54	06:22 (8) 19:58	05:58 (8) 20:23	05:28 20:36	05:51 20:18	06:22 19:36	06:53 08:30 (8)	07:17 (8) 18:00	08:07 (8) 16:31	07:03 16:38
31	07:12 17:13	06:33 17:50	05:47 18:21	05:58 19:55	06:21 (8) 19:58	05:57 (8) 20:24	05:27 20:36	05:52 20:17	06:23 19:35	06:54 08:31 (8)	07:18 (8) 18:00	08:08 (8) 16:31	07:04 16:38
Potential sun hours	297	297	369	399	449	453	460	428	375	2235	345	297	297
Total, worst case			1871	1349					565		472		

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: oMBRA Shadow receptor: M - Shadow Receptor: 1,0 x 1,0 Azimuth: -60,0° Slope: 90,0° (13)  
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 16:39	07:11 17:14	06:34 17:48	07:05 (8) 19:23	06:43 19:23	07:28 (8) 19:55	05:28 20:16	05:29 20:16	05:53 20:16	06:24 19:33	07:36 (8) 18:42	06:54 16:55	06:29 16:30
2	07:24 16:40	07:10 17:15	06:33 17:49	06:58 (8) 19:24	06:42 19:24	07:28 (8) 19:56	05:28 20:15	05:29 20:15	05:54 20:15	06:25 19:31	07:34 (8) 18:40	06:55 16:54	06:30 16:30
3	07:24 16:41	07:09 17:16	06:31 17:50	06:54 (8) 19:25	06:40 19:25	07:30 (8) 19:57	05:27 20:26	05:28 20:26	05:55 20:14	06:26 19:30	07:32 (8) 18:39	06:56 16:53	06:06 16:30
4	07:24 16:42	07:08 17:18	06:30 17:52	06:52 (8) 19:26	06:38 19:26	07:30 (8) 19:58	05:27 20:27	05:30 20:35	05:56 20:13	06:27 19:28	07:30 (8) 18:37	06:57 16:51	06:07 16:30
5	07:24 16:43	07:07 17:19	06:28 17:53	06:49 (8) 19:27	06:37 19:27	07:30 (8) 19:59	05:27 20:27	05:31 20:35	05:57 20:12	06:28 19:26	07:28 (8) 18:35	06:58 16:50	06:08 16:29
6	07:24 16:44	07:06 17:20	06:27 17:54	06:47 (8) 19:28	06:35 19:28	07:31 (8) 20:00	05:26 20:28	05:31 20:35	05:58 20:11	06:29 19:25	07:26 (8) 18:34	06:59 16:49	06:09 16:29
7	07:24 16:45	07:04 17:21	06:25 17:55	06:45 (8) 19:29	06:33 19:29	07:32 (8) 20:01	05:26 20:29	05:32 20:34	05:59 20:09	06:30 19:23	07:25 (8) 18:32	06:59 16:48	06:10 16:29
8	07:24 16:46	07:03 17:23	06:23 17:56	06:43 (8) 19:30	06:32 19:30	07:32 (8) 20:02	05:26 20:29	05:33 20:34	06:00 20:08	06:31 19:21	07:24 (8) 18:30	06:59 16:47	06:11 16:29
9	07:24 16:47	07:02 17:24	06:22 17:57	06:42 (8) 19:31	06:30 19:31	07:34 (8) 20:03	05:25 20:30	05:33 20:34	06:01 20:07	06:32 19:20	07:23 (8) 18:29	06:58 16:46	06:12 16:29
10	07:24 16:48	07:01 17:25	06:20 17:59	06:40 (8) 19:32	06:29 19:32	07:35 (8) 20:04	05:25 20:30	05:34 20:33	06:02 20:06	06:33 19:18	07:22 (8) 18:27	06:59 16:45	06:13 16:29
11	07:24 16:49	07:00 17:26	06:18 18:00	06:38 (8) 19:33	06:27 19:33	07:37 (8) 20:05	05:25 20:31	05:35 20:33	06:03 20:04	06:34 19:16	07:21 (8) 18:26	06:59 16:44	06:14 16:29
12	07:23 16:50	06:58 17:28	06:17 18:01	06:37 (8) 19:34	06:25 19:34	07:38 (8) 20:06	05:25 20:31	05:35 20:32	06:04 20:03	06:35 19:15	07:20 (8) 18:24	06:59 16:43	06:14 16:29
13	07:23 16:51	06:57 17:29	06:15 18:02	06:36 (8) 19:35	06:24 19:35	07:40 (8) 20:07	05:25 20:32	05:36 20:32	06:05 20:02	06:36 19:13	07:19 (8) 18:22	06:59 16:42	06:15 16:30
14	07:23 16:52	06:56 17:30	06:14 18:03	06:35 (8) 19:37	06:22 19:37	07:43 (8) 20:08	05:25 20:32	05:37 20:31	06:06 20:00	06:37 19:11	07:18 (8) 18:21	06:59 16:41	06:16 16:30
15	07:22 16:53	06:55 17:31	06:12 18:04	06:34 (8) 19:38	06:21 19:38	07:46 (8) 20:09	05:25 20:33	05:38 20:31	06:07 19:59	06:38 19:09	07:18 (8) 18:19	06:59 16:40	06:16 16:30
16	07:22 16:54	06:53 17:33	06:10 18:05	06:33 (8) 19:39	06:19 19:39	05:40 20:10	05:25 20:33	05:38 20:30	06:08 19:57	06:39 19:08	07:17 (8) 18:18	06:59 16:39	06:17 16:30
17	07:22 16:55	06:52 17:34	06:09 18:06	06:32 (8) 19:40	06:17 19:40	05:39 20:11	05:25 20:34	05:39 20:29	06:09 19:56	06:40 19:06	07:16 (8) 18:16	06:59 16:38	06:18 16:30
18	07:21 16:57	06:51 17:35	06:07 18:07	06:32 (8) 19:41	06:16 19:41	05:38 20:12	05:25 20:34	05:40 20:29	06:10 19:55	06:41 19:04	07:16 (8) 18:15	06:59 16:38	06:18 16:31
19	07:21 16:58	06:49 17:36	06:05 18:08	06:31 (8) 19:42	06:14 19:42	05:37 20:13	05:25 20:34	05:41 20:28	06:11 19:53	06:42 19:03	07:15 (8) 18:13	06:59 16:37	06:19 16:31
20	07:20 16:59	06:48 17:37	06:04 18:10	06:30 (8) 19:43	06:13 19:43	05:36 20:14	05:25 20:35	05:42 20:27	06:12 19:52	06:43 19:01	07:15 (8) 18:12	06:59 16:36	06:20 16:32
21	07:19 17:00	06:46 17:39	06:02 18:11	06:29 (8) 19:44	06:11 19:44	05:35 20:15	05:25 20:35	05:43 20:27	06:13 19:50	06:44 18:59	07:15 (8) 18:10	06:59 16:35	06:20 16:32
22	07:19 17:01	06:45 17:40	06:00 18:12	06:29 (8) 19:45	06:10 19:45	05:35 20:16	05:25 20:35	05:43 20:26	06:14 19:49	06:45 18:57	07:14 (8) 18:09	06:59 16:34	06:21 16:32
23	07:18 17:03	06:43 17:41	05:59 18:13	06:29 (8) 19:46	06:08 19:46	05:34 20:17	05:26 20:35	05:44 20:25	06:15 19:47	06:46 18:56	07:14 (8) 18:07	06:59 16:33	06:21 16:33
24	07:17 17:04	06:42 17:42	05:57 18:14	06:28 (8) 19:47	06:07 19:47	05:33 20:18	05:26 20:35	05:45 20:24	06:16 19:46	06:47 18:54	07:14 (8) 18:06	06:59 16:33	06:22 16:34
25	07:17 17:05	06:41 17:43	05:55 18:15	06:29 (8) 19:48	06:06 19:48	05:32 20:19	05:26 20:35	05:46 20:23	06:17 19:44	06:48 18:52	07:14 (8) 18:04	06:59 16:33	06:22 16:34
26	07:16 17:06	06:39 17:45	05:53 18:16	06:28 (8) 19:49	06:04 19:49	05:32 20:20	05:27 20:36	05:47 20:22	06:18 19:42	06:49 18:51	07:14 (8) 18:03	06:59 16:32	06:23 16:35
27	07:15 17:08	06:38 17:46	05:52 18:17	06:28 (8) 19:50	06:03 19:50	05:31 20:20	05:27 20:36	05:48 20:21	06:19 19:41	06:50 18:49	07:14 (8) 18:02	06:59 16:32	06:23 16:35
28	07:14 17:09	06:36 17:47	05:50 18:18	06:28 (8) 19:52	06:01 19:52	05:30 20:21	05:27 20:36	05:49 20:21	06:20 19:41	06:51 18:49	07:15 (8) 18:01	06:59 16:32	06:24 16:35
29	07:13 17:10	06:48 17:48	06:48 18:19	07:28 (8) 19:53	06:00 19:53	05:29 20:22	05:28 20:36	05:50 20:19	06:21 19:38	19 08:07 (8) 18:45	08:21 (8) 18:00	06:25 16:31	06:24 16:36
30	07:13 17:11	06:47 17:49	06:47 18:20	07:28 (8) 19:54	05:59 19:54	05:29 20:23	05:28 20:36	05:51 20:18	06:22 19:36	19 08:10 (8) 18:44	08:21 (8) 18:00	06:25 16:31	06:24 16:36
31	07:12 17:13	06:45 17:50	06:45 18:21	07:29 (8) 19:55	05:58 19:55	05:29 20:24	05:28 20:37	05:52 20:17	06:23 19:35	37 08:15 (8) 18:44	08:19 (8) 18:00	06:27 16:56	06:24 16:38
Potential sun hours	297	297	297	369	399	449	453	460	428	375	345	551	297
Total, worst case				1824	715	449	453	460	114	1905	345	551	297

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: oMBRA Shadow receptor: N - Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (14)

### 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 16:39	07:11 17:14	06:34 17:48	06:43 19:23	05:57 19:55	06:21 (8) 05:28 64
2	07:24 16:40	07:10 17:15	06:33 17:49	06:42 19:24	05:56 19:56	06:20 (8) 05:28 68
3	07:24 16:41	07:09 17:16	06:31 17:50	06:40 19:25	05:55 19:57	06:19 (8) 05:27 69
4	07:24 16:42	07:08 17:18	06:30 17:52	06:38 19:26	05:53 19:58	06:19 (8) 05:27 70
5	07:24 16:43	07:07 17:19	06:28 17:53	06:37 19:27	05:52 19:59	06:19 (8) 05:27 70
6	07:24 16:44	07:06 17:20	06:27 17:54	06:35 19:28	05:51 20:00	06:19 (8) 05:26 70
7	07:24 16:45	07:04 17:21	06:25 17:55	06:33 19:29	05:50 20:01	06:18 (8) 05:26 71
8	07:24 16:46	07:03 17:23	06:23 17:56	06:32 19:30	05:49 20:02	06:17 (8) 05:26 72
9	07:24 16:47	07:02 17:24	06:22 17:57	06:30 19:31	05:47 20:03	06:17 (8) 05:25 72
10	07:24 16:48	07:01 17:25	06:20 17:58	06:29 19:32	05:46 20:04	06:17 (8) 05:25 72
11	07:24 16:49	07:00 17:26	06:19 18:00	06:27 19:33	05:45 20:05	06:17 (8) 05:25 72
12	07:23 16:50	06:58 17:28	06:17 18:01	06:25 19:34	05:44 20:06	06:17 (8) 05:25 72
13	07:23 16:51	06:57 17:29	06:15 18:02	06:24 19:35	05:43 20:07	06:17 (8) 05:25 72
14	07:23 16:52	06:56 17:30	06:14 18:03	06:22 19:36	05:42 20:08	06:17 (8) 05:25 72
15	07:22 16:53	06:55 17:31	06:12 18:04	06:21 19:38	05:41 20:09	06:17 (8) 05:25 71
16	07:22 16:54	06:53 17:33	06:10 18:05	06:19 19:39	05:40 20:10	06:17 (8) 05:25 71
17	07:22 16:56	06:52 17:34	06:09 18:06	06:17 19:40	05:39 20:11	06:17 (8) 05:25 71
18	07:21 16:57	06:51 17:35	06:07 18:07	06:16 19:41	05:38 20:12	06:18 (8) 05:25 71
19	07:21 16:58	06:49 17:36	06:05 18:08	06:14 19:42	05:37 20:13	06:18 (8) 05:25 70
20	07:20 16:59	06:48 17:37	06:04 18:10	06:13 19:43	05:36 20:14	06:18 (8) 05:25 70
21	07:19 17:00	06:46 17:39	06:02 18:11	06:11 19:44	05:35 20:15	06:18 (8) 05:25 69
22	07:19 17:01	06:45 17:40	06:00 18:12	06:10 19:45	05:35 20:16	06:18 (8) 05:25 69
23	07:18 17:03	06:43 17:41	05:59 18:13	06:08 19:46	05:34 20:17	06:19 (8) 05:26 68
24	07:17 17:04	06:42 17:42	05:57 18:14	06:07 19:47	05:33 20:18	06:19 (8) 05:26 68
25	07:17 17:05	06:41 17:43	05:55 18:15	06:06 19:48	05:32 20:19	06:19 (8) 05:26 67
26	07:16 17:06	06:39 17:45	05:53 18:16	06:04 19:49	05:32 20:20	06:20 (8) 05:27 67
27	07:15 17:08	06:38 17:46	05:52 18:17	06:03 19:50	05:31 20:20	06:20 (8) 05:27 66
28	07:14 17:09	06:36 17:47	05:50 18:18	06:01 19:52	05:30 20:21	06:21 (8) 05:27 65
29	07:13 17:10		06:48 19:19	06:00 19:53	05:30 20:22	06:21 (8) 05:28 65
30	07:13 17:11		06:47 19:20	05:59 19:54	05:29 20:23	06:22 (8) 05:28 64
31	07:12 17:13		06:45 19:21		05:29 20:24	06:22 (8) 05:28 63
Potential sun hours	297	297	369	399	449	453
Total, worst case				804	2144	1724

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: oMBRA Shadow receptor: N - Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (14)  
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	05:29 20:35	06:31 (8) 07:28 (8)	05:53 20:16	06:28 (8) 07:40 (8)	06:24 19:33	06:54 18:42	06:29 16:55	07:04 16:30
2	05:29 20:35	06:31 (8) 07:29 (8)	05:54 20:15	06:28 (8) 07:40 (8)	06:25 19:31	06:55 18:40	06:30 16:54	07:05 16:30
3	05:30 20:35	06:30 (8) 07:29 (8)	05:55 20:14	06:28 (8) 07:40 (8)	06:26 19:30	06:56 18:39	06:31 16:53	07:06 16:30
4	05:30 20:35	06:31 (8) 07:30 (8)	05:56 20:13	06:28 (8) 07:40 (8)	06:27 19:28	06:57 18:37	06:32 16:51	07:07 16:30
5	05:31 20:35	06:30 (8) 07:30 (8)	05:57 20:12	06:28 (8) 07:39 (8)	06:28 19:26	06:58 18:35	06:33 16:50	07:08 16:29
6	05:31 20:35	06:31 (8) 07:31 (8)	05:58 20:11	06:28 (8) 07:39 (8)	06:29 19:25	06:59 18:34	06:35 16:49	07:09 16:29
7	05:32 20:34	06:31 (8) 07:31 (8)	05:59 20:09	06:28 (8) 07:39 (8)	06:30 19:23	07:00 18:32	06:36 16:48	07:10 16:29
8	05:33 20:34	06:30 (8) 07:31 (8)	06:00 20:08	06:29 (8) 07:39 (8)	06:31 19:21	07:01 18:30	06:37 16:47	07:11 16:29
9	05:33 20:34	06:30 (8) 07:32 (8)	06:01 20:07	06:28 (8) 07:37 (8)	06:32 19:20	07:03 18:29	06:38 16:46	07:12 16:29
10	05:34 20:33	06:31 (8) 07:33 (8)	06:02 20:06	06:28 (8) 07:37 (8)	06:33 19:18	07:04 18:27	06:39 16:45	07:12 16:29
11	05:35 20:33	06:30 (8) 07:33 (8)	06:03 20:04	06:28 (8) 07:37 (8)	06:34 19:16	07:05 18:26	06:41 16:44	07:13 16:29
12	05:35 20:32	06:30 (8) 07:33 (8)	06:04 20:03	06:29 (8) 07:36 (8)	06:35 19:15	07:06 18:24	06:42 16:43	07:14 16:29
13	05:36 20:32	06:30 (8) 07:34 (8)	06:05 20:02	06:29 (8) 07:35 (8)	06:36 19:13	07:07 18:22	06:43 16:42	07:15 16:30
14	05:37 20:31	06:29 (8) 07:34 (8)	06:06 20:00	06:30 (8) 07:35 (8)	06:37 19:11	07:08 18:21	06:44 16:41	07:16 16:30
15	05:38 20:31	06:29 (8) 07:35 (8)	06:07 19:59	06:30 (8) 07:34 (8)	06:38 19:09	07:09 18:19	06:45 16:40	07:16 16:30
16	05:38 20:30	06:29 (8) 07:35 (8)	06:08 19:57	06:31 (8) 07:33 (8)	06:39 19:08	07:10 18:18	06:47 16:39	07:17 16:30
17	05:39 20:29	06:29 (8) 07:36 (8)	06:09 19:56	06:31 (8) 07:32 (8)	06:40 19:06	07:11 18:16	06:48 16:38	07:18 16:30
18	05:40 20:29	06:29 (8) 07:37 (8)	06:10 19:55	06:32 (8) 07:31 (8)	06:41 19:04	07:12 18:15	06:49 16:38	07:18 16:31
19	05:41 20:28	06:29 (8) 07:36 (8)	06:11 19:53	06:33 (8) 07:30 (8)	06:42 19:03	07:14 18:13	06:50 16:37	07:19 16:31
20	05:42 20:27	06:29 (8) 07:37 (8)	06:12 19:52	06:34 (8) 07:29 (8)	06:43 19:01	07:15 18:12	06:51 16:36	07:20 16:32
21	05:43 20:27	06:29 (8) 07:37 (8)	06:13 19:50	06:35 (8) 07:27 (8)	06:44 18:59	07:16 18:10	06:53 16:35	07:20 16:32
22	05:43 20:26	06:29 (8) 07:38 (8)	06:14 19:49	06:36 (8) 07:26 (8)	06:45 18:57	07:17 18:09	06:54 16:35	07:21 16:32
23	05:44 20:25	06:29 (8) 07:38 (8)	06:15 19:47	06:38 (8) 07:24 (8)	06:46 18:56	07:18 18:07	06:55 16:34	07:21 16:33
24	05:45 20:24	06:29 (8) 07:39 (8)	06:16 19:46	06:39 (8) 07:22 (8)	06:47 18:54	07:19 18:06	06:56 16:33	07:22 16:34
25	05:46 20:23	06:29 (8) 07:39 (8)	06:17 19:44	06:41 (8) 07:19 (8)	06:48 18:52	06:20 17:04	06:57 16:33	07:22 16:34
26	05:47 20:22	06:28 (8) 07:38 (8)	06:18 19:42	06:43 (8) 07:17 (8)	06:49 18:51	06:22 17:03	06:58 16:32	07:23 16:35
27	05:48 20:21	06:28 (8) 07:39 (8)	06:19 19:41	06:46 (8) 07:13 (8)	06:50 18:49	06:23 17:02	06:59 16:32	07:23 16:35
28	05:49 20:20	06:28 (8) 07:39 (8)	06:20 19:39	06:50 (8) 07:09 (8)	06:51 18:47	06:24 17:00	07:00 16:32	07:23 16:36
29	05:50 20:19	06:28 (8) 07:39 (8)	06:21 19:38		06:52 18:45	06:25 16:59	07:02 16:31	07:24 16:37
30	05:51 20:18	06:28 (8) 07:39 (8)	06:22 19:36		06:53 18:44	06:26 16:58	07:03 16:31	07:24 16:38
31	05:52 20:17	06:28 (8) 07:39 (8)	06:23 19:35			06:27 16:56		07:24 16:38
Potential sun hours	460	428		375	345	297	287	
Total, worst case	2026	1643						

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: oMBRA Shadow receptor: O - Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (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 16:39	07:11 17:14	06:34 17:48	06:43 19:23	05:57 19:55	06:26 (8) 07:31 (8)	05:28 20:24	06:40 (8) 07:16 (8)
2	07:24 16:40	07:10 17:15	06:33 17:49	06:42 19:24	05:56 19:56	06:25 (8) 07:30 (8)	05:28 20:25	06:40 (8) 07:14 (8)
3	07:24 16:41	07:09 17:16	06:31 17:50	06:40 19:25	05:55 19:57	06:25 (8) 07:30 (8)	05:27 20:26	06:42 (8) 07:14 (8)
4	07:24 16:42	07:08 17:18	06:30 17:52	06:38 19:26	05:53 19:58	06:25 (8) 07:30 (8)	05:27 20:27	06:43 (8) 07:14 (8)
5	07:24 16:43	07:07 17:19	06:28 17:53	06:37 19:27	05:52 19:59	06:25 (8) 07:30 (8)	05:27 20:27	06:43 (8) 07:12 (8)
6	07:24 16:44	07:06 17:20	06:27 17:54	06:35 19:28	05:51 20:00	06:25 (8) 07:30 (8)	05:26 20:28	06:45 (8) 07:12 (8)
7	07:24 16:45	07:04 17:21	06:25 17:55	06:33 19:29	05:50 20:01	06:24 (8) 07:29 (8)	05:26 20:29	06:46 (8) 07:11 (8)
8	07:24 16:46	07:03 17:23	06:23 17:56	06:32 19:30	05:49 20:02	06:25 (8) 07:29 (8)	05:26 20:29	06:47 (8) 07:11 (8)
9	07:24 16:47	07:02 17:24	06:22 17:57	06:30 19:31	05:47 07:00 (8) 20:03	06:25 (8) 07:28 (8)	05:25 20:30	06:48 (8) 07:09 (8)
10	07:24 16:48	07:01 17:25	06:20 17:59	06:29 19:32	05:46 07:13 (8) 20:04	06:25 (8) 07:28 (8)	05:25 20:30	06:49 (8) 07:08 (8)
11	07:24 16:49	07:00 17:26	06:19 18:00	06:27 19:33	05:45 07:17 (8) 20:05	06:26 (8) 07:28 (8)	05:25 20:31	06:50 (8) 07:08 (8)
12	07:23 16:50	06:58 17:28	06:17 18:01	06:25 19:34	05:44 07:20 (8) 20:06	06:26 (8) 07:27 (8)	05:25 20:31	06:51 (8) 07:07 (8)
13	07:23 16:51	06:57 17:29	06:15 18:02	06:24 19:35	05:43 07:21 (8) 20:07	06:26 (8) 07:27 (8)	05:25 20:32	06:53 (8) 07:06 (8)
14	07:23 16:52	06:56 17:30	06:14 18:03	06:22 19:37	05:42 07:23 (8) 20:08	06:27 (8) 07:26 (8)	05:25 20:32	06:54 (8) 07:05 (8)
15	07:22 16:53	06:55 17:31	06:12 18:04	06:21 19:38	05:41 07:24 (8) 20:09	06:27 (8) 07:26 (8)	05:25 20:33	06:55 (8) 07:04 (8)
16	07:22 16:54	06:53 17:33	06:10 18:05	06:19 19:39	05:40 07:26 (8) 20:10	06:27 (8) 07:25 (8)	05:25 20:33	06:57 (8) 07:03 (8)
17	07:22 16:56	06:52 17:34	06:09 18:06	06:17 19:40	05:39 07:28 (8) 20:11	06:28 (8) 07:25 (8)	05:25 20:34	06:59 (8) 07:01 (8)
18	07:21 16:57	06:51 17:35	06:07 18:07	06:16 19:41	05:38 07:28 (8) 20:12	06:29 (8) 07:25 (8)	05:25 20:34	
19	07:21 16:58	06:49 17:36	06:05 18:08	06:14 19:42	05:37 07:28 (8) 20:13	06:29 (8) 07:24 (8)	05:25 20:34	
20	07:20 16:59	06:48 17:37	06:04 18:10	06:13 19:43	05:36 07:29 (8) 20:14	06:30 (8) 07:23 (8)	05:25 20:35	
21	07:19 17:00	06:46 17:39	06:02 18:11	06:11 19:44	05:35 07:29 (8) 20:15	06:30 (8) 07:23 (8)	05:25 20:35	
22	07:19 17:01	06:45 17:40	06:00 18:12	06:10 19:45	05:35 07:30 (8) 20:16	06:31 (8) 07:22 (8)	05:25 20:35	
23	07:18 17:03	06:43 17:41	05:59 18:13	06:08 19:46	05:34 07:30 (8) 20:17	06:32 (8) 07:22 (8)	05:26 20:35	
24	07:17 17:04	06:42 17:42	05:57 18:14	06:07 19:47	05:33 07:30 (8) 20:18	06:33 (8) 07:21 (8)	05:26 20:35	
25	07:17 17:05	06:41 17:43	05:55 18:15	06:06 19:48	05:32 07:31 (8) 20:19	06:33 (8) 07:20 (8)	05:26 20:35	
26	07:16 17:06	06:39 17:45	05:53 18:16	06:04 19:49	05:32 07:31 (8) 20:20	06:34 (8) 07:20 (8)	05:27 20:36	07:00 (8) 07:04 (8)
27	07:15 17:08	06:38 17:46	05:52 18:17	06:03 19:50	05:31 07:31 (8) 20:20	06:35 (8) 07:19 (8)	05:27 20:36	06:59 (8) 07:07 (8)
28	07:14 17:09	06:36 17:47	05:50 18:18	06:01 19:52	05:30 07:31 (8) 20:21	06:36 (8) 07:19 (8)	05:27 20:36	06:58 (8) 07:08 (8)
29	07:13 17:10		06:48 19:19	06:00 19:53	05:30 07:31 (8) 20:22	06:37 (8) 07:17 (8)	05:28 20:36	06:56 (8) 07:09 (8)
30	07:13 17:11		06:47 19:20	05:59 19:54	05:29 07:31 (8) 20:23	06:38 (8) 07:17 (8)	05:28 20:36	06:56 (8) 07:11 (8)
31	07:12 17:13		06:45 19:21		05:29 20:24	06:38 (8) 07:16 (8)		
Potential sun hours	297	297	369	399	449		453	403
Total, worst case				1105	1725			

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: oMBRA Shadow receptor: O - Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (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	05:29	06:55 (8)	05:53	06:36 (8)	06:24	06:48 (8)	06:54	06:29	07:04
	20:35	16 07:11 (8)	20:16	62 07:38 (8)	19:33	28 07:16 (8)	18:42	16:55	16:30
2	05:29	06:54 (8)	05:54	06:36 (8)	06:25	06:51 (8)	06:55	06:30	07:05
	20:35	19 07:13 (8)	20:15	63 07:39 (8)	19:31	21 07:12 (8)	18:40	16:54	16:30
3	05:30	06:53 (8)	05:55	06:36 (8)	06:26	06:58 (8)	06:56	06:31	07:06
	20:35	21 07:14 (8)	20:14	63 07:39 (8)	19:30	8 07:06 (8)	18:39	16:53	16:30
4	05:30	06:53 (8)	05:56	06:36 (8)	06:27		06:57	06:32	07:07
	20:35	22 07:15 (8)	20:13	63 07:39 (8)	19:28		18:37	16:51	16:30
5	05:31	06:51 (8)	05:57	06:35 (8)	06:28		06:58	06:33	07:08
	20:35	25 07:16 (8)	20:12	65 07:40 (8)	19:26		18:35	16:50	16:29
6	05:31	06:51 (8)	05:58	06:35 (8)	06:29		06:59	06:35	07:09
	20:35	26 07:17 (8)	20:11	65 07:40 (8)	19:25		18:34	16:49	16:29
7	05:32	06:51 (8)	05:59	06:35 (8)	06:30		07:00	06:36	07:10
	20:34	28 07:19 (8)	20:09	65 07:40 (8)	19:23		18:32	16:48	16:29
8	05:33	06:49 (8)	06:00	06:35 (8)	06:31		07:01	06:37	07:11
	20:34	30 07:19 (8)	20:08	65 07:40 (8)	19:21		18:30	16:47	16:29
9	05:33	06:49 (8)	06:01	06:34 (8)	06:32		07:03	06:38	07:12
	20:34	32 07:21 (8)	20:07	65 07:39 (8)	19:20		18:29	16:46	16:29
10	05:34	06:49 (8)	06:02	06:33 (8)	06:33		07:04	06:39	07:12
	20:33	33 07:22 (8)	20:06	66 07:39 (8)	19:18		18:27	16:45	16:29
11	05:35	06:47 (8)	06:03	06:33 (8)	06:34		07:05	06:41	07:13
	20:33	36 07:23 (8)	20:04	66 07:39 (8)	19:16		18:26	16:44	16:29
12	05:35	06:47 (8)	06:04	06:33 (8)	06:35		07:06	06:42	07:14
	20:32	37 07:24 (8)	20:03	66 07:39 (8)	19:15		18:24	16:43	16:29
13	05:36	06:47 (8)	06:05	06:33 (8)	06:36		07:07	06:43	07:15
	20:32	38 07:25 (8)	20:02	66 07:39 (8)	19:13		18:22	16:42	16:30
14	05:37	06:45 (8)	06:06	06:33 (8)	06:37		07:08	06:44	07:16
	20:31	40 07:25 (8)	20:00	65 07:38 (8)	19:11		18:21	16:41	16:30
15	05:38	06:45 (8)	06:07	06:33 (8)	06:38		07:09	06:45	07:16
	20:31	41 07:26 (8)	19:59	65 07:38 (8)	19:09		18:19	16:40	16:30
16	05:38	06:44 (8)	06:08	06:34 (8)	06:39		07:10	06:47	07:17
	20:30	44 07:28 (8)	19:57	64 07:38 (8)	19:08		18:18	16:39	16:30
17	05:39	06:44 (8)	06:09	06:34 (8)	06:40		07:11	06:48	07:18
	20:29	45 07:29 (8)	19:56	63 07:37 (8)	19:06		18:16	16:38	16:30
18	05:40	06:44 (8)	06:10	06:34 (8)	06:41		07:12	06:49	07:18
	20:29	46 07:30 (8)	19:55	63 07:37 (8)	19:04		18:15	16:38	16:31
19	05:41	06:42 (8)	06:11	06:34 (8)	06:42		07:14	06:50	07:19
	20:28	48 07:30 (8)	19:53	62 07:36 (8)	19:03		18:13	16:37	16:31
20	05:42	06:42 (8)	06:12	06:35 (8)	06:43		07:15	06:51	07:20
	20:27	49 07:31 (8)	19:52	60 07:35 (8)	19:01		18:12	16:36	16:32
21	05:43	06:41 (8)	06:13	06:35 (8)	06:44		07:16	06:53	07:20
	20:27	51 07:32 (8)	19:50	60 07:35 (8)	18:59		18:10	16:35	16:32
22	05:43	06:41 (8)	06:14	06:36 (8)	06:45		07:17	06:54	07:21
	20:26	52 07:33 (8)	19:49	58 07:34 (8)	18:57		18:09	16:35	16:32
23	05:44	06:41 (8)	06:15	06:36 (8)	06:46		07:18	06:55	07:21
	20:25	52 07:33 (8)	19:47	57 07:33 (8)	18:56		18:07	16:34	16:33
24	05:45	06:40 (8)	06:16	06:37 (8)	06:47		07:19	06:56	07:22
	20:24	54 07:34 (8)	19:46	55 07:32 (8)	18:54		18:06	16:33	16:34
25	05:46	06:40 (8)	06:17	06:38 (8)	06:48		06:20	06:57	07:22
	20:23	55 07:35 (8)	19:44	52 07:30 (8)	18:52		17:04	16:33	16:34
26	05:47	06:38 (8)	06:18	06:39 (8)	06:49		06:22	06:58	07:23
	20:22	57 07:35 (8)	19:42	50 07:29 (8)	18:51		17:03	16:32	16:35
27	05:48	06:38 (8)	06:19	06:40 (8)	06:50		06:23	06:59	07:23
	20:21	57 07:35 (8)	19:41	48 07:28 (8)	18:49		17:02	16:32	16:35
28	05:49	06:38 (8)	06:20	06:41 (8)	06:51		06:24	07:00	07:23
	20:20	58 07:36 (8)	19:39	45 07:26 (8)	18:47		17:00	16:32	16:36
29	05:50	06:37 (8)	06:21	06:42 (8)	06:52		06:25	07:02	07:24
	20:19	60 07:37 (8)	19:38	42 07:24 (8)	18:45		16:59	16:31	16:37
30	05:51	06:37 (8)	06:22	06:44 (8)	06:53		06:26	07:03	07:24
	20:18	60 07:37 (8)	19:36	38 07:22 (8)	18:44		16:58	16:31	16:38
31	05:52	06:37 (8)	06:23	06:46 (8)			06:27		07:24
	20:17	61 07:38 (8)	19:35	33 07:19 (8)			16:56		16:38
Potential sun hours	460		428		375		345	297	287
Total, worst case	1293		1820		57				

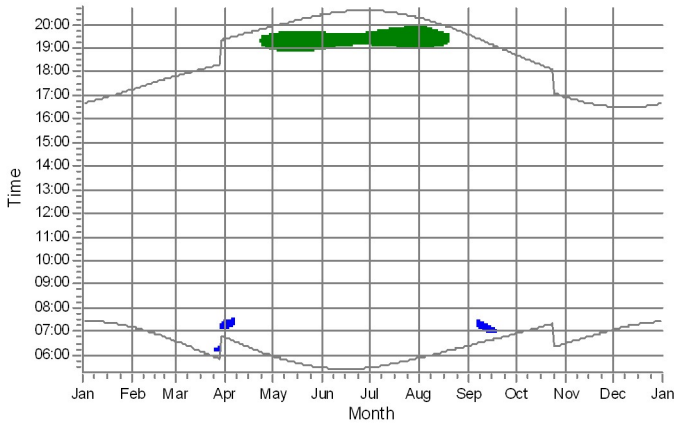
Table layout: For each day in each month the following matrix apply

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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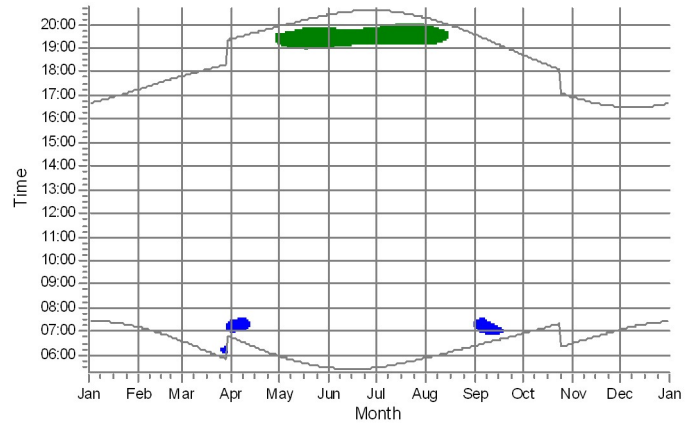
## SHADOW - Calendar, graphical

Calculation: oMBRA

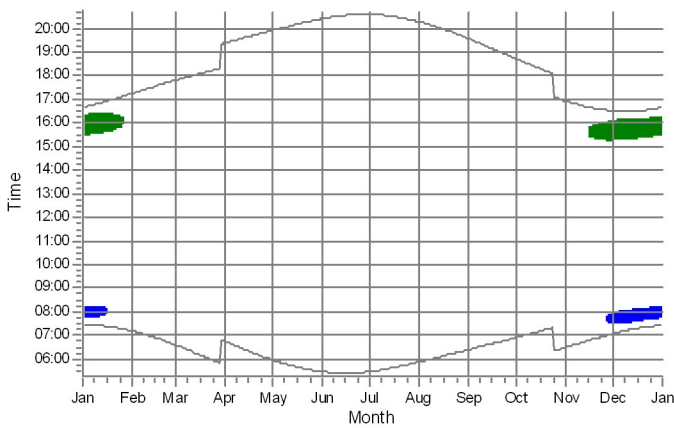
A: Shadow Receptor: 1,0 × 1,0 Azimuth: -180,0° Slope: 90,0° (1)



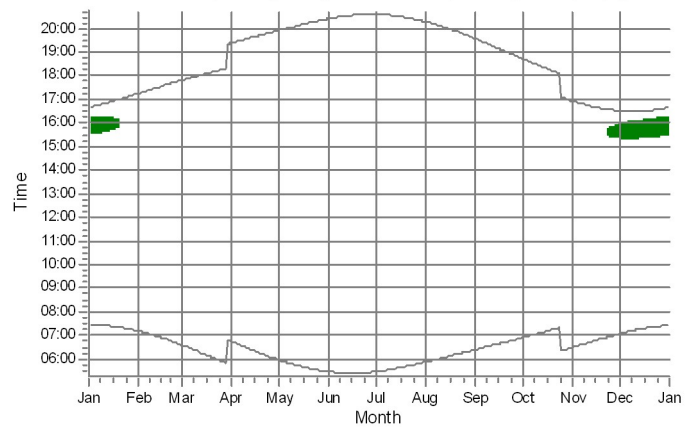
B: Shadow Receptor: 1,0 × 1,0 Azimuth: -180,0° Slope: 90,0° (2)



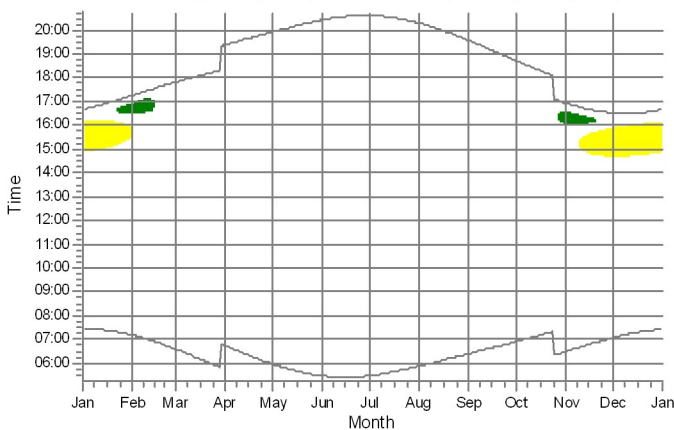
C: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)



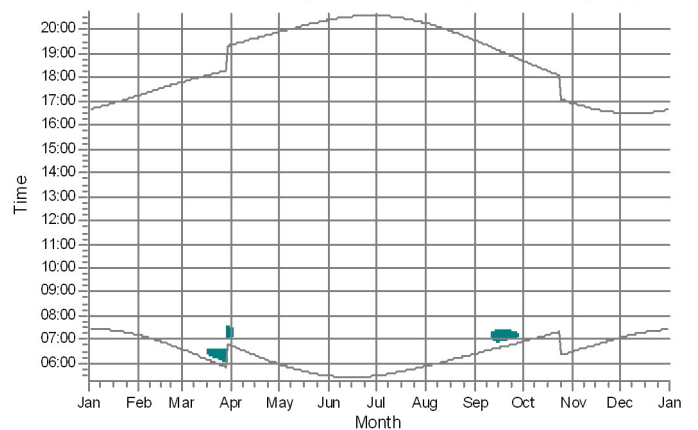
D: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)



E: Shadow Receptor: 1,0 × 1,0 Azimuth: 45,0° Slope: 90,0° (5)



F: Shadow Receptor: 1,0 × 1,0 Azimuth: -140,0° Slope: 90,0° (6)



### WTGs

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

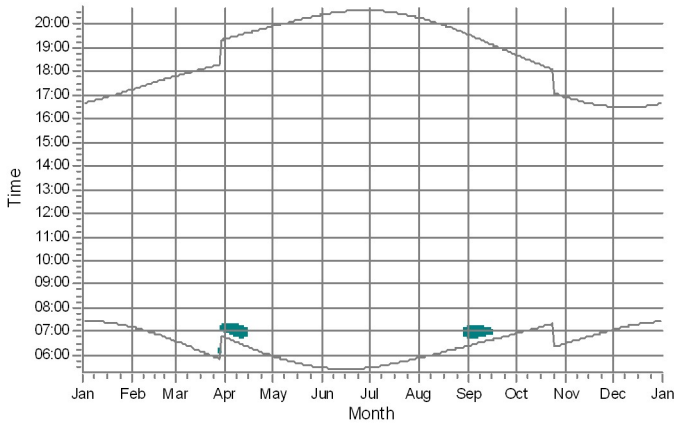
- 3: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (3)
- 6: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (6)



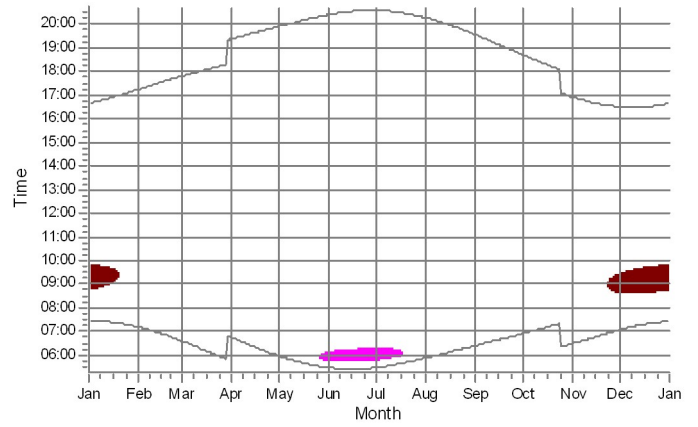
## SHADOW - Calendar, graphical

Calculation: oMBRA

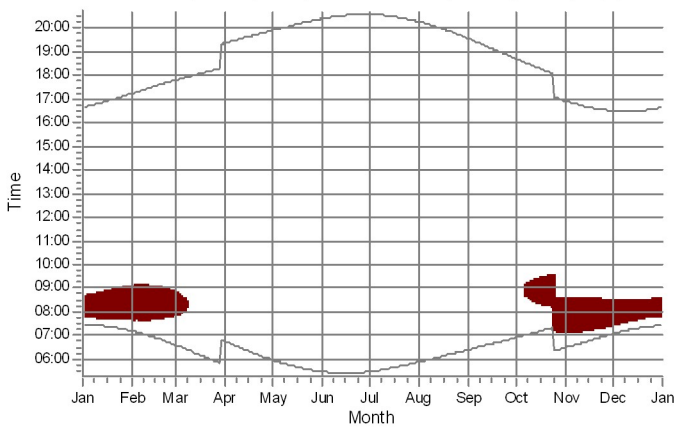
G: Shadow Receptor: 1,0 × 1,0 Azimuth: -160,0° Slope: 90,0° (7)



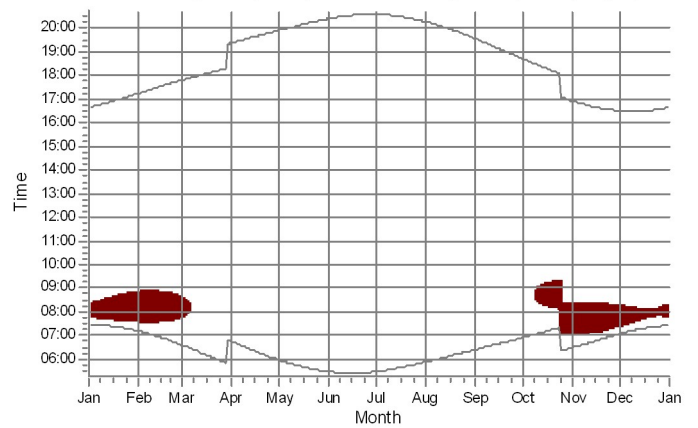
H: Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (8)



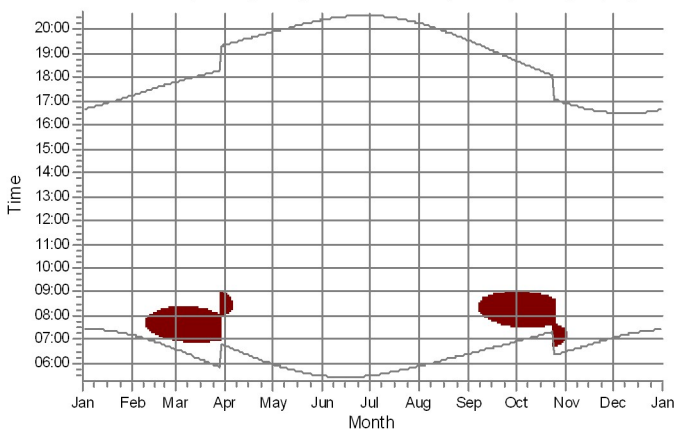
I: Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (9)



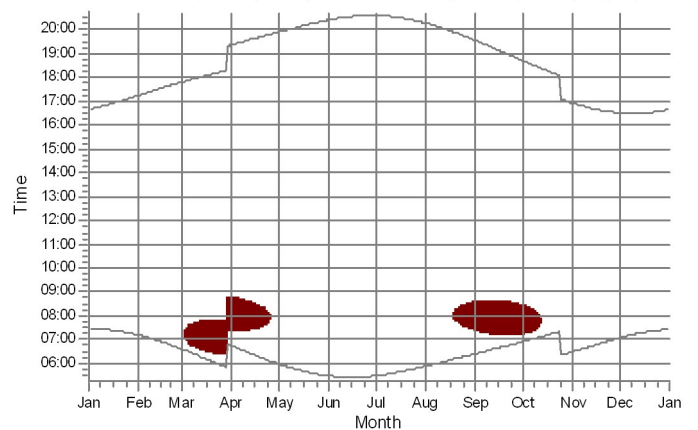
J: Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (10)



K: Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (11)



L: Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (12)



### WTGs

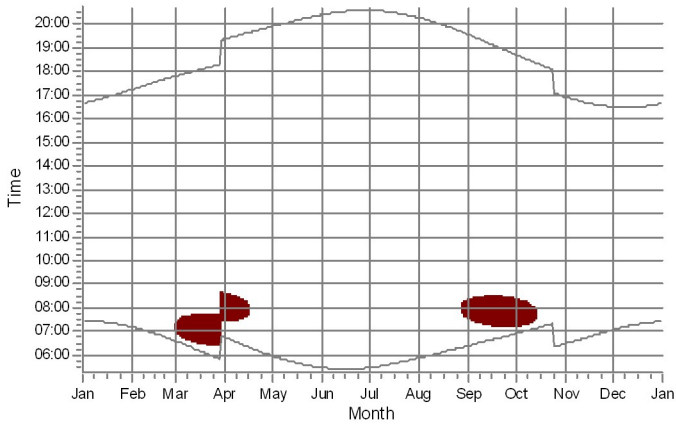
- 5: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (5)
- 6: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (6)

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

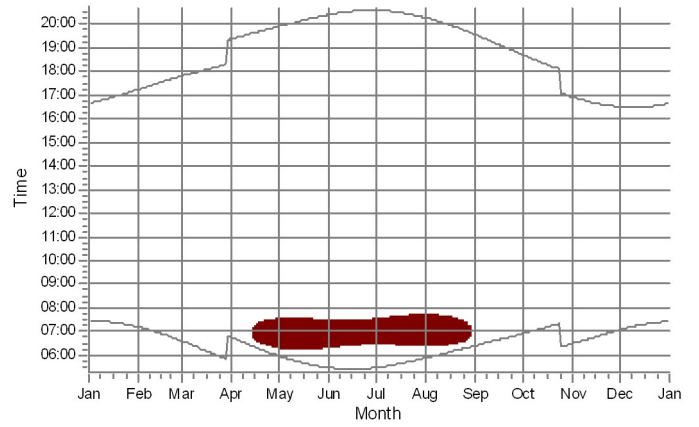
## SHADOW - Calendar, graphical

Calculation: oMBRA

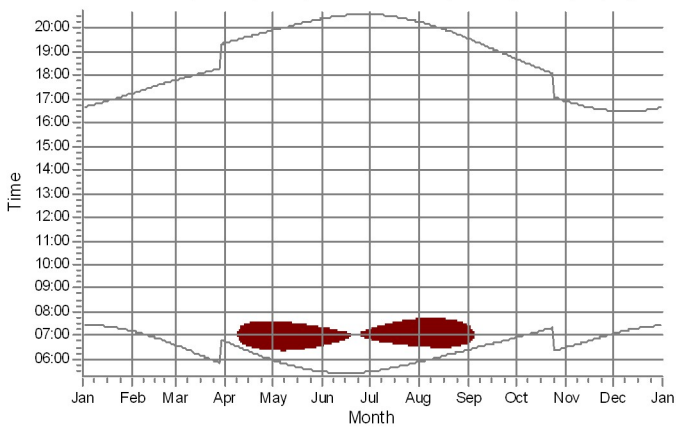
Mt Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (13)



N: Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (14)



O: Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (15)



### WTGs

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

## SHADOW - Calendar per WTG

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

### 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 15:33-16:13/40 16:39	07:11 16:35-16:50/15 17:14	06:35 17:48	06:44 19:23	05:57 18:59-19:32/33 19:55	05:28 19:01-19:46/45 20:25
2	07:25 15:33-16:14/41 16:40	07:10 16:35-16:51/16 17:15	06:33 17:49	06:42 19:24	05:56 18:58-19:32/34 19:56	05:28 19:01-19:45/44 20:25
3	07:25 15:34-16:15/41 16:41	07:09 16:35-16:53/18 17:16	06:32 17:51	06:40 19:25	05:55 18:57-19:34/37 19:57	05:27 19:02-19:45/43 20:26
4	07:25 15:34-16:16/42 16:42	07:08 16:36-16:54/18 17:18	06:30 17:52	06:39 19:26	05:54 18:56-19:35/39 19:58	05:27 19:03-19:46/43 20:27
5	07:25 15:35-16:17/42 16:43	07:07 16:36-16:56/20 17:19	06:28 17:53	06:37 19:27	05:52 18:56-19:36/40 19:59	05:27 19:03-19:45/42 20:28
6	07:25 15:35-16:18/43 16:44	07:06 16:37-16:57/20 17:20	06:27 17:54	06:35 19:28	05:51 18:56-19:37/41 20:00	05:26 19:04-19:45/41 20:28
7	07:25 15:36-16:19/43 16:45	07:05 16:36-16:58/22 17:21	06:25 17:55	06:34 19:29	05:50 18:55-19:38/43 20:01	05:26 19:05-19:45/40 20:29
8	07:24 15:36-16:18/42 16:46	07:03 16:37-16:59/22 17:23	06:24 17:56	06:32 19:30	05:49 18:54-19:38/44 20:02	05:26 19:06-19:45/39 20:29
9	07:24 15:37-16:18/41 16:47	07:02 16:38-17:01/23 17:24	06:22 17:58	06:30 19:31	05:47 18:54-19:39/45 20:03	05:26 19:07-19:45/38 20:30
10	07:24 15:38-16:19/41 16:48	07:01 16:39-17:02/23 17:25	06:20 17:59	06:29 19:32	05:46 18:54-19:40/46 20:04	05:25 19:07-19:44/37 20:31
11	07:24 15:39-16:19/40 16:49	07:00 16:40-17:02/22 17:27	06:19 18:00	06:27 19:33	05:45 18:53-19:41/48 20:05	05:25 19:07-19:44/37 20:31
12	07:24 15:39-16:19/40 16:50	06:59 16:41-17:01/20 17:28	06:17 18:01	06:25 19:35	05:44 18:53-19:42/49 20:06	05:25 19:08-19:44/36 20:32
13	07:23 15:40-16:19/39 16:51	06:57 16:44-16:59/15 17:29	06:15 18:02	06:24 19:36	05:43 18:53-19:43/50 20:07	05:25 19:09-19:44/35 20:32
14	07:23 15:40-16:19/39 16:52	06:56 16:47-16:57/10 17:30	06:14 18:03	06:22 19:37	05:42 18:53-19:44/51 20:08	05:25 19:10-19:44/34 20:33
15	07:23 15:41-16:19/38 16:53	06:55 17:31	06:12 18:04	06:21 19:38	05:41 18:53-19:45/52 20:09	05:25 19:10-19:44/34 20:33
16	07:22 15:42-16:18/36 16:54	06:53 17:33	06:10 18:05	06:19 19:39	05:40 18:53-19:46/53 20:10	05:25 19:11-19:44/33 20:33
17	07:22 15:43-16:19/36 16:56	06:52 17:34	06:09 18:06	06:18 19:40	05:39 18:53-19:46/53 20:11	05:25 19:11-19:44/33 20:34
18	07:21 15:44-16:18/34 16:57	06:51 17:35	06:07 18:08	06:16 19:41	05:38 18:54-19:47/53 20:12	05:25 19:11-19:44/33 20:34
19	07:21 15:45-16:18/33 16:58	06:49 17:36	06:05 18:09	06:15 19:42	05:37 18:55-19:47/52 20:13	05:25 19:13-19:45/32 20:34
20	07:20 15:46-16:17/31 16:59	06:48 17:38	06:04 18:10	06:13 19:43	05:36 18:55-19:46/51 20:14	05:25 19:13-19:45/32 20:35
21	07:20 15:47-16:16/29 17:00	06:47 17:39	06:02 18:11	06:12 19:44	05:36 18:55-19:46/51 20:15	05:25 19:13-19:45/32 20:35
22	07:19 15:49-16:16/27 17:02	06:45 17:40	06:00 18:12	06:10 19:45	05:35 18:56-19:47/51 20:16	05:26 19:13-19:45/32 20:35
23	07:18 15:51-16:15/24 17:03	06:44 17:41	05:59 18:13	06:09 19:46	05:34 18:56-19:47/51 20:17	05:26 19:13-19:45/32 20:35
24	07:18 16:38-16:39/1 17:04	06:42 17:42	05:57 18:14	06:07 19:47	19:17-19:21/4 05:33 18:56-19:46/50 20:18	05:26 19:13-19:46/33 20:36
25	07:17 16:37-16:40/3 17:05	06:41 17:44	05:55 18:15	06:06 19:48	19:11-19:26/15 05:32 18:56-19:46/50 20:19	05:26 19:13-19:46/33 20:36
26	07:16 16:37-16:42/5 17:06	06:39 17:45	05:54 18:16	06:04 19:50	19:07-19:27/20 05:32 18:57-19:46/49 20:20	05:27 19:13-19:46/33 20:36
27	07:15 16:37-16:43/6 17:08	06:38 17:46	05:52 18:17	06:03 19:51	19:05-19:28/23 05:31 18:57-19:46/49 20:21	05:27 19:13-19:47/34 20:36
28	07:14 16:36-16:45/9 17:09	06:36 17:47	05:50 18:18	06:01 19:52	19:04-19:29/25 05:30 18:59-19:46/47 20:21	05:27 19:13-19:47/34 20:36
29	07:14 16:36-16:46/10 17:10		06:49 19:19	06:00 19:53	19:01-19:30/29 05:30 18:59-19:46/47 20:22	05:28 19:12-19:47/35 20:36
30	07:13 16:35-16:47/12 17:11		06:47 19:21	05:59 19:54	19:00-19:31/31 05:29 19:00-19:46/46 20:23	05:28 19:13-19:48/35 20:36
31	07:12 16:35-16:49/14 17:13		06:45 19:22		05:29 19:00-19:45/45 20:24	
Potential sun hours	297	297	369	399	449	453
Sum of minutes with flicker	968	264	0	147	1450	1084

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

### 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	05:29 19:12-19:48/36 20:36	05:53 19:04-19:53/49 20:16	06:24 19:33	06:54 18:42	06:29 16:08-16:31/23 16:55	07:04 15:21-16:01/40 16:31
2	05:29 19:12-19:49/37 20:36	05:54 19:04-19:52/48 20:15	06:25 19:31	06:55 18:40	06:30 16:08-16:30/22 16:54	07:05 15:21-16:02/41 16:30
3	05:30 19:11-19:49/38 20:35	05:55 19:04-19:51/47 20:14	06:26 19:30	06:56 18:39	06:31 16:07-16:29/22 16:53	07:06 15:21-16:02/41 16:30
4	05:30 19:11-19:50/39 20:35	05:56 19:04-19:50/46 20:13	06:27 19:28	06:57 18:37	06:32 16:06-16:27/21 16:52	07:07 15:21-16:03/42 16:30
5	05:31 19:11-19:51/40 20:35	05:57 19:05-19:49/44 20:12	06:28 19:26	06:58 18:35	06:34 16:06-16:27/21 16:50	07:08 15:21-16:04/43 16:30
6	05:31 19:11-19:51/40 20:35	05:58 19:05-19:48/43 20:11	06:29 19:25	06:59 18:34	06:35 16:06-16:25/19 16:49	07:09 15:22-16:04/42 16:29
7	05:32 19:11-19:52/41 20:34	05:59 19:05-19:46/41 20:10	06:30 19:23	07:01 18:32	06:36 16:06-16:24/18 16:48	07:10 15:22-16:04/42 16:29
8	05:33 19:10-19:52/42 20:34	06:00 19:06-19:45/39 20:08	06:31 19:21	07:02 18:31	06:37 16:05-16:23/18 16:47	07:11 15:22-16:04/42 16:29
9	05:33 19:10-19:52/42 20:34	06:01 19:06-19:44/38 20:07	06:32 19:20	07:03 18:29	06:38 16:06-16:22/16 16:46	07:12 15:23-16:04/41 16:29
10	05:34 19:10-19:53/43 20:33	06:02 19:07-19:43/36 20:06	06:33 19:18	07:04 18:27	06:40 16:06-16:21/15 16:45	07:13 15:22-16:03/41 16:29
11	05:35 19:09-19:53/44 20:33	06:03 19:08-19:42/34 20:04	06:34 19:16	07:05 18:26	06:41 16:06-16:19/13 16:44	07:13 15:23-16:03/40 16:29
12	05:35 19:08-19:54/46 20:32	06:04 19:07-19:39/32 20:03	06:35 19:15	07:06 18:24	06:42 16:07-16:19/12 16:43	07:14 15:23-16:04/41 16:29
13	05:36 19:08-19:54/46 20:32	06:05 19:08-19:38/30 20:02	06:36 19:13	07:07 18:22	06:43 16:08-16:18/10 16:42	07:15 15:24-16:04/40 16:30
14	05:37 19:08-19:55/47 20:31	06:06 19:09-19:37/28 20:00	06:37 19:11	07:08 18:21	06:44 16:08-16:17/9 16:41	07:16 15:25-16:04/39 16:30
15	05:38 19:07-19:55/48 20:31	06:07 19:11-19:36/25 19:59	06:38 19:10	07:09 18:19	06:46 16:09-16:15/6 16:40	07:17 15:24-16:04/40 16:30
16	05:38 19:07-19:55/48 20:30	06:08 19:12-19:34/22 19:58	06:39 19:08	07:10 18:18	06:47 16:10-16:15/5 16:39	07:17 15:25-16:04/39 16:30
17	05:39 19:07-19:56/49 20:30	06:09 19:14-19:33/19 19:56	06:40 19:06	07:11 18:16	06:48 16:11-16:14/3 16:38	07:18 15:26-16:05/39 16:31
18	05:40 19:07-19:56/49 20:29	06:10 19:17-19:32/15 19:55	06:41 19:04	07:13 18:15	06:49 16:12-16:13/1 16:38	07:19 15:26-16:05/39 16:31
19	05:41 19:06-19:56/50 20:28	06:11 19:19-19:31/13 19:53	06:42 19:03	07:14 18:13	06:50 15:25-15:49/24 16:37	07:19 15:26-16:05/39 16:31
20	05:42 19:06-19:56/50 20:28	06:12 19:21-19:30/11 19:52	06:43 19:01	07:15 18:12	06:52 15:24-15:51/27 16:36	07:20 15:26-16:05/39 16:32
21	05:43 19:05-19:56/51 20:27	06:13 19:23-19:29/9 19:50	06:44 18:59	07:16 18:10	06:53 15:23-15:52/29 16:35	07:20 15:27-16:06/39 16:32
22	05:44 19:05-19:57/52 20:26	06:14 19:25-19:28/7 19:49	06:45 18:58	07:17 18:09	06:54 15:22-15:53/31 16:35	07:21 15:27-16:06/39 16:33
23	05:44 19:05-19:57/52 20:25	06:15 19:27-19:25/5 19:47	06:46 18:56	07:18 18:07	06:55 15:21-15:54/33 16:34	07:21 15:28-16:07/39 16:33
24	05:45 19:05-19:57/52 20:24	06:16 19:29-19:22/3 19:46	06:47 18:54	07:19 18:06	06:56 15:22-15:56/34 16:34	07:22 15:28-16:07/39 16:34
25	05:46 19:05-19:57/52 20:23	06:17 19:31-19:19/1 19:44	06:48 18:52	07:20 18:04	06:57 15:21-15:57/36 16:33	07:22 15:30-16:09/39 16:34
26	05:47 19:04-19:56/52 20:23	06:18 19:33-19:15/1 19:43	06:49 18:51	07:21 18:03	06:58 15:21-15:57/36 16:33	07:23 15:30-16:09/39 16:35
27	05:48 19:04-19:56/52 20:22	06:19 19:35-19:07/1 19:41	06:50 18:49	07:22 18:02	07:00 15:20-15:58/38 16:32	07:23 15:30-16:09/39 16:36
28	05:49 19:04-19:56/52 20:21	06:20 19:37-18:59/1 19:39	06:51 18:47	07:23 18:00	07:01 15:20-15:59/39 16:32	07:23 15:30-16:10/40 16:36
29	05:50 19:04-19:55/51 20:20	06:21 19:39-18:31/1 19:38	06:52 18:46	07:24 17:59	07:02 15:20-15:59/39 16:31	07:24 15:31-16:11/40 16:37
30	05:51 19:04-19:54/50 20:19	06:22 19:41-18:03/1 19:36	06:53 18:44	07:25 17:58	07:03 15:21-16:01/40 16:31	07:24 15:32-16:12/40 16:38
31	05:52 19:04-19:54/50 20:18	06:23 19:43-17:35/1 19:35	06:54 18:42	07:26 17:56	07:04 15:21-16:01/40 16:30	07:24 15:32-16:12/40 16:38
Potential sun hours	460	428	375	345	297	287
Sum of minutes with flicker	1441	636	0	71	706	1243

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

### 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 14:57-16:04/67 16:39	07:11 17:14 17:48	06:35 17:48 19:23	06:43 19:23 19:55	05:57 20:25 20:36	05:28 20:36 20:16	05:29 20:36 19:33	05:53 20:16 19:33	06:24 19:33 18:42	06:54 18:42 16:55	06:29 16:55 06:30	07:04 16:30 14:46-15:48/62	
2	07:25 14:57-16:04/67 16:40	07:10 17:15 17:49	06:33 17:49 19:24	06:42 19:24 19:56	05:56 20:25 20:35	05:28 20:35 20:15	05:29 20:35 19:31	05:54 20:15 19:31	06:25 19:31 18:40	06:55 18:40 16:54	06:30 16:54 06:31	07:05 16:30 14:46-15:49/63	
3	07:25 14:58-16:04/66 16:41	07:09 17:16 17:51	06:32 17:51 19:25	06:40 19:25 19:57	05:55 20:26 20:35	05:27 20:35 20:14	05:30 20:35 19:30	05:55 20:14 19:30	06:26 19:30 18:39	06:56 18:39 16:53	06:31 16:53 06:32	07:06 16:30 14:46-15:49/63	
4	07:25 14:59-16:04/65 16:42	07:08 17:18 17:52	06:30 17:52 19:26	06:38 19:26 19:58	05:53 20:27 20:35	05:27 20:35 20:13	05:30 20:35 19:28	05:56 20:13 19:28	06:27 19:28 18:37	06:57 18:37 16:51	06:32 16:51 06:33	07:07 16:30 14:46-15:50/64	
5	07:25 14:59-16:05/66 16:43	07:07 17:19 17:53	06:28 17:53 19:27	06:37 19:27 19:59	05:52 20:28 20:35	05:27 20:35 20:12	05:31 20:35 19:26	05:57 20:12 19:26	06:28 19:26 18:35	06:58 18:35 16:50	06:34 16:50 06:35	07:08 16:30 14:46-15:51/65	
6	07:25 15:00-16:05/65 16:44	07:06 17:20 17:54	06:27 17:54 19:28	06:35 20:00 20:00	05:51 20:28 20:35	05:26 20:35 20:11	05:58 20:11 19:25	06:29 19:25 18:34	06:59 18:34 16:49	06:35 16:49 06:36	06:35 06:36	07:09 16:29 14:46-15:51/65	
7	07:25 15:01-16:06/65 16:45	07:05 17:21 17:55	06:25 17:55 19:29	06:34 20:01 20:01	05:50 20:29 20:34	05:26 20:34 20:09	05:59 20:09 19:23	06:30 19:23 18:32	07:01 18:32 16:48	06:36 16:48 06:37	06:36 06:37	07:10 16:29 14:46-15:52/66	
8	07:24 15:01-16:05/64 16:46	07:03 17:23 17:56	06:24 17:56 19:30	06:32 20:02 20:02	05:49 20:29 20:34	05:26 20:34 20:08	06:00 20:08 19:21	06:31 19:21 18:30	07:02 18:30 16:47	06:37 16:47 06:38	06:37 06:38	07:11 16:29 14:47-15:52/65	
9	07:24 15:02-16:05/63 16:47	07:02 17:24 17:57	06:22 17:57 19:31	06:30 20:03 20:03	05:47 20:30 20:34	05:25 20:34 20:07	06:01 20:07 19:20	06:32 19:20 18:29	07:03 18:29 16:46	06:38 16:46 06:39	06:38 06:39	07:12 16:29 14:47-15:53/66	
10	07:24 15:03-16:06/63 16:48	07:01 17:25 17:59	06:20 17:59 19:32	06:29 20:04 20:04	05:46 20:31 20:33	05:25 20:33 20:06	06:02 20:06 19:18	06:33 19:18 18:27	07:04 18:27 16:45	06:40 16:45 06:41	06:40 06:41	07:13 16:29 14:46-15:53/67	
11	07:24 15:04-16:06/62 16:49	07:00 17:26 18:00	06:19 18:00 19:33	06:27 20:05 20:05	05:45 20:31 20:33	05:25 20:33 20:04	06:03 20:04 19:16	06:34 19:16 18:26	07:05 18:26 16:44	06:41 16:44 06:42	06:41 06:42	07:14 16:29 15:07-15:17/10	
12	07:24 15:04-16:05/61 16:50	06:59 17:28 18:01	06:17 18:01 19:34	06:25 20:06 20:06	05:44 20:32 20:32	05:25 20:32 20:03	06:04 20:03 19:15	06:35 19:15 18:24	07:06 18:24 16:43	06:42 16:43 06:43	06:42 06:43	07:14 16:29 14:47-15:54/67	
13	07:23 15:05-16:06/61 16:51	06:57 17:29 18:02	06:15 18:02 19:36	06:24 20:07 20:07	05:43 20:32 20:32	05:25 20:32 20:02	06:05 20:02 19:13	06:36 19:13 18:22	07:07 18:22 16:42	06:43 16:42 06:44	06:43 06:44	07:15 16:29 15:00-15:26/26	
14	07:23 15:05-16:05/60 16:52	06:56 17:30 18:03	06:14 18:03 19:37	06:22 20:08 20:08	05:42 20:33 20:31	05:25 20:31 20:00	06:06 20:00 19:11	06:37 19:11 18:21	07:08 18:21 16:41	06:44 16:41 06:45	06:44 06:45	07:16 16:29 14:49-15:56/67	
15	07:23 15:07-16:06/59 16:53	06:55 17:31 18:04	06:12 18:04 19:38	06:21 20:09 20:09	05:41 20:33 20:31	05:25 20:31 19:59	06:07 19:10 19:10	06:38 19:10 18:19	07:09 18:19 16:40	06:46 16:40 06:47	06:46 06:47	07:17 16:29 14:48-15:56/68	
16	07:22 15:07-16:05/58 16:54	06:53 17:33 18:05	06:10 18:05 19:39	06:19 20:10 20:10	05:40 20:33 20:30	05:25 20:30 19:58	06:08 19:08 19:08	06:39 19:08 18:18	07:10 18:18 16:39	06:47 16:39 06:48	06:47 06:48	07:17 16:29 14:50-15:57/67	
17	07:22 15:09-16:05/56 16:56	06:52 17:34 18:06	06:09 18:06 19:40	06:18 20:11 20:11	05:39 20:34 20:30	05:25 20:30 19:56	06:09 19:06 19:06	06:40 19:06 18:16	07:11 18:16 16:38	06:48 16:38 06:49	06:48 06:49	07:18 16:29 14:51-15:35/44	
18	07:21 15:09-16:04/55 16:57	06:51 17:35 18:08	06:07 18:08 19:41	06:16 20:12 20:12	05:38 20:34 20:29	05:25 20:29 19:55	06:10 19:04 19:04	06:41 19:04 18:15	07:13 18:15 16:38	06:49 16:38 06:50	06:49 06:50	07:19 16:29 14:49-15:57/68	
19	07:21 15:11-16:05/54 16:58	06:49 17:36 18:09	06:05 18:09 19:42	06:15 20:13 20:13	05:37 20:34 20:28	05:25 20:28 19:53	06:11 19:03 19:03	06:42 19:03 18:13	07:14 18:13 16:37	06:50 16:37 06:51	06:50 06:51	07:20 16:29 14:50-15:58/68	
20	07:20 15:12-16:04/52 16:59	06:48 17:38 18:10	06:04 18:10 19:43	06:13 20:14 20:14	05:36 20:35 20:27	05:25 20:27 19:52	06:12 19:01 19:01	06:43 19:01 18:12	07:15 18:12 16:36	06:52 16:36 06:53	06:52 06:53	07:20 16:29 14:50-15:58/68	
21	07:20 15:13-16:03/50 17:00	06:47 17:39 18:11	06:02 18:11 19:44	06:12 20:15 20:15	05:36 20:35 20:27	05:25 20:27 19:50	06:13 18:59 18:59	06:44 18:59 18:10	07:16 18:10 16:35	06:53 16:35 06:54	06:53 06:54	07:20 16:29 14:51-15:59/68	
22	07:19 15:15-16:03/48 17:02	06:45 17:40 18:12	06:00 18:12 19:45	06:10 20:16 20:16	05:35 20:35 20:26	05:26 20:26 19:49	06:14 18:57 18:57	06:45 18:57 18:09	07:17 18:09 16:35	06:54 16:35 06:55	06:54 06:55	07:21 16:29 14:51-15:59/68	
23	07:18 15:16-16:02/46 17:03	06:44 17:41 18:13	05:59 18:13 19:46	06:09 20:17 20:17	05:34 20:35 20:25	05:26 20:25 19:47	06:15 18:56 18:56	06:46 18:56 18:07	07:18 18:07 16:34	06:55 16:34 06:56	06:55 06:56	07:21 16:29 14:52-16:00/68	
24	07:18 15:17-16:01/44 17:04	06:42 17:42 18:14	05:57 18:14 19:47	06:07 20:18 20:18	05:33 20:36 20:24	05:26 20:24 19:46	06:16 18:54 18:54	06:47 18:54 18:06	07:19 18:06 16:34	06:56 16:34 06:57	06:56 06:57	07:22 16:29 14:47-15:42/55	
25	07:17 15:19-16:00/41 17:05	06:41 17:44 18:15	05:55 18:15 19:48	06:06 20:19 20:19	05:32 20:36 20:23	05:26 20:23 19:44	06:17 18:52 18:52	06:48 18:52 17:04	07:20 17:04 16:33	06:57 16:33 06:58	06:57 06:58	07:22 16:29 14:53-16:01/68	
26	07:16 15:21-16:00/39 17:06	06:39 17:45 18:16	05:54 18:16 19:50	06:04 20:20 20:20	05:32 20:36 20:22	05:27 20:22 19:43	06:18 18:51 18:51	06:49 18:51 17:03	07:21 17:03 16:33	06:58 16:33 06:59	06:58 06:59	07:23 16:29 14:54-16:01/67	
27	07:15 15:23-15:58/35 17:08	06:38 17:46 18:17	05:52 18:17 19:51	06:03 20:21 20:21	05:31 20:36 20:22	05:27 20:22 19:41	06:19 18:49 18:49	06:50 18:49 17:02	07:22 17:02 16:32	06:59 16:32 07:00	06:59 07:00	07:23 16:29 14:54-16:01/67	
28	07:14 15:25-15:56/31 17:09	06:36 17:47 18:18	05:50 18:18 19:52	06:01 20:21 20:21	05:30 20:36 20:21	05:27 20:21 19:39	06:20 18:47 18:47	06:51 18:47 17:00	07:23 17:00 16:32	06:51 16:32 06:52	06:51 06:52	07:23 16:29 14:54-16:02/68	
29	07:14 15:28-15:54/26 17:10	06:36 17:49 18:19	05:50 18:19 19:53	06:01 20:22 20:22	05:30 20:36 20:20	05:28 20:20 19:38	06:21 18:46 18:46	06:52 18:46 16:59	07:24 16:59 16:31	06:52 16:31 06:53	06:52 06:53	07:24 16:29 14:55-16:03/68	
30	07:13 15:31-15:51/20 17:11	06:36 17:49 18:19	05:50 18:19 19:53	06:01 20:22 20:22	05:30 20:36 20:20	05:28 20:20 19:38	06:22 18:46 18:46	06:53 18:46 16:59	07:25 16:59 16:31	06:53 16:31 06:54	06:53 06:54	07:24 16:29 14:56-16:03/67	
31	07:12 15:37-15:46/9 17:13	06:36 17:49 18:19	05:50 18:19 19:53	06:01 20:22 20:22	05:30 20:36 20:20	05:28 20:20 19:38	06:22 18:46 18:46	06:53 18:46 16:59	07:25 16:59 16:31	06:53 16:31 06:54	06:53 06:54	07:24 16:29 14:56-16:03/67	
	Potential sun hours Sum of minutes with flicker	297 1618	297 0	369 0	399 0	449 0	453 0	460 0	428 0	375 0	345 0	297 905	287 2064

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

### 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 07:47-08:09/22   16:39	07:11   06:35   17:14   17:48		06:43 07:03-07:23/20   19:23	05:57   05:28   19:55   20:25	
2	07:24 07:47-08:10/23   16:40	07:10   06:33   17:15   17:49		06:42 07:03-07:24/21   19:24	05:56   05:28   19:56   20:25	
3	07:25 07:47-08:10/23   16:41	07:09   06:31   17:16   17:51		06:40 07:04-07:26/22   19:25	05:55   05:27   19:57   20:26	
4	07:25 07:47-08:10/23   16:42	07:08   06:30   17:18   17:52		06:38 07:04-07:27/23   19:26	05:53   05:27   19:58   20:27	
5	07:25 07:47-08:10/23   16:43	07:07   06:28   17:19   17:53		06:37 07:04-07:28/24   19:27	05:52   05:27   19:59   20:27	
6	07:25 07:47-08:11/24   16:44	07:06   06:27   17:20   17:54		06:35 07:05-07:30/25   19:28	05:51   05:26   20:00   20:28	
7	07:24 07:48-08:11/23   16:45	07:04   06:25   17:21   17:55		06:34 07:05-07:31/26   19:29	05:50   05:26   20:01   20:29	
8	07:24 07:48-08:10/22   16:46	07:03   06:23   17:23   17:56		06:32 07:06-07:30/24   19:30	05:49   05:26   20:02   20:29	
9	07:24 07:49-08:10/21   16:47	07:02   06:22   17:24   17:57		06:30 07:08-07:28/20   19:31	05:47   05:25   20:03   20:30	
10	07:24 07:51-08:10/19   16:48	07:01   06:20   17:25   17:59		06:29 07:10-07:25/15   19:32	05:46   05:25   20:04   20:31	
11	07:24 07:52-08:10/18   16:49	07:00   06:19   17:26   18:00		06:27 07:15-07:21/6   19:33	05:45   05:25   20:05   20:31	
12	07:24 07:53-08:09/16   16:50	06:59   06:17   17:28   18:01		06:25   19:34	05:44   05:25   20:06   20:32	
13	07:23 07:54-08:09/15   16:51	06:57   06:15   17:29   18:02		06:24   19:36	05:43   05:25   20:07   20:32	
14	07:23 07:56-08:07/11   16:52	06:56   06:14   17:30   18:03		06:22   19:37	05:42   05:25   20:08   20:33	
15	07:23 07:59-08:06/7   16:53	06:55   06:12   17:31   18:04		06:21   19:38	05:41   05:25   20:09   20:33	
16	07:22   16:54	06:53   06:10   17:33   18:05		06:19   19:39	05:40   05:25   20:10   20:33	
17	07:22   16:56	06:52   06:09   17:34   18:06		06:18   19:40	05:39   05:25   20:11   20:34	
18	07:21   16:57	06:51   06:07   17:35   18:07		06:16   19:41	05:38   05:25   20:12   20:34	
19	07:21   16:58	06:49   06:05   17:36   18:09		06:14   19:42	05:37   05:25   20:13   20:34	
20	07:20   16:59	06:48   06:04   17:38   18:10		06:13   19:43	05:36   05:25   20:14   20:35	
21	07:20   17:00	06:46   06:02   17:39   18:11		06:11   19:44	05:35   05:25   20:15   20:35	
22	07:19   17:01	06:45   06:00   17:40   18:12		06:10   19:45	05:35   05:25   20:16   20:35	
23	07:18   17:03	06:44   05:59   17:41   18:13		06:09   19:46	05:34   05:26   20:17   20:35	
24	07:18   17:04	06:42   05:57   17:42   18:14		06:07   19:47	05:33   05:26   20:18   20:35	
25	07:17   17:05	06:41   05:55   17:44   18:15		06:06   19:48	05:32   05:26   20:19   20:36	
26	07:16   17:06	06:39   05:54   17:45   18:16	06:12-06:14/2	06:04   19:49	05:32   05:27   20:20   20:36	
27	07:15   17:08	06:38   05:52   17:46   18:17	06:10-06:15/5	06:03   19:51	05:31   05:27   20:21   20:36	
28	07:14   17:09	06:36   05:50   17:47   18:18	06:09-06:17/8	06:01   19:52	05:30   05:27   20:21   20:36	
29	07:14   17:10	06:48   19:19	07:07-07:18/11	06:00   19:53	05:30   05:28   20:22   20:36	
30	07:13   17:11	06:47   19:20	07:05-07:19/14	05:59   19:54	05:29   05:28   20:23   20:36	
31	07:12   17:13	06:45   19:22	07:04-07:21/17		05:29     20:24	
Potential sun hours	297	297	369	399	449	453
Sum of minutes with flicker	290	0	57	226	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: oMBRA WTG: 3 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (3)

### 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	05:29 20:36	05:53 20:16	06:24 19:33	07:14-07:20/6 18:42	06:29 16:55	07:04 16:30
2	05:29 20:35	05:54 20:15	06:25 19:31	07:09-07:24/15 18:40	06:30 16:54	07:05 16:30
3	05:30 20:35	05:55 20:14	06:26 19:30	07:06-07:26/20 18:39	06:31 16:53	07:06 16:30
4	05:30 20:35	05:56 20:13	06:27 19:28	07:04-07:28/24 18:37	06:32 16:51	07:07 16:30
5	05:31 20:35	05:57 20:12	06:28 19:26	07:02-07:28/26 18:35	06:33 16:50	07:08 16:30
6	05:31 20:35	05:58 20:11	06:29 19:25	07:01-07:26/25 18:34	06:35 16:49	07:09 16:29
7	05:32 20:34	05:59 20:09	06:30 19:23	07:00-07:24/24 18:32	06:36 16:48	07:10 16:29
8	05:33 20:34	06:00 20:08	06:31 19:21	06:58-07:21/23 18:30	06:37 16:47	07:11 16:29
9	05:33 20:34	06:01 20:07	06:32 19:20	06:57-07:19/22 18:29	06:38 16:46	07:12 16:29
10	05:34 20:33	06:02 20:06	06:33 19:18	06:56-07:17/21 18:27	06:40 16:45	07:13 16:29
11	05:35 20:33	06:03 20:04	06:34 19:16	06:56-07:15/19 18:26	06:41 16:44	07:13 16:29
12	05:35 20:32	06:04 20:03	06:35 19:15	06:55-07:13/18 18:24	06:42 16:43	07:14 16:29
13	05:36 20:32	06:05 20:02	06:36 19:13	06:56-07:11/15 18:22	06:43 16:42	07:15 16:30
14	05:37 20:31	06:06 20:00	06:37 19:11	06:57-07:09/12 18:21	06:44 16:41	07:16 16:30
15	05:38 20:31	06:07 19:59	06:38 19:09	06:58-07:07/9 18:19	06:46 16:40	07:17 16:30
16	05:38 20:30	06:08 19:57	06:39 19:08	06:59-07:04/5 18:18	06:47 16:39	07:17 16:30
17	05:39 20:30	06:09 19:56	06:40 19:06	07:00-07:02/2 18:16	06:48 16:38	07:18 16:30
18	05:40 20:29	06:10 19:55	06:41 19:04	07:12 18:15	06:49 16:38	07:19 16:31
19	05:41 20:28	06:11 19:53	06:42 19:03	07:14 18:13	06:50 16:37	07:19 16:31
20	05:42 20:27	06:12 19:52	06:43 19:01	07:15 18:12	06:51 16:36	07:20 16:32
21	05:43 20:27	06:13 19:50	06:44 18:59	07:16 18:10	06:53 16:35	07:20 16:32
22	05:43 20:26	06:14 19:49	06:45 18:57	07:17 18:09	06:54 16:35	07:21 16:33
23	05:44 20:25	06:15 19:47	06:46 18:56	07:18 18:07	06:55 16:34	07:21 16:33
24	05:45 20:24	06:16 19:46	06:47 18:54	07:19 18:06	06:56 16:34	07:22 16:34
25	05:46 20:23	06:17 19:44	06:48 18:52	07:20 17:04	06:57 16:33	07:22 16:34
26	05:47 20:22	06:18 19:43	06:49 18:51	07:22 17:03	06:58 16:32	07:23 16:35
27	05:48 20:21	06:19 19:41	06:50 18:49	06:23 17:02	06:59 16:32	07:23 16:35
28	05:49 20:21	06:20 19:39	06:51 18:47	06:24 17:00	07:01 16:32	07:23 16:36
29	05:50 20:20	06:21 19:38	06:52 18:45	06:25 16:59	07:02 16:31	07:24 16:37
30	05:51 20:19	06:22 19:36	06:53 18:44	06:26 16:58	07:03 16:31	07:24 16:38
31	05:52 20:17	06:23 19:35		06:28 16:56		07:24 16:38
Potential sun hours	460	428	375	345	297	287
Sum of minutes with flicker	0	0	286	0	49	669

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

### 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 16:39	07:11 17:14	06:34 17:48	06:43 19:23	05:57 19:55	05:28 20:25	05:29 20:35	05:53 20:16	06:24 19:33	06:54 18:42	06:29 16:55	07:04 16:30
2	07:24 16:40	07:10 17:15	06:33 17:49	06:42 19:24	05:56 19:56	05:28 20:25	05:29 20:35	05:54 20:15	06:25 19:31	06:55 18:40	06:30 16:54	07:05 16:30
3	07:24 16:41	07:09 17:16	06:31 17:50	06:40 19:25	05:55 19:57	05:27 20:26	05:30 20:35	05:55 20:14	06:26 19:30	06:56 18:39	06:31 16:53	07:06 16:30
4	07:25 16:42	07:08 17:18	06:30 17:52	06:38 19:26	05:53 19:58	05:27 20:27	05:30 20:35	05:56 20:13	06:27 19:28	06:57 18:37	06:32 16:51	07:07 16:30
5	07:25 16:43	07:07 17:19	06:28 17:53	06:37 19:27	05:52 19:59	05:26 20:27	05:31 20:35	05:57 20:12	06:28 19:26	06:58 18:35	06:33 16:50	07:08 16:29
6	07:25 16:44	07:06 17:20	06:27 17:54	06:35 19:28	05:51 20:00	05:26 20:28	05:31 20:35	05:58 20:11	06:29 19:25	06:59 18:34	06:35 16:49	07:09 16:29
7	07:24 16:45	07:04 17:21	06:25 17:55	06:33 19:29	05:50 20:01	05:26 20:29	05:32 20:34	05:59 20:09	06:30 19:23	07:00 18:32	06:36 16:48	07:10 16:29
8	07:24 16:46	07:03 17:23	06:23 17:56	06:32 19:30	05:48 20:02	05:26 20:29	05:32 20:34	06:00 20:08	06:31 19:21	07:01 18:30	06:37 16:47	07:11 16:29
9	07:24 16:47	07:02 17:24	06:22 17:57	06:30 19:31	05:47 20:03	05:25 20:30	05:33 20:34	06:01 20:07	06:32 19:20	07:03 18:29	06:38 16:46	07:12 16:29
10	07:24 16:48	07:01 17:25	06:20 17:58	06:29 19:32	05:46 20:04	05:25 20:30	05:34 20:33	06:02 20:06	06:33 19:18	07:04 18:27	06:39 16:45	07:12 16:29
11	07:24 16:49	07:00 17:26	06:19 18:00	06:27 19:33	05:45 20:05	05:25 20:31	05:35 20:33	06:03 20:04	06:34 19:16	07:05 18:25	06:41 16:44	07:13 16:29
12	07:24 16:50	06:58 17:28	06:17 18:01	06:25 19:34	05:44 20:06	05:25 20:32	05:35 20:32	06:04 20:03	06:35 19:15	07:06 18:24	06:42 16:43	07:14 16:29
13	07:23 16:51	06:57 17:29	06:15 18:02	06:24 19:35	05:43 20:07	05:25 20:32	05:36 20:32	06:05 20:02	06:36 19:13	07:07 18:22	06:43 16:42	07:15 16:29
14	07:23 16:52	06:56 17:30	06:14 18:03	06:22 19:37	05:42 20:08	05:25 20:32	05:37 20:31	06:06 20:00	06:37 19:11	07:08 18:21	06:44 16:41	07:16 16:30
15	07:22 16:53	06:55 17:31	06:12 18:04	06:21 19:38	05:41 20:09	05:25 20:33	05:38 20:31	06:07 19:59	06:38 19:09	07:09 18:19	06:45 16:40	07:16 16:30
16	07:22 16:54	06:53 17:33	06:10 18:05	06:19 19:39	05:40 20:10	05:25 20:33	05:38 20:30	06:08 19:57	06:39 19:08	07:10 18:18	06:47 16:39	07:17 16:30
17	07:22 16:55	06:52 17:34	06:09 18:06	06:17 19:40	05:39 20:11	05:25 20:34	05:39 20:29	06:09 19:56	06:40 19:06	07:11 18:16	06:48 16:38	07:18 16:30
18	07:21 16:57	06:51 17:35	06:07 18:07	06:16 19:41	05:38 20:12	05:25 20:34	05:40 20:29	06:10 19:55	06:41 19:04	07:12 18:15	06:49 16:37	07:19 16:31
19	07:21 16:58	06:49 17:36	06:05 18:08	06:14 19:42	05:37 20:13	05:25 20:34	05:41 20:28	06:11 19:53	06:42 19:03	07:14 18:13	06:50 16:37	07:19 16:31
20	07:20 16:59	06:48 17:37	06:04 18:10	06:13 19:43	05:36 20:14	05:25 20:35	05:42 20:27	06:12 19:52	06:43 19:01	07:15 18:12	06:51 16:36	07:20 16:32
21	07:19 17:00	06:46 17:39	06:02 18:11	06:11 19:44	05:35 20:15	05:25 20:35	05:42 20:27	06:13 19:50	06:44 18:59	07:16 18:10	06:53 16:35	07:20 16:32
22	07:19 17:01	06:45 17:40	06:00 18:12	06:10 19:45	05:35 20:16	05:25 20:35	05:43 20:26	06:14 19:49	06:45 18:57	07:17 18:09	06:54 16:35	07:21 16:32
23	07:18 17:03	06:44 17:41	05:59 18:13	06:08 19:46	05:34 20:17	05:26 20:35	05:44 20:25	06:15 19:47	06:46 18:56	07:18 18:07	06:55 16:34	07:21 16:33
24	07:17 17:04	06:42 17:42	05:57 18:14	06:07 19:47	05:33 20:18	05:26 20:35	05:45 20:24	06:16 19:46	06:47 18:54	07:19 18:06	06:56 16:33	07:22 16:33
25	07:17 17:05	06:41 17:43	05:55 18:15	06:06 19:48	05:32 20:19	05:26 20:36	05:46 20:23	06:17 19:44	06:48 18:52	07:20 17:04	06:57 16:33	07:22 16:34
26	07:16 17:06	06:39 17:45	05:53 18:16	06:04 19:49	05:32 20:20	05:26 20:36	05:47 20:22	06:18 19:42	06:49 18:51	07:22 17:03	06:58 16:32	07:23 16:35
27	07:15 17:08	06:38 17:46	05:52 18:17	06:03 19:50	05:31 20:20	05:27 20:36	05:48 20:21	06:19 19:41	06:50 18:49	07:23 17:02	06:59 16:32	07:23 16:35
28	07:14 17:09	06:36 17:47	05:50 18:18	06:01 19:52	05:30 20:21	05:27 20:36	05:49 20:20	06:20 19:39	06:51 18:47	07:24 17:00	07:01 16:31	07:23 16:36
29	07:13 17:10		06:48 19:19	06:00 19:53	05:30 20:22	05:28 20:36	05:50 20:19	06:21 19:38	06:52 18:45	07:25 16:59	07:02 16:31	07:24 16:37
30	07:13 17:11		06:47 19:20	05:59 19:54	05:29 20:23	05:28 20:36	05:51 20:18	06:22 19:36	06:53 18:44	07:26 16:58	07:03 16:31	07:24 16:37
31	07:12 17:13		06:45 19:21		05:29 20:24		05:52 20:17	06:23 19:35		06:27 16:56		07:24 16:38
Potential sun hours	297	297	369	399	449	453	460	428	375	345	297	287
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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



## SHADOW - Calendar per WTG

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

### 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 16:39	07:11 17:14	06:34 17:48	06:43 19:22	05:57 19:55	05:28 20:24	05:50-06:03/13 20:35	05:29 20:16	05:51-06:12/21 19:33	06:24 18:42	06:54 18:42	06:29 16:55	07:04 16:30	
2	07:24 16:40	07:10 17:15	06:33 17:49	06:42 19:24	05:56 19:56	05:28 20:25	05:49-06:03/14 20:35	05:29 20:15	05:52-06:13/21 19:31	06:25 18:40	06:55 18:40	06:30 16:54	07:05 16:30	
3	07:24 16:41	07:09 17:16	06:31 17:50	06:40 19:25	05:55 19:57	05:27 20:26	05:49-06:04/15 20:35	05:30 20:14	05:52-06:12/20 19:30	06:26 18:39	06:56 18:39	06:31 16:52	07:06 16:30	
4	07:24 16:42	07:08 17:18	06:30 17:52	06:38 19:26	05:53 19:58	05:27 20:27	05:49-06:05/16 20:35	05:30 20:13	05:53-06:12/20 19:28	06:27 18:37	06:57 18:37	06:32 16:51	07:07 16:30	
5	07:24 16:43	07:07 17:19	06:28 17:53	06:37 19:27	05:52 19:59	05:26 20:27	05:48-06:05/17 20:35	05:31 20:12	05:53-06:12/19 19:27	06:28 18:35	06:58 18:35	06:33 16:50	07:08 16:29	
6	07:24 16:44	07:05 17:20	06:27 17:54	06:35 19:28	05:51 20:00	05:26 20:28	05:48-06:06/18 20:34	05:31 20:11	05:54-06:12/18 19:25	06:29 18:34	06:59 18:34	06:35 16:49	07:09 16:29	
7	07:24 16:45	07:04 17:21	06:25 17:55	06:33 19:29	05:50 20:01	05:26 20:29	05:48-06:07/19 20:34	05:32 20:09	05:55-06:12/17 19:23	06:30 18:32	07:00 18:32	06:36 16:48	07:10 16:29	
8	07:24 16:46	07:03 17:23	06:23 17:56	06:32 19:30	05:48 20:02	05:26 20:29	05:48-06:07/19 20:34	05:32 20:08	05:55-06:12/17 19:21	06:00 18:30	07:01 18:30	06:37 16:47	07:11 16:29	
9	07:24 16:47	07:02 17:24	06:22 17:57	06:30 19:31	05:47 20:03	05:25 20:30	05:47-06:07/20 20:33	05:33 20:07	05:56-06:12/16 19:20	06:01 18:29	07:02 18:29	06:38 16:46	07:12 16:29	
10	07:24 16:48	07:01 17:25	06:20 17:58	06:28 19:32	05:46 20:04	05:25 20:30	05:47-06:08/21 20:33	05:34 20:06	05:57-06:11/14 19:18	06:02 18:27	07:04 18:27	06:39 16:45	07:12 16:29	
11	07:24 16:49	07:00 17:26	06:18 18:00	06:27 19:33	05:45 20:05	05:25 20:31	05:47-06:08/21 20:33	05:34 20:04	05:57-06:10/13 19:16	06:03 18:25	07:05 18:25	06:41 16:44	07:13 16:29	
12	07:23 16:50	06:58 17:28	06:17 18:01	06:25 19:34	05:44 20:06	05:25 20:31	05:47-06:09/22 20:32	05:35 20:03	05:58-06:10/12 19:14	06:04 18:24	06:35 18:24	07:06 16:43	07:14 16:29	
13	07:23 16:51	06:57 17:29	06:15 18:02	06:24 19:35	05:43 20:07	05:25 20:32	05:47-06:09/22 20:32	05:36 20:02	05:59-06:09/10 19:13	06:05 18:22	06:36 18:22	07:07 16:42	07:15 16:29	
14	07:23 16:52	06:56 17:30	06:14 18:03	06:22 19:36	05:42 20:08	05:25 20:32	05:47-06:09/22 20:31	05:37 20:00	05:59-06:08/9 19:11	06:06 18:21	06:37 18:21	07:08 16:41	07:16 16:30	
15	07:22 16:53	06:55 17:31	06:12 18:04	06:21 19:38	05:41 20:09	05:25 20:33	05:47-06:10/23 20:31	05:37 20:00	06:00-06:06/6 19:09	06:07 18:19	06:38 18:19	07:09 16:40	07:16 16:30	
16	07:22 16:54	06:53 17:33	06:10 18:05	06:19 19:39	05:40 20:10	05:25 20:33	05:47-06:10/23 20:30	05:38 20:00	06:01-06:05/4 19:57	06:08 18:18	06:39 18:18	07:10 16:39	07:17 16:30	
17	07:22 16:55	06:52 17:34	06:09 18:06	06:17 19:40	05:39 20:11	05:25 20:34	05:47-06:10/23 20:29	05:39 20:00	06:09-06:05/4 19:56	06:09 18:16	06:40 18:16	07:11 16:38	07:18 16:30	
18	07:21 16:57	06:51 17:35	06:07 18:07	06:16 19:41	05:38 20:12	05:25 20:34	05:47-06:10/23 20:29	05:40 20:00	06:10-06:05/4 19:55	06:10 18:14	06:41 18:14	07:12 16:37	07:18 16:31	
19	07:21 16:58	06:49 17:36	06:05 18:08	06:14 19:42	05:37 20:13	05:25 20:34	05:47-06:10/23 20:28	05:41 20:00	06:11-06:05/4 19:53	06:11 18:13	06:42 18:13	07:13 16:37	07:19 16:31	
20	07:20 16:59	06:48 17:37	06:04 18:10	06:13 19:43	05:36 20:14	05:25 20:35	05:48-06:12/24 20:27	05:42 20:00	06:12-06:05/4 19:52	06:12 18:11	06:43 18:11	07:15 16:36	07:20 16:31	
21	07:19 17:00	06:46 17:39	06:02 18:11	06:11 19:44	05:35 20:15	05:25 20:35	05:48-06:12/24 20:27	05:42 20:00	06:13-06:05/4 19:50	06:13 18:09	06:44 18:09	07:16 16:35	07:20 16:32	
22	07:19 17:01	06:45 17:40	06:00 18:12	06:10 19:45	05:35 20:16	05:25 20:35	05:48-06:12/24 20:26	05:43 20:00	06:14-06:05/4 19:49	06:14 18:07	06:45 18:07	07:17 16:35	07:21 16:32	
23	07:18 17:03	06:43 17:41	05:58 18:13	06:08 19:46	05:34 20:17	05:26 20:35	05:48-06:12/24 20:25	05:44 20:00	06:15-06:05/4 19:47	06:15 18:06	06:46 18:06	07:18 16:34	07:21 16:33	
24	07:17 17:04	06:42 17:42	05:57 18:14	06:07 19:47	05:33 20:18	05:26 20:35	05:49-06:12/23 20:24	05:45 20:00	06:16-06:05/4 19:46	06:16 18:05	06:47 18:05	07:19 16:33	07:22 16:33	
25	07:17 17:05	06:40 17:43	05:55 18:15	06:05 19:48	05:32 20:19	05:26 20:35	05:49-06:12/23 20:23	05:46 20:00	06:17-06:05/4 19:44	06:17 18:04	06:48 18:04	07:20 16:33	07:22 16:34	
26	07:16 17:06	06:39 17:45	05:53 18:16	06:04 19:49	05:32 20:20	05:26 20:36	05:49-06:12/23 20:22	05:47 20:00	06:18-06:05/4 19:42	06:18 18:03	06:49 18:03	07:21 16:32	07:23 16:35	
27	07:15 17:07	06:37 17:46	05:52 18:17	06:03 19:50	05:31 20:20	05:27 20:36	05:50-06:13/23 20:21	05:48 20:00	06:19-06:05/4 19:41	06:19 18:01	06:50 18:01	07:22 16:32	07:23 16:35	
28	07:14 17:09	06:36 17:47	05:50 18:18	06:01 19:51	05:30 20:21	05:27 20:36	05:50-06:13/23 20:20	05:49 20:00	06:20-06:05/4 19:39	06:20 18:00	06:51 18:00	07:23 16:31	07:23 16:36	
29	07:13 17:10	06:35 17:48	05:48 18:19	06:00 19:52	05:29 20:22	05:28 20:36	05:50-06:12/22 20:19	05:50 20:00	06:21-06:05/4 19:38	06:21 18:00	06:52 18:00	07:24 16:31	07:24 16:37	
30	07:13 17:11	06:34 17:49	05:47 18:20	05:59 19:53	05:29 20:23	05:28 20:36	05:51-06:13/22 20:18	05:51 20:00	06:22-06:05/4 19:36	06:22 18:00	06:53 18:00	07:25 16:31	07:24 16:37	
31	07:12 17:12	06:33 17:50	05:46 18:21	05:58 19:54	05:28 20:24	05:27 20:36	05:51-06:13/22 20:17	05:51 20:00	06:23-06:05/4 19:34	06:23 18:00	06:54 18:00	07:26 16:31	07:24 16:38	
Potential sun hours	297	297	369	399	449	453	629	460	237	428	375	345	297	287
Sum of minutes with flicker	0	0	0	0	36	0	0	0	0	0	0	0	0	0

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

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

## SHADOW - Calendar per WTG

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

### 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 16:39	07:11 17:14	06:34 17:48	06:43 07:02-07:15/13 19:22	05:57 19:55	05:28 20:24	05:28 20:35	05:53 20:16	06:24 06:47-07:09/22 19:33	06:54 18:42	06:29 16:55	07:04 16:30
2	07:24 16:40	07:10 17:15	06:33 17:49	06:42 07:00-07:15/15 19:24	05:56 19:56	05:28 20:25	05:29 20:35	05:54 20:15	06:25 06:46-07:10/24 19:31	06:55 18:40	06:30 16:54	07:05 16:30
3	07:24 16:41	07:09 17:16	06:31 17:50	06:40 06:59-07:16/17 19:25	05:55 19:57	05:27 20:26	05:29 20:35	05:55 20:14	06:26 06:47-07:11/24 19:30	06:56 18:39	06:31 16:52	07:06 16:30
4	07:24 16:42	07:08 17:17	06:30 17:52	06:38 06:57-07:15/18 19:26	05:53 19:58	05:27 20:27	05:30 20:35	05:56 20:13	06:27 06:47-07:10/23 19:28	06:57 18:37	06:32 16:51	07:07 16:30
5	07:24 16:43	07:07 17:19	06:28 17:53	06:37 06:55-07:15/20 19:27	05:52 19:59	05:26 20:27	05:31 20:35	05:56 20:12	06:28 06:48-07:10/22 19:26	06:58 18:35	06:33 16:50	07:08 16:29
6	07:24 16:44	07:05 17:20	06:27 17:54	06:35 06:54-07:15/21 19:28	05:51 20:00	05:26 20:28	05:31 20:34	05:57 20:10	06:29 06:49-07:10/21 19:25	06:59 18:34	06:35 16:49	07:09 16:29
7	07:24 16:45	07:04 17:21	06:25 17:55	06:33 06:52-07:14/22 19:29	05:50 20:01	05:26 20:29	05:32 20:34	05:58 20:09	06:30 06:50-07:10/20 19:23	07:00 18:32	06:36 16:48	07:10 16:29
8	07:24 16:46	07:03 17:22	06:23 17:56	06:32 06:50-07:13/23 19:30	05:48 20:02	05:26 20:29	05:32 20:34	05:59 20:08	06:31 06:51-07:10/19 19:21	07:01 18:30	06:37 16:47	07:11 16:29
9	07:24 16:47	07:02 17:24	06:22 17:57	06:30 06:49-07:13/24 19:31	05:47 20:03	05:25 20:30	05:33 20:33	06:00 20:07	06:32 06:52-07:09/17 19:20	07:02 18:29	06:38 16:46	07:11 16:29
10	07:24 16:48	07:01 17:25	06:20 17:58	06:28 06:47-07:11/24 19:32	05:46 20:04	05:25 20:30	05:34 20:33	06:01 20:05	06:33 06:53-07:08/15 19:18	07:04 18:27	06:39 16:45	07:12 16:29
11	07:24 16:49	07:00 17:26	06:18 18:00	06:27 06:47-07:09/22 19:33	05:45 20:05	05:25 20:31	05:34 20:33	06:02 20:04	06:34 06:54-07:07/13 19:16	07:05 18:25	06:41 16:44	07:13 16:29
12	07:23 16:50	06:58 17:28	06:17 18:01	06:25 06:49-07:08/19 19:34	05:44 20:06	05:25 20:31	05:35 20:32	06:03 20:03	06:35 06:55-07:14/19 19:14	07:06 18:24	06:42 16:43	07:14 16:29
13	07:23 16:51	06:57 17:29	06:15 18:02	06:24 06:50-07:06/16 19:35	05:43 20:07	05:25 20:32	05:36 20:32	06:04 20:01	06:36 06:56-07:16/20 19:13	07:07 18:22	06:43 16:42	07:15 16:29
14	07:23 16:52	06:56 17:30	06:13 18:03	06:22 06:53-07:03/10 19:36	05:42 20:08	05:25 20:32	05:37 20:31	06:05 20:00	06:37 06:57-07:18/21 19:11	07:08 18:21	06:44 16:41	07:16 16:30
15	07:22 16:53	06:55 17:31	06:12 18:04	06:20 19:37	05:41 20:09	05:25 20:33	05:37 20:31	06:07 19:59	06:38 06:58-07:19/21 19:09	07:09 18:19	06:45 16:40	07:16 16:30
16	07:22 16:54	06:53 17:32	06:10 18:05	06:19 19:39	05:40 20:10	05:25 20:33	05:38 20:30	06:08 19:57	06:39 06:59-07:19/20 19:08	07:10 18:18	06:47 16:39	07:17 16:30
17	07:21 16:55	06:52 17:34	06:08 06:27-06:30/3 18:06	06:17 19:40	05:39 20:11	05:25 20:34	05:39 20:29	06:09 19:56	06:40 07:00-07:20/20 19:06	07:11 18:16	06:48 16:38	07:18 16:30
18	07:21 16:57	06:50 17:35	06:07 06:26-06:32/6 18:07	06:16 19:41	05:38 20:12	05:25 20:34	05:40 20:29	06:10 19:54	06:41 07:01-07:20/19 19:04	07:12 18:14	06:49 16:37	07:18 16:31
19	07:20 16:58	06:49 17:36	06:05 06:24-06:33/9 18:08	06:14 19:42	05:37 20:13	05:25 20:34	05:41 20:28	06:11 19:53	06:42 07:02-07:20/18 19:02	07:13 18:13	06:50 16:37	07:19 16:31
20	07:20 16:59	06:48 17:37	06:03 06:22-06:33/11 18:09	06:13 19:43	05:36 20:14	05:25 20:34	05:42 20:27	06:12 19:52	06:43 07:03-07:19/16 19:01	07:15 18:11	06:51 16:36	07:20 16:31
21	07:19 17:00	06:46 17:39	06:02 06:20-06:33/13 18:11	06:11 19:44	05:35 20:15	05:25 20:35	05:42 20:26	06:13 19:50	06:44 07:04-07:19/15 18:59	07:16 18:10	06:52 16:35	07:20 16:32
22	07:19 17:01	06:45 17:40	06:00 06:19-06:34/15 18:12	06:10 19:45	05:34 20:16	05:25 20:35	05:43 20:26	06:14 19:49	06:45 07:05-07:18/13 18:57	07:17 18:08	06:54 16:35	07:21 16:32
23	07:18 17:03	06:43 17:41	05:58 06:17-06:33/16 18:13	06:08 19:46	05:34 20:17	05:26 20:35	05:44 20:25	06:15 19:47	06:46 07:06-07:17/11 18:56	07:18 18:07	06:55 16:34	07:21 16:33
24	07:17 17:04	06:42 17:42	05:57 06:15-06:32/17 18:14	06:07 19:47	05:33 20:18	05:26 20:35	05:45 20:24	06:16 19:45	06:47 07:07-07:16/9 18:54	07:19 18:06	06:56 16:33	07:22 16:33
25	07:17 17:05	06:40 17:43	05:55 06:14-06:33/19 18:15	06:05 19:48	05:32 20:19	05:26 20:35	05:46 20:23	06:17 19:44	06:48 07:08-07:15/7 18:52	07:20 17:04	06:57 16:33	07:22 16:34
26	07:16 17:06	06:39 17:45	05:53 06:12-06:31/19 18:16	06:04 19:49	05:32 20:19	05:26 20:35	05:47 20:22	06:18 19:42	06:49 07:09-07:13/4 18:50	07:21 17:03	06:58 16:32	07:22 16:35
27	07:15 17:07	06:37 17:46	05:52 06:10-06:30/20 18:17	06:03 19:50	05:31 20:20	05:27 20:36	05:48 20:21	06:19 19:41	06:50 07:10-07:11/1 18:49	07:22 17:01	06:59 16:32	07:23 16:35
28	07:14 17:09	06:36 17:47	05:50 06:09-06:30/21 18:18	06:01 19:51	05:30 20:21	05:27 20:36	05:49 20:20	06:20 19:39	06:51 18:47	07:23 17:00	07:00 16:31	07:23 16:36
29	07:13 17:10		06:48 07:07-07:28/21 19:19	06:00 19:52	05:30 20:22	05:28 20:36	05:50 20:19	06:21 19:38	06:52 06:54-07:04/10 18:45	07:24 16:59	07:02 16:31	07:23 16:37
30	07:12 17:11		06:47 07:05-07:25/20 19:20	05:58 19:54	05:29 20:23	05:28 20:35	05:51 20:18	06:22 19:36	06:51 07:07-07/16 18:44	07:25 16:57	07:03 16:31	07:24 16:37
31	07:12 17:12		06:45 07:04-07:23/19 19:21		05:29 20:24		05:52 20:17	06:23 19:34	06:49 07:08/19 18:44	07:26 16:56		07:24 16:38
	Potential sun hours	297	297	369	399	449	453	460	428	375	345	297
	Sum of minutes with flicker	0	0	229	264	0	0	0	45	454	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: oMBRA WTG: 7 - VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (7)

### 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 16:39	07:11 17:14	06:34 17:48	06:43 19:23	05:57 19:55	05:28 20:24	05:29 20:35	05:53 20:16	06:24 19:33	06:54 18:42	06:29 16:55	07:04 16:30
2	07:24 16:40	07:10 17:15	06:33 17:49	06:42 19:24	05:56 19:56	05:28 20:25	05:29 20:35	05:54 20:15	06:25 19:31	06:55 18:40	06:30 16:54	07:05 16:30
3	07:24 16:41	07:09 17:16	06:31 17:50	06:40 19:25	05:55 19:57	05:27 20:26	05:30 20:35	05:55 20:14	06:26 19:30	06:56 18:39	06:31 16:53	07:06 16:30
4	07:24 16:42	07:08 17:18	06:30 17:52	06:38 19:26	05:53 19:58	05:27 20:27	05:30 20:35	05:56 20:13	06:27 19:28	06:57 18:37	06:32 16:51	07:07 16:30
5	07:24 16:43	07:07 17:19	06:28 17:53	06:37 19:27	05:52 19:59	05:27 20:27	05:31 20:35	05:57 20:12	06:28 19:26	06:58 18:35	06:33 16:50	07:08 16:30
6	07:24 16:44	07:05 17:20	06:27 17:54	06:35 19:28	05:51 20:00	05:26 20:28	05:31 20:34	05:58 20:11	06:29 19:25	06:59 18:34	06:35 16:49	07:09 16:29
7	07:24 16:45	07:04 17:21	06:25 17:55	06:33 19:29	05:50 20:01	05:26 20:29	05:32 20:34	05:59 20:09	06:30 19:23	07:00 18:32	06:36 16:48	07:10 16:29
8	07:24 16:46	07:03 17:23	06:23 17:56	06:32 19:30	05:49 20:02	05:26 20:29	05:33 20:34	06:00 20:08	06:31 19:21	07:01 18:30	06:37 16:47	07:11 16:29
9	07:24 16:47	07:02 17:24	06:22 17:57	06:30 19:31	05:47 20:03	05:25 20:30	05:33 20:33	06:01 20:07	06:32 19:20	07:03 18:29	06:38 16:46	07:12 16:29
10	07:24 16:48	07:01 17:25	06:20 17:59	06:29 19:32	05:46 20:04	05:25 20:30	05:34 20:33	06:02 20:06	06:33 19:18	07:04 18:27	06:39 16:45	07:12 16:29
11	07:24 16:49	07:00 17:26	06:19 18:00	06:27 19:33	05:45 20:05	05:25 20:31	05:35 20:33	06:03 20:04	06:34 19:16	07:05 18:26	06:41 16:44	07:13 16:29
12	07:23 16:50	06:58 17:28	06:17 18:01	06:25 19:34	05:44 20:06	05:25 20:31	05:35 20:32	06:04 20:03	06:35 19:14	07:06 18:24	06:42 16:43	07:14 16:29
13	07:23 16:51	06:57 17:29	06:15 18:02	06:24 19:35	05:43 20:07	05:25 20:32	05:36 20:32	06:05 20:02	06:36 19:13	07:07 18:22	06:43 16:42	07:15 16:30
14	07:23 16:52	06:56 17:30	06:14 18:03	06:22 19:36	05:42 20:08	05:25 20:32	05:37 20:31	06:06 20:00	06:37 19:11	07:08 18:21	06:44 16:41	07:16 16:30
15	07:22 16:53	06:55 17:31	06:12 18:04	06:21 19:38	05:41 20:09	05:25 20:33	05:38 20:31	06:07 19:59	06:38 19:09	07:09 18:19	06:45 16:40	07:16 16:30
16	07:22 16:54	06:53 17:33	06:10 18:05	06:19 19:39	05:40 20:10	05:25 20:33	05:38 20:30	06:08 19:57	06:39 19:08	07:10 18:18	06:47 16:39	07:17 16:30
17	07:22 16:56	06:52 17:34	06:09 18:06	06:17 19:40	05:39 20:11	05:25 20:34	05:39 20:29	06:09 19:56	06:40 19:06	07:11 18:16	06:48 16:38	07:18 16:30
18	07:21 16:57	06:51 17:35	06:07 18:07	06:16 19:41	05:38 20:12	05:25 20:34	05:40 20:29	06:10 19:55	06:41 19:04	07:12 18:15	06:49 16:38	07:18 16:31
19	07:21 16:58	06:49 17:36	06:05 18:08	06:14 19:42	05:37 20:13	05:25 20:34	05:41 20:28	06:11 19:53	06:42 19:03	07:13 18:13	06:50 16:37	07:19 16:31
20	07:20 16:59	06:48 17:37	06:04 18:10	06:13 19:43	05:36 20:14	05:25 20:35	05:42 20:27	06:12 19:52	06:43 19:01	07:15 18:12	06:51 16:36	07:20 16:32
21	07:19 17:00	06:46 17:39	06:02 18:11	06:11 19:44	05:35 20:15	05:25 20:35	05:43 20:27	06:13 19:50	06:44 18:59	07:16 18:10	06:53 16:35	07:20 16:32
22	07:19 17:01	06:45 17:40	06:00 18:12	06:10 19:45	05:35 20:16	05:25 20:35	05:43 20:26	06:14 19:49	06:45 18:57	07:17 18:09	06:54 16:35	07:21 16:33
23	07:18 17:03	06:43 17:41	05:59 18:13	06:08 19:46	05:34 20:17	05:26 20:35	05:44 20:25	06:15 19:47	06:46 18:56	07:18 18:07	06:55 16:34	07:21 16:33
24	07:17 17:04	06:42 17:42	05:57 18:14	06:07 19:47	05:33 20:18	05:26 20:35	05:45 20:24	06:16 19:46	06:47 18:54	07:19 18:06	06:56 16:34	07:22 16:34
25	07:17 17:05	06:41 17:43	05:55 18:15	06:06 19:48	05:32 20:19	05:26 20:35	05:46 20:23	06:17 19:44	06:48 18:52	07:20 17:04	06:57 16:33	07:22 16:34
26	07:16 17:06	06:39 17:45	05:53 18:16	06:04 19:49	05:32 20:20	05:27 20:35	05:47 20:22	06:18 19:42	06:49 18:51	07:22 17:03	06:58 16:32	07:23 16:35
27	07:15 17:08	06:38 17:46	05:52 18:17	06:03 19:50	05:31 20:20	05:27 20:36	05:48 20:21	06:19 19:41	06:50 18:49	07:23 17:02	06:59 16:32	07:23 16:35
28	07:14 17:09	06:36 17:47	05:50 18:18	06:01 19:51	05:30 20:21	05:27 20:36	05:49 20:20	06:20 19:39	06:51 18:47	07:24 17:00	07:00 16:32	07:23 16:36
29	07:13 17:10		06:48 19:19	06:00 19:53	05:30 20:22	05:28 20:36	05:50 20:19	06:21 19:38	06:52 18:45	07:25 16:59	07:02 16:31	07:23 16:37
30	07:13 17:11		06:47 19:20	05:59 19:54	05:29 20:23	05:28 20:35	05:51 20:18	06:22 19:36	06:53 18:44	07:26 16:58	07:03 16:31	07:24 16:38
31	07:12 17:13		06:45 19:21		05:29 20:24		05:52 20:17	06:23 19:35		06:27 16:56		07:24 16:38
Potential sun hours	297	297	369	399	449	453	460	428	375	345	297	287
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

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

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

## SHADOW - Calendar per WTG

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

### 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 07:49-08:36/47 16:39 08:51-09:44/53 16:40 08:51-09:44/53	07:11 07:38-09:03/85 17:14 07:37-09:03/86	06:34 07:02-08:46/104 17:48 06:58-08:44/106	06:43 07:25-08:48/83 19:23 07:24-08:44/80	05:57 06:21-07:31/70 19:55 06:20-07:30/70	05:28 06:22-07:26/64 20:24 06:22-07:25/63
2	07:24 07:49-08:37/48 16:41 08:52-09:44/52	07:10 07:37-09:03/86 17:15 07:37-09:04/87	06:31 06:54-08:41/107 17:49 06:54-08:41/107	06:40 07:25-08:41/76 19:24 07:25-08:41/76	05:56 06:19-07:30/71 19:57 06:19-07:30/71	05:27 06:23-07:25/62 20:25 06:23-07:25/62
3	07:24 07:48-08:39/51 16:42 08:53-09:44/51	07:09 07:37-09:04/87 17:16 07:37-09:04/87	06:30 06:52-08:38/106 17:50 06:49-08:35/106	06:38 07:25-08:40/75 19:25 07:24-08:39/75	05:55 06:19-07:30/71 19:58 06:19-07:30/71	05:27 06:24-07:25/61 20:26 06:24-07:24/60
4	07:24 07:48-08:40/52 16:43 08:54-09:43/49	07:07 07:37-09:04/87 17:18 07:37-09:03/86	06:28 06:49-08:35/106 17:52 07:05 07:37-09:03/86	06:37 07:24-08:39/75 19:26 07:25-08:38/73	05:52 06:19-07:30/71 19:59 06:19-07:30/71	05:26 06:24-07:24/60 20:27 06:24-07:24/60
5	07:24 07:47-08:41/54 16:44 08:55-09:43/48	07:05 07:37-09:03/86 17:19 07:37-09:04/87	06:27 06:47-08:31/104 17:53 06:45-08:25/100	06:35 07:25-08:38/73 19:27 07:25-08:37/72	05:51 06:19-07:30/71 19:28 06:18-07:29/71	05:26 06:24-07:24/60 20:28 06:25-07:25/60
6	07:24 07:46-08:42/56 16:45 08:55-09:42/47	07:04 07:37-09:04/87 17:20 07:37-09:04/87	06:25 06:45-08:25/100 17:54 06:43-08:18/95	06:33 07:25-08:37/72 19:29 07:25-08:35/70	05:50 06:18-07:29/71 20:01 06:17-07:29/72	05:26 06:25-07:25/60 20:29 06:26-07:25/59
7	07:24 07:46-08:43/57 16:46 08:57-09:42/45	07:03 07:37-09:04/87 17:21 07:37-09:04/87	06:23 06:43-08:18/95 17:55 06:42-08:18/96	06:32 07:25-08:35/70 19:30 07:00-07:08/8	05:49 06:17-07:29/72 20:02 06:17-07:29/72	05:26 06:26-07:25/59 20:30 06:25-07:24/59
8	07:24 07:46-08:44/58 16:47 08:58-09:42/44	07:02 07:37-09:04/87 17:22 07:37-09:04/86	06:22 06:42-08:18/96 17:57 06:40-08:18/98	06:30 07:00-07:08/8 19:31 06:52-07:13/21	05:47 06:17-07:29/72 20:03 06:17-07:29/72	05:25 06:26-07:24/58 20:31 06:26-07:24/58
9	07:24 07:46-08:45/59 16:48 09:00-09:41/41	07:01 07:38-09:04/86 17:23 07:38-09:03/89	06:20 06:40-08:18/98 17:58 06:38-08:17/99	06:29 06:52-07:13/21 19:32 07:26-08:33/67	05:46 06:17-07:29/72 20:04 06:17-07:29/72	05:25 06:26-07:24/58 20:32 06:27-07:24/57
10	07:24 07:45-08:46/61 16:49 09:00-09:40/40	07:00 07:34-09:03/89 17:24 07:29-09:03/94	06:19 06:38-08:17/99 18:00 06:37-08:17/100	06:28 06:49-07:17/28 19:33 07:27-08:33/66	05:45 06:17-07:29/72 20:05 06:17-07:29/72	05:25 06:26-07:24/58 20:33 06:27-07:24/57
11	07:23 07:45-08:47/62 16:50 09:02-09:39/37	06:58 07:29-09:03/94 17:25 07:29-09:03/98	06:17 06:37-08:17/100 18:01 06:36-08:16/100	06:26 06:46-07:20/34 19:34 07:28-08:31/63	05:44 06:17-07:29/72 20:06 06:17-07:29/72	05:25 06:27-07:24/57 20:34 06:27-07:24/57
12	07:23 07:45-08:49/64 16:51 09:04-09:39/35	06:57 07:25-09:03/98 17:26 07:25-09:02/100	06:15 06:36-08:16/100 18:02 06:34-08:15/101	06:24 06:43-07:21/38 19:35 07:28-08:29/61	05:43 06:17-07:29/72 20:07 06:17-07:28/71	05:25 06:27-07:24/57 20:35 06:28-07:24/56
13	07:23 07:44-08:49/65 16:52 09:06-09:37/31	06:56 07:22-09:02/100 17:27 07:24-08:50/66	06:14 06:35-08:15/100 18:03 06:34-08:15/101	06:22 06:41-07:23/42 19:36 07:29-08:28/59	05:42 06:17-07:29/72 20:08 06:17-07:28/71	05:25 06:28-07:24/56 20:36 06:28-07:24/56
14	07:22 07:44-08:50/66 16:53 09:08-09:36/28	06:55 07:20-09:02/102 17:28 07:18-09:02/104	06:12 06:34-08:15/101 18:04 06:33-08:14/101	06:21 06:39-07:24/45 19:38 07:30-08:26/56	05:41 06:17-07:28/71 20:09 06:17-07:28/71	05:25 06:28-07:24/56 20:37 06:28-07:24/56
15	07:22 07:43-08:51/68 16:54 09:10-09:33/23	06:53 07:18-09:02/104 17:29 07:15-09:01/106	06:10 06:33-08:14/101 18:05 06:32-08:13/101	06:19 06:38-07:26/48 19:39 07:32-08:24/52	05:40 06:17-07:28/71 20:10 06:17-07:28/71	05:25 06:28-07:24/56 20:38 06:28-07:24/56
16	07:22 07:43-08:52/69 16:55 09:14-09:31/17	06:52 07:15-09:01/106 17:30 07:14-09:00/106	06:09 06:32-08:13/101 18:06 06:32-08:12/100	06:17 06:36-07:26/50 19:40 07:32-08:22/50	05:39 06:17-07:28/71 20:11 06:18-07:29/71	05:25 06:28-07:24/56 20:39 06:29-07:24/55
17	07:21 07:42-08:53/71 16:57 09:19-09:26/7	06:51 07:14-09:00/106 17:31 07:13-09:00/107	06:07 06:32-08:12/100 18:07 06:31-08:11/100	06:16 06:35-07:28/53 19:41 07:34-08:20/46	05:38 06:18-07:29/71 20:12 06:18-07:28/70	05:25 06:29-07:24/55 20:40 06:29-07:24/55
18	07:21 07:42-08:54/72 16:58 09:21-09:23/5	06:49 07:13-09:00/107 17:32 07:11-08:59/108	06:05 06:31-08:11/100 18:08 06:30-08:10/100	06:14 06:33-07:28/55 19:42 07:35-08:18/43	05:37 06:18-07:28/70 20:13 06:18-07:28/70	05:25 06:29-07:24/55 20:41 06:30-07:25/55
19	07:20 07:41-08:55/74 16:59 09:23-09:25/3	06:48 07:11-08:59/108 17:33 07:10-08:58/108	06:04 06:30-08:10/100 18:09 06:29-08:08/99	06:13 06:32-07:29/57 19:43 07:38-08:16/38	05:36 06:18-07:27/69 20:14 06:18-07:27/69	05:25 06:30-07:25/55 20:42 06:30-07:25/55
20	07:19 07:40-08:55/75 17:00 09:25-09:27/1	06:46 07:10-08:58/108 17:34 07:08-08:57/109	06:02 06:29-08:08/99 18:10 06:29-08:08/99	06:11 06:31-07:29/58 19:44 07:39-08:12/33	05:35 06:18-07:27/69 20:15 06:18-07:27/69	05:25 06:30-07:25/55 20:43 06:30-07:25/55
21	07:19 07:40-08:57/77 17:01 09:27-09:29/1	06:45 07:08-08:57/109 17:35 07:07-08:56/109	06:00 06:29-08:08/99 18:11 06:28-08:06/98	06:10 06:30-07:30/60 19:45 07:42-08:10/28	05:35 06:18-07:27/69 20:16 06:19-07:27/68	05:25 06:30-07:25/55 20:44 06:30-07:25/55
22	07:18 07:40-08:57/77 17:03 09:29-09:31/1	06:43 07:07-08:56/109 17:36 07:06-08:54/108	05:58 06:28-08:06/98 18:12 06:27-08:04/97	06:08 06:28-07:30/62 19:46 07:45-08:05/20	05:34 06:19-07:27/68 20:17 06:19-07:27/68	05:26 06:31-07:26/55 20:45 06:31-07:26/55
23	07:17 07:39-08:58/79 17:04 09:31-09:33/1	06:42 07:06-08:54/108 17:37 07:05-08:53/108	05:57 06:27-08:04/97 18:13 06:27-08:03/96	06:07 06:27-07:30/63 19:47 07:54-07:57/3	05:33 06:19-07:27/68 20:18 06:19-07:26/67	05:26 06:31-07:26/55 20:46 06:31-07:26/55
24	07:17 07:39-08:59/80 17:05 09:33-09:35/1	06:41 07:05-08:53/108 17:38 07:04-08:51/107	05:55 06:27-08:03/96 18:14 06:26-08:01/95	06:06 06:26-07:31/65 19:48 06:25-07:31/66	05:32 06:19-07:26/67 20:19 06:20-07:27/67	05:26 06:31-07:26/55 20:47 06:30-07:26/56
25	07:16 07:38-08:59/81 17:06 09:35-09:37/1	06:39 07:04-08:51/107 17:39 07:04-08:50/106	05:53 06:26-08:01/95 18:15 06:25-07:59/94	06:04 06:25-07:31/66 19:49 06:24-07:31/67	05:32 06:20-07:27/67 20:20 06:20-07:26/66	05:27 06:30-07:26/56 20:48 06:31-07:27/56
26	07:15 07:39-09:01/82 17:08 09:37-09:39/1	06:38 07:04-08:50/106 17:40 07:02-08:48/106	05:52 06:25-07:59/94 18:16 06:26-07:58/92	06:03 06:24-07:31/67 19:50 06:23-07:31/68	05:31 06:20-07:26/66 20:21 06:21-07:26/65	05:27 06:31-07:27/56 20:49 06:31-07:27/56
27	07:14 07:38-09:01/83 17:09 09:39-09:41/1	06:36 07:02-08:48/106 17:41 07:02-08:48/106	05:50 06:26-07:58/92 18:17 07:25-08:53/88	06:01 06:23-07:31/68 19:51 06:21-07:31/70	05:30 06:21-07:26/65 20:22 06:22-07:26/64	05:27 06:31-07:27/56 20:50 06:31-07:27/56
28	07:13 07:38-09:01/83 17:10 09:41-09:43/1	06:36 07:02-08:48/106 17:42 07:02-08:48/106	06:48 07:25-08:55/90 19:19 07:25-08:53/88	06:00 06:22-07:31/69 19:53 06:21-07:31/70	05:30 06:21-07:26/65 20:23 06:22-07:26/64	05:28 06:30-07:27/57 20:51 06:31-07:28/57
29	07:13 07:38-09:02/84 17:11 09:43-09:45/1	06:36 07:02-08:48/106 17:43 07:02-08:48/106	06:47 07:25-08:53/88 19:20 07:25-08:51/86	05:59 06:21-07:31/70 19:54 06:22-07:31/69	05:29 06:22-07:26/64 20:24 06:22-07:25/63	05:28 06:30-07:27/57 20:52 06:31-07:28/57
30	07:12 07:38-09:02/84 17:13 09:45-09:47/1	06:36 07:02-08:48/106 17:44 07:02-08:48/106	06:45 07:25-08:51/86 19:21 07:25-08:51/86	05:59 06:21-07:31/70 19:55 06:22-07:31/69	05:29 06:22-07:25/63 20:25 06:22-07:25/63	05:28 06:30-07:27/57 20:53 06:31-07:28/57
31	07:12 07:38-09:02/84 17:13 09:47-09:49/1	06:36 07:02-08:48/106 17:45 07:02-08:48/106	06:45 07:25-08:51/86 19:22 07:25-08:51/86	05:59 06:21-07:31/70 19:56 06:22-07:31/69	05:29 06:22-07:25/63 20:26 06:22-07:25/63	05:28 06:30-07:27/57 20:54 06:31-07:28/57
Potential sun hours	297	297	369	399	449	453
Sum of minutes with flicker	2789	2740	3058	2485	2154	1724

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

### 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	05:29 06:31-07:28/57 20:35	05:53 06:28-07:40/72 20:16	06:24 06:48-07:16/28 19:33 07:26-08:32/66	06:54 07:16-08:55/99 18:42	06:29 07:06-08:33/87 16:55	07:04 07:27-08:28/61 16:30 08:43-09:22/39
2	05:29 06:31-07:29/58 20:35	05:54 06:28-07:40/72 20:15	06:25 06:51-07:12/21 19:31 07:25-08:32/67	06:55 07:16-08:55/99 18:40	06:30 07:07-08:34/87 16:54	07:05 07:29-08:29/60 16:30 08:43-09:24/41
3	05:30 06:30-07:29/59 20:35	05:55 06:28-07:40/72 20:14	06:26 06:58-07:06/8 19:30 07:24-08:33/69	06:56 07:17-08:55/98 18:39	06:31 07:07-08:34/87 16:53	07:06 07:30-08:28/58 16:30 08:42-09:26/44
4	05:30 06:31-07:30/59 20:35	05:56 06:28-07:40/72 20:13	06:27 07:23-08:33/70 19:28	06:57 07:18-08:55/97 18:37	06:32 07:07-08:34/87 16:51	07:07 07:31-08:28/57 16:30 08:42-09:27/45
5	05:31 06:30-07:30/60 20:35	05:57 06:28-07:40/72 20:12	06:28 07:21-08:33/72 19:26	06:58 07:19-08:55/96 18:35	06:33 07:06-08:33/87 16:50	07:08 07:32-08:28/56 16:29 08:42-09:28/46
6	05:31 06:31-07:31/60 20:34	05:58 06:28-07:40/72 20:11	06:29 07:20-08:33/73 19:25	06:59 07:21-08:55/94 18:34	06:35 07:07-08:34/87 16:49	07:09 07:33-08:27/54 16:29 08:41-09:29/48
7	05:32 06:31-07:31/60 20:34	05:59 06:28-07:40/72 20:09	06:30 07:20-08:34/74 19:23	07:00 07:22-09:04/102 18:32	06:36 07:07-08:34/87 16:48	07:10 07:35-08:27/52 16:29 08:41-09:30/49
8	05:33 06:30-07:31/61 20:34	06:00 06:29-07:40/71 20:08	06:31 07:19-08:34/75 19:21	07:01 07:23-09:09/106 18:30	06:37 07:07-08:33/86 16:47	07:11 07:35-08:26/51 16:29 08:40-09:31/51
9	05:33 06:30-07:32/62 20:34	06:01 06:28-07:39/71 20:07	06:32 07:18-08:34/76 19:20	07:03 07:25-09:12/107 18:29	06:38 07:08-08:34/86 16:46	07:12 07:37-08:26/49 16:29 08:40-09:32/52
10	05:34 06:31-07:33/62 20:33	06:02 06:28-07:39/71 20:06	06:33 07:17-08:37/80 19:18	07:04 07:27-09:14/107 18:27	06:39 07:08-08:34/86 16:45	07:12 07:38-08:26/48 16:29 08:40-09:33/53
11	05:35 06:30-07:33/63 20:33	06:03 06:28-07:39/71 20:04	06:34 07:17-08:40/83 19:16	07:05 07:30-09:16/106 18:25	06:41 07:09-08:33/84 16:44	07:13 07:39-08:26/47 16:29 08:41-09:34/53
12	05:35 06:30-07:33/63 20:32	06:04 06:29-07:39/70 20:03	06:35 07:16-08:42/86 19:14	07:06 07:34-09:18/104 18:24	06:42 07:09-08:33/84 16:43	07:14 07:40-08:26/46 16:29 08:41-09:35/54
13	05:36 06:30-07:34/64 20:32	06:05 06:29-07:39/70 20:02	06:36 07:16-08:44/88 19:13	07:07 07:35-09:20/105 18:22	06:43 07:10-08:33/83 16:42	07:15 07:41-08:27/46 16:29 08:41-09:36/55
14	05:37 06:29-07:34/65 20:31	06:06 06:30-07:38/68 20:00	06:37 07:15-08:45/90 19:11	07:08 07:35-09:21/106 18:21	06:44 07:10-08:33/83 16:41	07:16 07:41-08:26/45 16:30 08:41-09:36/55
15	05:38 06:29-07:35/66 20:31	06:07 06:30-07:38/68 19:59	06:38 07:15-08:47/92 19:09	07:09 07:36-09:23/107 18:19	06:45 07:11-08:32/81 16:40	07:16 07:42-08:26/44 16:30 08:41-09:37/56
16	05:38 06:29-07:35/66 20:30	06:08 06:31-07:38/67 19:57	06:39 07:15-08:48/93 19:08	07:10 07:37-09:24/107 18:18	06:47 07:12-08:33/81 16:39	07:17 07:43-08:27/44 16:30 08:42-09:38/56
17	05:39 06:29-07:36/67 20:29	06:09 06:31-07:37/66 19:56	06:40 07:14-08:49/95 19:06	07:11 07:37-09:25/108 18:16	06:48 07:13-08:33/80 16:38	07:18 07:44-08:26/42 16:30 08:43-09:39/56
18	05:40 06:29-07:37/68 20:29	06:10 06:32-07:37/65 19:55	06:41 07:14-08:50/96 19:04	07:12 07:38-09:26/108 18:15	06:49 07:13-08:32/79 16:37	07:18 07:45-08:27/42 16:31 08:42-09:39/57
19	05:41 06:29-07:36/67 20:28	06:11 06:33-07:36/63 19:53	06:42 07:14-08:51/97 19:02	07:13 07:38-09:27/109 18:13	06:50 07:14-08:31/77 16:37	07:19 07:46-08:27/41 16:31 08:43-09:40/57
20	05:42 06:29-07:37/68 20:27	06:12 06:34-07:35/61 19:52	06:43 07:14-08:52/98 19:01	07:15 07:39-09:27/108 18:12	06:51 07:15-08:32/77 16:36	07:20 07:46-08:27/41 16:32 08:43-09:40/57
21	05:42 06:29-07:37/68 20:27	06:13 06:35-07:35/60 19:50	06:44 07:14-08:53/99 18:59	07:16 07:41-09:29/108 18:10	06:53 07:16-08:31/75 16:35	07:20 07:47-08:28/41 16:32 08:44-09:41/57
22	05:43 06:29-07:38/69 20:26	06:14 06:36-07:34/58 19:49	06:45 07:14-08:53/99 18:57	07:17 07:42-09:29/107 18:09	06:54 07:17-08:31/74 16:35	07:21 07:47-08:28/41 16:32 08:44-09:41/57
23	05:44 06:29-07:38/69 20:25	06:15 06:36-07:33/57 19:47	06:46 07:14-08:54/100 18:56	07:18 07:43-09:30/107 18:07	06:55 07:18-08:30/72 16:34	07:21 07:48-08:29/41 16:33 08:45-09:42/57
24	05:45 06:29-07:39/70 20:24	06:16 06:37-07:32/55 19:46	06:47 07:14-08:54/100 18:54	07:19 07:44-09:30/106 18:06	06:56 07:19-08:30/71 16:33	07:22 07:48-08:29/41 16:34 08:45-09:42/57
25	05:46 06:29-07:39/70 20:23	06:17 06:38-07:30/52 19:44	06:48 07:14-08:55/101 18:52	07:20 06:46-08:31/105 17:04	06:57 07:21-08:30/69 16:33	07:22 07:48-08:30/42 16:34 08:45-09:42/57
26	05:47 06:28-07:38/70 20:22	06:18 06:39-07:29/50 19:42	06:49 07:14-08:55/101 18:50	07:22 06:48-08:32/104 17:03	06:58 07:22-08:30/68 16:32	07:23 07:49-08:31/42 16:35 08:46-09:43/57
27	05:48 06:28-07:39/71 20:21	06:19 06:40-07:28/48 19:41	06:50 07:14-08:55/101 18:49	07:23 06:50-08:32/102 17:02	06:59 07:23-08:30/67 16:32	07:23 07:48-08:31/43 16:35 08:47-09:43/56
28	05:49 06:28-07:39/71 20:20	06:20 06:41-07:26/45 19:39	06:51 07:15-08:55/100 18:47	07:24 06:52-08:32/100 17:00	07:00 07:24-08:29/65 16:31	07:23 07:48-08:32/44 16:36 08:47-09:43/56
29	05:50 06:28-07:39/71 20:19	06:21 06:42-07:24/42 19:38	06:52 07:15-08:55/100 18:45	07:25 06:55-08:32/97 16:59	07:02 07:25-08:29/64 16:31	07:24 07:48-08:33/45 16:37 08:48-09:43/55
30	05:51 06:28-07:39/71 20:18	06:22 06:44-07:22/38 19:36	06:53 07:15-08:56/101 18:44	07:26 06:59-08:33/94 16:58	07:03 07:26-08:28/62 16:31	07:24 07:49-08:34/45 16:38 08:49-09:44/55
31	05:52 06:28-07:39/71 20:17	06:23 06:46-07:19/33 19:34	06:54 07:15-08:56/101 18:43	07:27 07:05-08:33/88 16:56	07:04 08:43-09:20/37 16:30	07:24 07:49-08:35/46 16:38 08:50-09:44/54
Potential sun hours	460	428	375	345	297	287
Sum of minutes with flicker	2026	2489	2699	3191	2541	3097

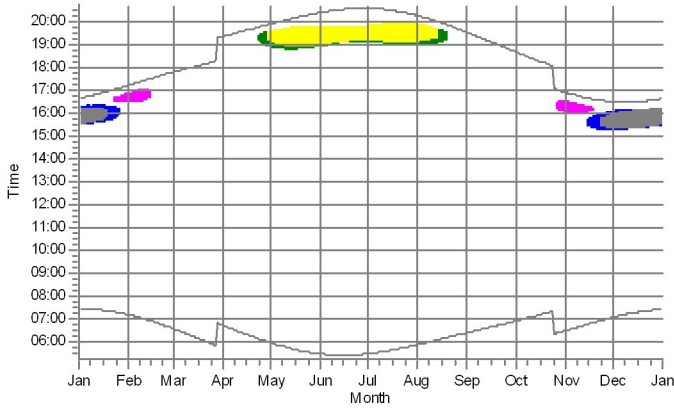
Table layout: For each day in each month the following matrix apply

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

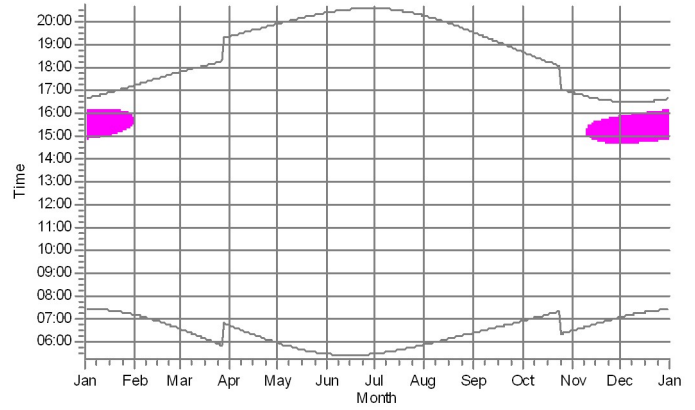
## SHADOW - Calendar per WTG, graphical

Calculation: oMBRA

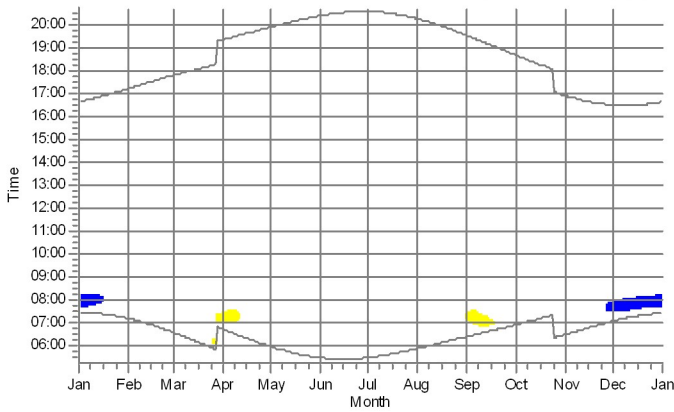
1: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (1)



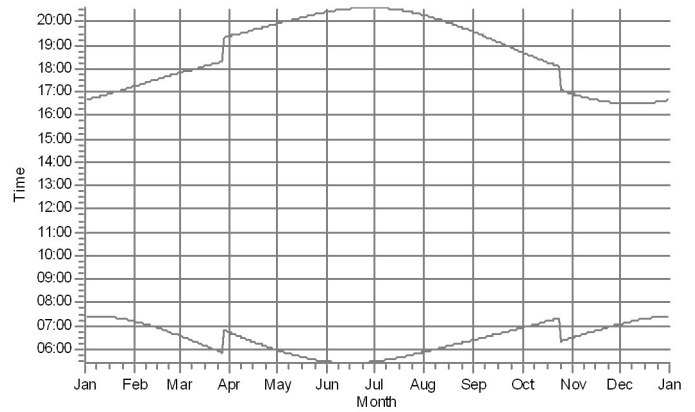
2: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (2)



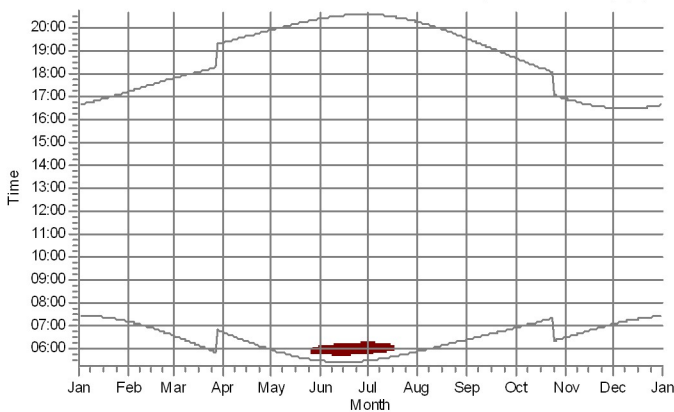
3: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (3)



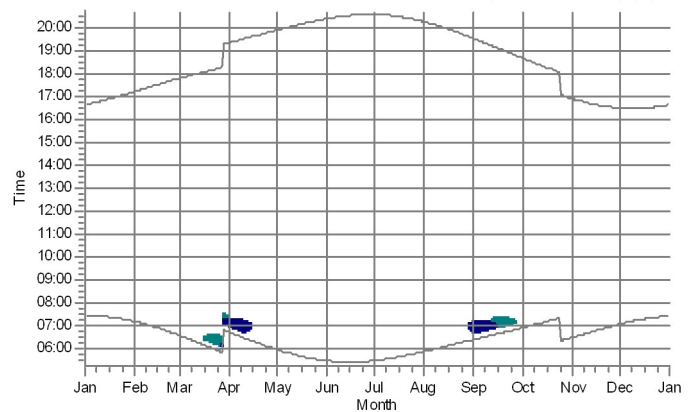
4: VESTAS V150-6.0 6000 150.0 !O! hub: 105,0 m (TOT: 180,0 m) (4)



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



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



### Shadow receptors

- A: Shadow Receptor: 1,0 × 1,0 Azimuth: -180,0° Slope: 90,0° (1)
- B: Shadow Receptor: 1,0 × 1,0 Azimuth: -180,0° Slope: 90,0° (2)
- C: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (3)
- D: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)

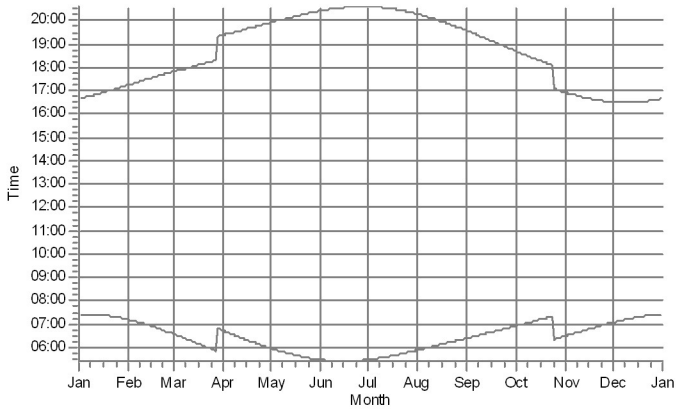
- E: Shadow Receptor: 1,0 × 1,0 Azimuth: 45,0° Slope: 90,0° (5)
- F: Shadow Receptor: 1,0 × 1,0 Azimuth: -140,0° Slope: 90,0° (6)
- G: Shadow Receptor: 1,0 × 1,0 Azimuth: -160,0° Slope: 90,0° (7)
- H: Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (8)



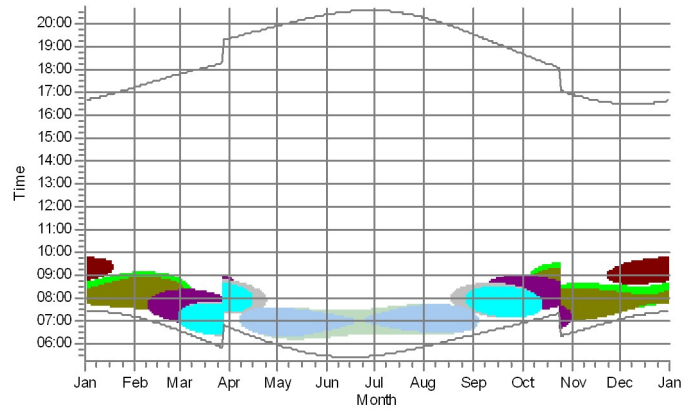
## SHADOW - Calendar per WTG, graphical

Calculation: oMBRA

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



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

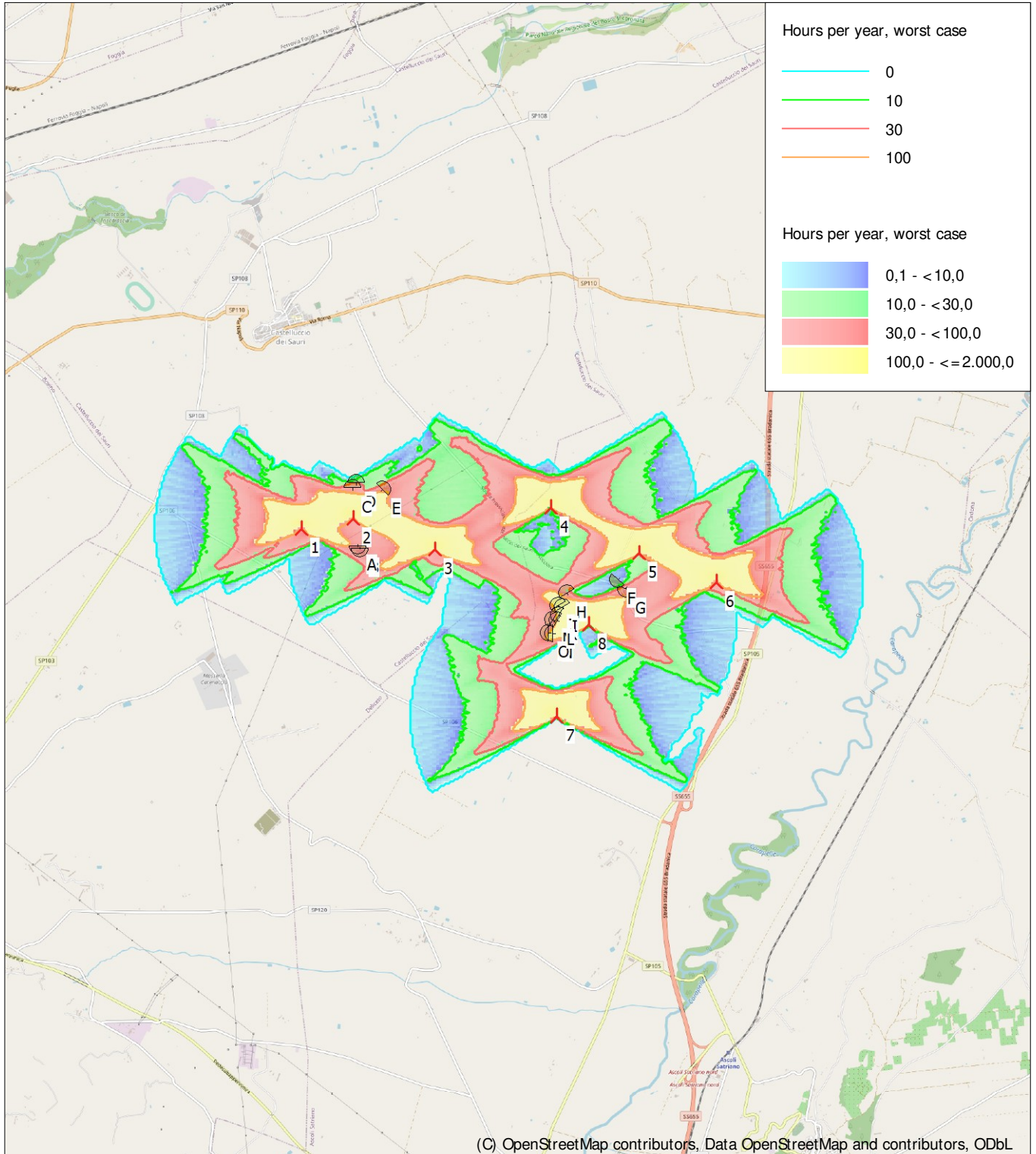


### Shadow receptors

- H: Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (8)
- I: Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (9)
- J: Shadow Receptor: 1,0 × 1,0 Azimuth: -30,0° Slope: 90,0° (10)
- K: Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (11)

- L: Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (12)
- M: Shadow Receptor: 1,0 × 1,0 Azimuth: -60,0° Slope: 90,0° (13)
- N: Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (14)
- O: Shadow Receptor: 1,0 × 1,0 Azimuth: -90,0° Slope: 90,0° (15)

**SHADOW - Map**  
Calculation: oMBRA



(C) OpenStreetMap contributors, Data OpenStreetMap and contributors, ODbL

0 1 2 3 4 km

Map: EMD OpenStreetMap , Print scale 1:75.000, Map center UTM (north)-WGS84 Zone: 33 East: 543.060 North: 4.569.390

New WTG

Shadow receptor

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

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m