
PROGETTO PER LA REALIZZAZIONE DI UN IMPIANTO PER LA
PRODUZIONE DI ENERGIA MEDIANTE LO SFRUTTAMENTO DEL VENTO
NEL TERRITORIO COMUNALE DI CAMUGNANO (BO) LOC. TRASSERRA
POTENZA NOMINALE 27 MW

PROGETTO DEFINITIVO - SIA

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**ES.6 Analisi dell'evoluzione dell'ombra indotta
dagli aereogeneratori - Shadow flickering**

REV.	DATA	DESCRIZIONE
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1. INTRODUZIONE

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 in territorio extra urbano del comune di Camugnano (BO). Il progetto è composto da n°9 aerogeneratori del tipo IEC 3B - 150, con potenza unitaria pari a 4.5 MW, altezza al mozzo pari a 150 e diametro rotorico pari a 163.

In particolare, la posizione degli aerogeneratori è la seguente:

WTG	COORDINATE UTM WGS84-32N	
	EST	NORD
CMG1	667700.04	4894365.45
CMG2	669446.62	4893167.11
CMG3	670427.59	4893158.78
CMG4	670441.56	4893655.03
CMG5	670773.98	4894345.93
CMG6	671276.93	4894317.04

Tab. 1 – Coordinate aerogeneratori

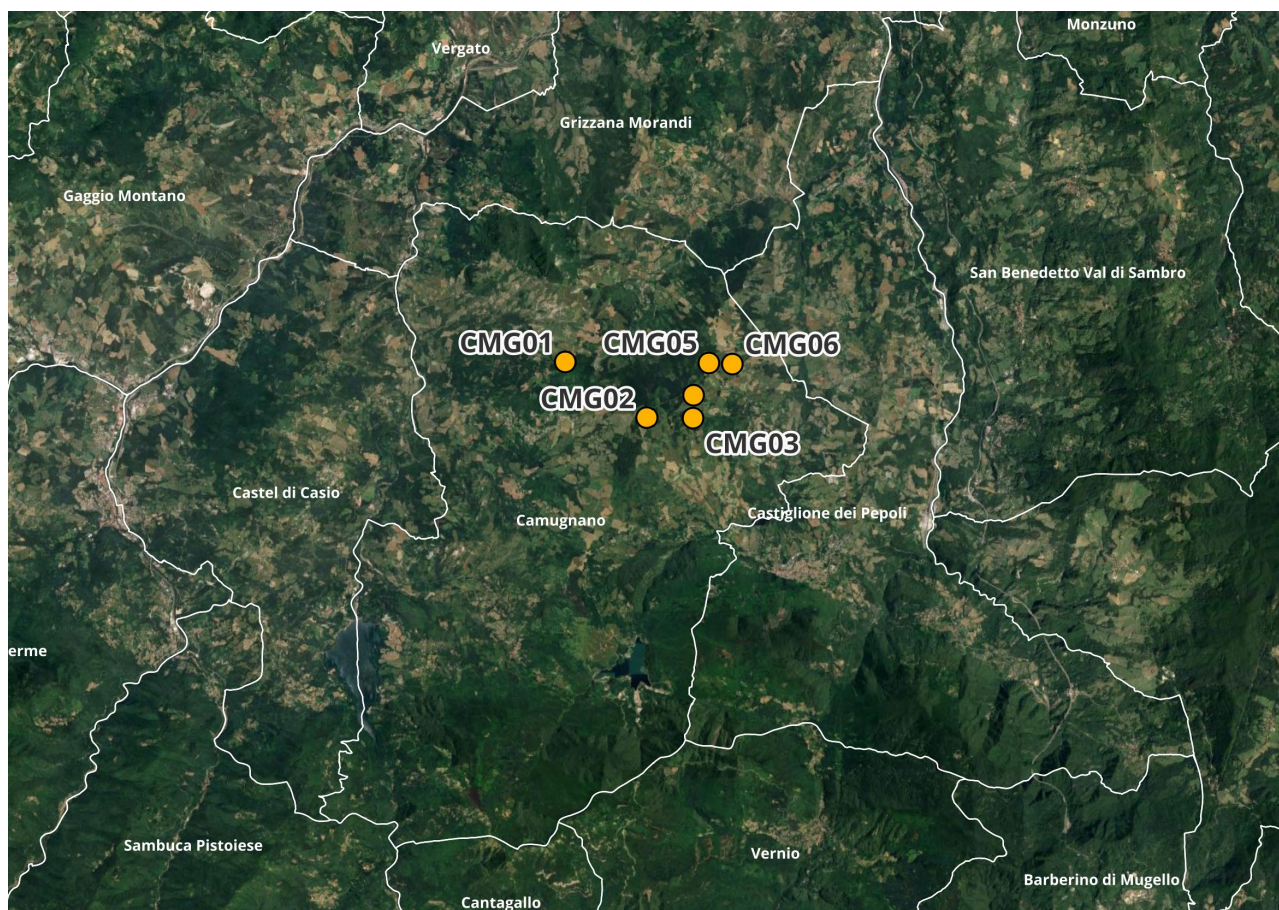


Figura 1: Planimetria dell'impianto

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 2 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.



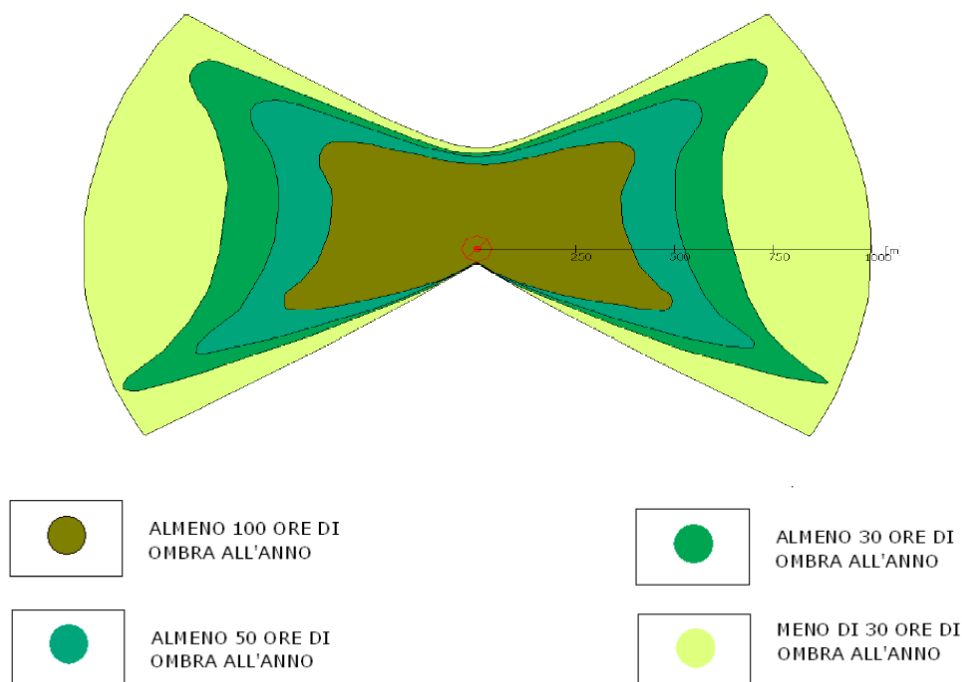


Figura 2: Evoluzione annuale tipo dell'ombra di una pala

Considerati i pochi precedenti esistenti (Germania) e le ipotesi così penalizzanti con cui è stato 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 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

3.1 Individuazione dei ricettori

Il progetto in esame nei comuni di Camugnano (BO) prevede l'installazione di 6 aerogeneratori.

L'analisi di shadow-flickering di cui al presente studio è scaturita da una attività di censimento nell'area del parco eolico in progetto così come descritto nell'elaborato ES.8.1 Individuazione recettori.

Da tale studio ne è derivato che i recettori da considerare effettivamente sensibili sono esterni all'intorno di 500 m (distanza pari a 2,5 volte l'altezza complessiva) dall'asse di ciascun aerogeneratore. Ad ogni modo si è ritenuto opportuno procedere con l'analisi.

L'analisi è stata elaborata per specifici 36 recettori che circondano l'impianto per i quali è stata stabilita l'abitabilità.



Codifica (WINDPRO)	Denominazio ne manufatto	Coordinate geografiche UTM WGS84 33N		z [m]
		Est	Nord	
A	3	668009.26	4894705.93	760.4
B	5	667998.75	4894710.44	758.4
C	6	668073.06	4894700.64	772.5
D	8	668019.16	4894690.49	760
E	9	667995.79	4894698.02	756.3
F	10	668197.84	4894050.87	833
G	11	667361.82	4894340.69	704.4
H	12	667343.18	4894329.20	707.9
I	16	670804.63	4893250.09	758.2
J	17	670772.77	4893259.50	760
K	18	670908.35	4893258.91	732.3
L	22	670743.08	4893648.37	780.3
M	27	670890.37	4893869.26	753.5
N	28	670892.21	4893865.27	753.2
O	29	670898.42	4893853.48	752.1
p	31	670900.59	4893860.68	751.6
Q	34	671707.01	4894127.42	618.6
R	36	671222.17	4894827.87	653

Tab. 2 – Coordinate recettori



SHADOW - Map
 Calculation: WON033_ShadowFlickering

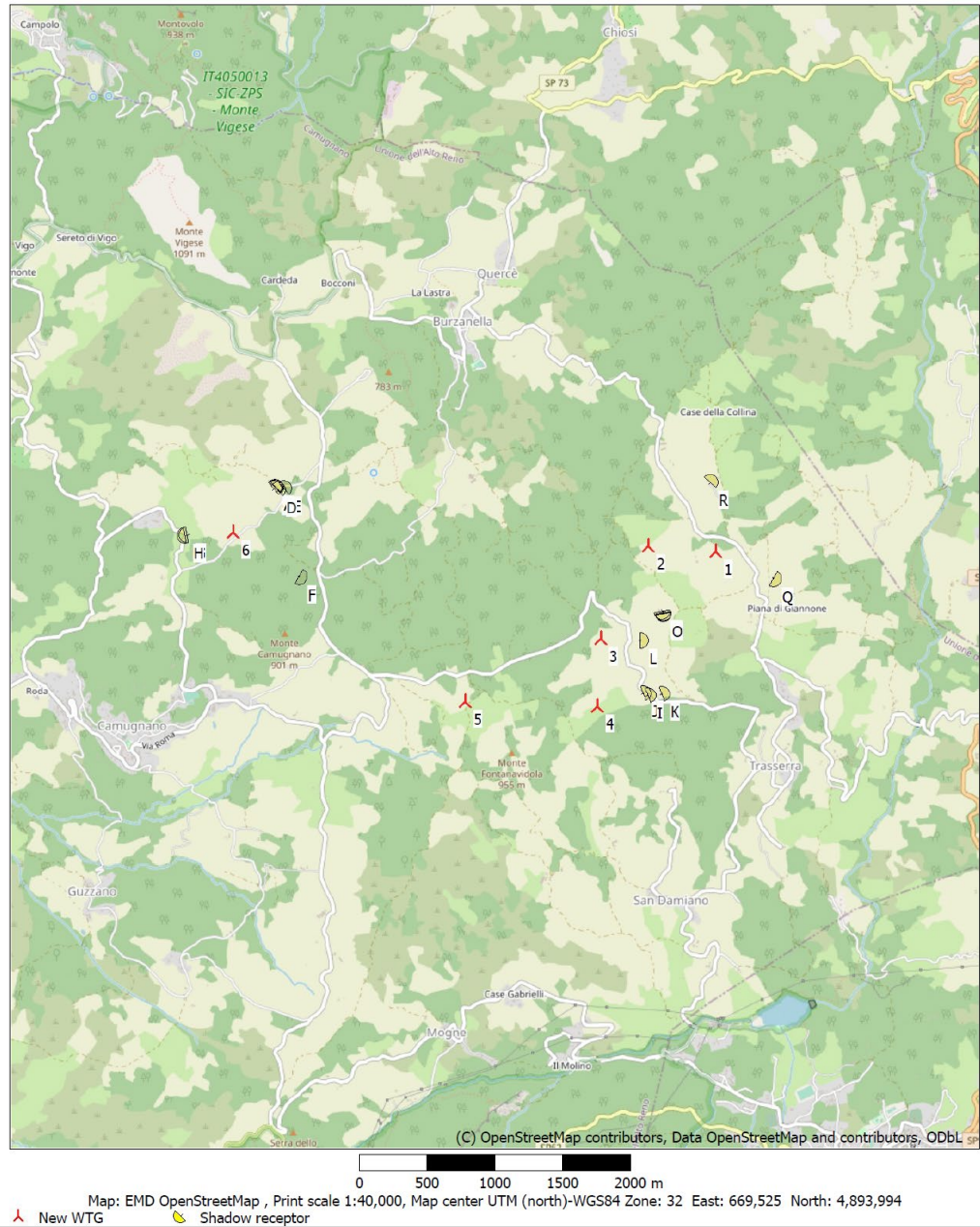


Figura 3 -Indicazione dei recettori

Nella tabella a seguire sono riportate le distanze minime intercorrenti tra recettori in oggetto e l'aerogeneratore più prossimo.



Codifica (WINDPRO)	Denominazio ne manufatto	Distanza WTG più	WTG più vicina [m]	Codifica (WINDPRO)
A	3	459	CMG01	6
B	5	456	CMG01	6
C	6	501	CMG01	6
D	8	455	CMG01	6
E	9	445	CMG01	6
F	10	588	CMG01	6
G	11	339	CMG01	6
H	12	358	CMG01	6
I	16	387	CMG03	4
J	17	359	CMG03	4
K	18	491	CMG03	4
L	22	301	CMG04	3
M	27	494	CMG05	2
N	28	490	CMG05	2
O	29	498	CMG04	3
p	31	501	CMG05	2
Q	34	470	CMG06	1
R	36	513	CMG06	1

Tab. 3 –Distanze delle turbine dai recettori più prossimi

In relazione a ciò, si fa presente che già in fase di scelta delle aree sulle quali ubicare l'impianto si è cercato di allontanarsi il più possibile dall'area urbana e dalle abitazioni ed edifici ritenuti sensibili.

Tale fascia è stata definita in fase di progetto al fine di garantire il rispetto dei limiti in merito non solo all'ombreggiamento ma anche agli impatti acustici, elettromagnetici e in termini di calcolo della gittata.

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.

3.2 Base dati e parametri di calcolo

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 dei 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 sul recettore "k" individuato nell'analisi che, nelle ipotesi di "Worst case", subisce il fenomeno per un periodo che si avvicina o supera di poco 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 per i ricettori con $k = 33$ ore/anno e comunque sono abitati meno di 4 ore giorno e quindi la probabilità di accadimento si riduce quasi al nulla.

È 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, Aprile, Settembre, Novembre e Dicembre nelle prime ore della giornata, oppure al primo pomeriggio. 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.

È 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 dell'elaborazione 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

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. Calendar per WTG, graphical: grafico dell'analisi giornaliera dell'effetto "flickering" indotto da ogni aerogeneratore sui recettori;
6. Map: mappa dei recettori.



SHADOW - Main Result

Calculation: WON033_ShadowFlickering
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: WON033_EMDGrid_1.wpg
Receptor grid resolution: 1.0 m

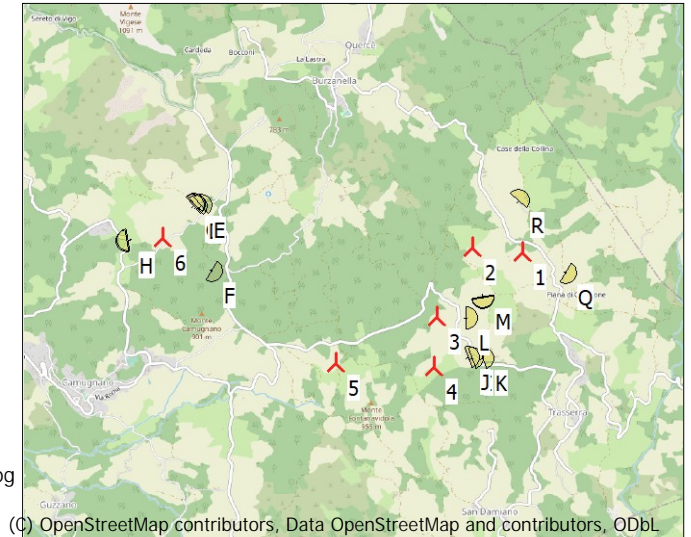
All coordinates are in
UTM (north)-WGS84 Zone: 32

WTGs

	Easting	Northing	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
			[m]									
1	671,277	4,894,317	661.2	VESTAS V163-4.5_h150 4500 ...Yes	VESTAS	V163-4.5_h150-4,500	4,500	163.0	150.0	2,500	-	
2	670,774	4,894,346	740.9	VESTAS V163-4.5_h150 4500 ...Yes	VESTAS	V163-4.5_h150-4,500	4,500	163.0	150.0	2,500	-	
3	670,442	4,893,655	827.8	VESTAS V163-4.5_h150 4500 ...Yes	VESTAS	V163-4.5_h150-4,500	4,500	163.0	150.0	2,500	-	
4	670,428	4,893,159	834.2	VESTAS V163-4.5_h150 4500 ...Yes	VESTAS	V163-4.5_h150-4,500	4,500	163.0	150.0	2,500	-	
5	669,447	4,893,167	899.1	VESTAS V163-4.5_h150 4500 ...Yes	VESTAS	V163-4.5_h150-4,500	4,500	163.0	150.0	2,500	-	
6	667,700	4,894,365	740.4	VESTAS V163-4.5_h150 4500 ...Yes	VESTAS	V163-4.5_h150-4,500	4,500	163.0	150.0	2,500	-	

Shadow receptor-Input

No.	Easting	Northing	Z	Width	Height	Elevation	Degrees from	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l. [m]	south cw [°]	window [°]		(ZVI) a.g.l. [m]
A	667,999	4,894,710	758.4	1.0	1.0	1.0	40.0	90.0	Fixed direction	2.0
B	668,009	4,894,706	760.4	1.0	1.0	1.0	50.0	90.0	Fixed direction	2.0
C	667,996	4,894,698	756.3	1.0	1.0	1.0	50.0	90.0	Fixed direction	2.0
D	668,019	4,894,690	760.0	1.0	1.0	1.0	50.0	90.0	Fixed direction	2.0
E	668,073	4,894,701	772.5	1.0	1.0	1.0	50.0	90.0	Fixed direction	2.0
F	668,198	4,894,051	833.0	1.0	1.0	1.0	120.0	90.0	Fixed direction	2.0
G	667,362	4,894,341	704.4	1.0	1.0	1.0	-100.0	90.0	Fixed direction	2.0
H	667,343	4,894,329	707.9	1.0	1.0	1.0	-100.0	90.0	Fixed direction	2.0
I	670,805	4,893,250	758.2	1.0	1.0	1.0	70.0	90.0	Fixed direction	2.0
J	670,773	4,893,260	760.0	1.0	1.0	1.0	70.0	90.0	Fixed direction	2.0
K	670,908	4,893,259	732.3	1.0	1.0	1.0	70.0	90.0	Fixed direction	2.0
L	670,743	4,893,648	780.3	1.0	1.0	1.0	90.0	90.0	Fixed direction	2.0
M	670,890	4,893,869	753.5	1.0	1.0	1.0	170.0	90.0	Fixed direction	2.0
N	670,892	4,893,865	753.2	1.0	1.0	1.0	170.0	90.0	Fixed direction	2.0
O	670,898	4,893,853	752.1	1.0	1.0	1.0	170.0	90.0	Fixed direction	2.0
P	670,901	4,893,861	751.6	1.0	1.0	1.0	170.0	90.0	Fixed direction	2.0
Q	671,707	4,894,127	618.6	1.0	1.0	1.0	120.0	90.0	Fixed direction	2.0
R	671,222	4,894,828	653.0	1.0	1.0	1.0	40.0	90.0	Fixed direction	2.0



Scale 1:75,000
New WTG
Shadow receptor

Project:
WON033

Licensed user:
Iron solar s.r.l.
via Lanzone, 31
IT-20122 Milano
+393487125089
Fabio Paccapelo / francesca.saccarola@hopegroup.it
Calculated:
06/03/2024 14:46/3.6.377

SHADOW - Main Result

Calculation: WON033_ShadowFlickering

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	159:18	131	1:24
B	159:14	133	1:23
C	167:01	137	1:25
D	163:46	140	1:23
E	144:47	135	1:17
F	17:10	58	0:26
G	197:29	137	1:38
H	188:18	134	1:35
I	149:47	140	1:39
J	162:57	146	1:46
K	96:27	102	1:24
L	306:29	272	1:44
M	0:00	0	0:00
N	0:00	0	0:00
O	0:00	0	0:00
P	0:00	0	0:00
Q	80:07	181	0:40
R	129:30	138	1:28

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

No.	Name	Worst case [h/year]
1	VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (1)	43:20
2	VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (2)	114:01
3	VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (3)	217:01
4	VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (4)	294:25
5	VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (5)	36:57
6	VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (6)	459:01

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: WON033_ShadowFlickering Shadow receptor: A - Shadow Receptor: 1.0 × 1.0 Azimuth: 40.0° 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	07:52		14:32 (6)	07:35	14:40 (6)	06:55	06:59	05:36
	16:47	76	15:48 (6)	17:25	16:01 (6)	18:03	19:42	20:52
2	07:52		14:33 (6)	07:34	14:40 (6)	06:53	06:57	05:36
	16:48	76	15:49 (6)	17:26	16:02 (6)	18:04	19:43	20:53
3	07:52		14:33 (6)	07:33	14:41 (6)	06:52	06:56	05:35
	16:49	77	15:50 (6)	17:28	16:02 (6)	18:06	19:45	20:54
4	07:52		14:33 (6)	07:32	14:42 (6)	06:50	06:54	05:35
	16:50	77	15:50 (6)	17:29	16:02 (6)	18:07	19:46	20:54
5	07:52		14:34 (6)	07:30	14:43 (6)	06:48	06:52	05:34
	16:51	77	15:51 (6)	17:30	16:02 (6)	18:08	19:47	20:55
6	07:52		14:33 (6)	07:29	14:43 (6)	06:46	06:50	05:34
	16:52	78	15:51 (6)	17:32	16:01 (6)	18:10	19:48	20:56
7	07:51		14:34 (6)	07:28	14:44 (6)	06:45	06:48	05:33
	16:53	78	15:52 (6)	17:33	16:01 (6)	18:11	19:49	20:57
8	07:51		14:34 (6)	07:27	14:45 (6)	06:43	06:47	05:33
	16:54	79	15:53 (6)	17:35	16:01 (6)	18:12	19:51	20:57
9	07:51		14:34 (6)	07:25	14:45 (6)	06:41	06:45	05:33
	16:55	79	15:53 (6)	17:36	16:00 (6)	18:14	19:52	20:58
10	07:51		14:34 (6)	07:24	14:47 (6)	06:39	06:43	05:33
	16:56	80	15:54 (6)	17:37	15:59 (6)	18:15	19:53	20:58
11	07:50		14:35 (6)	07:23	14:47 (6)	06:37	06:41	05:32
	16:58	80	15:55 (6)	17:39	15:58 (6)	18:16	19:54	20:59
12	07:50		14:34 (6)	07:21	14:48 (6)	06:36	06:40	05:32
	16:59	81	15:55 (6)	17:40	15:58 (6)	18:17	19:56	21:00
13	07:50		14:35 (6)	07:20	14:50 (6)	06:34	06:38	05:32
	17:00	81	15:56 (6)	17:41	15:57 (6)	18:19	19:57	21:00
14	07:49		14:35 (6)	07:19	14:51 (6)	06:32	06:36	05:32
	17:01	81	15:56 (6)	17:43	15:56 (6)	18:20	19:58	21:01
15	07:49		14:36 (6)	07:17	14:53 (6)	06:30	06:34	05:32
	17:02	81	15:57 (6)	17:44	15:55 (6)	18:21	19:59	21:01
16	07:48		14:35 (6)	07:16	14:54 (6)	06:28	06:33	05:32
	17:03	82	15:57 (6)	17:46	15:54 (6)	18:22	20:00	21:01
17	07:48		14:35 (6)	07:14	14:56 (6)	06:27	06:31	05:32
	17:05	82	15:57 (6)	17:47	15:53 (6)	18:24	20:02	21:02
18	07:47		14:36 (6)	07:13	14:57 (6)	06:25	06:29	05:32
	17:06	83	15:59 (6)	17:48	15:51 (6)	18:25	20:03	21:02
19	07:47		14:36 (6)	07:11	14:59 (6)	06:23	06:28	05:32
	17:07	83	15:59 (6)	17:50	15:49 (6)	18:26	20:04	21:03
20	07:46		14:36 (6)	07:10	15:02 (6)	06:21	06:26	05:32
	17:09	83	15:59 (6)	17:51	15:48 (6)	18:27	20:05	21:03
21	07:45		14:36 (6)	07:08	15:04 (6)	06:19	06:24	05:32
	17:10	83	15:59 (6)	17:52	15:45 (6)	18:29	20:07	21:03
22	07:44		14:37 (6)	07:06	15:07 (6)	06:18	06:23	05:33
	17:11	83	16:00 (6)	17:54	15:43 (6)	18:30	20:08	21:03
23	07:44		14:37 (6)	07:05	15:10 (6)	06:16	06:21	05:33
	17:12	84	16:01 (6)	17:55	15:40 (6)	18:31	20:09	21:03
24	07:43		14:37 (6)	07:03	15:15 (6)	06:14	06:19	05:33
	17:14	84	16:01 (6)	17:56	15:35 (6)	18:32	20:10	21:04
25	07:42		14:38 (6)	07:02		06:12	06:18	05:33
	17:15	83	16:01 (6)	17:58		18:34	20:11	21:04
26	07:41		14:38 (6)	07:00		06:10	06:16	05:34
	17:17	83	16:01 (6)	17:59		18:35	20:13	21:04
27	07:40		14:38 (6)	06:58		06:08	06:15	05:34
	17:18	84	16:02 (6)	18:00		18:36	20:14	21:04
28	07:39		14:39 (6)	06:57		06:07	06:13	05:34
	17:19	83	16:02 (6)	18:02		18:37	20:15	21:04
29	07:38		14:39 (6)			07:05	06:12	05:35
	17:21	83	16:02 (6)			19:38	20:16	21:04
30	07:37		14:40 (6)			07:03	06:10	05:35
	17:22	82	16:02 (6)			19:40	20:17	21:04
31	07:36		14:40 (6)			07:01		
	17:23	82	16:02 (6)			19:41	20:51	
Potential sun hours	288		292		369	403	457	463
Total, worst case	2508		1510					

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: A - Shadow Receptor: 1.0 × 1.0 Azimuth: 40.0° 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	05:36 21:04	06:03 20:42	06:38 19:54	07:13 18:59		06:52 17:07	73	14:16 (6) 15:29 (6)	07:30 16:39
2	05:36 21:03	06:04 20:40	06:39 19:52	07:14 18:57		06:53 17:06	74	14:15 (6) 15:29 (6)	07:31 16:39
3	05:37 21:03	06:05 20:39	06:40 19:50	07:15 18:55		06:54 17:05	76	14:14 (6) 15:30 (6)	07:33 16:38
4	05:37 21:03	06:06 20:38	06:41 19:49	07:16 18:53		06:56 17:03	77	14:14 (6) 15:31 (6)	07:34 16:38
5	05:38 21:03	06:07 20:37	06:43 19:47	07:17 18:51		06:57 17:02	78	14:13 (6) 15:31 (6)	07:35 16:38
6	05:39 21:02	06:08 20:35	06:44 19:45	07:19 18:50		06:58 17:01	79	14:13 (6) 15:32 (6)	07:36 16:38
7	05:39 21:02	06:09 20:34	06:45 19:43	07:20 18:48		07:00 16:59	80	14:12 (6) 15:32 (6)	07:37 16:38
8	05:40 21:02	06:10 20:33	06:46 19:41	07:21 18:46		07:01 16:58	81	14:12 (6) 15:33 (6)	07:38 16:37
9	05:41 21:01	06:12 20:31	06:47 19:40	07:22 18:44		07:02 16:57	81	14:11 (6) 15:32 (6)	07:39 16:37
10	05:42 21:01	06:13 20:30	06:48 19:38	07:23 18:43		07:04 16:56	81	14:12 (6) 15:33 (6)	07:40 16:37
11	05:42 21:00	06:14 20:28	06:49 19:36	07:25 18:41		07:05 16:55	82	14:11 (6) 15:33 (6)	07:41 16:37
12	05:43 21:00	06:15 20:27	06:51 19:34	07:26 18:39		07:06 16:54	83	14:10 (6) 15:33 (6)	07:41 16:37
13	05:44 20:59	06:16 20:25	06:52 19:32	07:27 18:37		07:08 16:52	83	14:11 (6) 15:34 (6)	07:42 16:37
14	05:45 20:58	06:17 20:24	06:53 19:30	07:28 18:36		07:09 16:51	83	14:11 (6) 15:34 (6)	07:43 16:38
15	05:46 20:58	06:18 20:22	06:54 19:28	07:30 18:34		07:10 16:50	83	14:11 (6) 15:34 (6)	07:44 16:38
16	05:47 20:57	06:20 20:21	06:55 19:27	07:31 18:32		07:12 16:49	83	14:11 (6) 15:34 (6)	07:45 16:38
17	05:47 20:56	06:21 20:19	06:56 19:25	07:32 18:30	11	07:13 16:03 (6)	83	14:11 (6) 15:34 (6)	07:45 16:38
18	05:48 20:56	06:22 20:18	06:57 19:23	07:33 18:29	24	07:14 16:08 (6)	84	14:11 (6) 15:35 (6)	07:46 16:39
19	05:49 20:55	06:23 20:16	06:59 19:21	07:35 18:27	32	07:16 15:41 (6)	84	14:11 (6) 15:35 (6)	07:47 16:39
20	05:50 20:54	06:24 20:14	07:00 19:19	07:36 18:25	38	07:17 16:15 (6)	83	14:12 (6) 15:35 (6)	07:47 16:39
21	05:51 20:53	06:25 20:13	07:01 19:17	07:37 18:24	44	07:18 16:17 (6)	83	14:12 (6) 15:35 (6)	07:48 16:40
22	05:52 20:52	06:26 20:11	07:02 19:15	07:39 18:22	48	07:19 15:31 (6)	83	14:12 (6) 15:35 (6)	07:48 16:40
23	05:53 20:51	06:28 20:09	07:03 19:14	07:40 18:21	51	07:21 16:20 (6)	83	14:13 (6) 15:36 (6)	07:49 16:41
24	05:54 20:50	06:29 20:08	07:04 19:12	07:41 18:19	55	07:22 16:21 (6)	83	14:13 (6) 15:36 (6)	07:49 16:41
25	05:55 20:49	06:30 20:06	07:06 19:10	07:42 17:18	58	07:23 15:23 (6)	82	14:13 (6) 15:35 (6)	07:50 16:42
26	05:56 20:48	06:31 20:04	07:07 19:08	07:44 17:16	61	07:24 15:24 (6)	82	14:14 (6) 15:36 (6)	07:50 16:43
27	05:57 20:47	06:32 20:03	07:08 19:06	07:45 17:15	63	07:26 15:25 (6)	81	14:15 (6) 15:36 (6)	07:50 16:43
28	05:58 20:46	06:33 20:01	07:09 19:04	07:46 17:13	66	07:27 15:26 (6)	81	14:15 (6) 15:36 (6)	07:51 16:44
29	05:59 20:45	06:34 19:59	07:10 19:02	07:48 17:12	67	07:28 15:26 (6)	81	14:15 (6) 15:36 (6)	07:51 16:45
30	06:00 20:44	06:36 19:58	07:11 19:01	07:49 17:10	70	07:29 15:28 (6)	81	14:16 (6) 15:37 (6)	07:51 16:45
31	06:01 20:43	06:37 19:56		06:50 17:09	71	14:17 (6) 15:28 (6)			07:51 16:46
Potential sun hours	469	434	376	342	759	290		277	2350
Total, worst case									

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: WON033_ShadowFlickering Shadow receptor: B - Shadow Receptor: 1.0 × 1.0 Azimuth: 50.0° Slope: 90.0° (16)
Assumptions for shadow calculations

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

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

	January		February		March	April	May	June
1	07:52	14:39 (6)	07:35	14:45 (6)	06:55	06:59	06:09	05:36
	16:47	15:53 (6)	17:25	16:07 (6)	18:03	19:42	20:19	20:52
2	07:52	14:39 (6)	07:34	14:46 (6)	06:53	06:57	06:07	05:36
	16:48	15:53 (6)	17:26	16:07 (6)	18:04	19:43	20:20	20:53
3	07:52	14:40 (6)	07:33	14:47 (6)	06:52	06:56	06:06	05:35
	16:49	15:54 (6)	17:28	16:07 (6)	18:06	19:45	20:21	20:54
4	07:52	14:40 (6)	07:32	14:47 (6)	06:50	06:54	06:04	05:35
	16:50	15:55 (6)	17:29	16:07 (6)	18:07	19:46	20:22	20:54
5	07:52	14:40 (6)	07:30	14:48 (6)	06:48	06:52	06:03	05:34
	16:51	15:56 (6)	17:30	16:07 (6)	18:08	19:47	20:23	20:55
6	07:52	14:40 (6)	07:29	14:48 (6)	06:46	06:50	06:02	05:34
	16:52	15:55 (6)	17:32	16:06 (6)	18:10	19:48	20:25	20:56
7	07:51	14:40 (6)	07:28	14:49 (6)	06:45	06:48	06:00	05:33
	16:53	15:56 (6)	17:33	16:06 (6)	18:11	19:49	20:26	20:57
8	07:51	14:41 (6)	07:27	14:50 (6)	06:43	06:47	05:59	05:33
	16:54	15:57 (6)	17:35	16:06 (6)	18:12	19:51	20:27	20:57
9	07:51	14:40 (6)	07:25	14:50 (6)	06:41	06:45	05:58	05:33
	16:55	15:57 (6)	17:36	16:05 (6)	18:14	19:52	20:28	20:58
10	07:51	14:41 (6)	07:24	14:51 (6)	06:39	06:43	05:57	05:33
	16:56	15:58 (6)	17:37	16:05 (6)	18:15	19:53	20:29	20:58
11	07:50	14:41 (6)	07:23	14:52 (6)	06:37	06:41	05:55	05:32
	16:58	15:59 (6)	17:39	16:04 (6)	18:16	19:54	20:30	20:59
12	07:50	14:41 (6)	07:21	14:53 (6)	06:36	06:40	05:54	05:32
	16:59	15:59 (6)	17:40	16:04 (6)	18:17	19:56	20:32	21:00
13	07:50	14:41 (6)	07:20	14:55 (6)	06:34	06:38	05:53	05:32
	17:00	16:00 (6)	17:41	16:04 (6)	18:19	19:57	20:33	21:00
14	07:49	14:41 (6)	07:19	14:55 (6)	06:32	06:36	05:52	05:32
	17:01	16:01 (6)	17:43	16:02 (6)	18:20	19:58	20:34	21:01
15	07:49	14:42 (6)	07:17	14:57 (6)	06:30	06:34	05:51	05:32
	17:02	16:02 (6)	17:44	16:02 (6)	18:21	19:59	20:35	21:01
16	07:48	14:42 (6)	07:16	14:58 (6)	06:28	06:33	05:49	05:32
	17:03	16:02 (6)	17:46	16:00 (6)	18:22	20:00	20:36	21:01
17	07:48	14:41 (6)	07:14	15:00 (6)	06:27	06:31	05:48	05:32
	17:05	16:02 (6)	17:47	16:00 (6)	18:24	20:02	20:37	21:02
18	07:47	14:42 (6)	07:13	15:01 (6)	06:25	06:29	05:47	05:32
	17:06	16:03 (6)	17:48	15:58 (6)	18:25	20:03	20:38	21:02
19	07:47	14:42 (6)	07:11	15:02 (6)	06:23	06:28	05:46	05:32
	17:07	16:04 (6)	17:50	15:56 (6)	18:26	20:04	20:39	21:03
20	07:46	14:42 (6)	07:10	15:05 (6)	06:21	06:26	05:45	05:32
	17:09	16:04 (6)	17:51	15:55 (6)	18:27	20:05	20:40	21:03
21	07:45	14:42 (6)	07:08	15:07 (6)	06:19	06:24	05:44	05:32
	17:10	16:04 (6)	17:52	15:53 (6)	18:29	20:07	20:41	21:03
22	07:44	14:43 (6)	07:06	15:10 (6)	06:18	06:23	05:43	05:33
	17:11	16:05 (6)	17:54	15:51 (6)	18:30	20:08	20:43	21:03
23	07:44	14:43 (6)	07:05	15:12 (6)	06:16	06:21	05:43	05:33
	17:12	16:06 (6)	17:55	15:48 (6)	18:31	20:09	20:44	21:03
24	07:43	14:43 (6)	07:03	15:16 (6)	06:14	06:19	05:42	05:33
	17:14	16:06 (6)	17:56	15:44 (6)	18:32	20:10	20:45	21:04
25	07:42	14:43 (6)	07:02	15:21 (6)	06:12	06:18	05:41	05:33
	17:15	16:06 (6)	17:58	15:41 (6)	18:34	20:11	20:46	21:04
26	07:41	14:44 (6)	07:00		06:10	06:16	05:40	05:34
	17:17	16:06 (6)	17:59		18:35	20:13	20:46	21:04
27	07:40	14:44 (6)	06:58		06:08	06:15	05:39	05:34
	17:18	16:07 (6)	18:00		18:36	20:14	20:47	21:04
28	07:39	14:44 (6)	06:57		06:07	06:13	05:39	05:34
	17:19	16:07 (6)	18:02		18:37	20:15	20:48	21:04
29	07:38	14:45 (6)			07:05	06:12	05:38	05:35
	17:21	16:07 (6)			19:38	20:16	20:49	21:04
30	07:37	14:45 (6)			07:03	06:10	05:37	05:35
	17:22	16:07 (6)			19:40	20:17	20:50	21:04
31	07:36	14:46 (6)			07:01		05:37	
	17:23	16:08 (6)			19:41		20:51	
Potential sun hours	288		292		369	403	457	463
Total, worst case	2462		1580					

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: B - Shadow Receptor: 1.0 × 1.0 Azimuth: 50.0° Slope: 90.0° (16)
Assumptions for shadow calculations

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

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

	July	August	September	October		November		December		
1	05:36 21:04	06:03 20:42	06:38 19:54	07:13 18:59		06:52 17:07	74	14:21 (6) 15:35 (6)	07:30 16:39	14:23 (6) 15:41 (6)
2	05:36 21:03	06:04 20:40	06:39 19:52	07:14 18:57		06:53 17:06	75	14:20 (6) 15:35 (6)	07:31 16:39	14:24 (6) 15:41 (6)
3	05:37 21:03	06:05 20:39	06:40 19:50	07:15 18:55		06:54 17:05	76	14:19 (6) 15:35 (6)	07:33 16:38	14:24 (6) 15:41 (6)
4	05:37 21:03	06:06 20:38	06:41 19:49	07:16 18:53		06:56 17:03	77	14:19 (6) 15:36 (6)	07:34 16:38	14:25 (6) 15:41 (6)
5	05:38 21:03	06:07 20:37	06:43 19:47	07:17 18:51		06:57 17:02	78	14:18 (6) 15:36 (6)	07:35 16:38	14:25 (6) 15:41 (6)
6	05:39 21:02	06:08 20:35	06:44 19:45	07:19 18:50		06:58 17:01	79	14:18 (6) 15:37 (6)	07:36 16:38	14:26 (6) 15:42 (6)
7	05:39 21:02	06:09 20:34	06:45 19:43	07:20 18:48		07:00 16:59	80	14:17 (6) 15:37 (6)	07:37 16:38	14:26 (6) 15:42 (6)
8	05:40 21:02	06:10 20:33	06:46 19:41	07:21 18:46		07:01 16:58	81	14:17 (6) 15:38 (6)	07:38 16:37	14:27 (6) 15:42 (6)
9	05:41 21:01	06:12 20:31	06:47 19:40	07:22 18:44		07:02 16:57	81	14:17 (6) 15:38 (6)	07:39 16:37	14:28 (6) 15:42 (6)
10	05:42 21:01	06:13 20:30	06:48 19:38	07:23 18:43		07:04 16:56	82	14:17 (6) 15:39 (6)	07:40 16:37	14:28 (6) 15:42 (6)
11	05:42 21:00	06:14 20:28	06:49 19:36	07:25 18:41		07:05 16:55	82	14:17 (6) 15:39 (6)	07:41 16:37	14:29 (6) 15:43 (6)
12	05:43 21:00	06:15 20:27	06:51 19:34	07:26 18:39		07:06 16:54	82	14:16 (6) 15:38 (6)	07:41 16:37	14:30 (6) 15:43 (6)
13	05:44 20:59	06:16 20:25	06:52 19:32	07:27 18:37		07:08 16:52	82	14:17 (6) 15:39 (6)	07:42 16:37	14:31 (6) 15:44 (6)
14	05:45 20:58	06:17 20:24	06:53 19:30	07:28 18:36		07:09 16:51	83	14:16 (6) 15:39 (6)	07:43 16:38	14:31 (6) 15:44 (6)
15	05:46 20:58	06:18 20:22	06:54 19:28	07:30 18:34		07:10 16:50	83	14:17 (6) 15:40 (6)	07:44 16:38	14:31 (6) 15:44 (6)
16	05:47 20:57	06:20 20:21	06:55 19:27	07:31 18:32	10	15:58 (6) 16:08 (6)	82	14:17 (6) 15:39 (6)	07:45 16:38	14:32 (6) 15:44 (6)
17	05:47 20:56	06:21 20:19	06:56 19:25	07:32 18:30	24	15:50 (6) 16:14 (6)	83	14:16 (6) 15:39 (6)	07:45 16:38	14:33 (6) 15:45 (6)
18	05:48 20:56	06:22 20:18	06:57 19:23	07:33 18:29	31	15:46 (6) 16:17 (6)	83	14:17 (6) 15:40 (6)	07:46 16:39	14:33 (6) 15:45 (6)
19	05:49 20:55	06:23 20:16	06:59 19:21	07:35 18:27	37	15:43 (6) 16:20 (6)	83	14:17 (6) 15:40 (6)	07:47 16:39	14:34 (6) 15:45 (6)
20	05:50 20:54	06:24 20:14	07:00 19:19	07:36 18:25	43	15:39 (6) 16:22 (6)	82	14:18 (6) 15:40 (6)	07:47 16:39	14:35 (6) 15:46 (6)
21	05:51 20:53	06:25 20:13	07:01 19:17	07:37 18:24	47	15:37 (6) 16:24 (6)	82	14:18 (6) 15:40 (6)	07:48 16:40	14:35 (6) 15:46 (6)
22	05:52 20:52	06:26 20:11	07:02 19:15	07:39 18:22	51	15:35 (6) 16:26 (6)	82	14:18 (6) 15:40 (6)	07:48 16:40	14:36 (6) 15:47 (6)
23	05:53 20:51	06:28 20:09	07:03 19:14	07:40 18:21	55	15:32 (6) 16:27 (6)	82	14:19 (6) 15:41 (6)	07:49 16:41	14:36 (6) 15:47 (6)
24	05:54 20:50	06:29 20:08	07:04 19:12	07:41 18:19	58	15:30 (6) 16:28 (6)	81	14:19 (6) 15:40 (6)	07:49 16:41	14:36 (6) 15:47 (6)
25	05:55 20:49	06:30 20:06	07:06 19:10	07:42 17:18	60	14:29 (6) 15:29 (6)	81	14:19 (6) 15:40 (6)	07:50 16:42	14:37 (6) 15:49 (6)
26	05:56 20:48	06:31 20:04	07:07 19:08	07:44 17:16	63	14:27 (6) 15:30 (6)	80	14:21 (6) 15:41 (6)	07:50 16:43	14:37 (6) 15:49 (6)
27	05:57 20:47	06:32 20:03	07:08 19:06	07:45 17:15	66	14:26 (6) 15:32 (6)	80	14:21 (6) 15:41 (6)	07:50 16:43	14:37 (6) 15:49 (6)
28	05:58 20:46	06:33 20:01	07:09 19:04	07:46 17:13	67	14:25 (6) 15:32 (6)	80	14:21 (6) 15:41 (6)	07:51 16:44	14:37 (6) 15:49 (6)
29	05:59 20:45	06:34 19:59	07:10 19:02	07:48 17:12	69	14:23 (6) 15:32 (6)	80	14:21 (6) 15:41 (6)	07:51 16:45	14:38 (6) 15:51 (6)
30	06:00 20:44	06:36 19:58	07:11 19:01	07:49 17:10	71	14:23 (6) 15:34 (6)	78	14:23 (6) 15:41 (6)	07:51 16:45	14:39 (6) 15:51 (6)
31	06:01 20:43	06:37 19:56		06:50 17:09	73	14:21 (6) 15:34 (6)		07:51 16:46	07:51 16:46	14:39 (6) 15:52 (6)
Potential sun hours	469	434	376	342	825	290	2414	277	2273	
Total, worst case										

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: WON033_ShadowFlickering Shadow receptor: C - Shadow Receptor: 1.0 × 1.0 Azimuth: 50.0° Slope: 90.0° (17)
Assumptions for shadow calculations

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

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

	January		February		March		April	May	June
1	07:52		14:35 (6)	07:35	14:40 (6)	06:55	06:59	06:09	05:36
	16:47	73	15:48 (6)	17:25	16:04 (6)	18:03	19:42	20:19	20:52
2	07:52		14:35 (6)	07:34	14:40 (6)	06:53	06:57	06:07	05:36
	16:48	74	15:49 (6)	17:26	16:04 (6)	18:04	19:43	20:20	20:53
3	07:52		14:35 (6)	07:33	14:41 (6)	06:52	06:56	06:06	05:35
	16:49	75	15:50 (6)	17:28	16:04 (6)	18:06	19:45	20:21	20:54
4	07:52		14:36 (6)	07:32	14:41 (6)	06:50	06:54	06:04	05:35
	16:50	74	15:50 (6)	17:29	16:04 (6)	18:07	19:46	20:22	20:54
5	07:52		14:36 (6)	07:30	14:42 (6)	06:48	06:52	06:03	05:34
	16:51	75	15:51 (6)	17:30	16:05 (6)	18:08	19:47	20:23	20:55
6	07:52		14:35 (6)	07:29	14:42 (6)	06:46	06:50	06:02	05:34
	16:52	76	15:51 (6)	17:32	16:04 (6)	18:10	19:48	20:25	20:56
7	07:51		14:36 (6)	07:28	14:43 (6)	06:45	06:48	06:00	05:33
	16:53	76	15:52 (6)	17:33	16:04 (6)	18:11	19:49	20:26	20:57
8	07:51		14:36 (6)	07:27	14:44 (6)	06:43	06:47	05:59	05:33
	16:54	77	15:53 (6)	17:35	16:04 (6)	18:12	19:51	20:27	20:57
9	07:51		14:36 (6)	07:25	14:44 (6)	06:41	06:45	05:58	05:33
	16:55	77	15:53 (6)	17:36	16:03 (6)	18:14	19:52	20:28	20:58
10	07:51		14:36 (6)	07:24	14:45 (6)	06:39	06:43	05:57	05:33
	16:56	78	15:54 (6)	17:37	16:03 (6)	18:15	19:53	20:29	20:58
11	07:50		14:37 (6)	07:23	14:45 (6)	06:37	06:41	05:55	05:32
	16:58	78	15:55 (6)	17:39	16:02 (6)	18:16	19:54	20:30	20:59
12	07:50		14:36 (6)	07:21	14:46 (6)	06:36	06:40	05:54	05:32
	16:59	79	15:55 (6)	17:40	16:02 (6)	18:17	19:56	20:32	21:00
13	07:50		14:37 (6)	07:20	14:48 (6)	06:34	06:38	05:53	05:32
	17:00	80	15:57 (6)	17:41	16:02 (6)	18:19	19:57	20:33	21:00
14	07:49		14:37 (6)	07:19	14:48 (6)	06:32	06:36	05:52	05:32
	17:01	80	15:57 (6)	17:43	16:00 (6)	18:20	19:58	20:34	21:01
15	07:49		14:37 (6)	07:17	14:50 (6)	06:30	06:34	05:51	05:32
	17:02	81	15:58 (6)	17:44	16:00 (6)	18:21	19:59	20:35	21:01
16	07:48		14:37 (6)	07:16	14:51 (6)	06:28	06:33	05:49	05:32
	17:03	81	15:58 (6)	17:46	15:59 (6)	18:22	20:00	20:36	21:01
17	07:48		14:37 (6)	07:14	14:52 (6)	06:27	06:31	05:48	05:32
	17:05	81	15:58 (6)	17:47	15:58 (6)	18:24	20:02	20:37	21:02
18	07:47		14:37 (6)	07:13	14:53 (6)	06:25	06:29	05:47	05:32
	17:06	83	16:00 (6)	17:48	15:57 (6)	18:25	20:03	20:38	21:02
19	07:47		14:37 (6)	07:11	14:54 (6)	06:23	06:28	05:46	05:32
	17:07	83	16:00 (6)	17:50	15:55 (6)	18:26	20:04	20:39	21:03
20	07:46		14:37 (6)	07:10	14:57 (6)	06:21	06:26	05:45	05:32
	17:09	83	16:00 (6)	17:51	15:55 (6)	18:27	20:05	20:40	21:03
21	07:45		14:37 (6)	07:08	14:58 (6)	06:19	06:24	05:44	05:32
	17:10	84	16:01 (6)	17:52	15:53 (6)	18:29	20:07	20:41	21:03
22	07:44		14:38 (6)	07:06	15:01 (6)	06:18	06:23	05:43	05:33
	17:11	84	16:02 (6)	17:54	15:52 (6)	18:30	20:08	20:43	21:03
23	07:44		14:38 (6)	07:05	15:03 (6)	06:16	06:21	05:43	05:33
	17:12	84	16:02 (6)	17:55	15:49 (6)	18:31	20:09	20:44	21:03
24	07:43		14:38 (6)	07:03	15:05 (6)	06:14	06:19	05:42	05:33
	17:14	84	16:02 (6)	17:56	15:47 (6)	18:32	20:10	20:45	21:04
25	07:42		14:38 (6)	07:02	15:08 (6)	06:12	06:18	05:41	05:33
	17:15	85	16:03 (6)	17:58	15:45 (6)	18:34	20:11	20:46	21:04
26	07:41		14:38 (6)	07:00	15:12 (6)	06:10	06:16	05:40	05:34
	17:17	85	16:03 (6)	17:59	15:41 (6)	18:35	20:13	20:46	21:04
27	07:40		14:39 (6)	06:58	15:16 (6)	06:08	06:15	05:39	05:34
	17:18	84	16:03 (6)	18:00	15:36 (6)	18:36	20:14	20:47	21:04
28	07:39		14:39 (6)	06:57		06:07	06:13	05:39	05:34
	17:19	85	16:04 (6)	18:02		18:37	20:15	20:48	21:04
29	07:38		14:39 (6)			07:05	06:12	05:38	05:35
	17:21	85	16:04 (6)			19:38	20:16	20:49	21:04
30	07:37		14:40 (6)			07:03	06:10	05:37	05:35
	17:22	84	16:04 (6)			19:40	20:17	20:50	21:04
31	07:36		14:40 (6)			07:01		05:37	
	17:23	85	16:05 (6)			19:41		20:51	
Potential sun hours	288		292		369		403	457	463
Total, worst case	2493		1783						

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: C - Shadow Receptor: 1.0 × 1.0 Azimuth: 50.0° Slope: 90.0° (17)
Assumptions for shadow calculations

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

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

	July	August	September	October		November		December			
1	05:36 21:04	06:03 20:42	06:38 19:54	07:13 18:59		06:52 17:07	78	14:15 (6) 15:33 (6)	07:30 16:39	78	14:19 (6) 15:37 (6)
2	05:36 21:03	06:04 20:40	06:39 19:52	07:14 18:57		06:53 17:06	80	14:13 (6) 15:33 (6)	07:31 16:39	78	14:19 (6) 15:37 (6)
3	05:37 21:03	06:05 20:39	06:40 19:50	07:15 18:55		06:54 17:05	81	14:12 (6) 15:33 (6)	07:33 16:38	77	14:20 (6) 15:37 (6)
4	05:37 21:03	06:06 20:38	06:41 19:49	07:16 18:53		06:56 17:03	81	14:13 (6) 15:34 (6)	07:34 16:38	77	14:20 (6) 15:37 (6)
5	05:38 21:03	06:07 20:37	06:43 19:47	07:17 18:51		06:57 17:02	82	14:12 (6) 15:34 (6)	07:35 16:38	76	14:21 (6) 15:37 (6)
6	05:39 21:02	06:08 20:35	06:44 19:45	07:19 18:50		06:58 17:01	83	14:12 (6) 15:35 (6)	07:36 16:38	76	14:21 (6) 15:37 (6)
7	05:39 21:02	06:09 20:34	06:45 19:43	07:20 18:48		07:00 16:59	83	14:11 (6) 15:34 (6)	07:37 16:38	75	14:22 (6) 15:37 (6)
8	05:40 21:02	06:10 20:33	06:46 19:41	07:21 18:46		07:01 16:58	83	14:12 (6) 15:35 (6)	07:38 16:37	75	14:23 (6) 15:38 (6)
9	05:41 21:01	06:12 20:31	06:47 19:40	07:22 18:44		07:02 16:57	84	14:11 (6) 15:35 (6)	07:39 16:37	75	14:23 (6) 15:38 (6)
10	05:42 21:01	06:13 20:30	06:48 19:38	07:23 18:43		07:04 16:56	85	14:11 (6) 15:36 (6)	07:40 16:37	74	14:24 (6) 15:38 (6)
11	05:42 21:00	06:14 20:28	06:49 19:36	07:25 18:41		07:05 16:55	84	14:11 (6) 15:35 (6)	07:41 16:37	73	14:25 (6) 15:38 (6)
12	05:43 21:00	06:15 20:27	06:51 19:34	07:26 18:39		07:06 16:54	84	14:11 (6) 15:35 (6)	07:41 16:37	73	14:26 (6) 15:39 (6)
13	05:44 20:59	06:16 20:25	06:52 19:32	07:27 18:37		07:08 16:52	85	14:11 (6) 15:36 (6)	07:42 16:37	72	14:27 (6) 15:39 (6)
14	05:45 20:58	06:17 20:24	06:53 19:30	07:28 18:36	11	15:54 (6) 16:05 (6)	85	14:11 (6) 15:36 (6)	07:43 16:38	73	14:27 (6) 15:40 (6)
15	05:46 20:58	06:18 20:22	06:54 19:28	07:30 18:34	25	15:46 (6) 16:11 (6)	84	14:12 (6) 15:36 (6)	07:44 16:38	72	14:27 (6) 15:39 (6)
16	05:47 20:57	06:20 20:21	06:55 19:27	07:31 18:32	33	15:42 (6) 16:15 (6)	85	14:11 (6) 15:36 (6)	07:45 16:38	72	14:28 (6) 15:40 (6)
17	05:47 20:56	06:21 20:19	06:56 19:25	07:32 18:30	38	15:39 (6) 16:17 (6)	85	14:11 (6) 15:36 (6)	07:45 16:38	71	14:29 (6) 15:40 (6)
18	05:48 20:56	06:22 20:18	06:57 19:23	07:33 18:29	44	15:35 (6) 16:19 (6)	84	14:12 (6) 15:36 (6)	07:46 16:39	71	14:29 (6) 15:40 (6)
19	05:49 20:55	06:23 20:16	06:59 19:21	07:35 18:27	48	15:33 (6) 16:21 (6)	84	14:12 (6) 15:36 (6)	07:47 16:39	71	14:30 (6) 15:41 (6)
20	05:50 20:54	06:24 20:14	07:00 19:19	07:36 18:25	53	15:30 (6) 16:23 (6)	84	14:13 (6) 15:37 (6)	07:47 16:39	71	14:31 (6) 15:42 (6)
21	05:51 20:53	06:25 20:13	07:01 19:17	07:37 18:24	56	15:28 (6) 16:24 (6)	84	14:13 (6) 15:37 (6)	07:48 16:40	71	14:31 (6) 15:42 (6)
22	05:52 20:52	06:26 20:11	07:02 19:15	07:39 18:22	58	15:27 (6) 16:25 (6)	83	14:13 (6) 15:36 (6)	07:48 16:40	71	14:32 (6) 15:43 (6)
23	05:53 20:51	06:28 20:09	07:03 19:14	07:40 18:21	62	15:24 (6) 16:26 (6)	83	14:14 (6) 15:37 (6)	07:49 16:41	71	14:32 (6) 15:43 (6)
24	05:54 20:50	06:29 20:08	07:04 19:12	07:41 18:19	65	15:22 (6) 16:27 (6)	83	14:14 (6) 15:37 (6)	07:49 16:41	71	14:32 (6) 15:43 (6)
25	05:55 20:49	06:30 20:06	07:06 19:10	06:42 17:18	66	14:22 (6) 15:28 (6)	81	14:15 (6) 15:36 (6)	07:50 16:42	71	14:33 (6) 15:44 (6)
26	05:56 20:48	06:31 20:04	07:07 19:08	06:44 17:16	69	14:20 (6) 15:29 (6)	81	14:16 (6) 15:37 (6)	07:50 16:43	71	14:33 (6) 15:44 (6)
27	05:57 20:47	06:32 20:03	07:08 19:06	06:45 17:15	71	14:19 (6) 15:30 (6)	81	14:16 (6) 15:37 (6)	07:50 16:43	72	14:33 (6) 15:45 (6)
28	05:58 20:46	06:33 20:01	07:09 19:04	06:46 17:13	72	14:18 (6) 15:30 (6)	80	14:17 (6) 15:37 (6)	07:51 16:44	72	14:33 (6) 15:45 (6)
29	05:59 20:45	06:34 19:59	07:10 19:02	06:48 17:12	75	14:16 (6) 15:31 (6)	80	14:17 (6) 15:37 (6)	07:51 16:45	72	14:34 (6) 15:46 (6)
30	06:00 20:44	06:36 19:58	07:11 19:01	06:49 17:10	76	14:16 (6) 15:32 (6)	79	14:18 (6) 15:37 (6)	07:51 16:45	73	14:34 (6) 15:47 (6)
31	06:01 20:43	06:37 19:56		06:50 17:09	77	14:15 (6) 15:32 (6)			07:51 16:46	72	14:35 (6) 15:47 (6)
Potential sun hours	469	434	376	342	999	290		277	2267		
Total, worst case											

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: WON033_ShadowFlickering Shadow receptor: D - Shadow Receptor: 1.0 × 1.0 Azimuth: 50.0° Slope: 90.0° (18)
Assumptions for shadow calculations

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

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

	January			February			March			April	May	June
1	07:52		14:50 (6)	07:35		14:52 (6)	06:55		15:30 (6)	06:59	06:09	05:36
	16:47	66	15:56 (6)	17:25	82	16:14 (6)	18:03	15	15:45 (6)	19:42	20:19	20:52
2	07:52		14:50 (6)	07:34		14:52 (6)	06:53			06:57	06:07	05:36
	16:48	67	15:57 (6)	17:26	83	16:15 (6)	18:04			19:43	20:20	20:53
3	07:52		14:50 (6)	07:33		14:53 (6)	06:52			06:56	06:06	05:35
	16:49	68	15:58 (6)	17:28	82	16:15 (6)	18:06			19:45	20:21	20:54
4	07:52		14:50 (6)	07:32		14:53 (6)	06:50			06:54	06:04	05:35
	16:50	69	15:59 (6)	17:29	82	16:15 (6)	18:07			19:46	20:22	20:54
5	07:52		14:51 (6)	07:30		14:54 (6)	06:48			06:52	06:03	05:34
	16:51	69	16:00 (6)	17:30	82	16:16 (6)	18:08			19:47	20:23	20:55
6	07:52		14:50 (6)	07:29		14:53 (6)	06:46			06:50	06:02	05:34
	16:52	70	16:00 (6)	17:32	82	16:15 (6)	18:10			19:48	20:25	20:56
7	07:51		14:50 (6)	07:28		14:54 (6)	06:45			06:48	06:00	05:33
	16:53	71	16:01 (6)	17:33	81	16:15 (6)	18:11			19:49	20:26	20:57
8	07:51		14:51 (6)	07:27		14:55 (6)	06:43			06:47	05:59	05:33
	16:54	71	16:02 (6)	17:35	80	16:15 (6)	18:12			19:51	20:27	20:57
9	07:51		14:50 (6)	07:25		14:55 (6)	06:41			06:45	05:58	05:33
	16:55	72	16:02 (6)	17:36	79	16:14 (6)	18:14			19:52	20:28	20:58
10	07:51		14:50 (6)	07:24		14:56 (6)	06:39			06:43	05:57	05:33
	16:56	73	16:03 (6)	17:37	78	16:14 (6)	18:15			19:53	20:29	20:58
11	07:50		14:51 (6)	07:23		14:56 (6)	06:37			06:41	05:55	05:32
	16:58	73	16:04 (6)	17:39	77	16:13 (6)	18:16			19:54	20:30	20:59
12	07:50		14:50 (6)	07:21		14:57 (6)	06:36			06:40	05:54	05:32
	16:59	74	16:04 (6)	17:40	76	16:13 (6)	18:17			19:56	20:32	21:00
13	07:50		14:51 (6)	07:20		14:58 (6)	06:34			06:38	05:53	05:32
	17:00	74	16:05 (6)	17:41	75	16:13 (6)	18:19			19:57	20:33	21:00
14	07:49		14:50 (6)	07:19		14:59 (6)	06:32			06:36	05:52	05:32
	17:01	76	16:06 (6)	17:43	73	16:12 (6)	18:20			19:58	20:34	21:01
15	07:49		14:51 (6)	07:17		15:00 (6)	06:30			06:34	05:51	05:32
	17:02	76	16:07 (6)	17:44	72	16:12 (6)	18:21			19:59	20:35	21:01
16	07:48		14:51 (6)	07:16		15:00 (6)	06:28			06:33	05:49	05:32
	17:03	76	16:07 (6)	17:46	71	16:11 (6)	18:22			20:00	20:36	21:01
17	07:48		14:50 (6)	07:14		15:02 (6)	06:27			06:31	05:48	05:32
	17:05	78	16:08 (6)	17:47	69	16:11 (6)	18:24			20:02	20:37	21:02
18	07:47		14:51 (6)	07:13		15:03 (6)	06:25			06:29	05:47	05:32
	17:06	78	16:09 (6)	17:48	66	16:09 (6)	18:25			20:03	20:38	21:02
19	07:47		14:51 (6)	07:11		15:04 (6)	06:23			06:28	05:46	05:32
	17:07	78	16:09 (6)	17:50	64	16:08 (6)	18:26			20:04	20:39	21:03
20	07:46		14:50 (6)	07:10		15:05 (6)	06:21			06:26	05:45	05:32
	17:09	80	16:10 (6)	17:51	62	16:07 (6)	18:27			20:05	20:40	21:03
21	07:45		14:50 (6)	07:08		15:07 (6)	06:19			06:24	05:44	05:32
	17:10	80	16:10 (6)	17:52	59	16:06 (6)	18:29			20:07	20:41	21:03
22	07:44		14:51 (6)	07:06		15:09 (6)	06:18			06:23	05:43	05:33
	17:11	81	16:12 (6)	17:54	56	16:05 (6)	18:30			20:08	20:43	21:03
23	07:44		14:51 (6)	07:05		15:10 (6)	06:16			06:21	05:43	05:33
	17:12	81	16:12 (6)	17:55	53	16:03 (6)	18:31			20:09	20:44	21:03
24	07:43		14:51 (6)	07:03		15:12 (6)	06:14			06:19	05:42	05:33
	17:14	81	16:12 (6)	17:56	49	16:01 (6)	18:32			20:10	20:45	21:04
25	07:42		14:51 (6)	07:02		15:15 (6)	06:12			06:18	05:41	05:33
	17:15	82	16:13 (6)	17:58	45	16:00 (6)	18:34			20:11	20:46	21:04
26	07:41		14:51 (6)	07:00		15:17 (6)	06:10			06:16	05:40	05:34
	17:17	82	16:13 (6)	17:59	40	15:57 (6)	18:35			20:13	20:46	21:04
27	07:40		14:51 (6)	06:58		15:20 (6)	06:08			06:15	05:39	05:34
	17:18	83	16:14 (6)	18:00	34	15:54 (6)	18:36			20:14	20:47	21:04
28	07:39		14:51 (6)	06:57		15:24 (6)	06:07			06:13	05:39	05:34
	17:19	83	16:14 (6)	18:02	27	15:51 (6)	18:37			20:15	20:48	21:04
29	07:38		14:52 (6)				07:05			06:12	05:38	05:35
	17:21	82	16:14 (6)				19:38			20:16	20:49	21:04
30	07:37		14:52 (6)				07:03			06:10	05:37	05:35
	17:22	83	16:15 (6)				19:40			20:17	20:50	21:04
31	07:36		14:52 (6)				07:01				05:37	
	17:23	83	16:15 (6)				19:41				20:51	
Potential sun hours	288			292			369	15		403	457	463
Total, worst case	2360			1879								

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: WON033_ShadowFlickering Shadow receptor: D - Shadow Receptor: 1.0 × 1.0 Azimuth: 50.0° Slope: 90.0° (18)
Assumptions for shadow calculations

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

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

	July	August	September	October		November		December			
1	05:36 21:04	06:03 20:42	06:38 19:54	07:13 18:59		06:52 17:07	78	14:26 (6) 15:44 (6)	07:30 16:39	73	14:33 (6) 15:46 (6)
2	05:36 21:03	06:04 20:40	06:39 19:52	07:14 18:57		06:53 17:06	79	14:25 (6) 15:44 (6)	07:31 16:39	73	14:33 (6) 15:46 (6)
3	05:37 21:03	06:05 20:39	06:40 19:50	07:15 18:55		06:54 17:05	80	14:24 (6) 15:44 (6)	07:33 16:38	72	14:34 (6) 15:46 (6)
4	05:37 21:03	06:06 20:38	06:41 19:49	07:16 18:53		06:56 17:03	81	14:24 (6) 15:45 (6)	07:34 16:38	71	14:35 (6) 15:46 (6)
5	05:38 21:03	06:07 20:37	06:43 19:47	07:17 18:51		06:57 17:02	82	14:23 (6) 15:45 (6)	07:35 16:38	71	14:35 (6) 15:46 (6)
6	05:39 21:02	06:08 20:35	06:44 19:45	07:19 18:50		06:58 17:01	81	14:24 (6) 15:45 (6)	07:36 16:38	70	14:36 (6) 15:46 (6)
7	05:39 21:02	06:09 20:34	06:45 19:43	07:20 18:48		07:00 16:59	82	14:23 (6) 15:45 (6)	07:37 16:38	69	14:37 (6) 15:46 (6)
8	05:40 21:02	06:10 20:33	06:46 19:41	07:21 18:46		07:01 16:58	83	14:23 (6) 15:46 (6)	07:38 16:37	69	14:37 (6) 15:46 (6)
9	05:41 21:01	06:12 20:31	06:47 19:40	07:22 18:44		07:02 16:57	83	14:23 (6) 15:46 (6)	07:39 16:37	68	14:38 (6) 15:46 (6)
10	05:42 21:01	06:13 20:30	06:48 19:38	07:23 18:43		07:04 16:56	83	14:23 (6) 15:46 (6)	07:40 16:37	67	14:39 (6) 15:46 (6)
11	05:42 21:00	06:14 20:28	06:49 19:36	07:25 18:41		07:05 16:55	83	14:23 (6) 15:46 (6)	07:41 16:37	66	14:40 (6) 15:46 (6)
12	05:43 21:00	06:15 20:27	06:51 19:34	07:26 18:39		07:06 16:54	83	14:23 (6) 15:46 (6)	07:41 16:37	66	14:41 (6) 15:47 (6)
13	05:44 20:59	06:16 20:25	06:52 19:32	07:27 18:37	21	16:00 (6) 16:21 (6)	82	14:24 (6) 15:46 (6)	07:42 16:37	66	14:41 (6) 15:47 (6)
14	05:45 20:58	06:17 20:24	06:53 19:30	07:28 18:36	30	15:55 (6) 16:25 (6)	83	14:23 (6) 15:46 (6)	07:43 16:38	66	14:42 (6) 15:48 (6)
15	05:46 20:58	06:18 20:22	06:54 19:28	07:30 18:34	36	15:51 (6) 16:27 (6)	82	14:24 (6) 15:46 (6)	07:44 16:38	65	14:42 (6) 15:47 (6)
16	05:47 20:57	06:20 20:21	06:55 19:27	07:31 18:32	42	15:48 (6) 16:30 (6)	82	14:24 (6) 15:46 (6)	07:45 16:38	65	14:43 (6) 15:48 (6)
17	05:47 20:56	06:21 20:19	06:56 19:25	07:32 18:30	47	15:45 (6) 16:32 (6)	82	14:24 (6) 15:46 (6)	07:45 16:38	64	14:44 (6) 15:48 (6)
18	05:48 20:56	06:22 20:18	06:57 19:23	07:33 18:29	50	15:43 (6) 16:33 (6)	81	14:25 (6) 15:46 (6)	07:46 16:39	64	14:44 (6) 15:48 (6)
19	05:49 20:55	06:23 20:16	06:59 19:21	07:35 18:27	54	15:41 (6) 16:35 (6)	81	14:25 (6) 15:46 (6)	07:47 16:39	64	14:45 (6) 15:49 (6)
20	05:50 20:54	06:24 20:14	07:00 19:19	07:36 18:25	57	15:39 (6) 16:36 (6)	81	14:26 (6) 15:47 (6)	07:47 16:39	64	14:46 (6) 15:50 (6)
21	05:51 20:53	06:25 20:13	07:01 19:17	07:37 18:24	60	15:37 (6) 16:37 (6)	80	14:26 (6) 15:46 (6)	07:48 16:40	63	14:46 (6) 15:49 (6)
22	05:52 20:52	06:26 20:11	07:02 19:15	07:39 18:22	62	15:36 (6) 16:38 (6)	80	14:26 (6) 15:46 (6)	07:48 16:40	63	14:47 (6) 15:50 (6)
23	05:53 20:51	06:28 20:09	07:03 19:14	07:40 18:21	65	15:34 (6) 16:39 (6)	78	14:28 (6) 15:46 (6)	07:49 16:41	64	14:47 (6) 15:51 (6)
24	05:54 20:50	06:29 20:08	07:04 19:12	07:41 18:19	67	15:32 (6) 16:39 (6)	78	14:28 (6) 15:46 (6)	07:49 16:41	64	14:47 (6) 15:51 (6)
25	05:55 20:49	06:30 20:06	07:06 19:10	06:42 17:18	70	14:31 (6) 15:41 (6)	78	14:28 (6) 15:46 (6)	07:50 16:42	64	14:48 (6) 15:52 (6)
26	05:56 20:48	06:31 20:04	07:07 19:08	06:44 17:16	71	14:30 (6) 15:41 (6)	76	14:30 (6) 15:46 (6)	07:50 16:43	64	14:48 (6) 15:52 (6)
27	05:57 20:47	06:32 20:03	07:08 19:06	06:45 17:15	73	14:29 (6) 15:42 (6)	76	14:30 (6) 15:46 (6)	07:50 16:43	64	14:48 (6) 15:52 (6)
28	05:58 20:46	06:33 20:01	07:09 19:04	06:46 17:13	74	14:28 (6) 15:42 (6)	76	14:30 (6) 15:46 (6)	07:51 16:44	65	14:48 (6) 15:53 (6)
29	05:59 20:45	06:34 19:59	07:10 19:02	06:48 17:12	75	14:27 (6) 15:42 (6)	75	14:31 (6) 15:46 (6)	07:51 16:45	65	14:49 (6) 15:54 (6)
30	06:00 20:44	06:36 19:58	07:11 19:01	06:49 17:10	76	14:27 (6) 15:43 (6)	74	14:32 (6) 15:46 (6)	07:51 16:45	66	14:49 (6) 15:55 (6)
31	06:01 20:43	06:37 19:56		06:50 17:09	77	14:26 (6) 15:43 (6)			07:51 16:46	67	14:49 (6) 15:56 (6)
Potential sun hours	469	434	376	342	1107	290	2403		277	2062	
Total, worst case											

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: WON033_ShadowFlickering Shadow receptor: E - Shadow Receptor: 1.0 × 1.0 Azimuth: 50.0° Slope: 90.0° (19)
Assumptions for shadow calculations

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

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

	January		February		March		April	May	June
1	07:52		15:11 (6)	07:35	15:13 (6)	06:55	06:59	06:09	05:36
	16:47	61	16:12 (6)	17:25	16:30 (6)	18:03	19:42	20:19	20:52
2	07:52		15:11 (6)	07:34	15:14 (6)	06:53	06:57	06:07	05:36
	16:48	62	16:13 (6)	17:26	16:30 (6)	18:04	19:43	20:20	20:53
3	07:52		15:12 (6)	07:33	15:14 (6)	06:52	06:56	06:06	05:35
	16:49	61	16:13 (6)	17:28	16:30 (6)	18:06	19:45	20:21	20:54
4	07:52		15:12 (6)	07:32	15:15 (6)	06:50	06:54	06:04	05:35
	16:50	62	16:14 (6)	17:29	16:30 (6)	18:07	19:46	20:22	20:54
5	07:52		15:12 (6)	07:30	15:16 (6)	06:48	06:52	06:03	05:34
	16:51	63	16:15 (6)	17:30	16:31 (6)	18:08	19:47	20:23	20:55
6	07:52		15:11 (6)	07:29	15:15 (6)	06:46	06:50	06:02	05:34
	16:52	64	16:15 (6)	17:32	16:30 (6)	18:10	19:48	20:25	20:56
7	07:51		15:12 (6)	07:28	15:16 (6)	06:45	06:48	06:00	05:33
	16:53	64	16:16 (6)	17:33	16:30 (6)	18:11	19:49	20:26	20:57
8	07:51		15:12 (6)	07:27	15:17 (6)	06:43	06:47	05:59	05:33
	16:54	65	16:17 (6)	17:35	16:30 (6)	18:12	19:51	20:27	20:57
9	07:51		15:11 (6)	07:25	15:17 (6)	06:41	06:45	05:58	05:33
	16:55	66	16:17 (6)	17:36	16:29 (6)	18:14	19:52	20:28	20:58
10	07:51		15:12 (6)	07:24	15:18 (6)	06:39	06:43	05:57	05:33
	16:56	66	16:18 (6)	17:37	16:29 (6)	18:15	19:53	20:29	20:58
11	07:50		15:12 (6)	07:23	15:18 (6)	06:37	06:41	05:55	05:32
	16:58	68	16:20 (6)	17:39	16:28 (6)	18:16	19:54	20:30	20:59
12	07:50		15:12 (6)	07:21	15:19 (6)	06:36	06:40	05:54	05:32
	16:59	68	16:20 (6)	17:40	16:28 (6)	18:17	19:56	20:32	21:00
13	07:50		15:12 (6)	07:20	15:21 (6)	06:34	06:38	05:53	05:32
	17:00	69	16:21 (6)	17:41	16:28 (6)	18:19	19:57	20:33	21:00
14	07:49		15:12 (6)	07:19	15:21 (6)	06:32	06:36	05:52	05:32
	17:01	69	16:21 (6)	17:43	16:26 (6)	18:20	19:58	20:34	21:01
15	07:49		15:12 (6)	07:17	15:22 (6)	06:30	06:34	05:51	05:32
	17:02	71	16:23 (6)	17:44	16:26 (6)	18:21	19:59	20:35	21:01
16	07:48		15:12 (6)	07:16	15:23 (6)	06:28	06:33	05:49	05:32
	17:03	71	16:23 (6)	17:46	16:25 (6)	18:22	20:00	20:36	21:01
17	07:48		15:12 (6)	07:14	15:25 (6)	06:27	06:31	05:48	05:32
	17:05	71	16:23 (6)	17:47	16:24 (6)	18:24	20:02	20:37	21:02
18	07:47		15:12 (6)	07:13	15:26 (6)	06:25	06:29	05:47	05:32
	17:06	73	16:25 (6)	17:48	16:23 (6)	18:25	20:03	20:38	21:02
19	07:47		15:12 (6)	07:11	15:27 (6)	06:23	06:28	05:46	05:32
	17:07	73	16:25 (6)	17:50	16:21 (6)	18:26	20:04	20:39	21:03
20	07:46		15:12 (6)	07:10	15:29 (6)	06:21	06:26	05:45	05:32
	17:09	73	16:25 (6)	17:51	16:20 (6)	18:27	20:05	20:40	21:03
21	07:45		15:12 (6)	07:08	15:30 (6)	06:19	06:24	05:44	05:32
	17:10	74	16:26 (6)	17:52	16:18 (6)	18:29	20:07	20:41	21:03
22	07:44		15:13 (6)	07:06	15:33 (6)	06:18	06:23	05:43	05:33
	17:11	74	16:27 (6)	17:54	16:17 (6)	18:30	20:08	20:43	21:03
23	07:44		15:13 (6)	07:05	15:35 (6)	06:16	06:21	05:43	05:33
	17:12	74	16:27 (6)	17:55	16:15 (6)	18:31	20:09	20:44	21:03
24	07:43		15:13 (6)	07:03	15:37 (6)	06:14	06:19	05:42	05:33
	17:14	75	16:28 (6)	17:56	16:12 (6)	18:32	20:10	20:45	21:04
25	07:42		15:13 (6)	07:02	15:41 (6)	06:12	06:18	05:41	05:33
	17:15	75	16:28 (6)	17:58	16:09 (6)	18:34	20:11	20:46	21:04
26	07:41		15:13 (6)	07:00	15:45 (6)	06:10	06:16	05:40	05:34
	17:17	76	16:29 (6)	17:59	16:05 (6)	18:35	20:13	20:46	21:04
27	07:40		15:13 (6)	06:58		06:08	06:15	05:39	05:34
	17:18	76	16:29 (6)	18:00		18:36	20:14	20:47	21:04
28	07:39		15:13 (6)	06:57		06:07	06:13	05:39	05:34
	17:19	76	16:29 (6)	18:02		18:37	20:15	20:48	21:04
29	07:38		15:13 (6)			07:05	06:12	05:38	05:35
	17:21	77	16:30 (6)			19:38	20:16	20:49	21:04
30	07:37		15:14 (6)			07:03	06:10	05:37	05:35
	17:22	76	16:30 (6)			19:40	20:17	20:50	21:04
31	07:36		15:14 (6)			07:01		05:37	
	17:23	76	16:30 (6)			19:41		20:51	
Potential sun hours	288		292		369	403	457	463	
Total, worst case	2169		1577						

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: E - Shadow Receptor: 1.0 × 1.0 Azimuth: 50.0° Slope: 90.0° (19)
Assumptions for shadow calculations

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

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

	July	August	September	October		November		December			
1	05:36 21:04	06:03 20:42	06:38 19:54	07:13 18:59		06:52 17:07	71	14:48 (6) 15:59 (6)	07:30 16:39	68	14:54 (6) 16:02 (6)
2	05:36 21:03	06:04 20:40	06:39 19:52	07:14 18:57		06:53 17:06	72	14:47 (6) 15:59 (6)	07:31 16:39	67	14:55 (6) 16:02 (6)
3	05:37 21:03	06:05 20:39	06:40 19:50	07:15 18:55		06:54 17:05	73	14:46 (6) 15:59 (6)	07:33 16:38	66	14:55 (6) 16:01 (6)
4	05:37 21:03	06:06 20:38	06:41 19:49	07:16 18:53		06:56 17:03	74	14:46 (6) 16:00 (6)	07:34 16:38	65	14:56 (6) 16:01 (6)
5	05:38 21:03	06:07 20:37	06:43 19:47	07:17 18:51		06:57 17:02	75	14:45 (6) 16:00 (6)	07:35 16:38	64	14:57 (6) 16:01 (6)
6	05:39 21:02	06:08 20:35	06:44 19:45	07:19 18:50		06:58 17:01	75	14:45 (6) 16:00 (6)	07:36 16:38	64	14:57 (6) 16:01 (6)
7	05:39 21:02	06:09 20:34	06:45 19:43	07:20 18:48		07:00 16:59	75	14:45 (6) 16:00 (6)	07:37 16:38	63	14:58 (6) 16:01 (6)
8	05:40 21:02	06:10 20:33	06:46 19:41	07:21 18:46		07:01 16:58	76	14:45 (6) 16:01 (6)	07:38 16:37	62	14:59 (6) 16:01 (6)
9	05:41 21:01	06:12 20:31	06:47 19:40	07:22 18:44		07:02 16:57	76	14:45 (6) 16:01 (6)	07:39 16:37	61	15:00 (6) 16:01 (6)
10	05:42 21:01	06:13 20:30	06:48 19:38	07:23 18:43		07:04 16:56	76	14:45 (6) 16:01 (6)	07:40 16:37	62	15:00 (6) 16:02 (6)
11	05:42 21:00	06:14 20:28	06:49 19:36	07:25 18:41		07:05 16:55	76	14:45 (6) 16:01 (6)	07:41 16:37	61	15:01 (6) 16:02 (6)
12	05:43 21:00	06:15 20:27	06:51 19:34	07:26 18:39		07:06 16:54	77	14:44 (6) 16:01 (6)	07:41 16:37	60	15:02 (6) 16:02 (6)
13	05:44 20:59	06:16 20:25	06:52 19:32	07:27 18:37		07:08 16:52	77	14:45 (6) 16:02 (6)	07:42 16:37	60	15:03 (6) 16:03 (6)
14	05:45 20:58	06:17 20:24	06:53 19:30	07:28 18:36		07:09 16:51	76	14:45 (6) 16:01 (6)	07:43 16:38	59	15:04 (6) 16:03 (6)
15	05:46 20:58	06:18 20:22	06:54 19:28	07:30 18:34	12	16:21 (6) 16:33 (6)	76	14:46 (6) 16:02 (6)	07:44 16:38	58	15:04 (6) 16:02 (6)
16	05:47 20:57	06:19 20:21	06:55 19:27	07:31 18:32	24	16:15 (6) 16:39 (6)	75	14:46 (6) 16:01 (6)	07:45 16:38	58	15:05 (6) 16:03 (6)
17	05:47 20:56	06:21 20:19	06:56 19:25	07:32 18:30	31	16:11 (6) 16:42 (6)	75	14:46 (6) 16:01 (6)	07:45 16:38	58	15:06 (6) 16:04 (6)
18	05:48 20:56	06:22 20:18	06:57 19:23	07:33 18:29	37	16:07 (6) 16:44 (6)	75	14:47 (6) 16:02 (6)	07:46 16:39	57	15:06 (6) 16:03 (6)
19	05:49 20:55	06:23 20:16	06:59 19:21	07:35 18:27	42	16:05 (6) 16:47 (6)	74	14:47 (6) 16:01 (6)	07:47 16:39	57	15:07 (6) 16:04 (6)
20	05:50 20:54	06:24 20:14	07:00 19:19	07:36 18:25	45	16:03 (6) 16:48 (6)	74	14:48 (6) 16:02 (6)	07:47 16:39	57	15:08 (6) 16:05 (6)
21	05:51 20:53	06:25 20:13	07:01 19:17	07:37 18:24	49	16:00 (6) 16:49 (6)	74	14:48 (6) 16:02 (6)	07:48 16:40	58	15:07 (6) 16:05 (6)
22	05:52 20:52	06:26 20:11	07:02 19:15	07:39 18:22	52	15:59 (6) 16:51 (6)	73	14:48 (6) 16:01 (6)	07:48 16:40	58	15:08 (6) 16:06 (6)
23	05:53 20:51	06:28 20:09	07:03 19:14	07:40 18:21	55	15:57 (6) 16:52 (6)	73	14:49 (6) 16:02 (6)	07:49 16:41	58	15:08 (6) 16:06 (6)
24	05:54 20:50	06:29 20:08	07:04 19:12	07:41 18:19	58	15:55 (6) 16:53 (6)	73	14:49 (6) 16:02 (6)	07:49 16:41	57	15:09 (6) 16:06 (6)
25	05:55 20:49	06:30 20:06	07:06 19:10	07:42 17:18	60	14:54 (6) 15:54 (6)	71	07:23 16:01 (6)	07:50 16:42	57	15:10 (6) 16:07 (6)
26	05:56 20:48	06:31 20:04	07:07 19:08	07:44 17:16	63	14:52 (6) 15:55 (6)	71	07:24 16:02 (6)	07:50 16:43	57	15:10 (6) 16:07 (6)
27	05:57 20:47	06:32 20:03	07:08 19:06	07:45 17:14	64	14:52 (6) 15:56 (6)	71	07:26 16:02 (6)	07:50 16:43	58	15:10 (6) 16:08 (6)
28	05:58 20:46	06:33 20:01	07:09 19:04	07:46 17:13	66	14:50 (6) 15:56 (6)	69	07:27 16:01 (6)	07:51 16:44	58	15:10 (6) 16:08 (6)
29	05:59 20:45	06:34 19:59	07:10 19:02	07:48 17:12	68	14:49 (6) 15:57 (6)	69	07:28 16:01 (6)	07:51 16:45	59	15:11 (6) 16:10 (6)
30	06:00 20:44	06:36 19:58	07:11 19:01	07:49 17:10	69	14:49 (6) 15:58 (6)	68	07:29 16:02 (6)	07:51 16:45	59	15:11 (6) 16:10 (6)
31	06:01 20:43	06:37 19:56		06:50 17:09	70	14:48 (6) 15:58 (6)			07:51 16:46	60	15:11 (6) 16:11 (6)
Potential sun hours	469	434	376	342	865	290	2210	277	1866		
Total, worst case											

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)

Project:

WON033

Licensed user:

Iron solar s.r.l.

via Lanzone, 31

IT-20122 Milano

+393487125089

Fabio Paccapelo / francesca.saccarola@hopegroup.it

Calculated:

06/03/2024 14:46/3.6.377

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: F - Shadow Receptor: 1.0 × 1.0 Azimuth: 120.0° Slope: 90.0° (20)
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	07:52 16:47	07:35 17:25	06:55 18:03	06:59 19:42	06:09 20:19	05:36 20:52	20:11 (6) 21:04	20:13 (6) 20:42	06:03 19:54	06:38 18:59	07:13 17:07	06:52 16:39
2	07:52 16:48	07:34 17:26	06:53 18:04	06:57 19:43	06:07 20:20	05:36 20:53	20:11 (6) 21:03	20:14 (6) 20:40	06:04 19:52	06:39 18:57	07:14 17:06	06:53 16:39
3	07:52 16:49	07:33 17:28	06:52 18:06	06:56 19:45	06:06 20:21	05:35 20:54	20:10 (6) 21:03	20:14 (6) 20:39	06:05 19:50	06:40 18:55	07:15 17:05	06:54 16:38
4	07:52 16:50	07:32 17:29	06:50 18:07	06:54 19:46	06:04 20:22	05:35 20:54	20:10 (6) 21:03	20:15 (6) 20:38	06:06 19:49	06:41 18:53	07:16 17:03	06:56 16:38
5	07:52 16:51	07:30 17:30	06:48 18:08	06:52 19:47	06:03 20:23	05:34 20:55	20:09 (6) 21:03	20:15 (6) 20:37	06:07 19:47	06:43 18:51	07:17 17:02	06:57 16:38
6	07:52 16:52	07:29 17:32	06:46 18:10	06:50 19:48	06:02 20:25	05:34 20:56	20:09 (6) 21:02	20:15 (6) 20:35 (6)	06:08 19:45	06:44 18:50	07:19 17:01	06:58 16:38
7	07:51 16:53	07:28 17:33	06:45 18:11	06:48 19:49	06:00 20:26	05:33 20:56	20:10 (6) 21:02	20:16 (6) 20:34	06:09 19:43	06:45 18:48	07:20 16:59	07:00 16:38
8	07:51 16:54	07:27 17:35	06:43 18:12	06:47 19:51	05:59 20:27	05:33 20:57	20:10 (6) 21:02	20:16 (6) 20:33	06:10 19:41	06:46 18:46	07:21 16:58	07:01 16:37
9	07:51 16:55	07:25 17:36	06:41 18:14	06:45 19:52	05:58 20:28	05:33 20:58	20:09 (6) 21:01	20:17 (6) 20:31	06:12 19:40	06:47 18:44	07:22 16:57	07:02 16:37
10	07:51 16:56	07:24 17:37	06:39 18:15	06:43 19:53	05:57 20:29	05:33 20:58	20:09 (6) 21:01	20:18 (6) 20:30	06:13 19:38	06:48 18:43	07:23 16:54	07:04 16:37
11	07:50 16:58	07:23 17:39	06:37 18:16	06:41 19:54	05:55 20:30	05:32 20:59	20:09 (6) 21:00	20:19 (6) 20:28	06:14 19:36	06:49 18:41	07:25 16:55	07:05 16:37
12	07:50 16:59	07:21 17:40	06:36 18:17	06:40 19:56	05:54 20:32	05:32 21:00	20:09 (6) 21:00	20:19 (6) 20:27	06:15 19:34	06:51 18:39	07:26 16:54	07:06 16:37
13	07:50 17:00	07:20 17:41	06:34 18:19	06:38 19:57	05:53 20:33	05:32 21:00	20:09 (6) 20:59	20:20 (6) 20:25	06:16 19:32	06:52 18:37	07:27 16:52	07:08 16:37
14	07:49 17:01	07:19 17:43	06:32 18:20	06:36 19:58	05:52 20:34	05:32 21:01	20:09 (6) 20:58	20:21 (6) 20:24	06:17 19:30	06:53 18:36	07:28 16:59	07:09 16:38
15	07:49 17:02	07:17 17:44	06:30 18:21	06:34 19:59	05:51 20:35	05:32 21:01	20:09 (6) 20:58	20:22 (6) 20:22	06:18 19:28	06:54 18:34	07:30 16:50	07:10 16:38
16	07:48 17:03	07:16 17:46	06:28 18:22	06:33 20:00	05:49 20:36	05:32 21:01	20:09 (6) 20:57	20:23 (6) 20:21	06:20 19:27	06:55 18:32	07:31 16:49	07:12 16:38
17	07:48 17:05	07:14 17:47	06:27 18:24	06:31 20:02	05:48 20:37	05:32 21:02	20:10 (6) 20:56	20:24 (6) 20:19	06:21 19:25	06:56 18:30	07:32 16:48	07:13 16:38
18	07:47 17:06	07:13 17:48	06:25 18:25	06:29 20:03	05:47 20:38	05:32 21:02	20:10 (6) 20:56	20:25 (6) 20:18	06:22 19:23	06:57 18:29	07:33 16:48	07:14 16:39
19	07:47 17:07	07:11 17:50	06:23 18:26	06:28 20:04	05:46 20:39	05:32 21:03	20:10 (6) 20:55	20:26 (6) 20:16	06:23 19:21	06:59 18:27	07:35 16:47	07:16 16:39
20	07:46 17:09	07:10 17:51	06:21 18:27	06:26 20:05	05:45 20:40	05:32 21:03	20:10 (6) 20:54	20:27 (6) 20:14	06:24 19:19	07:00 18:25	07:36 16:46	07:17 16:39
21	07:45 17:10	07:08 17:52	06:19 18:29	06:24 20:07	05:44 20:41	05:32 21:03	20:10 (6) 20:53	06:25 20:13	07:01 19:17	07:37 18:24	07:18 16:45	07:48 16:40
22	07:44 17:11	07:06 17:54	06:18 18:30	06:23 20:08	05:43 20:42	05:33 21:03	20:11 (6) 20:52	06:26 20:11	07:02 19:15	07:39 18:22	07:19 16:44	07:48 16:40
23	07:44 17:12	07:05 17:55	06:16 18:31	06:21 20:09	05:43 20:44	05:33 21:03	20:11 (6) 20:51	06:28 20:09	07:03 19:14	07:40 18:21	07:21 16:44	07:49 16:41
24	07:43 17:14	07:03 17:56	06:14 18:32	06:19 20:10	05:42 20:45	05:33 21:04	20:11 (6) 20:50	06:29 20:08	07:04 19:12	07:41 18:19	07:22 16:43	07:49 16:41
25	07:42 17:15	07:02 17:58	06:12 18:34	06:18 20:11	05:41 20:46	05:33 21:04	20:12 (6) 20:49	06:30 20:06	07:06 19:10	06:42 17:18	07:23 16:42	07:50 16:42
26	07:41 17:17	07:00 17:59	06:10 18:35	06:16 20:13	05:40 20:46	05:34 21:04	20:11 (6) 20:48	06:31 20:04	07:07 19:08	06:44 17:16	07:24 16:42	07:50 16:43
27	07:40 17:18	06:58 18:00	06:08 18:36	06:15 20:14	05:39 20:47	05:34 21:04	20:11 (6) 20:47	06:32 20:03	07:08 19:06	06:45 17:15	07:26 16:41	07:50 16:43
28	07:39 17:19	06:57 18:02	06:07 18:37	06:13 20:15	05:39 20:48	05:34 21:04	20:12 (6) 20:46	06:33 20:01	07:09 19:04	06:46 17:13	07:27 16:40	07:51 16:44
29	07:38 17:21		07:05 19:38	06:12 20:16	05:38 20:49	05:35 21:04	20:12 (6) 20:45	06:34 19:59	07:10 19:02	06:48 17:12	07:28 16:40	07:51 16:45
30	07:37 17:22		07:03 19:40	06:10 20:17	05:37 20:50	05:35 21:04	20:13 (6) 20:44	06:36 19:58	07:11 19:01	06:49 17:10	07:29 16:40	07:51 16:45
31	07:36 17:23		07:01 19:41		05:37 20:51	05:35 20:25 (6)	06:00 20:43	06:37 19:56		06:50 17:09		07:51 16:46
Potential sun hours	288	292	369	403	457	463	469	434	376	342	290	277
Total, worst case					62	685	283					

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: G - Shadow Receptor: 1.0 × 1.0 Azimuth: -100.0° Slope: 90.0° (21)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June
1	07:52 16:47	07:35 17:25	06:55 18:03	06:59 19:42	06:09 20:19	07:49 (6) 05:36 09:14 (6) 20:52
2	07:52 16:48	07:34 17:26	06:53 18:04	06:57 19:43	06:07 20:20	07:48 (6) 05:36 09:15 (6) 20:53
3	07:52 16:49	07:33 17:28	06:52 18:06	06:56 19:45	06:06 20:21	07:46 (6) 05:35 09:16 (6) 20:54
4	07:52 16:50	07:32 17:29	06:50 18:07	06:54 19:46	06:05 20:22	07:46 (6) 05:35 09:16 (6) 20:54
5	07:52 16:51	07:31 17:30	06:48 18:08	06:52 19:47	06:03 20:23	07:46 (6) 05:34 09:16 (6) 20:55
6	07:52 16:52	07:29 17:32	06:46 18:10	06:50 19:48	06:02 20:25	07:45 (6) 05:34 09:17 (6) 20:56
7	07:51 16:53	07:28 17:33	06:45 18:11	06:48 19:49	06:00 20:26	07:44 (6) 05:33 09:16 (6) 20:57
8	07:51 16:54	07:27 17:35	06:43 18:12	06:47 19:51	05:59 20:27	07:43 (6) 05:33 09:17 (6) 20:57
9	07:51 16:55	07:25 17:36	06:41 18:14	06:45 19:52	05:58 20:28	07:43 (6) 05:33 09:17 (6) 20:58
10	07:51 16:56	07:24 17:37	06:39 18:15	06:43 19:53	05:57 20:29	07:43 (6) 05:33 09:17 (6) 20:58
11	07:50 16:58	07:23 17:39	06:38 18:16	06:41 19:54	05:55 20:30	07:42 (6) 05:32 09:17 (6) 20:59
12	07:50 16:59	07:21 17:40	06:36 18:17	06:40 19:56	05:54 20:32	07:41 (6) 05:32 09:17 (6) 21:00
13	07:50 17:00	07:20 17:42	06:34 18:19	06:38 19:57	05:53 20:33	07:41 (6) 05:32 09:17 (6) 21:00
14	07:49 17:01	07:19 17:43	06:32 18:20	06:36 19:58	08:34 (6) 05:52 08:39 (6) 20:34	07:41 (6) 05:32 09:17 (6) 21:01
15	07:49 17:02	07:17 17:44	06:30 18:21	06:34 19:59	08:23 (6) 05:51 08:48 (6) 20:35	07:41 (6) 05:32 09:17 (6) 21:01
16	07:48 17:04	07:16 17:46	06:29 18:22	06:33 20:00	08:18 (6) 05:50 08:53 (6) 20:36	07:40 (6) 05:32 09:17 (6) 21:02
17	07:48 17:05	07:14 17:47	06:27 18:24	06:31 20:02	08:14 (6) 05:48 08:57 (6) 20:37	07:40 (6) 05:32 09:17 (6) 21:02
18	07:47 17:06	07:13 17:48	06:25 18:25	06:29 20:03	08:11 (6) 05:47 08:59 (6) 20:38	07:40 (6) 05:32 09:17 (6) 21:02
19	07:47 17:07	07:11 17:50	06:23 18:26	06:28 20:04	08:08 (6) 05:46 09:01 (6) 20:39	07:40 (6) 05:32 09:17 (6) 21:03
20	07:46 17:09	07:10 17:51	06:21 18:27	06:26 20:05	08:06 (6) 05:45 09:04 (6) 20:40	07:39 (6) 05:32 09:17 (6) 21:03
21	07:45 17:10	07:08 17:52	06:19 18:29	06:24 20:07	08:03 (6) 05:44 09:05 (6) 20:42	07:39 (6) 05:32 09:16 (6) 21:03
22	07:44 17:11	07:06 17:54	06:18 18:30	06:23 20:08	08:02 (6) 05:44 09:07 (6) 20:43	07:40 (6) 05:33 09:17 (6) 21:03
23	07:44 17:13	07:05 17:55	06:16 18:31	06:21 20:09	07:59 (6) 05:43 09:08 (6) 20:44	07:40 (6) 05:33 09:17 (6) 21:03
24	07:43 17:14	07:03 17:57	06:14 18:32	06:20 20:10	07:58 (6) 05:42 09:10 (6) 20:45	07:40 (6) 05:33 09:17 (6) 21:04
25	07:42 17:15	07:02 17:58	06:12 18:34	06:18 20:11	07:56 (6) 05:41 09:10 (6) 20:46	07:39 (6) 05:33 09:16 (6) 21:04
26	07:41 17:17	07:00 17:59	06:10 18:35	06:16 20:13	07:54 (6) 05:40 09:11 (6) 20:47	07:40 (6) 05:34 09:17 (6) 21:04
27	07:40 17:18	06:58 18:01	06:08 18:36	06:15 20:14	07:53 (6) 05:39 09:12 (6) 20:47	07:40 (6) 05:34 09:17 (6) 21:04
28	07:39 17:19	06:57 18:02	06:07 18:37	06:13 20:15	07:53 (6) 05:39 09:13 (6) 20:48	07:39 (6) 05:34 09:16 (6) 21:04
29	07:38 17:21		07:05 19:38	06:12 20:16	07:51 (6) 05:38 09:13 (6) 20:49	07:40 (6) 05:35 09:17 (6) 21:04
30	07:37 17:22		07:03 19:40	06:10 20:17	07:50 (6) 05:37 09:14 (6) 20:50	07:40 (6) 05:35 09:16 (6) 21:04
31	07:36 17:23		07:01 19:41		05:37 20:51	07:40 (6) 09:17 (6)
Potential sun hours	288	292	369	403	457	463
Total, worst case				1011	2938	2824

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: WON033_ShadowFlickering Shadow receptor: G - Shadow Receptor: 1.0 × 1.0 Azimuth: -100.0° Slope: 90.0° (21)
Assumptions for shadow calculations

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

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

	July		August		September		October	November	December
1	05:36		07:46 (6)	06:03	07:52 (6)	06:38	07:13	06:52	07:30
	21:04	95	09:21 (6)	20:42	09:27 (6)	19:54	18:59	17:07	16:39
2	05:36		07:47 (6)	06:04	07:52 (6)	06:39	07:14	06:53	07:31
	21:03	94	09:21 (6)	20:40	09:27 (6)	19:52	18:57	17:06	16:39
3	05:37		07:46 (6)	06:05	07:53 (6)	06:40	07:15	06:54	07:33
	21:03	95	09:21 (6)	20:39	09:27 (6)	19:50	18:55	17:05	16:38
4	05:38		07:47 (6)	06:06	07:53 (6)	06:41	07:16	06:56	07:34
	21:03	95	09:22 (6)	20:38	09:27 (6)	19:49	18:53	17:03	16:38
5	05:38		07:47 (6)	06:07	07:53 (6)	06:43	07:17	06:57	07:35
	21:03	95	09:22 (6)	20:37	09:26 (6)	19:47	18:51	17:02	16:38
6	05:39		07:47 (6)	06:08	07:55 (6)	06:44	07:19	06:58	07:36
	21:02	95	09:22 (6)	20:35	09:27 (6)	19:45	18:50	17:01	16:38
7	05:39		07:48 (6)	06:09	07:55 (6)	06:45	07:20	07:00	07:37
	21:02	95	09:23 (6)	20:34	09:26 (6)	19:43	18:48	16:59	16:38
8	05:40		07:47 (6)	06:10	07:55 (6)	06:46	07:21	07:01	07:38
	21:02	96	09:23 (6)	20:33	09:26 (6)	19:41	18:46	16:58	16:37
9	05:41		07:48 (6)	06:12	07:56 (6)	06:47	07:22	07:02	07:39
	21:01	95	09:23 (6)	20:31	09:25 (6)	19:40	18:44	16:57	16:37
10	05:42		07:48 (6)	06:13	07:56 (6)	06:48	07:24	07:04	07:40
	21:01	96	09:24 (6)	20:30	09:24 (6)	19:38	18:43	16:56	16:37
11	05:42		07:48 (6)	06:14	07:57 (6)	06:49	07:25	07:05	07:41
	21:00	96	09:24 (6)	20:28	09:24 (6)	19:36	18:41	16:55	16:37
12	05:43		07:48 (6)	06:15	07:57 (6)	06:51	07:26	07:06	07:41
	21:00	96	09:24 (6)	20:27	09:23 (6)	19:34	18:39	16:54	16:37
13	05:44		07:48 (6)	06:16	07:58 (6)	06:52	07:27	07:08	07:42
	20:59	96	09:24 (6)	20:25	09:22 (6)	19:32	18:37	16:52	16:38
14	05:45		07:48 (6)	06:17	07:59 (6)	06:53	07:28	07:09	07:43
	20:58	97	09:25 (6)	20:24	09:21 (6)	19:30	18:36	16:51	16:38
15	05:46		07:49 (6)	06:18	08:00 (6)	06:54	07:30	07:10	07:44
	20:58	96	09:25 (6)	20:22	09:20 (6)	19:28	18:34	16:50	16:38
16	05:47		07:49 (6)	06:20	08:00 (6)	06:55	07:31	07:12	07:45
	20:57	97	09:26 (6)	20:21	09:19 (6)	19:27	18:32	16:49	16:38
17	05:47		07:49 (6)	06:21	08:01 (6)	06:56	07:32	07:13	07:45
	20:56	97	09:26 (6)	20:19	09:17 (6)	19:25	18:30	16:49	16:38
18	05:48		07:49 (6)	06:22	08:03 (6)	06:57	07:33	07:14	07:46
	20:56	97	09:26 (6)	20:18	09:17 (6)	19:23	18:29	16:48	16:39
19	05:49		07:49 (6)	06:23	08:04 (6)	06:59	07:35	07:16	07:47
	20:55	97	09:26 (6)	20:16	09:15 (6)	19:21	18:27	16:47	16:39
20	05:50		07:49 (6)	06:24	08:05 (6)	07:00	07:36	07:17	07:47
	20:54	97	09:26 (6)	20:14	09:13 (6)	19:19	18:26	16:46	16:39
21	05:51		07:49 (6)	06:25	08:07 (6)	07:01	07:37	07:18	07:48
	20:53	98	09:27 (6)	20:13	09:12 (6)	19:17	18:24	16:45	16:40
22	05:52		07:50 (6)	06:26	08:08 (6)	07:02	07:39	07:19	07:48
	20:52	97	09:27 (6)	20:11	09:10 (6)	19:15	18:22	16:44	16:40
23	05:53		07:50 (6)	06:28	08:10 (6)	07:03	07:40	07:21	07:49
	20:51	97	09:27 (6)	20:10	09:07 (6)	19:14	18:21	16:44	16:41
24	05:54		07:50 (6)	06:29	08:12 (6)	07:04	07:41	07:22	07:49
	20:50	97	09:27 (6)	20:08	09:05 (6)	19:12	18:19	16:43	16:41
25	05:55		07:50 (6)	06:30	08:14 (6)	07:06	06:42	07:23	07:50
	20:49	97	09:27 (6)	20:06	09:02 (6)	19:10	17:18	16:42	16:42
26	05:56		07:51 (6)	06:31	08:17 (6)	07:07	06:44	07:24	07:50
	20:48	97	09:28 (6)	20:04	08:58 (6)	19:08	17:16	16:42	16:43
27	05:57		07:51 (6)	06:32	08:20 (6)	07:08	06:45	07:26	07:50
	20:47	97	09:28 (6)	20:03	08:54 (6)	19:06	17:15	16:41	16:43
28	05:58		07:51 (6)	06:33	08:26 (6)	07:09	06:46	07:27	07:51
	20:46	97	09:28 (6)	20:01	08:50 (6)	19:04	17:13	16:41	16:44
29	05:59		07:51 (6)	06:35		07:10	06:48	07:28	07:51
	20:45	97	09:28 (6)	19:59		19:02	17:12	16:40	16:45
30	06:00		07:51 (6)	06:36		07:11	06:49	07:29	07:51
	20:44	97	09:28 (6)	19:58		19:01	17:10	16:40	16:46
31	06:02		07:52 (6)	06:37			06:50		07:51
	20:43	95	09:27 (6)	19:56			17:09		16:46
Potential sun hours	469		434		376	342	290	277	
Total, worst case	2983		2093						

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: H - Shadow Receptor: 1.0 × 1.0 Azimuth: -100.0° Slope: 90.0° (22)
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	07:52 16:47	07:35 17:25	06:55 18:03	06:59 19:42		06:09 20:19	81	07:41 (6) 09:02 (6)	05:36 20:52	07:32 (6) 09:05 (6)
2	07:52 16:48	07:34 17:26	06:53 18:04	06:57 19:43		06:07 20:20	83	07:40 (6) 09:03 (6)	05:36 20:53	07:33 (6) 09:06 (6)
3	07:52 16:49	07:33 17:28	06:52 18:06	06:56 19:45		06:06 20:21	84	07:39 (6) 09:03 (6)	05:35 20:54	07:32 (6) 09:05 (6)
4	07:52 16:50	07:32 17:29	06:50 18:07	06:54 19:46		06:05 20:22	86	07:38 (6) 09:04 (6)	05:35 20:54	07:33 (6) 09:06 (6)
5	07:52 16:51	07:31 17:30	06:48 18:08	06:52 19:47		06:03 20:23	87	07:38 (6) 09:05 (6)	05:34 20:55	07:32 (6) 09:05 (6)
6	07:52 16:52	07:29 17:32	06:46 18:10	06:50 19:48		06:02 20:25	88	07:37 (6) 09:05 (6)	05:34 20:56	07:33 (6) 09:05 (6)
7	07:51 16:53	07:28 17:33	06:45 18:11	06:48 19:49		06:00 20:26	89	07:36 (6) 09:05 (6)	05:33 20:57	07:33 (6) 09:06 (6)
8	07:51 16:54	07:27 17:35	06:43 18:12	06:47 19:51		05:59 20:27	90	07:35 (6) 09:05 (6)	05:33 20:57	07:34 (6) 09:06 (6)
9	07:51 16:55	07:25 17:36	06:41 18:14	06:45 19:52		05:58 20:28	91	07:35 (6) 09:06 (6)	05:33 20:58	07:33 (6) 09:05 (6)
10	07:51 16:56	07:24 17:37	06:39 18:15	06:43 19:53		05:57 20:29	91	07:35 (6) 09:06 (6)	05:33 20:58	07:34 (6) 09:05 (6)
11	07:50 16:58	07:23 17:39	06:38 18:16	06:41 19:54		05:55 20:30	92	07:33 (6) 09:05 (6)	05:32 20:59	07:34 (6) 09:06 (6)
12	07:50 16:59	07:21 17:40	06:36 18:17	06:40 19:56		05:54 20:32	92	07:33 (6) 09:05 (6)	05:32 21:00	07:34 (6) 09:06 (6)
13	07:50 17:00	07:20 17:42	06:34 18:19	06:38 19:57		05:53 20:33	93	07:33 (6) 09:06 (6)	05:32 21:00	07:35 (6) 09:06 (6)
14	07:49 17:01	07:19 17:43	06:32 18:20	06:36 19:58		05:52 20:34	93	07:33 (6) 09:06 (6)	05:32 21:01	07:35 (6) 09:06 (6)
15	07:49 17:02	07:17 17:44	06:30 18:21	06:34 19:59		05:51 20:35	94	07:32 (6) 09:06 (6)	05:32 21:01	07:35 (6) 09:06 (6)
16	07:48 17:04	07:16 17:46	06:29 18:22	06:33 20:00	24	08:13 (6) 08:37 (6)	94	07:32 (6) 09:06 (6)	05:32 21:02	07:36 (6) 09:06 (6)
17	07:48 17:05	07:14 17:47	06:27 18:24	06:31 20:02	33	08:09 (6) 08:42 (6)	94	07:32 (6) 09:06 (6)	05:32 21:02	07:36 (6) 09:07 (6)
18	07:47 17:06	07:13 17:48	06:25 18:25	06:29 20:03	41	08:04 (6) 08:45 (6)	94	07:32 (6) 09:06 (6)	05:32 21:02	07:36 (6) 09:07 (6)
19	07:47 17:07	07:11 17:50	06:23 18:26	06:28 20:04	47	08:01 (6) 08:48 (6)	94	07:32 (6) 09:06 (6)	05:32 21:03	07:36 (6) 09:07 (6)
20	07:46 17:09	07:10 17:51	06:21 18:27	06:26 20:05	52	07:59 (6) 08:51 (6)	95	07:31 (6) 09:06 (6)	05:32 21:03	07:36 (6) 09:07 (6)
21	07:45 17:10	07:08 17:52	06:19 18:29	06:24 20:07	56	07:56 (6) 08:52 (6)	94	07:31 (6) 09:05 (6)	05:32 21:03	07:36 (6) 09:07 (6)
22	07:44 17:11	07:06 17:54	06:18 18:30	06:23 20:08	60	07:54 (6) 08:54 (6)	94	07:32 (6) 09:06 (6)	05:33 21:03	07:37 (6) 09:08 (6)
23	07:44 17:13	07:05 17:55	06:16 18:31	06:21 20:09	63	07:52 (6) 08:55 (6)	94	07:32 (6) 09:06 (6)	05:33 21:03	07:37 (6) 09:08 (6)
24	07:43 17:14	07:03 17:57	06:14 18:32	06:20 20:10	66	07:51 (6) 08:57 (6)	95	07:31 (6) 09:06 (6)	05:33 21:04	07:37 (6) 09:08 (6)
25	07:42 17:15	07:02 17:58	06:12 18:34	06:18 20:11	69	07:49 (6) 08:58 (6)	94	07:31 (6) 09:05 (6)	05:33 21:04	07:38 (6) 09:09 (6)
26	07:41 17:17	07:00 17:59	06:10 18:35	06:16 20:13	71	07:47 (6) 08:58 (6)	94	07:32 (6) 09:06 (6)	05:34 21:04	07:38 (6) 09:09 (6)
27	07:40 17:18	06:58 18:01	06:08 18:36	06:15 20:14	74	07:46 (6) 09:00 (6)	94	07:32 (6) 09:06 (6)	05:34 21:04	07:37 (6) 09:08 (6)
28	07:39 17:19	06:57 18:02	06:07 18:37	06:13 20:15	76	07:45 (6) 09:01 (6)	94	07:31 (6) 09:05 (6)	05:34 21:04	07:38 (6) 09:09 (6)
29	07:38 17:21		07:05 19:38	06:12 20:16	78	07:43 (6) 09:01 (6)	94	07:32 (6) 09:06 (6)	05:35 21:04	07:38 (6) 09:09 (6)
30	07:37 17:22		07:03 19:40	06:10 20:17	80	07:42 (6) 09:02 (6)	93	07:32 (6) 09:05 (6)	05:35 21:04	07:39 (6) 09:10 (6)
31	07:36 17:23		07:01 19:41			05:37 20:51	94	07:32 (6) 09:06 (6)		
Potential sun hours	288	292	369	403		457			463	
Total, worst case				890		2839			2746	

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: WON033_ShadowFlickering Shadow receptor: H - Shadow Receptor: 1.0 × 1.0 Azimuth: -100.0° Slope: 90.0° (22)
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	05:36		07:38 (6)	06:03	07:44 (6)	06:38	07:13	06:52	07:30
	21:04	92	09:10 (6)	20:42	09:16 (6)	19:54	18:59	17:07	16:39
2	05:36		07:39 (6)	06:04	07:44 (6)	06:39	07:14	06:53	07:31
	21:03	92	09:11 (6)	20:40	09:16 (6)	19:52	18:57	17:06	16:39
3	05:37		07:39 (6)	06:05	07:45 (6)	06:40	07:15	06:54	07:33
	21:03	91	09:10 (6)	20:39	09:15 (6)	19:50	18:55	17:05	16:38
4	05:38		07:39 (6)	06:06	07:45 (6)	06:41	07:16	06:56	07:34
	21:03	92	09:11 (6)	20:38	09:15 (6)	19:49	18:53	17:03	16:38
5	05:38		07:39 (6)	06:07	07:45 (6)	06:43	07:17	06:57	07:35
	21:03	92	09:11 (6)	20:37	09:15 (6)	19:47	18:51	17:02	16:38
6	05:39		07:39 (6)	06:08	07:47 (6)	06:44	07:19	06:58	07:36
	21:02	92	09:11 (6)	20:35	09:15 (6)	19:45	18:50	17:01	16:38
7	05:39		07:40 (6)	06:09	07:47 (6)	06:45	07:20	07:00	07:37
	21:02	92	09:12 (6)	20:34	09:15 (6)	19:43	18:48	16:59	16:38
8	05:40		07:39 (6)	06:10	07:47 (6)	06:46	07:21	07:01	07:38
	21:02	93	09:12 (6)	20:33	09:14 (6)	19:41	18:46	16:58	16:37
9	05:41		07:40 (6)	06:12	07:48 (6)	06:47	07:22	07:02	07:39
	21:01	92	09:12 (6)	20:31	09:13 (6)	19:40	18:44	16:57	16:37
10	05:42		07:40 (6)	06:13	07:48 (6)	06:48	07:24	07:04	07:40
	21:01	93	09:13 (6)	20:30	09:13 (6)	19:38	18:43	16:56	16:37
11	05:42		07:40 (6)	06:14	07:49 (6)	06:49	07:25	07:05	07:41
	21:00	94	09:14 (6)	20:28	09:12 (6)	19:36	18:41	16:55	16:37
12	05:43		07:40 (6)	06:15	07:50 (6)	06:51	07:26	07:06	07:41
	21:00	93	09:13 (6)	20:27	09:11 (6)	19:34	18:39	16:54	16:37
13	05:44		07:40 (6)	06:16	07:50 (6)	06:52	07:27	07:08	07:42
	20:59	94	09:14 (6)	20:25	09:10 (6)	19:32	18:37	16:52	16:38
14	05:45		07:40 (6)	06:17	07:51 (6)	06:53	07:28	07:09	07:43
	20:58	94	09:14 (6)	20:24	09:09 (6)	19:30	18:36	16:51	16:38
15	05:46		07:41 (6)	06:18	07:52 (6)	06:54	07:30	07:10	07:44
	20:58	94	09:15 (6)	20:22	09:08 (6)	19:28	18:34	16:50	16:38
16	05:47		07:41 (6)	06:20	07:53 (6)	06:55	07:31	07:12	07:45
	20:57	94	09:15 (6)	20:21	09:06 (6)	19:27	18:32	16:49	16:38
17	05:47		07:41 (6)	06:21	07:54 (6)	06:56	07:32	07:13	07:45
	20:56	94	09:15 (6)	20:19	09:05 (6)	19:25	18:30	16:49	16:38
18	05:48		07:41 (6)	06:22	07:56 (6)	06:57	07:33	07:14	07:46
	20:56	94	09:15 (6)	20:18	09:04 (6)	19:23	18:29	16:48	16:39
19	05:49		07:41 (6)	06:23	07:57 (6)	06:59	07:35	07:16	07:47
	20:55	94	09:15 (6)	20:16	09:03 (6)	19:21	18:27	16:47	16:39
20	05:50		07:41 (6)	06:24	07:58 (6)	07:00	07:36	07:17	07:47
	20:54	94	09:15 (6)	20:14	09:01 (6)	19:19	18:26	16:46	16:39
21	05:51		07:41 (6)	06:25	07:59 (6)	07:01	07:37	07:18	07:48
	20:53	95	09:16 (6)	20:13	08:59 (6)	19:17	18:24	16:45	16:40
22	05:52		07:42 (6)	06:26	08:01 (6)	07:02	07:39	07:19	07:48
	20:52	94	09:16 (6)	20:11	08:57 (6)	19:15	18:22	16:44	16:40
23	05:53		07:42 (6)	06:28	08:03 (6)	07:03	07:40	07:21	07:49
	20:51	94	09:16 (6)	20:10	08:54 (6)	19:14	18:21	16:44	16:41
24	05:54		07:42 (6)	06:29	08:05 (6)	07:04	07:41	07:22	07:49
	20:50	94	09:16 (6)	20:08	08:51 (6)	19:12	18:19	16:43	16:41
25	05:55		07:42 (6)	06:30	08:08 (6)	07:06	06:42	07:23	07:50
	20:49	94	09:16 (6)	20:06	08:48 (6)	19:10	17:18	16:42	16:42
26	05:56		07:42 (6)	06:31	08:11 (6)	07:07	06:44	07:24	07:50
	20:48	94	09:16 (6)	20:04	08:44 (6)	19:08	17:16	16:42	16:43
27	05:57		07:43 (6)	06:32	08:16 (6)	07:08	06:45	07:26	07:50
	20:47	93	09:16 (6)	20:03	08:38 (6)	19:06	17:15	16:41	16:43
28	05:58		07:43 (6)	06:33		07:09	06:46	07:27	07:51
	20:46	93	09:16 (6)	20:01		19:04	17:13	16:41	16:44
29	05:59		07:43 (6)	06:35		07:10	06:48	07:28	07:51
	20:45	93	09:16 (6)	19:59		19:02	17:12	16:40	16:45
30	06:00		07:43 (6)	06:36		07:11	06:49	07:29	07:51
	20:44	93	09:16 (6)	19:58		19:01	17:10	16:40	16:46
31	06:02		07:44 (6)	06:37			06:50		07:51
	20:43	92	09:16 (6)	19:56			17:09		16:46
Potential sun hours	469		434		376	342	290	277	
Total, worst case	2889		1934						

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: I - Shadow Receptor: 1.0 × 1.0 Azimuth: 70.0° Slope: 90.0° (23)
Assumptions for shadow calculations

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

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

	January	February	March		April		May		June			
1	07:51 16:47	07:35 17:25	06:55 18:03		06:59 19:42	69	16:52 (4) 18:48 (5)	06:09 20:18	75	16:38 (4) 17:53 (4)	21	05:36 17:32 (4)
2	07:51 16:48	07:34 17:26	06:53 18:04		06:57 19:43	76	16:51 (4) 18:50 (5)	06:07 20:20	74	16:39 (4) 17:53 (4)	17	05:35 20:53 (4)
3	07:52 16:49	07:33 17:27	06:51 18:06		06:55 19:44	80	16:49 (4) 18:50 (5)	06:06 20:21	73	16:39 (4) 17:52 (4)	13	05:35 20:53 (4)
4	07:52 16:50	07:32 17:29	06:50 18:07		06:54 19:46	85	16:47 (4) 18:51 (5)	06:04 20:22	72	16:40 (4) 17:52 (4)	7	05:35 20:54 (4)
5	07:51 16:51	07:30 17:30	06:48 18:08		06:52 19:47	89	16:45 (4) 18:51 (5)	06:03 20:23	71	16:41 (4) 17:52 (4)		05:34 20:55 (4)
6	07:51 16:52	07:29 17:32	06:46 18:10		06:50 19:48	93	16:43 (4) 18:51 (5)	06:02 20:24	70	16:41 (4) 17:51 (4)		05:34 20:56 (4)
7	07:51 16:53	07:28 17:33	06:44 18:11		06:48 19:49	95	16:43 (4) 18:51 (5)	06:00 20:26	69	16:42 (4) 17:51 (4)		05:33 20:56 (4)
8	07:51 16:54	07:27 17:34	06:43 18:12		06:46 19:51	97	16:41 (4) 18:51 (5)	05:59 20:27	68	16:43 (4) 17:51 (4)		05:33 20:57 (4)
9	07:51 16:55	07:25 17:36	06:41 18:13		06:45 19:52	99	16:40 (4) 18:50 (5)	05:58 20:28	66	16:44 (4) 17:50 (4)		05:33 20:58 (4)
10	07:51 16:56	07:24 17:37	06:39 18:15		06:43 19:53	99	16:39 (4) 18:49 (5)	05:56 20:29	65	16:44 (4) 17:49 (4)		05:32 20:58 (4)
11	07:50 16:57	07:23 17:39	06:37 18:16		06:41 19:54	99	16:39 (4) 18:49 (5)	05:55 20:30	64	16:45 (4) 17:49 (4)		05:32 20:59 (4)
12	07:50 16:59	07:21 17:40	06:36 18:17		06:39 19:55	99	16:38 (4) 18:48 (5)	05:54 20:31	62	16:46 (4) 17:48 (4)		05:32 20:59 (4)
13	07:50 17:00	07:20 17:41	06:34 18:18		06:38 19:57	98	16:37 (4) 18:46 (5)	05:53 20:33	61	16:47 (4) 17:48 (4)		05:32 21:00 (4)
14	07:49 17:01	07:18 17:43	06:32 18:20		06:36 19:58	96	16:37 (4) 18:45 (5)	05:52 20:34	59	16:48 (4) 17:47 (4)		05:32 21:00 (4)
15	07:49 17:02	07:17 17:44	06:30 18:21		06:34 19:59	93	16:36 (4) 18:43 (5)	05:50 20:35	58	16:49 (4) 17:47 (4)		05:32 21:01 (4)
16	07:48 17:03	07:15 17:46	06:28 18:22		06:33 20:00	88	16:35 (4) 18:39 (5)	05:49 20:36	56	16:50 (4) 17:46 (4)		05:32 21:01 (4)
17	07:48 17:05	07:14 17:47	06:27 18:24		06:31 20:02	80	16:36 (4) 17:56 (4)	05:48 20:37	54	16:51 (4) 17:45 (4)		05:32 21:02 (4)
18	07:47 17:06	07:12 17:48	06:25 18:25		06:29 20:03	80	16:35 (4) 17:55 (4)	05:47 20:38	53	16:52 (4) 17:45 (4)		05:32 21:02 (4)
19	07:46 17:07	07:11 17:50	06:23 18:26		06:27 20:04	80	16:35 (4) 17:55 (4)	05:46 20:39	51	16:53 (4) 17:44 (4)		05:32 21:02 (4)
20	07:46 17:08	07:09 17:51	06:21 18:27		06:26 20:05	81	16:35 (4) 17:56 (4)	05:45 20:40	49	16:54 (4) 17:43 (4)		05:32 21:03 (4)
21	07:45 17:10	07:08 17:52	06:19 18:28		06:24 20:06	80	16:35 (4) 17:55 (4)	05:44 20:41	47	16:55 (4) 17:42 (4)		05:32 21:03 (4)
22	07:44 17:11	07:06 17:54	06:17 18:30		06:23 20:08	80	16:35 (4) 17:55 (4)	05:43 20:42	45	16:56 (4) 17:41 (4)		05:32 21:03 (4)
23	07:43 17:12	07:05 17:55	06:16 18:31		06:21 20:09	80	16:35 (4) 17:55 (4)	05:43 20:43	43	16:58 (4) 17:41 (4)		05:33 21:03 (4)
24	07:43 17:14	07:03 17:56	06:14 18:32		06:19 20:10	80	16:35 (4) 17:55 (4)	05:42 20:44	41	16:59 (4) 17:40 (4)		05:33 21:03 (4)
25	07:42 17:15	07:01 17:58	06:12 18:33		06:18 20:11	79	16:36 (4) 17:55 (4)	05:41 20:45	39	17:00 (4) 17:39 (4)		05:33 21:04 (4)
26	07:41 17:16	07:00 17:59	06:10 18:35		06:16 20:12	79	16:35 (4) 17:54 (4)	05:40 20:46	37	17:01 (4) 17:38 (4)		05:34 21:04 (4)
27	07:40 17:18	06:58 18:00	06:08 18:36	9	06:15 20:14	79	16:36 (4) 17:55 (4)	05:39 20:47	34	17:03 (4) 17:37 (4)		05:34 21:04 (4)
28	07:39 17:19	06:56 18:02	06:06 18:37	25	06:13 20:15	78	16:36 (4) 17:54 (4)	05:39 20:48	32	17:04 (4) 17:36 (4)		05:34 21:04 (4)
29	07:38 17:21		07:05 19:38	33	06:12 20:16	77	16:37 (4) 17:54 (4)	05:38 20:49	30	17:06 (4) 17:36 (4)		05:35 21:04 (4)
30	07:37 17:22		07:03 19:40	49	06:10 20:17	76	16:58 (4) 18:44 (5)	05:37 20:50	26	17:08 (4) 17:34 (4)		05:35 21:03 (4)
31	07:36 17:23		07:01 19:41	62	06:09 18:47 (5)		16:55 (4) 18:47 (5)	05:37 20:51	24	17:09 (4) 17:33 (4)		
Potential sun hours	288	292	369		403		457	463				
Total, worst case			178		2564		1668	58				

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: I - Shadow Receptor: 1.0 × 1.0 Azimuth: 70.0° Slope: 90.0° (23)
Assumptions for shadow calculations

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

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

July		August		September		October		November		December	
1	05:36	06:02		16:56 (4)	06:38	16:38 (4)	07:12	06:52		07:30	
	21:03	20:41	63	17:59 (4)	19:54	18:48 (5)	18:59	17:07		16:39	
2	05:36	06:04		16:55 (4)	06:39	16:38 (4)	07:14	06:53		07:31	
	21:03	20:40	64	17:59 (4)	19:52	18:48 (5)	18:57	17:06		16:39	
3	05:37	06:05		16:54 (4)	06:40	16:38 (4)	07:15	06:54		07:32	
	21:03	20:39	66	18:00 (4)	19:50	18:48 (5)	18:55	17:04		16:38	
4	05:37	06:06		16:53 (4)	06:41	16:38 (4)	07:16	06:56		07:33	
	21:03	20:38	67	18:00 (4)	19:48	18:48 (5)	18:53	17:03		16:38	
5	05:38	06:07		16:52 (4)	06:42	16:39 (4)	07:17	06:57		07:35	
	21:02	20:36	68	18:00 (4)	19:47	18:47 (5)	18:51	17:02		16:38	
6	05:39	06:08		16:51 (4)	06:44	16:39 (4)	07:18	06:58		07:36	
	21:02	20:35	70	18:01 (4)	19:45	18:47 (5)	18:50	17:01		16:38	
7	05:39	06:09		16:50 (4)	06:45	16:40 (4)	07:20	07:00		07:37	
	21:02	20:34	71	18:01 (4)	19:43	18:46 (5)	18:48	16:59		16:37	
8	05:40	06:10		16:50 (4)	06:46	16:42 (4)	07:21	07:01		07:38	
	21:01	20:32	72	18:02 (4)	19:41	18:46 (5)	18:46	16:58		16:37	
9	05:41	17:24 (4)	06:11	16:49 (4)	06:47	16:43 (4)	07:22	07:02		07:39	
	21:01	17:34 (4)	20:31	18:02 (4)	19:39	18:45 (5)	18:44	16:57		16:37	
10	05:41	17:22 (4)	06:13	16:48 (4)	06:48	16:44 (4)	07:23	07:04		07:39	
	21:01	17:37 (4)	20:30	18:02 (4)	19:38	18:43 (5)	18:42	16:56		16:37	
11	05:42	17:19 (4)	06:14	16:47 (4)	06:49	16:45 (4)	07:25	07:05		07:40	
	21:00	17:38 (4)	20:28	18:02 (4)	19:36	18:41 (5)	18:41	16:55		16:37	
12	05:43	17:18 (4)	06:15	16:46 (4)	06:50	16:47 (4)	07:26	07:06		07:41	
	20:59	17:40 (4)	20:27	18:02 (4)	19:34	18:39 (5)	18:39	16:53		16:37	
13	05:44	17:17 (4)	06:16	16:45 (4)	06:52	16:49 (4)	07:27	07:08		07:42	
	20:59	17:42 (4)	20:25	18:02 (4)	19:32	18:36 (5)	18:37	16:52		16:37	
14	05:45	17:15 (4)	06:17	16:44 (4)	06:53	16:52 (4)	07:28	07:09		07:43	
	20:58	17:44 (4)	20:24	18:02 (4)	19:30	17:26 (4)	18:35	16:51		16:38	
15	05:46	17:14 (4)	06:18	16:44 (4)	06:54	16:55 (4)	07:30	07:10		07:44	
	20:58	17:45 (4)	20:22	18:02 (4)	19:28	17:22 (4)	18:34	16:50		16:38	
16	05:46	17:13 (4)	06:19	16:43 (4)	06:55	17:01 (4)	07:31	07:11		07:44	
	20:57	17:46 (4)	20:21	18:01 (4)	19:26	17:15 (4)	18:32	16:49		16:38	
17	05:47	17:11 (4)	06:21	16:42 (4)	06:56		07:32	07:13		07:45	
	20:56	17:47 (4)	20:19	18:01 (4)	19:25		18:30	16:48		16:38	
18	05:48	17:10 (4)	06:22	16:41 (4)	06:57		07:33	07:14		07:46	
	20:55	17:48 (4)	20:17	18:01 (4)	19:23		18:29	16:47		16:39	
19	05:49	17:09 (4)	06:23	16:42 (4)	06:58		07:35	07:15		07:46	
	20:55	17:49 (4)	20:16	18:01 (4)	19:21		18:27	16:47		16:39	
20	05:50	17:08 (4)	06:24	16:41 (4)	07:00		07:36	07:17		07:47	
	20:54	17:50 (4)	20:14	18:01 (4)	19:19		18:25	16:46		16:39	
21	05:51	17:07 (4)	06:25	16:40 (4)	07:01		07:37	07:18		07:48	
	20:53	17:51 (4)	20:13	18:00 (4)	19:17		18:24	16:45		16:40	
22	05:52	17:06 (4)	06:26	16:40 (4)	07:02		07:38	07:19		07:48	
	20:52	17:52 (4)	20:11	18:00 (4)	19:15		18:22	16:44		16:40	
23	05:53	17:05 (4)	06:27	16:39 (4)	07:03		07:40	07:21		07:49	
	20:51	17:53 (4)	20:09	17:59 (4)	19:13		18:21	16:43		16:41	
24	05:54	17:04 (4)	06:29	16:39 (4)	07:04		07:41	07:22		07:49	
	20:50	17:54 (4)	20:08	17:59 (4)	19:12		18:19	16:43		16:41	
25	05:55	17:03 (4)	06:30	16:38 (4)	07:05		06:42	07:23		07:50	
	20:49	17:55 (4)	20:06	17:58 (4)	19:10		17:17	16:42		16:42	
26	05:56	17:02 (4)	06:31	16:38 (4)	07:07		06:44	07:24		07:50	
	20:48	17:55 (4)	20:04	17:57 (4)	19:08		17:16	16:41		16:42	
27	05:57	17:01 (4)	06:32	16:37 (4)	07:08		06:45	07:25		07:50	
	20:47	17:56 (4)	20:03	18:41 (5)	19:06		17:14	16:41		16:43	
28	05:58	17:00 (4)	06:33	16:37 (4)	07:09		06:46	07:27		07:51	
	20:46	17:57 (4)	20:01	18:44 (5)	19:04		17:13	16:40		16:44	
29	05:59	16:59 (4)	06:34	16:38 (4)	07:10		06:48	07:28		07:51	
	20:45	17:57 (4)	19:59	18:46 (5)	19:02		17:11	16:40		16:45	
30	06:00	16:58 (4)	06:36	16:38 (4)	07:11		06:49	07:29		07:51	
	20:44	17:58 (4)	19:57	18:47 (5)	19:00		17:10	16:39		16:45	
31	06:01	16:57 (4)	06:37	16:38 (4)			06:50			07:51	
	20:43	17:58 (4)	19:56	18:47 (5)			17:09			16:46	
Potential sun hours	469		434		376		342		290		277
Total, worst case	924		2421		1174						

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: J - Shadow Receptor: 1.0 × 1.0 Azimuth: 70.0° Slope: 90.0° (24)
Assumptions for shadow calculations

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

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

	January	February	March		April		May		June	
1	07:51 16:47	07:35 17:25	06:55 18:03		06:59 19:42	16:35 (4) 18:47 (5)	06:09 20:18	16:26 (4) 17:44 (4)	05:36 20:52	17:00 (4) 17:23 (4)
2	07:51 16:48	07:34 17:26	06:53 18:04		06:57 19:43	16:34 (4) 18:49 (5)	06:07 20:20	16:27 (4) 17:44 (4)	05:35 20:53	17:02 (4) 17:22 (4)
3	07:52 16:49	07:33 17:27	06:51 18:06		06:55 19:44	16:32 (4) 18:49 (5)	06:06 20:21	16:27 (4) 17:43 (4)	05:35 20:53	17:04 (4) 17:20 (4)
4	07:52 16:50	07:32 17:29	06:50 18:07		06:54 19:46	16:31 (4) 18:49 (5)	06:04 20:22	16:28 (4) 17:43 (4)	05:35 20:54	17:06 (4) 17:18 (4)
5	07:51 16:51	07:30 17:30	06:48 18:08		06:52 19:47	16:29 (4) 18:49 (5)	06:03 20:23	16:29 (4) 17:43 (4)	05:34 20:55	17:10 (4) 17:14 (4)
6	07:51 16:52	07:29 17:32	06:46 18:10		06:50 19:48	16:28 (4) 18:49 (5)	06:02 20:24	16:29 (4) 17:41 (4)	05:34 20:56	
7	07:51 16:53	07:28 17:33	06:44 18:11		06:48 19:49	16:27 (4) 18:50 (5)	06:00 20:26	16:30 (4) 17:41 (4)	05:33 20:56	
8	07:51 16:54	07:27 17:34	06:43 18:12		06:46 19:51	16:26 (4) 18:49 (5)	05:59 20:27	16:31 (4) 17:41 (4)	05:33 20:57	
9	07:51 16:55	07:25 17:36	06:41 18:13		06:45 19:52	16:25 (4) 18:48 (5)	05:58 20:28	16:32 (4) 17:41 (4)	05:33 20:58	
10	07:51 16:56	07:24 17:37	06:39 18:15		06:43 19:53	16:24 (4) 18:47 (5)	05:56 20:29	16:32 (4) 17:39 (4)	05:32 20:58	
11	07:50 16:57	07:23 17:39	06:37 18:16		06:41 19:54	16:24 (4) 18:47 (5)	05:55 20:30	16:33 (4) 17:39 (4)	05:32 20:59	
12	07:50 16:59	07:21 17:40	06:36 18:17		06:39 19:55	16:23 (4) 18:45 (5)	05:54 20:31	16:34 (4) 17:38 (4)	05:32 20:59	
13	07:50 17:00	07:20 17:41	06:34 18:18		06:38 19:57	16:23 (4) 18:44 (5)	05:53 20:33	16:36 (4) 17:38 (4)	05:32 21:00	
14	07:49 17:01	07:18 17:43	06:32 18:20		06:36 19:58	16:23 (4) 18:43 (5)	05:52 20:34	16:37 (4) 17:37 (4)	05:32 21:00	
15	07:49 17:02	07:17 17:44	06:30 18:21		06:34 19:59	16:22 (4) 18:40 (5)	05:50 20:35	16:38 (4) 17:37 (4)	05:32 21:01	
16	07:48 17:03	07:15 17:46	06:28 18:22		06:33 20:00	16:22 (4) 18:34 (5)	05:49 20:36	16:39 (4) 17:36 (4)	05:32 21:01	
17	07:48 17:05	07:14 17:47	06:27 18:24		06:31 20:02	16:22 (4) 17:47 (4)	05:48 20:37	16:40 (4) 17:36 (4)	05:32 21:02	
18	07:47 17:06	07:12 17:48	06:25 18:25		06:29 20:03	16:22 (4) 17:46 (4)	05:47 20:38	16:41 (4) 17:35 (4)	05:32 21:02	
19	07:46 17:07	07:11 17:50	06:23 18:26		06:27 20:04	16:21 (4) 17:46 (4)	05:46 20:39	16:42 (4) 17:34 (4)	05:32 21:02	
20	07:46 17:08	07:09 17:51	06:21 18:27		06:26 20:05	16:22 (4) 17:47 (4)	05:45 20:40	16:43 (4) 17:33 (4)	05:32 21:03	
21	07:45 17:10	07:08 17:52	06:19 18:28		06:24 20:06	16:22 (4) 17:46 (4)	05:44 20:41	16:44 (4) 17:32 (4)	05:32 21:03	
22	07:44 17:11	07:06 17:54	06:17 18:30		06:23 20:08	16:21 (4) 17:46 (4)	05:43 20:42	16:45 (4) 17:31 (4)	05:32 21:03	
23	07:43 17:12	07:05 17:55	06:16 18:31		06:21 20:09	16:22 (4) 17:46 (4)	05:43 20:43	16:47 (4) 17:32 (4)	05:33 21:03	
24	07:43 17:14	07:03 17:56	06:14 18:32		06:19 20:10	16:22 (4) 17:45 (4)	05:42 20:44	16:48 (4) 17:30 (4)	05:33 21:03	
25	07:42 17:15	07:01 17:58	06:12 18:33	15:59 (4) 16:17 (4)	06:18 20:11	16:23 (4) 17:46 (4)	05:41 20:45	16:49 (4) 17:29 (4)	05:33 21:04	
26	07:41 17:16	07:00 17:59	06:10 18:35	15:52 (4) 16:22 (4)	06:16 20:12	16:23 (4) 17:45 (4)	05:40 20:46	16:50 (4) 17:28 (4)	05:34 21:04	
27	07:40 17:18	06:58 18:00	06:08 18:36	15:49 (4) 16:27 (4)	06:15 20:14	16:24 (4) 17:45 (4)	05:39 20:47	16:52 (4) 17:28 (4)	05:34 21:04	
28	07:39 17:19	06:56 18:02	06:06 18:37	15:45 (4) 16:29 (4)	06:13 20:15	16:24 (4) 17:44 (4)	05:39 20:48	16:53 (4) 17:27 (4)	05:34 21:04	
29	07:38 17:21		07:05 19:38	16:42 (4) 18:41 (5)	06:12 20:16	16:25 (4) 17:45 (4)	05:38 20:49	16:55 (4) 17:26 (4)	05:35 21:04	
30	07:37 17:22		07:03 19:40	16:40 (4) 18:45 (5)	06:10 20:17	16:25 (4) 17:44 (4)	05:37 20:50	16:56 (4) 17:25 (4)	05:35 21:03	
31	07:36 17:23		07:01 19:41	16:37 (4) 18:46 (5)			05:37 20:51	16:58 (4) 17:23 (4)		
Potential sun hours	288	292	369		403		457		463	
Total, worst case			329		2731		1723		75	

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: WON033_ShadowFlickering Shadow receptor: J - Shadow Receptor: 1.0 × 1.0 Azimuth: 70.0° Slope: 90.0° (24)
Assumptions for shadow calculations

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

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

July		August		September		October		November		December	
1	05:36		06:02	16:45 (4)	06:38	16:23 (4)	07:12	06:52	07:30		
	21:03		20:41	17:49 (4)	19:54	18:46 (5)	18:59	17:07	16:39		
2	05:36		06:04	16:44 (4)	06:39	16:23 (4)	07:14	06:53	07:31		
	21:03		20:40	17:50 (4)	19:52	18:46 (5)	18:57	17:06	16:39		
3	05:37		06:05	16:43 (4)	06:40	16:23 (4)	07:15	06:54	07:32		
	21:03		20:39	17:50 (4)	19:50	18:46 (5)	18:55	17:04	16:38		
4	05:37		06:06	16:41 (4)	06:41	16:23 (4)	07:16	06:56	07:33		
	21:03		20:38	17:50 (4)	19:48	18:46 (5)	18:53	17:03	16:38		
5	05:38		06:07	16:40 (4)	06:42	16:23 (4)	07:17	06:57	07:35		
	21:02		20:36	17:51 (4)	19:47	18:46 (5)	18:51	17:02	16:38		
6	05:39		06:08	16:39 (4)	06:44	16:24 (4)	07:18	06:58	07:36		
	21:02		20:35	17:51 (4)	19:45	18:45 (5)	18:50	17:01	16:38		
7	05:39		06:09	16:38 (4)	06:45	16:24 (4)	07:20	07:00	07:37		
	21:02		20:34	17:51 (4)	19:43	18:44 (5)	18:48	16:59	16:37		
8	05:40		06:10	16:38 (4)	06:46	16:26 (4)	07:21	07:01	07:38		
	21:01	9	17:23 (4)	20:32	17:52 (4)	18:45 (5)	18:46	16:58	16:37		
9	05:41		06:11	16:37 (4)	06:47	16:26 (4)	07:22	07:02	07:39		
	21:01	14	17:26 (4)	20:31	17:52 (4)	18:44 (5)	18:44	16:57	16:37		
10	05:42		06:13	16:36 (4)	06:48	16:27 (4)	07:23	07:04	07:39		
	21:01	18	17:28 (4)	20:30	17:52 (4)	18:42 (5)	18:42	16:56	16:37		
11	05:42		06:14	16:35 (4)	06:49	16:28 (4)	07:25	07:05	07:40		
	21:00	21	17:30 (4)	20:28	17:52 (4)	18:41 (5)	18:41	16:55	16:37		
12	05:43		06:15	16:34 (4)	06:50	16:29 (4)	07:26	07:06	07:41		
	20:59	24	17:31 (4)	20:27	17:52 (4)	18:39 (5)	18:39	16:53	16:37		
13	05:44		06:16	16:33 (4)	06:52	16:30 (4)	07:27	07:08	07:42		
	20:59	28	17:33 (4)	20:25	17:52 (4)	18:36 (5)	18:37	16:52	16:37		
14	05:45		06:17	16:32 (4)	06:53	16:32 (4)	07:28	07:09	07:43		
	20:58	30	17:34 (4)	20:24	17:52 (4)	18:33 (5)	18:35	16:51	16:38		
15	05:46		06:18	16:31 (4)	06:54	16:34 (4)	07:30	07:10	07:44		
	20:58	33	17:36 (4)	20:22	17:52 (4)	17:19 (4)	18:34	16:50	16:38		
16	05:46		06:19	16:30 (4)	06:55	16:36 (4)	07:31	07:11	07:44		
	20:57	35	17:37 (4)	20:21	17:52 (4)	17:16 (4)	18:32	16:49	16:38		
17	05:47		06:21	16:29 (4)	06:56	16:41 (4)	07:32	07:13	07:45		
	20:56	37	17:37 (4)	20:19	17:52 (4)	17:13 (4)	18:30	16:48	16:38		
18	05:48		06:22	16:29 (4)	06:57	16:45 (4)	07:33	07:14	07:46		
	20:55	39	17:38 (4)	20:17	17:51 (4)	17:07 (4)	18:29	16:47	16:39		
19	05:49		06:23	16:29 (4)	06:58		07:35	07:15	07:46		
	20:55	41	17:39 (4)	20:16	17:52 (4)		18:27	16:47	16:39		
20	05:50		06:24	16:28 (4)	07:00		07:36	07:17	07:47		
	20:54	44	17:41 (4)	20:14	17:52 (4)		18:25	16:46	16:39		
21	05:51		06:25	16:27 (4)	07:01		07:37	07:18	07:48		
	20:53	46	17:42 (4)	20:13	17:51 (4)		18:24	16:45	16:40		
22	05:52		06:26	16:26 (4)	07:02		07:38	07:19	07:48		
	20:52	47	17:42 (4)	20:11	17:51 (4)		18:22	16:44	16:40		
23	05:53		06:27	16:26 (4)	07:03		07:40	07:21	07:49		
	20:51	49	17:43 (4)	20:09	17:50 (4)		18:21	16:43	16:41		
24	05:54		06:29	16:25 (4)	07:04		07:41	07:22	07:49		
	20:50	51	17:44 (4)	20:08	17:50 (4)		18:19	16:43	16:41		
25	05:55		06:30	16:25 (4)	07:05		06:42	07:23	07:50		
	20:49	53	17:45 (4)	20:06	17:49 (4)		17:17	16:42	16:42		
26	05:56		06:31	16:24 (4)	07:07		06:44	07:24	07:50		
	20:48	55	17:46 (4)	20:04	17:48 (4)		17:16	16:41	16:42		
27	05:57		06:32	16:24 (4)	07:08		06:45	07:25	07:50		
	20:47	56	17:46 (4)	20:03	18:37 (5)		17:14	16:41	16:43		
28	05:58		06:33	16:23 (4)	07:09		06:46	07:27	07:51		
	20:46	58	17:47 (4)	20:01	18:41 (5)		17:13	16:40	16:44		
29	05:59		06:34	16:24 (4)	07:10		06:48	07:28	07:51		
	20:45	60	17:48 (4)	19:59	18:44 (5)		17:11	16:40	16:45		
30	06:00		06:36	16:23 (4)	07:11		06:49	07:29	07:51		
	20:44	61	17:48 (4)	19:57	18:45 (5)		17:10	16:39	16:45		
31	06:01		06:37	16:23 (4)			06:50		07:51		
	20:43	63	17:49 (4)	19:56	18:45 (5)		17:09		16:46		
Potential sun hours	469		434		376		342	290	277		
Total, worst case	972		2514		1433						

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: K - Shadow Receptor: 1.0 × 1.0 Azimuth: 70.0° Slope: 90.0° (25)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	
1	07:51 16:47	07:35 17:25	06:55 18:03	06:59 19:42	17:14 (4) 18:46 (5)	06:09 20:18	17:00 (4) 20:52
2	07:51 16:48	07:34 17:26	06:53 18:04	06:57 19:43	17:12 (4) 18:48 (5)	06:07 20:20	17:01 (4) 20:53
3	07:52 16:49	07:33 17:27	06:51 18:06	06:55 19:44	17:10 (4) 18:49 (5)	06:06 20:21	17:01 (4) 20:53
4	07:51 16:50	07:32 17:29	06:50 18:07	06:54 19:46	17:08 (4) 18:49 (5)	06:04 20:22	17:02 (4) 20:54
5	07:51 16:51	07:30 17:30	06:48 18:08	06:52 19:47	17:06 (4) 18:49 (5)	06:03 20:23	17:04 (4) 20:55
6	07:51 16:52	07:29 17:32	06:46 18:10	06:50 19:48	17:04 (4) 18:49 (5)	06:02 20:24	17:04 (4) 20:56
7	07:51 16:53	07:28 17:33	06:44 18:11	06:48 19:49	17:03 (4) 18:49 (5)	06:00 20:26	17:05 (4) 20:56
8	07:51 16:54	07:27 17:34	06:43 18:12	06:46 19:51	17:02 (4) 18:49 (5)	05:59 20:27	17:06 (4) 20:57
9	07:51 16:55	07:25 17:36	06:41 18:13	06:45 19:52	17:01 (4) 18:48 (5)	05:58 20:28	17:08 (4) 20:58
10	07:51 16:56	07:24 17:37	06:39 18:15	06:43 19:53	16:59 (4) 18:47 (5)	05:56 20:29	17:08 (4) 20:58
11	07:50 16:57	07:23 17:39	06:37 18:16	06:41 19:54	16:59 (4) 18:47 (5)	05:55 20:30	17:10 (4) 20:59
12	07:50 16:59	07:21 17:40	06:36 18:17	06:39 19:55	16:58 (4) 18:46 (5)	05:54 20:31	17:11 (4) 20:59
13	07:50 17:00	07:20 17:41	06:34 18:18	06:38 19:57	16:57 (4) 18:44 (5)	05:53 20:33	17:13 (4) 21:00
14	07:49 17:01	07:18 17:43	06:32 18:20	06:36 19:58	16:58 (4) 18:43 (5)	05:52 20:34	17:15 (4) 21:00
15	07:49 17:02	07:17 17:44	06:30 18:21	06:34 19:59	16:57 (4) 18:40 (5)	05:50 20:35	17:16 (4) 21:01
16	07:48 17:03	07:15 17:45	06:28 18:22	06:33 20:00	16:56 (4) 18:02 (4)	05:49 20:36	17:18 (4) 21:01
17	07:48 17:05	07:14 17:47	06:27 18:23	06:31 20:01	16:57 (4) 18:02 (4)	05:48 20:37	17:21 (4) 21:02
18	07:47 17:06	07:12 17:48	06:25 18:25	06:29 20:03	16:56 (4) 18:02 (4)	05:47 20:38	17:24 (4) 21:02
19	07:46 17:07	07:11 17:50	06:23 18:26	06:27 20:04	16:56 (4) 18:02 (4)	05:46 20:39	17:38 (4) 21:02
20	07:46 17:08	07:09 17:51	06:21 18:27	06:26 20:05	16:56 (4) 18:02 (4)	05:45 20:40	17:44 (4) 21:03
21	07:45 17:10	07:08 17:52	06:19 18:28	06:24 20:06	16:56 (4) 18:02 (4)	05:44 20:41	17:46 (4) 21:03
22	07:44 17:11	07:06 17:54	06:17 18:30	06:23 20:08	16:56 (4) 18:01 (4)	05:43 20:42	17:48 (4) 21:03
23	07:43 17:12	07:05 17:55	06:16 18:31	06:21 20:09	16:56 (4) 18:01 (4)	05:42 20:43	17:50 (4) 21:03
24	07:43 17:14	07:03 17:56	06:14 18:32	06:19 20:10	16:56 (4) 18:01 (4)	05:42 20:44	17:52 (4) 21:03
25	07:42 17:15	07:01 17:58	06:12 18:33	06:18 20:11	16:57 (4) 18:01 (4)	05:41 20:45	17:54 (4) 21:04
26	07:41 17:16	07:00 17:59	06:10 18:35	06:16 20:12	16:57 (4) 18:00 (4)	05:40 20:46	17:56 (4) 21:04
27	07:40 17:18	06:58 18:00	06:08 18:36	06:15 20:14	16:58 (4) 18:00 (4)	05:39 20:47	17:58 (4) 21:04
28	07:39 17:19	06:56 18:02	06:06 18:37	06:13 20:15	16:58 (4) 17:59 (4)	05:39 20:48	18:00 (4) 21:04
29	07:38 17:21		07:05 19:38	06:12 20:16	16:59 (4) 17:59 (4)	05:38 20:49	18:02 (4) 21:04
30	07:37 17:22		07:03 19:40	06:10 20:17	16:59 (4) 17:58 (4)	05:37 20:50	18:04 (4) 21:05
31	07:36 17:23		07:01 19:41	06:09 18:44 (5)	17:58 (4) 20:51	05:37 20:51	18:06 (4) 21:05
Potential sun hours	288	292	369	403	457	463	
Total, worst case			58	2082	732	463	

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: WON033_ShadowFlickering Shadow receptor: K - Shadow Receptor: 1.0 × 1.0 Azimuth: 70.0° Slope: 90.0° (25)
Assumptions for shadow calculations

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

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

	July			August			September			October	November	December
1	05:36			06:02	17:21 (4)	06:38	16:58 (4)	07:12	06:51	07:30		
	21:03			20:41	38 17:59 (4)	19:54	84 18:46 (5)	18:59	17:07	16:39		
2	05:36			06:04	17:20 (4)	06:39	16:58 (4)	07:14	06:53	07:31		
	21:03			20:40	40 18:00 (4)	19:52	83 18:46 (5)	18:57	17:06	16:39		
3	05:37			06:05	17:18 (4)	06:40	16:59 (4)	07:15	06:54	07:32		
	21:03			20:39	43 18:01 (4)	19:50	82 18:46 (5)	18:55	17:04	16:38		
4	05:37			06:06	17:17 (4)	06:41	16:59 (4)	07:16	06:55	07:33		
	21:03			20:38	45 18:02 (4)	19:48	82 18:46 (5)	18:53	17:03	16:38		
5	05:38			06:07	17:16 (4)	06:42	16:59 (4)	07:17	06:57	07:35		
	21:02			20:36	47 18:03 (4)	19:47	81 18:46 (5)	18:51	17:02	16:38		
6	05:39			06:08	17:14 (4)	06:44	17:00 (4)	07:18	06:58	07:36		
	21:02			20:35	49 18:03 (4)	19:45	77 18:45 (5)	18:50	17:00	16:38		
7	05:39			06:09	17:13 (4)	06:45	17:01 (4)	07:20	07:00	07:37		
	21:02			20:34	51 18:04 (4)	19:43	74 18:44 (5)	18:48	16:59	16:37		
8	05:40			06:10	17:13 (4)	06:46	17:03 (4)	07:21	07:01	07:38		
	21:01			20:32	52 18:05 (4)	19:41	70 18:44 (5)	18:46	16:58	16:37		
9	05:41			06:11	17:12 (4)	06:47	17:04 (4)	07:22	07:02	07:39		
	21:01			20:31	54 18:06 (4)	19:39	65 18:43 (5)	18:44	16:57	16:37		
10	05:41			06:13	17:10 (4)	06:48	17:05 (4)	07:23	07:04	07:39		
	21:01			20:30	56 18:06 (4)	19:38	59 18:41 (5)	18:42	16:56	16:37		
11	05:42			06:14	17:09 (4)	06:49	17:07 (4)	07:25	07:05	07:40		
	21:00			20:28	57 18:06 (4)	19:36	51 18:39 (5)	18:41	16:55	16:37		
12	05:43			06:15	17:08 (4)	06:50	17:10 (4)	07:26	07:06	07:41		
	20:59			20:27	58 18:06 (4)	19:34	40 18:37 (5)	18:39	16:53	16:37		
13	05:44			06:16	17:07 (4)	06:52	17:13 (4)	07:27	07:08	07:42		
	20:59			20:25	60 18:07 (4)	19:32	21 17:34 (4)	18:37	16:52	16:37		
14	05:45			06:17	17:06 (4)	06:53	17:22 (4)	07:28	07:09	07:43		
	20:58			20:24	61 18:07 (4)	19:30	2 17:24 (4)	18:35	16:51	16:38		
15	05:46			06:18	17:05 (4)	06:54		07:30	07:10	07:44		
	20:58			20:22	62 18:07 (4)	19:28		18:34	16:50	16:38		
16	05:46			06:19	17:04 (4)	06:55		07:31	07:11	07:44		
	20:57			20:21	63 18:07 (4)	19:26		18:32	16:49	16:38		
17	05:47			06:21	17:03 (4)	06:56		07:32	07:13	07:45		
	20:56			20:19	64 18:07 (4)	19:25		18:30	16:48	16:38		
18	05:48			06:22	17:03 (4)	06:57		07:33	07:14	07:46		
	20:55			20:17	63 18:06 (4)	19:23		18:29	16:47	16:39		
19	05:49			06:23	17:03 (4)	06:58		07:35	07:15	07:46		
	20:55			20:16	64 18:07 (4)	19:21		18:27	16:47	16:39		
20	05:50			06:24	17:02 (4)	07:00		07:36	07:17	07:47		
	20:54			20:14	65 18:07 (4)	19:19		18:25	16:46	16:39		
21	05:51			06:25	17:01 (4)	07:01		07:37	07:18	07:48		
	20:53			20:13	66 18:07 (4)	19:17		18:24	16:45	16:40		
22	05:52			06:26	17:01 (4)	07:02		07:38	07:19	07:48		
	20:52			20:11	65 18:06 (4)	19:15		18:22	16:44	16:40		
23	05:53			06:27	17:00 (4)	07:03		07:40	07:21	07:49		
	20:51			20:09	66 18:06 (4)	19:13		18:21	16:43	16:41		
24	05:54			06:29	16:59 (4)	07:04		07:41	07:22	07:49		
	20:50			20:08	66 18:05 (4)	19:12		18:19	16:43	16:41		
25	05:55	17:37 (4)	06:30	16:59 (4)	07:05			06:42	07:23	07:50		
	20:49	9 17:46 (4)	20:06	18:05 (4)	19:10			17:17	16:42	16:42		
26	05:56	17:33 (4)	06:31	16:59 (4)	07:07			06:44	07:24	07:50		
	20:48	17 17:50 (4)	20:04	18:04 (4)	19:08			17:16	16:41	16:42		
27	05:57	17:30 (4)	06:32	16:58 (4)	07:08			06:45	07:25	07:50		
	20:47	22 17:52 (4)	20:03	18:03 (4)	19:06			17:14	16:41	16:43		
28	05:58	17:28 (4)	06:33	16:58 (4)	07:09			06:46	07:27	07:51		
	20:46	26 17:54 (4)	20:01	18:41 (5)	19:04			17:13	16:40	16:44		
29	05:59	17:26 (4)	06:34	16:59 (4)	07:10			06:48	07:28	07:51		
	20:45	30 17:56 (4)	19:59	18:44 (5)	19:02			17:11	16:40	16:45		
30	06:00	17:24 (4)	06:35	16:58 (4)	07:11			06:49	07:29	07:51		
	20:44	33 17:57 (4)	19:57	18:45 (5)	19:00			17:10	16:39	16:45		
31	06:01	17:23 (4)	06:37	16:58 (4)				06:50		07:51		
	20:43	35 17:58 (4)	19:56	18:46 (5)				17:09		16:46		
Potential sun hours	469		434			376		342	290	277		
Total, worst case	172		1872			871						

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: L - Shadow Receptor: 1.0 × 1.0 Azimuth: 90.0° Slope: 90.0° (26)
Assumptions for shadow calculations

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

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

	January			February			March			April			May			June		
1	07:51 16:47	56	14:07 (4) 15:03 (4)	07:35 17:25	60	14:16 (4) 15:16 (4)	06:55 18:03	21	16:53 (5) 17:14 (5)	06:59 19:42		06:09 20:18	77	16:57 (3) 18:14 (3)	05:36 20:52	103	16:49 (3) 18:32 (3)	
2	07:51 16:48	57	14:07 (4) 15:04 (4)	07:34 17:26	59	14:17 (4) 15:16 (4)	06:53 18:04	23	16:52 (5) 17:15 (5)	06:57 19:43		06:07 20:20	78	16:57 (3) 18:15 (3)	05:35 20:53	104	16:48 (3) 18:32 (3)	
3	07:52 16:49	58	14:07 (4) 15:05 (4)	07:33 17:27	58	14:18 (4) 15:16 (4)	06:51 18:06	24	16:51 (5) 17:15 (5)	06:55 19:44		06:06 20:21	81	16:55 (3) 18:16 (3)	05:35 20:53	103	16:49 (3) 18:32 (3)	
4	07:52 16:50	58	14:08 (4) 15:06 (4)	07:32 17:29	56	14:19 (4) 15:15 (4)	06:50 18:07	25	16:51 (5) 17:16 (5)	06:54 19:46		06:04 20:22	83	16:54 (3) 18:17 (3)	05:35 20:54	103	16:50 (3) 18:33 (3)	
5	07:51 16:51	58	14:07 (4) 15:05 (4)	07:30 17:30	55	14:19 (4) 15:14 (4)	06:48 18:08	26	16:50 (5) 17:16 (5)	06:52 19:47		06:03 20:23	86	16:53 (3) 18:19 (3)	05:34 20:55	104	16:49 (3) 18:33 (3)	
6	07:51 16:52	59	14:07 (4) 15:06 (4)	07:29 17:32	54	14:20 (4) 15:14 (4)	06:46 18:10	27	16:49 (5) 17:16 (5)	06:50 19:48		06:02 20:24	87	16:52 (3) 18:19 (3)	05:34 20:56	103	16:50 (3) 18:33 (3)	
7	07:51 16:53	59	14:08 (4) 15:07 (4)	07:28 17:33	52	14:22 (4) 15:14 (4)	06:44 18:11	27	16:49 (5) 17:16 (5)	06:48 19:49		06:00 20:26	89	16:51 (3) 18:20 (3)	05:33 20:56	104	16:50 (3) 18:34 (3)	
8	07:51 16:54	60	14:08 (4) 15:08 (4)	07:27 17:34	50	14:22 (4) 15:12 (4)	06:43 18:12	26	16:49 (5) 17:15 (5)	06:46 19:51		05:59 20:27	90	16:51 (3) 18:21 (3)	05:33 20:57	103	16:50 (3) 18:33 (3)	
9	07:51 16:55	60	14:08 (4) 15:08 (4)	07:25 17:36	48	14:24 (4) 15:12 (4)	06:41 18:13	25	16:50 (5) 17:15 (5)	06:45 19:52		05:58 20:28	92	16:50 (3) 18:22 (3)	05:33 20:58	104	16:50 (3) 18:34 (3)	
10	07:51 16:56	61	14:08 (4) 15:09 (4)	07:24 17:37	45	14:26 (4) 15:11 (4)	06:39 18:15	24	16:50 (5) 17:14 (5)	06:43 19:53		05:56 20:29	93	16:49 (3) 18:22 (3)	05:32 20:58	103	16:51 (3) 18:34 (3)	
11	07:50 16:57	61	14:09 (4) 15:10 (4)	07:23 17:39	42	14:27 (4) 15:09 (4)	06:37 18:16	22	16:51 (5) 17:13 (5)	06:41 19:54		05:55 20:30	94	16:49 (3) 18:23 (3)	05:32 20:59	104	16:51 (3) 18:35 (3)	
12	07:50 16:59	61	14:09 (4) 15:10 (4)	07:21 17:40	38	14:30 (4) 15:08 (4)	06:36 18:17	20	16:51 (5) 17:11 (5)	06:39 19:55		05:54 20:31	95	16:48 (3) 18:23 (3)	05:32 20:59	103	16:52 (3) 18:35 (3)	
13	07:50 17:00	62	14:09 (4) 15:11 (4)	07:20 17:41	33	14:32 (4) 15:05 (4)	06:34 18:18	16	16:53 (5) 17:09 (5)	06:38 19:57		05:53 20:33	96	16:48 (3) 18:24 (3)	05:32 21:00	103	16:52 (3) 18:35 (3)	
14	07:49 17:01	62	14:09 (4) 15:11 (4)	07:18 17:43	28	14:35 (4) 15:03 (4)	06:32 18:20	11	16:56 (5) 17:07 (5)	06:36 19:58		05:52 20:34	97	16:48 (3) 18:25 (3)	05:32 21:00	104	16:52 (3) 18:36 (3)	
15	07:49 17:02	63	14:10 (4) 15:13 (4)	07:17 17:44	22	14:38 (4) 15:00 (4)	06:30 18:21		06:34 19:59	06:34 20:00		05:50 20:35	97	16:48 (3) 18:25 (3)	05:32 21:01	103	16:53 (3) 18:36 (3)	
16	07:48 17:03	63	14:10 (4) 15:13 (4)	07:15 17:45	11	14:44 (4) 14:55 (4)	06:28 18:22		06:33 20:00	06:33 20:00		05:49 20:36	98	16:48 (3) 18:26 (3)	05:32 21:01	103	16:53 (3) 18:36 (3)	
17	07:48 17:05	64	14:09 (4) 15:13 (4)	07:14 17:47			06:27 18:24		06:31 20:02	06:31 20:02		05:48 20:37	99	16:47 (3) 18:26 (3)	05:32 21:02	103	16:53 (3) 18:36 (3)	
18	07:47 17:06	64	14:10 (4) 15:14 (4)	07:12 17:48			06:25 18:25		06:29 20:03	06:29 20:03		05:47 20:38	100	16:47 (3) 18:27 (3)	05:32 21:02	103	16:53 (3) 18:36 (3)	
19	07:46 17:07	64	14:10 (4) 15:14 (4)	07:11 17:50			06:23 18:26		06:27 20:04	06:27 20:04		05:46 20:39	100	16:47 (3) 18:27 (3)	05:32 21:02	104	16:53 (3) 18:37 (3)	
20	07:46 17:08	64	14:10 (4) 15:14 (4)	07:09 17:51			06:21 18:27		06:26 20:05	06:26 20:05		05:45 20:40	101	16:47 (3) 18:28 (3)	05:32 21:03	104	16:53 (3) 18:37 (3)	
21	07:45 17:10	65	14:10 (4) 15:15 (4)	07:08 17:52			06:19 18:28		06:24 20:06	06:24 20:06	26	05:44 20:41	101	16:47 (3) 18:28 (3)	05:32 21:03	104	16:53 (3) 18:37 (3)	
22	07:44 17:11	64	14:11 (4) 15:15 (4)	07:06 17:54			06:17 18:30		06:23 20:08	06:23 20:08	36	05:43 20:42	101	16:47 (3) 18:28 (3)	05:32 21:03	104	16:54 (3) 18:38 (3)	
23	07:43 17:12	64	14:12 (4) 15:16 (4)	07:05 17:55			06:16 18:31		06:21 20:09	06:21 20:09	43	05:42 20:43	101	16:48 (3) 18:29 (3)	05:33 21:03	104	16:54 (3) 18:38 (3)	
24	07:43 17:14	64	14:12 (4) 15:16 (4)	07:03 17:56			06:14 18:32		06:19 20:10	06:19 20:10	50	05:42 20:44	102	16:47 (3) 18:29 (3)	05:33 21:03	103	16:54 (3) 18:37 (3)	
25	07:42 17:15	64	14:12 (4) 15:16 (4)	07:01 17:58			06:12 18:33		06:18 20:11	06:18 20:11	55	05:41 20:45	102	16:47 (3) 18:30 (3)	05:33 21:04	103	16:54 (3) 18:37 (3)	
26	07:41 17:16	63	14:13 (4) 15:16 (4)	07:00 17:59	6	17:01 (5) 17:07 (5)	06:10 18:35		06:16 20:12	06:16 20:12	60	05:40 20:46	103	16:47 (3) 18:30 (3)	05:34 21:04	103	16:55 (3) 18:38 (3)	
27	07:40 17:18	64	14:13 (4) 15:17 (4)	06:58 18:00	13	16:57 (5) 17:10 (5)	06:08 18:36		06:15 20:14	06:15 20:14	64	05:39 20:47	103	16:48 (3) 18:31 (3)	05:34 21:04	103	16:55 (3) 18:38 (3)	
28	07:39 17:19	63	14:14 (4) 15:17 (4)	06:56 18:02	18	16:54 (5) 17:12 (5)	06:06 18:37		06:13 20:15	06:13 20:15	67	05:39 20:48	103	16:48 (3) 18:31 (3)	05:34 21:04	103	16:56 (3) 18:39 (3)	
29	07:38 17:21	63	14:14 (4) 15:17 (4)				07:05 19:38		06:12 20:16	06:12 20:16	70	05:38 20:49	103	16:48 (3) 18:31 (3)	05:35 21:04	104	16:55 (3) 18:39 (3)	
30	07:37 17:22	62	14:15 (4) 15:17 (4)				07:03 19:40		06:10 20:17	06:10 20:17	74	05:37 20:50	103	16:48 (3) 18:31 (3)	05:35 21:03	103	16:56 (3) 18:39 (3)	
31	07:36 17:23	61	14:15 (4) 15:16 (4)				07:01 19:41		05:37 20:51	05:37 20:51			103	16:48 (3) 18:31 (3)				
Potential sun hours	288			292			369		403		457		463					
Total, worst case	1911			748			317		545		2959		3102					

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: L - Shadow Receptor: 1.0 × 1.0 Azimuth: 90.0° Slope: 90.0° (26)
Assumptions for shadow calculations

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

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

	July			August			September			October			November			December		
1	05:36			16:56 (3)	06:02		16:59 (3)	06:38		07:12			17:32 (5)	06:52		13:55 (4)	07:30	13:51 (4)
	21:03	103		18:39 (3)	20:41	95	18:34 (3)	19:54		18:59	18		17:50 (5)	17:07	45	14:40 (4)	16:39	61 14:52 (4)
2	05:36			16:56 (3)	06:04		16:59 (3)	06:39		07:14			17:30 (5)	06:53		13:54 (4)	07:31	13:52 (4)
	21:03	103		18:39 (3)	20:40	94	18:33 (3)	19:52		18:57	21		17:51 (5)	17:06	47	14:41 (4)	16:39	60 14:52 (4)
3	05:37			16:56 (3)	06:05		17:00 (3)	06:40		07:15			17:28 (5)	06:54		13:52 (4)	07:32	13:52 (4)
	21:03	103		18:39 (3)	20:39	92	18:32 (3)	19:50		18:55	23		17:51 (5)	17:04	50	14:42 (4)	16:38	60 14:52 (4)
4	05:37			16:56 (3)	06:06		17:00 (3)	06:41		07:16			17:27 (5)	06:56		13:51 (4)	07:33	13:52 (4)
	21:03	104		18:40 (3)	20:38	91	18:31 (3)	19:48		18:53	25		17:52 (5)	17:03	52	14:43 (4)	16:38	60 14:52 (4)
5	05:38			16:56 (3)	06:07		17:01 (3)	06:42		07:17			17:27 (5)	06:57		13:50 (4)	07:35	13:53 (4)
	21:02	103		18:39 (3)	20:36	89	18:30 (3)	19:47		18:51	26		17:53 (5)	17:02	54	14:44 (4)	16:38	59 14:52 (4)
6	05:39			16:56 (3)	06:08		17:01 (3)	06:44		07:18			17:26 (5)	06:58		13:50 (4)	07:36	13:54 (4)
	21:02	104		18:40 (3)	20:35	88	18:29 (3)	19:45		18:50	26		17:52 (5)	17:00	55	14:45 (4)	16:38	58 14:52 (4)
7	05:39			16:57 (3)	06:09		17:02 (3)	06:45		07:20			17:25 (5)	07:00		13:48 (4)	07:37	13:54 (4)
	21:02	103		18:40 (3)	20:34	86	18:28 (3)	19:43		18:48	27		17:52 (5)	16:59	57	14:45 (4)	16:37	59 14:53 (4)
8	05:40			16:56 (3)	06:10		17:03 (3)	06:46		07:21			17:25 (5)	07:01		13:47 (4)	07:38	13:55 (4)
	21:01	103		18:39 (3)	20:32	85	18:28 (3)	19:41		18:46	26		17:51 (5)	16:58	59	14:46 (4)	16:37	58 14:53 (4)
9	05:41			16:56 (3)	06:11		17:04 (3)	06:47		07:22			17:25 (5)	07:02		13:47 (4)	07:39	13:55 (4)
	21:01	104		18:40 (3)	20:31	82	18:26 (3)	19:39		18:44	26		17:51 (5)	16:57	60	14:47 (4)	16:37	58 14:53 (4)
10	05:41			16:57 (3)	06:13		17:05 (3)	06:48		07:23			17:25 (5)	07:04		13:46 (4)	07:39	13:56 (4)
	21:01	103		18:40 (3)	20:30	80	18:25 (3)	19:38		18:42	25		17:50 (5)	16:56	61	14:47 (4)	16:37	57 14:53 (4)
11	05:42			16:56 (3)	06:14		17:06 (3)	06:49		07:25			17:25 (5)	07:05		13:47 (4)	07:40	13:57 (4)
	21:00	103		18:39 (3)	20:28	78	18:24 (3)	19:36		18:41	24		17:49 (5)	16:55	61	14:48 (4)	16:37	57 14:54 (4)
12	05:43			16:56 (3)	06:15		17:06 (3)	06:50		07:26			17:26 (5)	07:06		13:46 (4)	07:41	13:58 (4)
	20:59	104		18:40 (3)	20:27	76	18:22 (3)	19:34		18:39	22		17:48 (5)	16:53	62	14:48 (4)	16:37	56 14:54 (4)
13	05:44			16:57 (3)	06:16		17:08 (3)	06:52		07:27			17:27 (5)	07:08		13:46 (4)	07:42	13:58 (4)
	20:59	103		18:40 (3)	20:25	72	18:20 (3)	19:32		18:37	20		17:47 (5)	16:52	63	14:49 (4)	16:37	56 14:54 (4)
14	05:45			16:57 (3)	06:17		17:09 (3)	06:53		07:28			17:29 (5)	07:09		13:46 (4)	07:43	13:58 (4)
	20:58	103		18:40 (3)	20:24	69	18:18 (3)	19:30		18:35	16		17:45 (5)	16:51	63	14:49 (4)	16:38	56 14:54 (4)
15	05:46			16:57 (3)	06:18		17:10 (3)	06:54		07:30			17:30 (5)	07:10		13:45 (4)	07:44	13:59 (4)
	20:58	103		18:40 (3)	20:22	66	18:16 (3)	19:28		18:34	12		17:42 (5)	16:50	63	14:48 (4)	16:38	55 14:54 (4)
16	05:46			16:57 (3)	06:19		17:11 (3)	06:55		07:31				07:11		13:46 (4)	07:44	14:00 (4)
	20:57	103		18:40 (3)	20:21	63	18:14 (3)	19:26		18:32				16:49	63	14:49 (4)	16:38	55 14:55 (4)
17	05:47			16:56 (3)	06:21		17:13 (3)	06:56		07:32				07:13		13:45 (4)	07:45	14:01 (4)
	20:56	103		18:39 (3)	20:19	59	18:12 (3)	19:25		18:30				16:48	64	14:49 (4)	16:38	55 14:56 (4)
18	05:48			16:57 (3)	06:22		17:15 (3)	06:57		07:33				07:14		13:46 (4)	07:46	14:01 (4)
	20:55	102		18:39 (3)	20:17	54	18:09 (3)	19:23		18:29				16:47	64	14:50 (4)	16:39	54 14:55 (4)
19	05:49			16:57 (3)	06:23		17:19 (3)	06:58		07:35				07:15		13:46 (4)	07:46	14:02 (4)
	20:55	102		18:39 (3)	20:16	48	18:07 (3)	19:21		18:27				16:47	64	14:50 (4)	16:39	54 14:56 (4)
20	05:50			16:57 (3)	06:24		17:21 (3)	07:00		07:36				07:17		13:46 (4)	07:47	14:02 (4)
	20:54	102		18:39 (3)	20:14	42	18:03 (3)	19:19		18:25				16:46	64	14:50 (4)	16:39	54 14:56 (4)
21	05:51			16:57 (3)	06:25		17:25 (3)	07:01		07:37				07:18		13:46 (4)	07:48	14:03 (4)
	20:53	102		18:39 (3)	20:13	34	17:59 (3)	19:17		18:24				16:45	65	14:51 (4)	16:40	54 14:57 (4)
22	05:52			16:57 (3)	06:26		17:30 (3)	07:02		07:38				07:19		13:46 (4)	07:48	14:03 (4)
	20:52	102		18:39 (3)	20:11	23	17:53 (3)	19:15		18:22				16:44	64	14:50 (4)	16:40	54 14:57 (4)
23	05:53			16:57 (3)	06:27			07:03		07:40				07:21		13:46 (4)	07:49	14:04 (4)
	20:51	101		18:38 (3)	20:09			19:13		18:21				16:43	64	14:50 (4)	16:41	54 14:58 (4)
24	05:54			16:58 (3)	06:29			07:04		07:41				07:22		13:47 (4)	07:49	14:04 (4)
	20:50	100		18:38 (3)	20:08			19:12		18:19				16:43	64	14:51 (4)	16:41	54 14:58 (4)
25	05:55			16:58 (3)	06:30			07:05		06:42				07:23		13:48 (4)	07:50	14:05 (4)
	20:49	100		18:38 (3)	20:06			19:10		17:17				16:42	63	14:51 (4)	16:42	54 14:59 (4)
26	05:56			16:58 (3)	06:31			07:07		06:44			14:12 (4)	07:24		13:48 (4)	07:50	14:05 (4)
	20:48	99		18:37 (3)	20:04			19:08		17:16	14		14:26 (4)	16:41	63	14:51 (4)	16:42	55 15:00 (4)
27	05:57			16:58 (3)	06:32			07:08		06:45			14:07 (4)	07:25		13:49 (4)	07:50	14:05 (4)
	20:47	99		18:37 (3)	20:03			19:06		17:14	23		14:30 (4)	16:41	63	14:52 (4)	16:43	55 15:00 (4)
28	05:58			16:58 (3)	06:33			07:09		06:46			14:04 (4)	07:27		13:49 (4)	07:51	14:05 (4)
	20:46	98		18:36 (3)	20:01			19:04		17:13	30		14:34 (4)	16:40	62	14:51 (4)	16:44	55 15:00 (4)
29	05:59			16:58 (3)	06:34			07:10		06:48			14:01 (4)	07:28		13:49 (4)	07:51	14:05 (4)
	20:45	98		18:36 (3)	19:59			19:02	9	17:46 (5)	17:11	34	14:35 (4)	16:40	62	14:51 (4)	16:45	56 15:01 (4)
30	06:00			16:59 (3)	06:35			07:11		06:49			13:59 (4)	07:29		13:50 (4)	07:51	14:06 (4)
	20:44	96		18:35 (3)	19:57			19:00	15	17:49 (5)	17:10	39	14:38 (4)	16:39	61	14:51 (4)	16:45	56 15:02 (4)
31	06:01			16:59 (3)	06:37					06:50			13:57 (4)				07:51	14:07 (4)
	20:43	95		18:34 (3)	19:56					17:09	42		14:39 (4)				16:46	56 15:03 (4)
Potential sun hours	469			434			376			342			290			277		
Total, worst case		3151			1566		24			519			1802			1745		

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: M - Shadow Receptor: 1.0 × 1.0 Azimuth: 170.0° Slope: 90.0° (27)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:51 16:47	07:35 17:25	06:55 18:03	06:59 19:42	06:09 20:18	05:36 20:52	05:36 21:03	06:02 20:41	06:38 19:54	07:12 18:59	06:52 17:07	07:30 16:39
2	07:51 16:48	07:34 17:26	06:53 18:04	06:57 19:43	06:07 20:20	05:35 20:53	05:36 21:03	06:04 20:40	06:39 19:52	07:14 18:57	06:53 17:06	07:31 16:39
3	07:52 16:49	07:33 17:27	06:51 18:06	06:55 19:44	06:06 20:21	05:35 20:53	05:37 21:03	06:05 20:39	06:40 19:50	07:15 18:55	06:54 17:04	07:32 16:38
4	07:52 16:50	07:32 17:29	06:50 18:07	06:54 19:46	06:04 20:22	05:34 20:54	05:37 21:03	06:06 20:38	06:41 19:48	07:16 18:53	06:56 17:03	07:33 16:38
5	07:51 16:51	07:30 17:30	06:48 18:08	06:52 19:47	06:03 20:23	05:34 20:55	05:38 21:02	06:07 20:36	06:42 19:47	07:17 18:51	06:57 17:02	07:35 16:38
6	07:51 16:52	07:29 17:32	06:46 18:10	06:50 19:48	06:02 20:24	05:34 20:56	05:39 21:02	06:08 20:35	06:44 19:45	07:18 18:49	06:58 17:00	07:36 16:38
7	07:51 16:53	07:28 17:33	06:44 18:11	06:48 19:49	06:00 20:26	05:33 20:56	05:39 21:02	06:09 20:34	06:45 19:43	07:20 18:48	07:00 16:59	07:37 16:37
8	07:51 16:54	07:27 17:34	06:43 18:12	06:46 19:51	05:59 20:27	05:33 20:57	05:40 21:01	06:10 20:32	06:46 19:41	07:21 18:46	07:01 16:58	07:38 16:37
9	07:51 16:55	07:25 17:36	06:41 18:13	06:45 19:52	05:58 20:28	05:33 20:58	05:41 21:01	06:11 20:31	06:47 19:39	07:22 18:44	07:02 16:57	07:39 16:37
10	07:51 16:56	07:24 17:37	06:39 18:15	06:43 19:53	05:56 20:29	05:32 20:58	05:41 21:01	06:13 20:30	06:48 19:38	07:23 18:42	07:04 16:56	07:39 16:37
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12	07:50 16:59	07:21 17:40	06:36 18:17	06:39 19:55	05:54 20:31	05:32 20:59	05:43 20:59	06:15 20:27	06:50 19:34	07:26 18:39	07:06 16:53	07:41 16:37
13	07:50 17:00	07:20 17:41	06:34 18:18	06:38 19:57	05:53 20:33	05:32 21:00	05:44 20:59	06:16 20:25	06:52 19:32	07:27 18:37	07:08 16:52	07:42 16:37
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21	07:45 17:10	07:08 17:52	06:19 18:28	06:24 20:06	05:44 20:41	05:32 21:03	05:51 20:53	06:25 20:13	07:01 19:17	07:37 18:24	07:18 16:45	07:48 16:40
22	07:44 17:11	07:06 17:54	06:17 18:30	06:23 20:08	05:43 20:42	05:32 21:03	05:52 20:52	06:26 20:11	07:02 19:15	07:38 18:22	07:19 16:44	07:48 16:40
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31	07:36 17:23		07:01 19:41		05:37 20:51		06:01 20:43	06:37 19:56		06:50 17:09		07:51 16:46
Potential sun hours	288	292	369	403	457	463	469	434	376	342	290	277
Total, worst case												

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: N - Shadow Receptor: 1.0 × 1.0 Azimuth: 170.0° Slope: 90.0° (28)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:51 16:47	07:35 17:25	06:55 18:03	06:59 19:42	06:09 20:18	05:36 20:52	05:36 21:03	06:02 20:41	06:38 19:54	07:12 18:59	06:52 17:07	07:30 16:39
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31	07:36 17:23		07:01 19:41		05:37 20:51		06:01 20:43	06:37 19:56		06:50 17:09		07:51 16:46
Potential sun hours	288	292	369	403	457	463	469	434	376	342	290	277
Total, worst case												

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: O - Shadow Receptor: 1.0 × 1.0 Azimuth: 170.0° Slope: 90.0° (29)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:51 16:47	07:35 17:25	06:55 18:03	06:59 19:42	06:09 20:18	05:36 20:52	05:36 21:03	06:02 20:41	06:38 19:54	07:12 18:59	06:52 17:07	07:30 16:39
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20	07:46 17:08	07:09 17:51	06:21 18:27	06:26 20:05	05:45 20:40	05:32 21:03	05:50 20:54	06:24 20:14	07:00 19:19	07:36 18:25	07:17 16:46	07:47 16:39
21	07:45 17:10	07:08 17:52	06:19 18:28	06:24 20:06	05:44 20:41	05:32 21:03	05:51 20:53	06:25 20:13	07:01 19:17	07:37 18:24	07:18 16:45	07:48 16:40
22	07:44 17:11	07:06 17:54	06:17 18:30	06:23 20:08	05:43 20:42	05:32 21:03	05:52 20:52	06:26 20:11	07:02 19:15	07:38 18:22	07:19 16:44	07:48 16:40
23	07:43 17:12	07:05 17:55	06:16 18:31	06:21 20:09	05:42 20:43	05:33 21:03	05:53 20:51	06:27 20:09	07:03 19:13	07:40 18:21	07:21 16:43	07:49 16:41
24	07:43 17:14	07:03 17:56	06:14 18:32	06:19 20:10	05:42 20:44	05:33 21:03	05:54 20:50	06:29 20:08	07:04 19:12	07:41 18:19	07:22 16:43	07:49 16:41
25	07:42 17:15	07:01 17:58	06:12 18:33	06:18 20:11	05:41 20:45	05:33 21:04	05:55 20:49	06:30 20:06	07:05 19:10	06:42 17:17	07:23 16:42	07:50 16:42
26	07:41 17:16	07:00 17:59	06:10 18:35	06:16 20:12	05:40 20:46	05:34 21:04	05:56 20:48	06:31 20:04	07:07 19:08	06:44 17:16	07:24 16:41	07:50 16:42
27	07:40 17:18	06:58 18:00	06:08 18:36	06:15 20:14	05:39 20:47	05:34 21:04	05:57 20:47	06:32 20:03	07:08 19:06	06:45 17:14	07:25 16:41	07:50 16:43
28	07:39 17:19	06:56 18:02	06:06 18:37	06:13 20:15	05:39 20:48	05:34 21:04	05:58 20:46	06:33 20:01	07:09 19:04	06:46 17:13	07:27 16:40	07:51 16:44
29	07:38 17:20		07:05 19:38	06:12 20:16	05:38 20:49	05:35 21:04	05:59 20:45	06:34 19:59	07:10 19:02	06:48 17:11	07:28 16:40	07:51 16:45
30	07:37 17:22		07:03 19:40	06:10 20:17	05:37 20:50	05:35 21:03	06:00 20:44	06:35 19:57	07:11 19:00	06:49 17:10	07:29 16:39	07:51 16:45
31	07:36 17:23		07:01 19:41		05:37 20:51		06:01 20:43	06:37 19:56		06:50 17:09		07:51 16:46
Potential sun hours Total, worst case	288	292	369	403	457	463	469	434	376	342	290	277

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: P - Shadow Receptor: 1.0 × 1.0 Azimuth: 170.0° Slope: 90.0° (30)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:51 16:47	07:35 17:25	06:55 18:03	06:59 19:42	06:09 20:18	05:36 20:52	05:36 21:03	06:02 20:41	06:38 19:54	07:12 18:59	06:52 17:07	07:30 16:39
2	07:51 16:48	07:34 17:26	06:53 18:04	06:57 19:43	06:07 20:20	05:35 20:53	05:36 21:03	06:04 20:40	06:39 19:52	07:14 18:57	06:53 17:06	07:31 16:39
3	07:52 16:49	07:33 17:27	06:51 18:06	06:55 19:44	06:06 20:21	05:35 20:53	05:37 21:03	06:05 20:39	06:40 19:50	07:15 18:55	06:54 17:04	07:32 16:38
4	07:52 16:50	07:32 17:29	06:50 18:07	06:54 19:46	06:04 20:22	05:34 20:54	05:37 21:03	06:06 20:38	06:41 19:48	07:16 18:53	06:56 17:03	07:33 16:38
5	07:51 16:51	07:30 17:30	06:48 18:08	06:52 19:47	06:03 20:23	05:34 20:55	05:38 21:02	06:07 20:36	06:42 19:47	07:17 18:51	06:57 17:02	07:35 16:38
6	07:51 16:52	07:29 17:32	06:46 18:10	06:50 19:48	06:02 20:24	05:34 20:56	05:39 21:02	06:08 20:35	06:44 19:45	07:18 18:49	06:58 17:00	07:36 16:38
7	07:51 16:53	07:28 17:33	06:44 18:11	06:48 19:49	06:00 20:26	05:33 20:56	05:39 21:02	06:09 20:34	06:45 19:43	07:20 18:48	07:00 16:59	07:37 16:37
8	07:51 16:54	07:27 17:34	06:43 18:12	06:46 19:51	05:59 20:27	05:33 20:57	05:40 21:01	06:10 20:32	06:46 19:41	07:21 18:46	07:01 16:58	07:38 16:37
9	07:51 16:55	07:25 17:36	06:41 18:13	06:45 19:52	05:58 20:28	05:33 20:58	05:41 21:01	06:11 20:31	06:47 19:39	07:22 18:44	07:02 16:57	07:39 16:37
10	07:51 16:56	07:24 17:37	06:39 18:15	06:43 19:53	05:56 20:29	05:32 20:58	05:41 21:01	06:13 20:30	06:48 19:38	07:23 18:42	07:04 16:56	07:39 16:37
11	07:50 16:57	07:23 17:39	06:37 18:16	06:41 19:54	05:55 20:30	05:32 20:59	05:42 21:00	06:14 20:28	06:49 19:36	07:25 18:41	07:05 16:55	07:40 16:37
12	07:50 16:59	07:21 17:40	06:36 18:17	06:39 19:55	05:54 20:31	05:32 20:59	05:43 20:59	06:15 20:27	06:50 19:34	07:26 18:39	07:06 16:53	07:41 16:37
13	07:50 17:00	07:20 17:41	06:34 18:18	06:38 19:57	05:53 20:33	05:32 21:00	05:44 20:59	06:16 20:25	06:52 19:32	07:27 18:37	07:08 16:52	07:42 16:37
14	07:49 17:01	07:18 17:43	06:32 18:20	06:36 19:58	05:52 20:34	05:32 21:00	05:45 20:58	06:17 20:24	06:53 19:30	07:28 18:35	07:09 16:51	07:43 16:37
15	07:49 17:02	07:17 17:44	06:30 18:21	06:34 19:59	05:50 20:35	05:32 21:01	05:46 20:58	06:18 20:22	06:54 19:28	07:30 18:34	07:10 16:50	07:44 16:38
16	07:48 17:03	07:15 17:45	06:28 18:22	06:33 20:00	05:49 20:36	05:32 21:01	05:46 20:57	06:19 20:21	06:55 19:26	07:31 18:32	07:11 16:49	07:44 16:38
17	07:48 17:05	07:14 17:47	06:27 18:23	06:31 20:02	05:48 20:37	05:32 21:02	05:47 20:56	06:21 20:19	06:56 19:25	07:32 18:30	07:13 16:48	07:45 16:38
18	07:47 17:06	07:12 17:48	06:25 18:25	06:29 20:03	05:47 20:38	05:32 21:02	05:48 20:55	06:22 20:17	06:57 19:23	07:33 18:29	07:14 16:47	07:46 16:38
19	07:46 17:07	07:11 17:50	06:23 18:26	06:27 20:04	05:46 20:39	05:32 21:02	05:49 20:55	06:23 20:16	06:58 19:21	07:35 18:27	07:15 16:47	07:46 16:39
20	07:46 17:08	07:09 17:51	06:21 18:27	06:26 20:05	05:45 20:40	05:32 21:03	05:50 20:54	06:24 20:14	07:00 19:19	07:36 18:25	07:17 16:46	07:47 16:39
21	07:45 17:10	07:08 17:52	06:19 18:28	06:24 20:06	05:44 20:41	05:32 21:03	05:51 20:53	06:25 20:13	07:01 19:17	07:37 18:24	07:18 16:45	07:48 16:40
22	07:44 17:11	07:06 17:54	06:17 18:30	06:23 20:08	05:43 20:42	05:32 21:03	05:52 20:52	06:26 20:11	07:02 19:15	07:38 18:22	07:19 16:44	07:48 16:40
23	07:43 17:12	07:05 17:55	06:16 18:31	06:21 20:09	05:42 20:43	05:33 21:03	05:53 20:51	06:27 20:09	07:03 19:13	07:40 18:21	07:21 16:43	07:49 16:41
24	07:43 17:14	07:03 17:56	06:14 18:32	06:19 20:10	05:42 20:44	05:33 21:03	05:54 20:50	06:29 20:08	07:04 19:12	07:41 18:19	07:22 16:43	07:49 16:41
25	07:42 17:15	07:01 17:58	06:12 18:33	06:18 20:11	05:41 20:45	05:33 21:04	05:55 20:49	06:30 20:06	07:05 19:10	06:42 17:17	07:23 16:42	07:50 16:42
26	07:41 17:16	07:00 17:59	06:10 18:35	06:16 20:12	05:40 20:46	05:34 21:04	05:56 20:48	06:31 20:04	07:07 19:08	06:44 17:16	07:24 16:41	07:50 16:42
27	07:40 17:18	06:58 18:00	06:08 18:36	06:15 20:14	05:39 20:47	05:34 21:04	05:57 20:47	06:32 20:03	07:08 19:06	06:45 17:14	07:25 16:41	07:50 16:43
28	07:39 17:19	06:56 18:02	06:06 18:37	06:13 20:15	05:39 20:48	05:34 21:04	05:58 20:46	06:33 20:01	07:09 19:04	06:46 17:13	07:27 16:40	07:51 16:44
29	07:38 17:20		07:05 19:38	06:12 20:16	05:38 20:49	05:35 21:04	05:59 20:45	06:34 19:59	07:10 19:02	06:48 17:11	07:28 16:40	07:51 16:45
30	07:37 17:22		07:03 19:40	06:10 20:17	05:37 20:50	05:35 21:03	06:00 20:44	06:35 19:57	07:11 19:00	06:49 17:10	07:29 16:39	07:51 16:45
31	07:36 17:23		07:01 19:41		05:37 20:51		06:01 20:43	06:37 19:56		06:50 17:09		07:51 16:46
Potential sun hours	288	292	369	403	457	463	469	434	376	342	290	277
Total, worst case												

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: Q - Shadow Receptor: 1.0 × 1.0 Azimuth: 120.0° Slope: 90.0° (31)
Assumptions for shadow calculations

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

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

	January		February		March		April		May			June		
1	07:51		07:35	16:02 (4)	06:55	16:52 (5)	06:59	06:09				05:36	18:47 (2)	
	16:47		17:25	12 16:14 (4)	18:03	14 17:06 (5)	19:42	20:18				20:52	39 19:26 (2)	
2	07:51		07:34	16:00 (4)	06:53	16:52 (5)	06:57	06:07				05:35	18:47 (2)	
	16:48		17:26	16 16:16 (4)	18:04	13 17:05 (5)	19:43	20:20				20:53	39 19:26 (2)	
3	07:51		07:33	16:00 (4)	06:51	16:52 (5)	06:55	06:06				05:35	18:47 (2)	
	16:49		17:27	17 16:17 (4)	18:06	12 17:04 (5)	19:44	20:21				20:53	39 19:26 (2)	
4	07:51		07:31	15:59 (4)	06:50	16:55 (5)	06:54	06:04				05:34	18:48 (2)	
	16:50		17:29	20 16:19 (4)	18:07	8 17:03 (5)	19:46	20:22				20:54	39 19:27 (2)	
5	07:51		07:30	15:58 (4)	06:48		06:52	06:03				05:34	18:48 (2)	
	16:51		17:30	21 16:19 (4)	18:08		19:47	20:23				20:55	38 19:26 (2)	
6	07:51		07:29	15:58 (4)	06:46	16:46 (3)	06:50	06:02				05:34	18:48 (2)	
	16:52		17:32	22 16:20 (4)	18:09	12 16:58 (3)	19:48	20:24				20:56	39 19:27 (2)	
7	07:51		07:28	15:58 (4)	06:44	16:43 (3)	06:48	06:00		19:00 (2)		05:33	18:49 (2)	
	16:53		17:33	23 16:21 (4)	18:11	17 17:00 (3)	19:49	20:26	9	19:09 (2)		20:56	38 19:27 (2)	
8	07:51		07:27	15:57 (4)	06:43	16:41 (3)	06:46	05:59		18:57 (2)		05:33	18:49 (2)	
	16:54		17:34	23 16:20 (4)	18:12	20 17:01 (3)	19:50	20:27	16	19:13 (2)		20:57	37 19:26 (2)	
9	07:51		07:25	15:57 (4)	06:41	16:40 (3)	06:45	05:58		18:55 (2)		05:33	18:49 (2)	
	16:55		17:36	24 16:21 (4)	18:13	22 17:02 (3)	19:52	20:28	20	19:15 (2)		20:58	37 19:26 (2)	
10	07:51		07:24	15:58 (4)	06:39	16:39 (3)	06:43	05:56		18:52 (2)		05:32	18:50 (2)	
	16:56		17:37	23 16:21 (4)	18:15	24 17:03 (3)	19:53	20:29	24	19:16 (2)		20:58	37 19:27 (2)	
11	07:50		07:23	15:58 (4)	06:37	16:38 (3)	06:41	05:55		18:51 (2)		05:32	18:50 (2)	
	16:57		17:39	22 16:20 (4)	18:16	25 17:03 (3)	19:54	20:30	27	19:18 (2)		20:59	37 19:27 (2)	
12	07:50		07:21	15:59 (4)	06:36	16:37 (3)	06:39	05:54		18:50 (2)		05:32	18:51 (2)	
	16:59		17:40	21 16:20 (4)	18:17	26 17:03 (3)	19:55	20:31	29	19:19 (2)		20:59	36 19:27 (2)	
13	07:50		07:20	15:59 (4)	06:34	16:36 (3)	06:38	05:53		18:49 (2)		05:32	18:51 (2)	
	17:00		17:41	20 16:19 (4)	18:18	27 17:03 (3)	19:57	20:33	31	19:20 (2)		21:00	36 19:27 (2)	
14	07:49		07:18	16:00 (4)	06:32	16:37 (3)	06:36	05:52		18:48 (2)		05:32	18:51 (2)	
	17:01		17:43	19 16:19 (4)	18:20	27 17:04 (3)	19:58	20:34	33	19:21 (2)		21:00	37 19:28 (2)	
15	07:49		07:17	16:01 (4)	06:30	16:37 (3)	06:34	05:50		18:48 (2)		05:32	18:52 (2)	
	17:02		17:44	16 16:17 (4)	18:21	26 17:03 (3)	19:59	20:35	34	19:22 (2)		21:01	36 19:28 (2)	
16	07:48		07:15	16:03 (4)	06:28	16:37 (3)	06:32	05:49		18:47 (2)		05:32	18:52 (2)	
	17:03		17:45	13 16:16 (4)	18:22	25 17:02 (3)	20:00	20:36	35	19:22 (2)		21:01	36 19:28 (2)	
17	07:48		07:14	16:06 (4)	06:26	16:37 (3)	06:31	05:48		18:47 (2)		05:32	18:52 (2)	
	17:05		17:47	7 16:13 (4)	18:23	24 17:01 (3)	20:01	20:37	36	19:23 (2)		21:02	36 19:28 (2)	
18	07:47		07:12		06:25	16:38 (3)	06:29	05:47		18:46 (2)		05:32	18:52 (2)	
	17:06		17:48		18:25	22 17:00 (3)	20:03	20:38	37	19:23 (2)		21:02	36 19:28 (2)	
19	07:46		07:11		06:23	16:38 (3)	06:27	05:46		18:46 (2)		05:32	18:53 (2)	
	17:07		17:50		18:26	20 16:58 (3)	20:04	20:39	37	19:23 (2)		21:02	35 19:28 (2)	
20	07:46		07:09		06:21	16:41 (3)	06:26	05:45		18:46 (2)		05:32	18:53 (2)	
	17:08		17:51		18:27	16 16:57 (3)	20:05	20:40	38	19:24 (2)		21:03	35 19:28 (2)	
21	07:45		07:08		06:19	16:43 (3)	06:24	05:44		18:45 (2)		05:32	18:53 (2)	
	17:10		17:52		18:28	12 16:55 (3)	20:06	20:41	39	19:24 (2)		21:03	35 19:28 (2)	
22	07:44		07:06		06:17		06:23	05:43		18:45 (2)		05:32	18:53 (2)	
	17:11		17:54		18:30		20:08	20:42	39	19:24 (2)		21:03	35 19:28 (2)	
23	07:43		07:05	16:58 (5)	06:15		06:21	05:42		18:46 (2)		05:33	18:54 (2)	
	17:12		17:55	3 17:01 (5)	18:31		20:09	20:43	39	19:25 (2)		21:03	35 19:29 (2)	
24	07:43		07:03	16:55 (5)	06:14		06:19	05:42		18:46 (2)		05:33	18:54 (2)	
	17:14		17:56	9 17:04 (5)	18:32		20:10	20:44	39	19:25 (2)		21:03	35 19:29 (2)	
25	07:42		07:01	16:54 (5)	06:12		06:18	05:41		18:45 (2)		05:33	18:53 (2)	
	17:15		17:58	12 17:06 (5)	18:33		20:11	20:45	40	19:25 (2)		21:04	36 19:29 (2)	
26	07:41		07:00	16:52 (5)	06:10		06:16	05:40		18:45 (2)		05:33	18:54 (2)	
	17:16		17:59	14 17:06 (5)	18:35		20:12	20:46	40	19:25 (2)		21:04	36 19:30 (2)	
27	07:40		06:58	16:51 (5)	06:08		06:15	05:39		18:46 (2)		05:34	18:54 (2)	
	17:18		18:00	15 17:06 (5)	18:36		20:14	20:47	40	19:26 (2)		21:04	36 19:30 (2)	
28	07:39		06:56	16:51 (5)	06:06		06:13	05:38		18:46 (2)		05:34	18:55 (2)	
	17:19		18:02	15 17:06 (5)	18:37		20:15	20:48	40	19:26 (2)		21:04	36 19:31 (2)	
29	07:38				07:05		06:12	05:38		18:47 (2)		05:35	18:54 (2)	
	17:20				19:38		20:16	20:49	39	19:26 (2)		21:04	36 19:30 (2)	
30	07:37				07:03		06:10	05:37		18:46 (2)		05:35	18:54 (2)	
	17:22				19:39		20:17	20:50	40	19:26 (2)		21:03	36 19:30 (2)	
31	07:36	16:04 (4)			07:01			05:37		18:46 (2)				
	17:23	7 16:11 (4)			19:41			20:51	40	19:26 (2)				
Potential sun hours	288		292		369		403	457				463		
Total, worst case	7		387		392			841				1098		

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: WON033_ShadowFlickering Shadow receptor: Q - Shadow Receptor: 1.0 × 1.0 Azimuth: 120.0° Slope: 90.0° (31)
Assumptions for shadow calculations

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

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

	July		August		September		October		November		December	
1	05:36		18:54 (2)	06:02	19:01 (2)	06:38	07:12	17:17 (3)	06:51	15:27 (4)	07:30	
	21:03	37	19:31 (2)	20:41	19:29 (2)	19:54	18:59	17:43 (3)	17:07	15:50 (4)	16:39	
2	05:36		18:54 (2)	06:04	19:02 (2)	06:39	07:14	17:16 (3)	06:53	15:27 (4)	07:31	
	21:03	37	19:31 (2)	20:40	19:28 (2)	19:52	18:57	17:42 (3)	17:06	15:50 (4)	16:39	
3	05:37		18:54 (2)	06:05	19:03 (2)	06:40	07:15	17:16 (3)	06:54	15:27 (4)	07:32	
	21:03	38	19:32 (2)	20:39	19:26 (2)	19:50	18:55	17:41 (3)	17:04	15:50 (4)	16:38	
4	05:37		18:55 (2)	06:06	19:05 (2)	06:41	07:16	17:16 (3)	06:55	15:28 (4)	07:33	
	21:03	37	19:32 (2)	20:38	19:24 (2)	19:48	18:53	17:40 (3)	17:03	15:50 (4)	16:38	
5	05:38		18:54 (2)	06:07	19:07 (2)	06:42	07:17	17:18 (3)	06:57	15:27 (4)	07:35	
	21:02	38	19:32 (2)	20:36	19:21 (2)	19:47	18:51	17:39 (3)	17:02	15:49 (4)	16:38	
6	05:39		18:55 (2)	06:08	19:12 (2)	06:43	07:18	17:19 (3)	06:58	15:29 (4)	07:36	
	21:02	38	19:33 (2)	20:35	19:16 (2)	19:45	18:49	17:37 (3)	17:00	15:50 (4)	16:38	
7	05:39		18:55 (2)	06:09		06:45	07:20	17:20 (3)	06:59	15:29 (4)	07:37	
	21:02	38	19:33 (2)	20:34		19:43	18:48	17:35 (3)	16:59	15:48 (4)	16:37	
8	05:40		18:54 (2)	06:10		06:46	07:21	17:23 (3)	07:01	15:30 (4)	07:38	
	21:01	39	19:33 (2)	20:32		19:41	18:46	17:31 (3)	16:58	15:47 (4)	16:37	
9	05:41		18:55 (2)	06:11		06:47	07:22	17:30 (5)	07:02	15:31 (4)	07:39	
	21:01	38	19:33 (2)	20:31		19:39	18:44	17:35 (5)	16:57	15:46 (4)	16:37	
10	05:41		18:55 (2)	06:12		06:48	07:23	17:28 (5)	07:03	15:33 (4)	07:39	
	21:01	39	19:34 (2)	20:30		19:38	18:42	17:38 (5)	16:56	15:44 (4)	16:37	
11	05:42		18:54 (2)	06:14		06:49	07:25	17:26 (5)	07:05	15:36 (4)	07:40	
	21:00	39	19:33 (2)	20:28		19:36	18:41	17:39 (5)	16:54	15:42 (4)	16:37	
12	05:43		18:55 (2)	06:15		06:50	07:26	17:25 (5)	07:06		07:41	
	20:59	39	19:34 (2)	20:27		19:34	18:39	17:39 (5)	16:53		16:37	
13	05:44		18:55 (2)	06:16		06:52	07:27	17:25 (5)	07:07		07:42	
	20:59	39	19:34 (2)	20:25		19:32	18:37	17:40 (5)	16:52		16:37	
14	05:45		18:55 (2)	06:17		06:53	07:28	17:24 (5)	07:09		07:43	
	20:58	40	19:35 (2)	20:24		19:30	18:35	17:39 (5)	16:51		16:37	
15	05:45		18:55 (2)	06:18		06:54	07:29	17:24 (5)	07:10		07:44	
	20:58	40	19:35 (2)	20:22		19:28	18:34	17:39 (5)	16:50		16:38	
16	05:46		18:54 (2)	06:19		06:55	07:31	17:24 (5)	07:11		07:44	
	20:57	40	19:34 (2)	20:21		19:26	18:32	17:37 (5)	16:49		16:38	
17	05:47		18:55 (2)	06:20		06:56	07:32	17:26 (5)	07:13		07:45	
	20:56	39	19:34 (2)	20:19		19:25	18:30	17:37 (5)	16:48		16:38	
18	05:48		18:55 (2)	06:22		06:57	07:33	17:27 (5)	07:14		07:46	
	20:55	40	19:35 (2)	20:17		19:23	18:29	17:35 (5)	16:47		16:38	
19	05:49		18:55 (2)	06:23		06:58	07:35		07:15		07:46	
	20:55	40	19:35 (2)	20:16		19:21	18:27		16:47		16:39	
20	05:50		18:55 (2)	06:24		07:00	07:36		07:17		07:47	
	20:54	40	19:35 (2)	20:14		19:19	18:25		16:46		16:39	
21	05:51		18:56 (2)	06:25		07:01	07:37		07:18		07:48	
	20:53	39	19:35 (2)	20:13		19:17	18:24		16:45		16:40	
22	05:52		18:56 (2)	06:26		07:02	17:28 (3)	07:38	07:19		07:48	
	20:52	39	19:35 (2)	20:11	10	19:15	17:38 (3)	18:22	16:44		16:40	
23	05:53		18:56 (2)	06:27		07:03	17:25 (3)	07:40	07:20		07:49	
	20:51	38	19:34 (2)	20:09	15	19:13	17:40 (3)	18:20	16:43		16:41	
24	05:54		18:56 (2)	06:29		07:04	17:22 (3)	07:41	07:22		07:49	
	20:50	38	19:34 (2)	20:08	19	19:11	17:41 (3)	18:19	16:43		16:41	
25	05:55		18:57 (2)	06:30		07:05	17:21 (3)	06:42	15:35 (4)	07:23	07:50	
	20:49	37	19:34 (2)	20:06	22	19:10	17:43 (3)	17:17	15:44 (4)	16:42	16:42	
26	05:56		18:57 (2)	06:31		07:07	17:20 (3)	06:44	15:32 (4)	07:24	07:50	
	20:48	37	19:34 (2)	20:04	23	19:08	17:43 (3)	17:16	15:46 (4)	16:41	16:42	
27	05:57		18:58 (2)	06:32		07:08	17:19 (3)	06:45	15:30 (4)	07:25	07:50	
	20:47	35	19:33 (2)	20:03	25	19:06	17:44 (3)	17:14	15:47 (4)	16:41	16:43	
28	05:58		18:58 (2)	06:33		07:09	17:18 (3)	06:46	15:30 (4)	07:27	07:51	
	20:46	34	19:32 (2)	20:01	25	19:04	17:43 (3)	17:13	15:49 (4)	16:40	16:44	
29	05:59		18:59 (2)	06:34		07:10	17:17 (3)	06:47	15:28 (4)	07:28	07:51	
	20:45	33	19:32 (2)	19:59	26	19:02	17:43 (3)	17:11	15:49 (4)	16:40	16:45	
30	06:00		18:59 (2)	06:35		07:11	17:16 (3)	06:49	15:28 (4)	07:29	07:51	
	20:44	32	19:31 (2)	19:57	27	19:00	17:43 (3)	17:10	15:50 (4)	16:39	16:45	
31	06:01		19:00 (2)	06:37				06:50	15:27 (4)		07:51	
	20:43	30	19:30 (2)	19:56			17:08	23	15:50 (4)		16:46	
Potential sun hours	469		434		376		342		290		277	
Total, worst case	1167		114		192		407		202			

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: R - Shadow Receptor: 1.0 × 1.0 Azimuth: 40.0° Slope: 90.0° (32)
Assumptions for shadow calculations

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

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

	January	February	March	April	May	June
1	07:51 16:47 82	11:29 (1) 15:03 (3) 17:25	07:35 17:25 50	14:54 (2) 15:44 (2) 18:03	06:55 18:03 19:42	06:59 20:18 20:52
2	07:52 16:48 80	11:30 (1) 15:03 (3) 17:26	07:34 17:26 52	14:53 (2) 15:45 (2) 18:04	06:53 18:04 19:43	06:57 20:20 20:53
3	07:52 16:49 82	11:31 (1) 15:50 (5) 17:27	07:33 17:27 52	14:53 (2) 15:45 (2) 18:06	06:51 18:06 19:44	06:55 20:21 20:53
4	07:52 16:50 84	11:32 (1) 15:52 (5) 17:29	07:32 17:29 53	14:53 (2) 15:46 (2) 18:07	06:50 18:07 19:46	06:54 20:22 20:54
5	07:51 16:51 82	11:33 (1) 15:52 (5) 17:30	07:30 17:30 53	14:53 (2) 15:46 (2) 18:08	06:48 18:08 19:47	06:52 20:23 20:55
6	07:51 16:52 82	11:34 (1) 15:54 (5) 17:32	07:29 17:32 54	14:53 (2) 15:47 (2) 18:09	06:46 18:09 19:48	06:50 20:24 20:56
7	07:51 16:53 81	11:35 (1) 15:55 (5) 17:33	07:28 17:33 54	14:53 (2) 15:47 (2) 18:11	06:44 18:11 19:49	06:48 20:26 20:56
8	07:51 16:54 78	11:37 (1) 15:56 (5) 17:34	07:27 17:34 55	14:52 (2) 15:47 (2) 18:12	06:43 18:12 19:51	06:46 20:27 20:57
9	07:51 16:55 76	11:38 (1) 15:57 (5) 17:36	07:25 17:36 55	14:53 (2) 15:48 (2) 18:13	06:41 18:13 19:52	06:45 20:28 20:58
10	07:51 16:56 74	11:39 (1) 15:58 (5) 17:37	07:24 17:37 55	14:53 (2) 15:48 (2) 18:15	06:39 18:15 19:53	06:43 20:29 20:58
11	07:50 16:57 70	11:41 (1) 15:59 (5) 17:39	07:23 17:39 55	14:53 (2) 15:48 (2) 18:16	06:37 18:16 19:54	06:41 20:30 20:59
12	07:50 16:59 64	11:43 (1) 15:59 (5) 17:40	07:21 17:40 54	14:54 (2) 15:48 (2) 18:17	06:36 18:17 19:55	06:39 20:31 20:59
13	07:50 17:00 57	11:45 (1) 16:00 (5) 17:41	07:20 17:41 54	14:53 (2) 15:47 (2) 18:18	06:34 18:18 19:57	06:38 20:33 21:00
14	07:49 17:01 47	11:47 (1) 16:00 (5) 17:43	07:18 17:43 54	14:54 (2) 15:48 (2) 18:20	06:32 18:20 19:58	06:36 20:34 21:00
15	07:49 17:02 41	11:51 (1) 16:01 (5) 17:44	07:17 17:44 53	14:54 (2) 15:47 (2) 18:21	06:30 18:21 19:59	06:34 20:35 21:01
16	07:48 17:03 35	11:54 (1) 16:01 (5) 17:45	07:15 17:45 52	14:55 (2) 15:47 (2) 18:22	06:28 18:22 20:00	06:32 20:36 21:01
17	07:48 17:05 33	12:00 (1) 16:01 (5) 17:47	07:14 17:47 50	14:56 (2) 15:46 (2) 18:23	06:26 18:23 20:02	06:31 20:37 21:02
18	07:47 17:06 33	15:07 (2) 16:02 (5) 17:48	07:12 17:48 49	14:57 (2) 15:46 (2) 18:25	06:25 18:25 20:03	06:29 20:38 21:02
19	07:46 17:07 38	15:05 (2) 16:02 (5) 17:50	07:11 17:50 48	14:57 (2) 15:45 (2) 18:26	06:23 18:26 20:04	06:27 20:39 21:02
20	07:46 17:08 40	15:03 (2) 16:01 (5) 17:51	07:09 17:51 45	14:59 (2) 15:44 (2) 18:27	06:21 18:27 20:05	06:26 20:40 21:03
21	07:45 17:10 42	15:01 (2) 16:01 (5) 17:52	07:08 17:52 43	15:00 (2) 15:43 (2) 18:28	06:19 18:28 20:06	06:24 20:41 21:03
22	07:44 17:11 43	15:00 (2) 16:00 (5) 17:54	07:06 17:54 41	15:02 (2) 15:43 (2) 18:30	06:17 18:30 20:08	06:23 20:42 21:03
23	07:43 17:12 44	15:00 (2) 16:00 (5) 17:55	07:05 17:55 38	15:03 (2) 15:41 (2) 18:31	06:16 18:31 20:09	06:21 20:43 21:03
24	07:43 17:14 43	14:59 (2) 15:59 (5) 17:56	07:03 17:56 35	15:04 (2) 15:39 (2) 18:32	06:14 18:32 20:10	06:19 20:44 21:03
25	07:42 17:15 39	14:58 (2) 15:37 (2) 17:58	07:01 17:58 31	15:07 (2) 15:38 (2) 18:33	06:12 18:33 20:11	06:18 20:45 21:04
26	07:41 17:16 41	14:57 (2) 15:38 (2) 17:59	07:00 17:59 25	15:10 (2) 15:35 (2) 18:35	06:10 18:35 20:12	06:16 20:46 21:04
27	07:40 17:18 43	14:57 (2) 15:40 (2) 18:00	06:58 18:00 18	15:13 (2) 15:31 (2) 18:36	06:08 18:36 20:14	06:15 20:47 21:04
28	07:39 17:19 45	14:56 (2) 15:41 (2) 18:02	06:56 18:02 4	15:20 (2) 15:24 (2) 18:37	06:06 18:37 20:15	06:13 20:48 21:04
29	07:38 17:20 46	14:56 (2) 15:42 (2) 18:03	06:55 18:03 3	15:21 (2) 15:25 (2) 18:38	06:12 18:38 20:16	06:12 20:49 21:04
30	07:37 17:22 48	14:55 (2) 15:43 (2) 18:04	06:54 18:04 2	15:22 (2) 15:26 (2) 18:39	06:11 18:39 20:17	06:11 20:50 21:04
31	07:36 17:23 49	14:54 (2) 15:43 (2) 18:05	06:53 18:05 1	15:23 (2) 15:27 (2) 18:40	06:10 18:40 20:18	06:10 20:51 21:04
Potential sun hours	288	292	369	403	457	463
Total, worst case	1742	1282				

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

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

SHADOW - Calendar

Calculation: WON033_ShadowFlickering Shadow receptor: R - Shadow Receptor: 1.0 × 1.0 Azimuth: 40.0° Slope: 90.0° (32)
Assumptions for shadow calculations

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

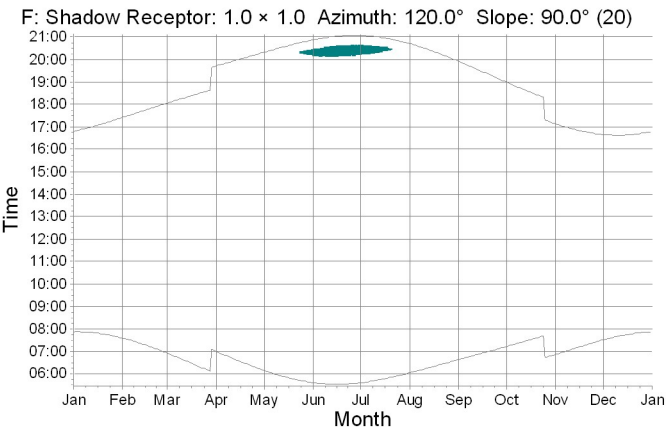
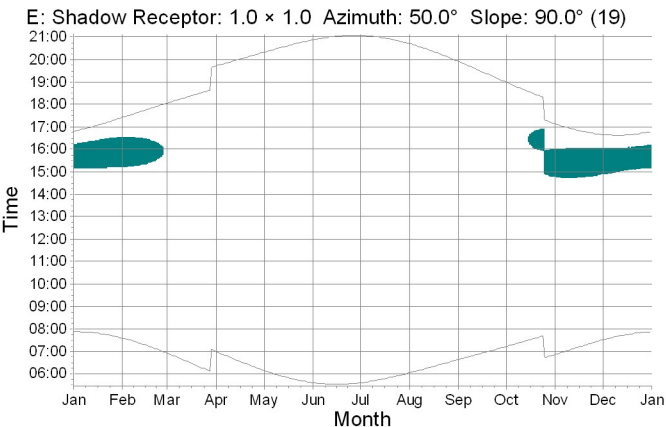
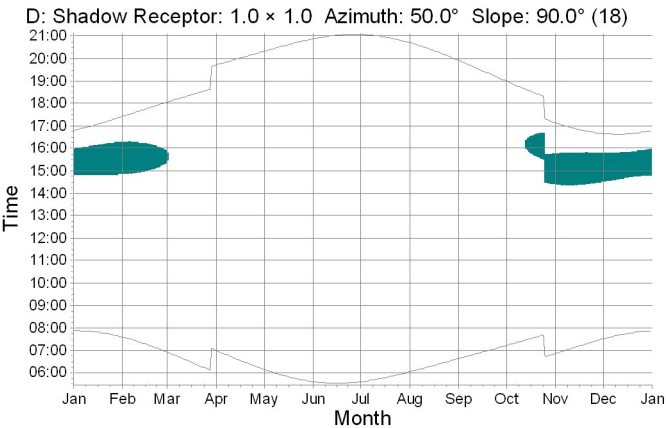
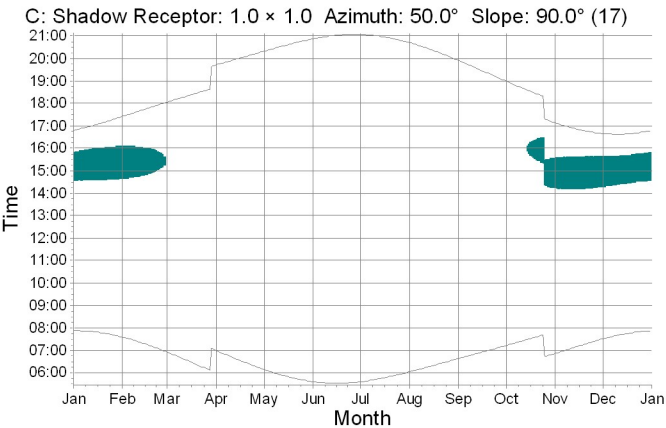
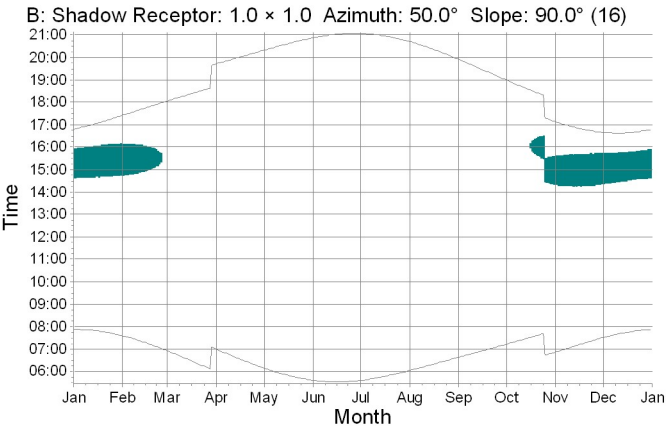
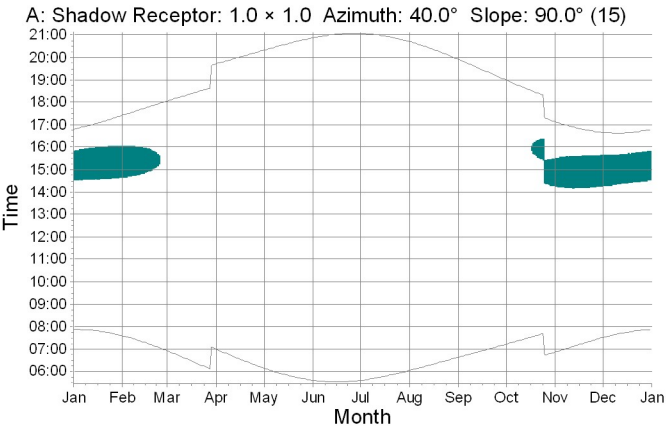
- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	July	August	September	October		November		December				
1	05:36 21:03	06:02 20:41	06:38 19:54	07:12 18:59		06:52 17:07	55	14:22 (2) 15:17 (2)	07:30 16:39	68	11:24 (1) 15:41 (5)	
2	05:36 21:03	06:04 20:40	06:39 19:52	07:14 18:57		06:53 17:06	55	14:22 (2) 15:17 (2)	07:31 16:39	72	11:23 (1) 15:41 (5)	
3	05:37 21:03	06:05 20:39	06:40 19:50	07:15 18:55		06:54 17:04	55	14:22 (2) 15:17 (2)	07:32 16:38	76	11:22 (1) 15:41 (5)	
4	05:37 21:03	06:06 20:38	06:41 19:48	07:16 18:53		06:56 17:03	54	14:23 (2) 15:17 (2)	07:34 16:38	78	11:21 (1) 15:40 (5)	
5	05:38 21:03	06:07 20:36	06:42 19:47	07:17 18:51		06:57 17:02	54	14:23 (2) 15:17 (2)	07:35 16:38	81	11:20 (1) 15:40 (5)	
6	05:39 21:02	06:08 20:35	06:44 19:45	07:18 18:49		06:58 17:00	54	14:23 (2) 15:17 (2)	07:36 16:38	82	11:20 (1) 15:40 (5)	
7	05:39 21:02	06:09 20:34	06:45 19:43	07:20 18:48		07:00 16:59	53	14:23 (2) 15:16 (2)	07:37 16:37	83	11:20 (1) 15:40 (5)	
8	05:40 21:01	06:10 20:32	06:46 19:41	07:21 18:46		07:01 16:58	52	14:23 (2) 15:15 (2)	07:38 16:37	83	11:20 (1) 15:39 (5)	
9	05:41 21:01	06:11 20:31	06:47 19:39	07:22 18:44		07:02 16:57	51	14:24 (2) 15:15 (2)	07:39 16:37	82	11:19 (1) 15:38 (5)	
10	05:41 21:01	06:12 20:30	06:48 19:38	07:23 18:42		07:04 16:56	50	14:25 (2) 15:15 (2)	07:40 16:37	80	11:19 (1) 14:52 (3)	
11	05:42 21:00	06:14 20:28	06:49 19:36	07:25 18:41		07:05 16:54	49	14:26 (2) 15:15 (2)	07:40 16:37	81	11:20 (1) 14:53 (3)	
12	05:43 21:00	06:15 20:27	06:50 19:34	07:26 18:39		07:06 16:53	48	14:26 (2) 15:14 (2)	07:41 16:37	82	11:20 (1) 14:54 (3)	
13	05:44 20:59	06:16 20:25	06:52 19:32	07:27 18:37		07:08 16:52	46	14:28 (2) 15:14 (2)	07:42 16:37	83	11:20 (1) 14:54 (3)	
14	05:45 20:58	06:17 20:24	06:53 19:30	07:28 18:35	12	15:49 (2) 16:01 (2)	07:09 16:51	45	14:28 (2) 15:13 (2)	07:43 16:37	84	11:19 (1) 14:54 (3)
15	05:45 20:58	06:18 20:22	06:54 19:28	07:30 18:34	21	15:44 (2) 16:05 (2)	07:10 16:50	43	14:29 (2) 15:12 (2)	07:44 16:38	85	11:20 (1) 14:55 (3)
16	05:46 20:57	06:19 20:21	06:55 19:26	07:31 18:32	27	15:40 (2) 16:07 (2)	07:11 16:49	41	14:30 (2) 15:11 (2)	07:44 16:38	86	11:20 (1) 14:56 (3)
17	05:47 20:56	06:20 20:19	06:56 19:25	07:32 18:30	32	15:38 (2) 16:10 (2)	07:13 16:48	39	14:31 (2) 15:10 (2)	07:45 16:38	86	11:21 (1) 14:57 (3)
18	05:48 20:55	06:22 20:17	06:57 19:23	07:33 18:29	36	15:35 (2) 16:11 (2)	07:14 16:47	43	14:33 (2) 15:33 (5)	07:46 16:38	87	11:21 (1) 14:57 (3)
19	05:49 20:55	06:23 20:16	06:58 19:21	07:35 18:27	39	15:33 (2) 16:12 (2)	07:15 16:47	44	14:34 (2) 15:34 (5)	07:47 16:39	88	11:21 (1) 14:58 (3)
20	05:50 20:54	06:24 20:14	07:00 19:19	07:36 18:25	41	15:32 (2) 16:13 (2)	07:17 16:46	43	14:35 (2) 15:35 (5)	07:47 16:39	87	11:21 (1) 14:57 (3)
21	05:51 20:53	06:25 20:13	07:01 19:17	07:37 18:24	44	15:30 (2) 16:14 (2)	07:18 16:45	42	14:37 (2) 15:37 (5)	07:48 16:40	87	11:22 (1) 14:58 (3)
22	05:52 20:52	06:26 20:11	07:02 19:15	07:38 18:22	46	15:29 (2) 16:15 (2)	07:19 16:44	40	14:39 (2) 15:37 (5)	07:48 16:40	87	11:22 (1) 14:58 (3)
23	05:53 20:51	06:27 20:09	07:03 19:13	07:40 18:21	47	15:28 (2) 16:15 (2)	07:21 16:43	38	14:41 (2) 15:38 (5)	07:49 16:41	87	11:23 (1) 14:59 (3)
24	05:54 20:50	06:29 20:08	07:04 19:12	07:41 18:19	50	15:26 (2) 16:16 (2)	07:22 16:43	33	14:44 (2) 15:39 (5)	07:49 16:41	87	11:23 (1) 14:59 (3)
25	05:55 20:49	06:30 20:06	07:05 19:10	06:42 17:17	51	14:26 (2) 15:17 (2)	07:23 16:42	32	11:39 (1) 15:39 (5)	07:50 16:42	87	11:25 (1) 15:01 (3)
26	05:56 20:48	06:31 20:04	07:07 19:08	06:44 17:16	52	14:25 (2) 15:17 (2)	07:24 16:41	35	11:32 (1) 15:39 (5)	07:50 16:42	87	11:25 (1) 15:01 (3)
27	05:57 20:47	06:32 20:03	07:08 19:06	06:45 17:14	52	14:24 (2) 15:16 (2)	07:25 16:41	41	11:30 (1) 15:40 (5)	07:50 16:43	86	11:25 (1) 15:01 (3)
28	05:58 20:46	06:33 20:01	07:09 19:04	06:46 17:13	53	14:24 (2) 15:17 (2)	07:27 16:40	47	11:27 (1) 15:40 (5)	07:51 16:44	85	11:26 (1) 15:01 (3)
29	05:59 20:45	06:34 19:59	07:10 19:02	06:48 17:11	54	14:23 (2) 15:17 (2)	07:28 16:40	57	11:25 (1) 15:40 (5)	07:51 16:45	84	11:26 (1) 15:01 (3)
30	06:00 20:44	06:35 19:57	07:11 19:00	06:49 17:10	55	14:23 (2) 15:18 (2)	07:29 16:39	64	11:24 (1) 15:40 (5)	07:51 16:45	83	11:28 (1) 15:02 (3)
31	06:01 20:43	06:37 19:56		06:50 17:09	54	14:23 (2) 15:17 (2)			07:51 16:46		83	11:28 (1) 15:03 (3)
Potential sun hours	469	434	376	342	766	290	1403	277	2577			
Total, worst case												

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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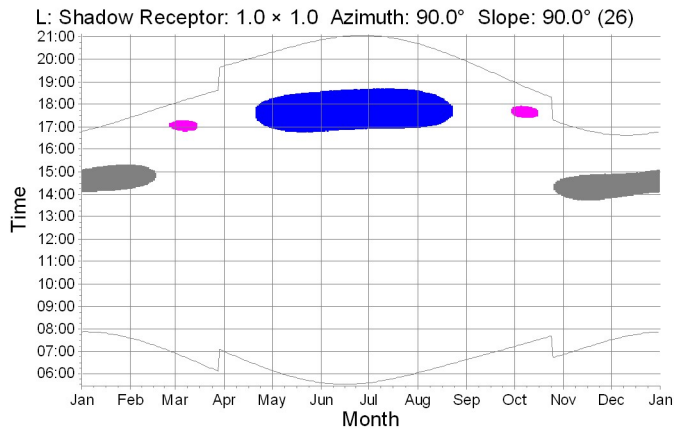
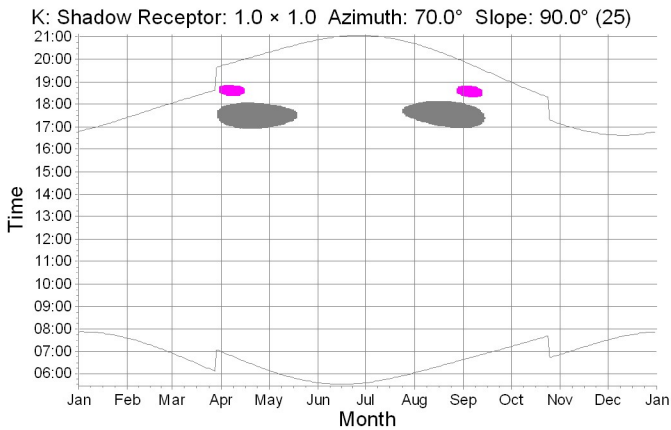
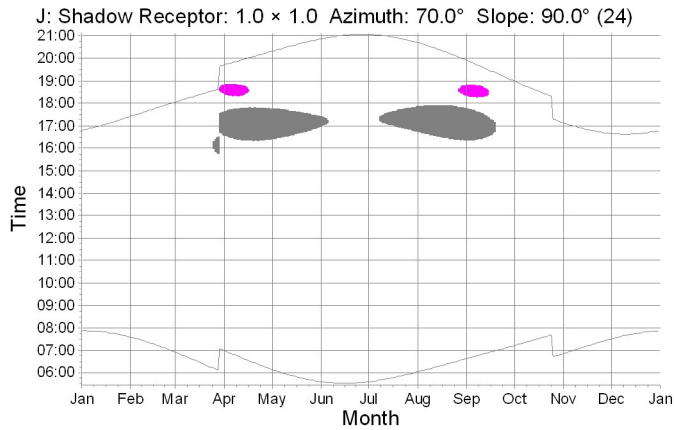
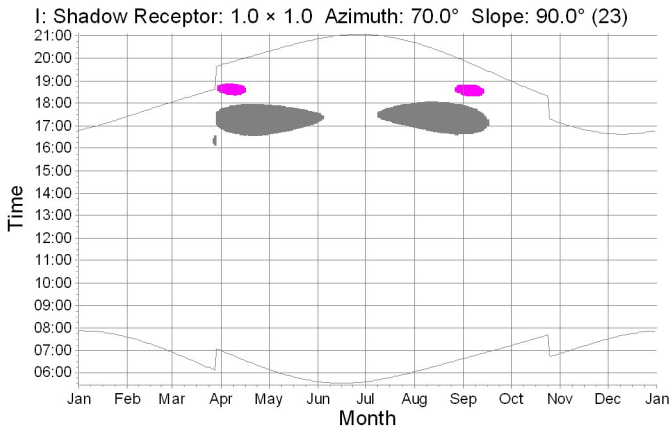
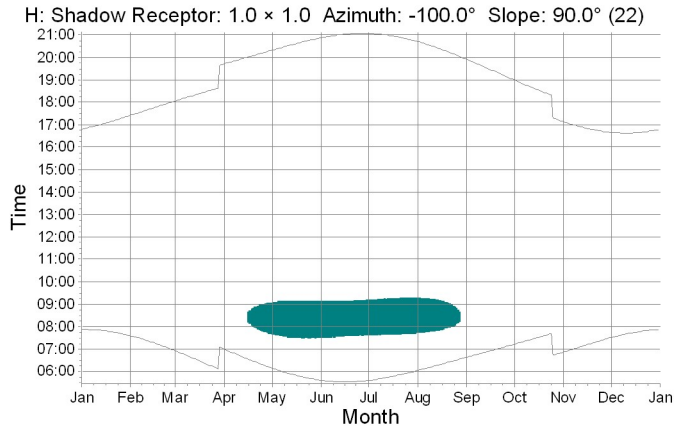
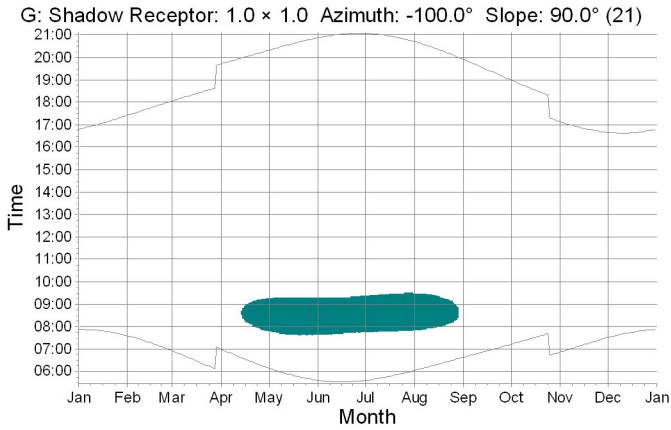
SHADOW - Calendar, graphical
Calculation: WON033_ShadowFlickering



WTGs

6: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (6)

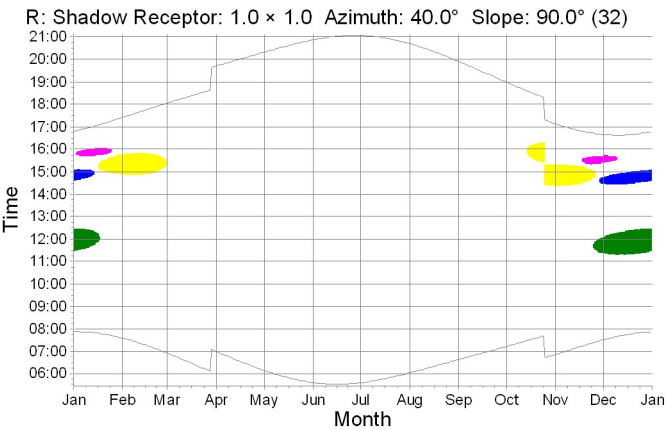
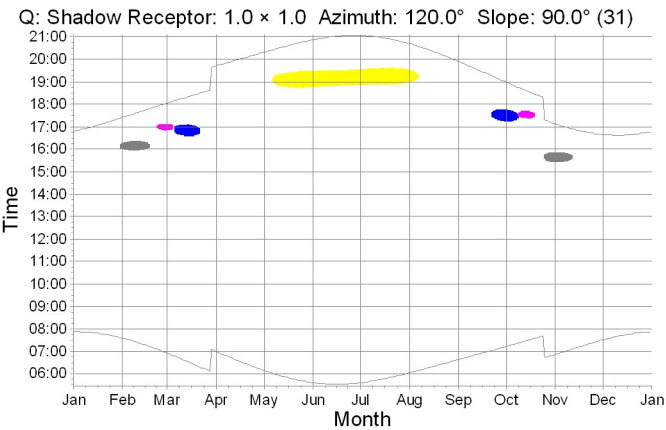
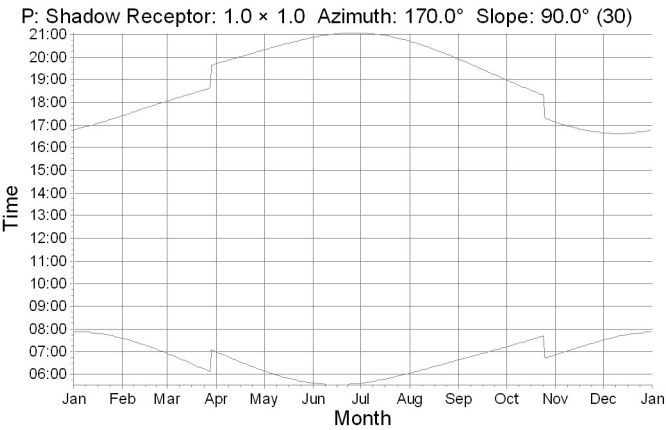
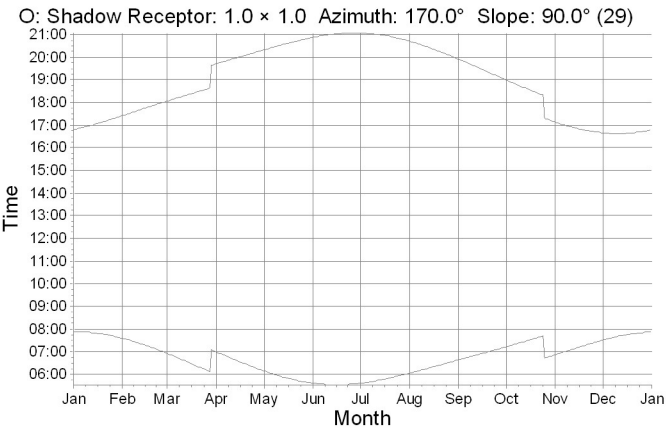
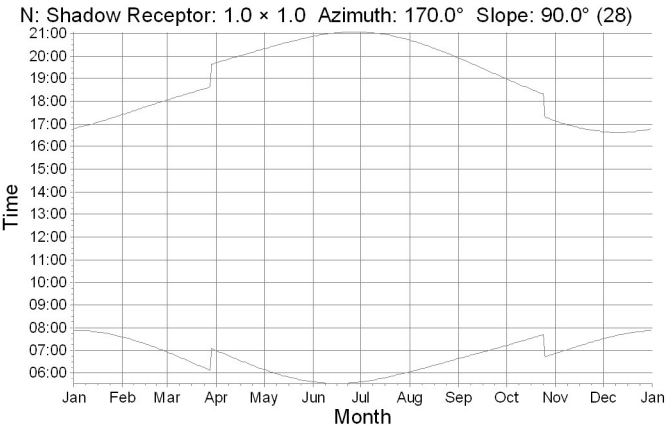
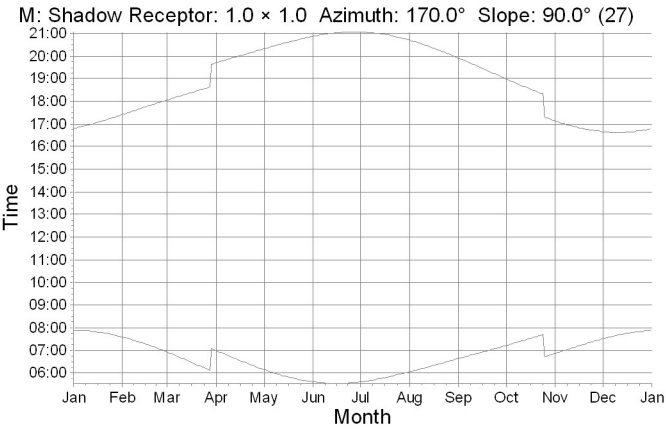
SHADOW - Calendar, graphical
Calculation: WON033_ShadowFlickering



WTGs

- 3: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (3)
- 4: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (4)
- 5: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (5)
- 6: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (6)

SHADOW - Calendar, graphical
Calculation: WON033_ShadowFlickering



WTGs

- 1: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (1)
- 2: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (2)
- 3: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (3)
- 4: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (4)
- 5: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (5)

Project:
WON033

Licensed user:
Iron solar s.r.l.
via Lanzone, 31
IT-20122 Milano
+393487125089
Fabio Paccapelo / francesca.saccarola@hopegroup.it
Calculated:
06/03/2024 14:46/3.6.377

SHADOW - Calendar per WTG

Calculation: WON033_ShadowFlickering WTG: 1 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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	July	August	September	October	November	December
1	07:51 11:29-12:26/57 16:47	07:35 17:25 18:03	06:55 18:42 19:42	06:59 19:42 20:18	06:09 20:52 21:03	05:36 21:03 21:03	05:36 21:03 20:41	06:02 20:41 19:54	06:38 19:54 18:59	07:12 18:59 17:07	06:51 17:07 16:39	07:30 16:39 11:24-12:04/40
2	07:51 11:30-12:26/56 16:48	07:34 17:26 18:04	06:53 18:43 19:43	06:57 20:20 20:53	06:07 20:53 21:03	05:36 21:03 20:40	05:36 21:03 20:40	06:04 20:40 19:52	06:39 19:52 18:57	07:14 18:57 17:06	06:53 17:06 16:39	07:31 16:39 11:23-12:06/43
3	07:52 11:31-12:26/55 16:49	07:33 17:27 18:06	06:51 18:44 19:44	06:55 20:21 20:53	06:06 20:53 21:03	05:35 21:03 20:39	05:37 20:39 19:50	06:05 19:50 18:55	06:40 18:55 17:04	07:15 17:04 16:55	06:54 16:55 16:38	07:32 16:38 11:22-12:07/45
4	07:52 11:32-12:26/54 16:50	07:32 17:29 18:07	06:50 18:46 19:46	06:54 20:22 20:54	06:04 20:54 21:03	05:34 21:03 20:38	05:37 20:38 19:48	06:06 19:48 18:53	06:41 18:53 17:03	07:16 17:03 16:57	06:55 16:57 16:38	07:33 16:38 11:21-12:08/47
5	07:51 11:33-12:25/52 16:51	07:30 17:30 18:08	06:48 18:47 19:47	06:52 20:23 20:55	06:03 20:55 21:02	05:34 21:02 20:36	05:38 20:36 19:47	06:07 19:47 18:51	06:42 18:51 17:02	07:17 17:02 16:57	06:57 16:57 16:35	11:20-12:10/50
6	07:51 11:34-12:25/51 16:52	07:29 17:32 18:09	06:46 18:48 19:48	06:50 20:24 20:56	06:02 20:56 21:02	05:34 21:02 20:35	05:39 20:35 19:45	06:08 19:45 18:49	06:44 18:49 17:00	07:18 17:00 16:58	06:58 16:58 16:36	11:20-12:11/51
7	07:51 11:35-12:25/50 16:53	07:28 17:33 18:11	06:44 18:49 19:49	06:48 20:26 20:56	06:00 20:56 21:02	05:33 21:02 20:34	05:39 20:34 19:43	06:09 19:43 18:48	06:45 18:48 16:59	07:20 16:59 16:37	07:00 16:37 16:37	11:20-12:12/52
8	07:51 11:37-12:24/47 16:54	07:27 17:34 18:12	06:43 18:51 19:51	06:46 20:27 20:57	05:59 20:57 21:01	05:33 21:01 20:32	05:40 20:32 19:41	06:10 19:41 18:46	06:46 18:46 16:58	07:21 16:58 16:37	07:01 16:37 16:38	11:20-12:13/53
9	07:51 11:38-12:23/45 16:55	07:25 17:36 18:13	06:41 18:52 19:52	06:45 20:28 20:58	05:58 20:58 21:01	05:33 21:01 20:31	05:41 20:31 19:39	06:11 19:39 18:44	06:47 18:44 16:57	07:22 16:57 16:39	07:02 16:39 16:37	11:19-12:14/55
10	07:51 11:39-12:23/44 16:56	07:24 17:37 18:15	06:39 18:53 19:53	06:43 20:29 20:58	05:56 20:58 21:01	05:32 21:01 20:30	05:41 20:30 19:38	06:12 19:38 18:42	06:48 18:42 16:56	07:23 16:56 16:37	07:04 16:37 16:39	11:19-12:15/56
11	07:50 11:41-12:22/41 16:57	07:23 17:39 18:16	06:37 18:54 19:54	06:41 20:30 20:59	05:55 20:59 21:00	05:32 21:00 20:28	05:42 20:28 19:36	06:14 19:36 18:41	06:49 18:41 16:54	07:25 16:54 16:37	07:05 16:37 16:37	11:20-12:16/56
12	07:50 11:43-12:21/38 16:59	07:21 17:40 18:17	06:36 18:55 19:55	06:39 20:31 20:59	05:54 20:59 20:59	05:32 20:59 20:27	05:43 20:27 19:34	06:15 19:34 18:39	06:50 18:39 16:53	07:26 16:53 16:37	07:06 16:37 16:37	11:20-12:17/57
13	07:50 11:45-12:20/35 17:00	07:20 17:41 18:18	06:34 18:57 19:57	06:38 20:33 21:00	05:53 21:00 20:59	05:32 20:59 20:25	05:44 20:25 19:32	06:16 19:32 18:37	06:52 18:37 16:52	07:27 16:52 16:37	07:08 16:37 16:37	11:20-12:18/58
14	07:49 11:47-12:18/31 17:01	07:18 17:43 18:20	06:32 18:58 19:58	06:36 20:34 21:00	05:52 21:00 20:58	05:32 20:58 20:24	05:45 20:24 19:30	06:17 19:30 18:35	06:53 18:35 16:51	07:28 16:51 16:37	07:09 16:37 16:37	11:19-12:18/59
15	07:49 11:51-12:16/25 17:02	07:17 17:44 18:21	06:30 18:59 19:59	06:34 20:35 21:01	05:50 21:01 20:58	05:32 20:58 20:22	05:46 20:22 19:28	06:18 19:28 18:34	06:54 18:34 16:50	07:30 16:50 16:38	07:10 16:38 16:38	11:20-12:19/59
16	07:48 11:54-12:13/19 17:03	07:15 17:45 18:22	06:28 18:59 19:59	06:33 20:36 21:01	05:49 21:01 20:57	05:32 20:57 20:21	05:46 20:21 19:26	06:55 19:26 18:32	07:31 18:32 16:49	07:31 16:49 16:38	07:11 16:38 16:38	11:20-12:20/60
17	07:48 12:00-12:06/6 17:05	07:14 17:47 18:23	06:26 18:59 19:59	06:31 20:37 21:02	05:48 21:02 20:56	05:32 20:56 20:19	05:47 20:19 19:25	06:20 19:25 18:30	06:56 18:30 16:48	07:32 16:48 16:38	07:13 16:38 16:38	11:21-12:21/60
18	07:47 17:06	07:12 17:48 18:25	06:25 18:59 19:59	06:29 20:38 21:02	05:47 21:02 20:55	05:32 20:55 20:17	05:48 20:17 19:23	06:22 19:23 18:29	06:57 18:29 16:47	07:33 16:47 16:38	07:14 16:38 16:38	11:21-12:21/60
19	07:46 17:07	07:11 17:50 18:26	06:23 18:59 19:59	06:27 20:39 21:02	05:46 21:02 20:55	05:32 20:55 20:16	05:49 20:16 19:21	06:23 19:21 18:27	06:58 18:27 16:47	07:35 16:47 16:39	07:15 16:39 16:39	11:21-12:22/61
20	07:46 17:08	07:09 17:51 18:27	06:21 18:59 19:59	06:26 20:40 21:03	05:45 21:03 20:54	05:32 20:54 20:14	05:50 20:14 19:19	06:24 19:19 18:25	07:00 18:25 16:46	07:36 16:46 16:39	07:17 16:39 16:39	11:21-12:22/61
21	07:45 17:10	07:08 17:52 18:28	06:19 18:59 19:59	06:24 20:41 21:03	05:44 21:03 20:53	05:32 20:53 20:13	05:51 20:13 19:17	06:25 19:17 18:24	07:01 18:24 16:45	07:37 16:45 16:40	07:18 16:40 16:40	11:22-12:23/61
22	07:44 17:11	07:06 17:54 18:30	06:17 18:59 19:59	06:23 20:42 21:03	05:43 21:03 20:52	05:32 20:52 20:11	05:52 20:11 19:15	06:26 19:15 18:22	07:02 18:22 16:44	07:38 16:44 16:40	07:19 16:40 16:40	11:22-12:23/61
23	07:43 17:12	07:05 17:55 18:31	06:16 18:59 19:59	06:21 20:43 21:03	05:42 21:03 20:51	05:33 20:51 20:09	05:53 20:09 19:13	06:27 19:13 18:21	07:03 18:21 16:43	07:40 16:43 16:41	07:21 16:41 16:41	11:23-12:24/61
24	07:43 17:14	07:03 17:56 18:32	06:14 18:59 19:59	06:19 20:44 21:03	05:42 21:03 20:50	05:33 20:50 20:08	05:54 20:08 19:12	06:29 19:12 18:19	07:04 18:19 16:43	07:41 16:43 16:41	07:22 16:41 16:41	11:23-12:24/61
25	07:42 17:15	07:01 17:58 18:33	06:12 18:59 19:59	06:18 20:45 21:04	05:41 21:04 20:49	05:33 20:49 20:06	05:55 20:06 19:10	06:30 19:10 17:17	07:05 17:17 16:42	07:23 16:42 16:42	07:23 11:39-11:44/5 16:42	11:25-12:25/60
26	07:41 17:16	07:00 17:59 18:35	06:10 18:59 19:59	06:16 20:46 21:04	05:40 21:04 20:48	05:33 20:48 20:04	05:56 20:04 19:08	06:31 19:08 17:16	07:07 17:16 16:41	07:24 16:41 16:41	07:24 11:32-11:51/19 16:41	11:25-12:25/60
27	07:40 17:18	06:58 18:00 18:36	06:08 18:59 19:59	06:15 20:47 21:04	05:39 21:04 20:47	05:34 20:47 20:03	05:57 20:03 19:06	06:32 19:06 17:14	07:08 17:14 16:41	07:25 16:41 16:41	07:25 11:30-11:55/25 16:41	11:25-12:25/60
28	07:39 17:19	06:56 18:02 18:37	06:06 18:59 19:59	06:13 20:48 21:04	05:38 21:04 20:46	05:34 20:46 20:01	05:58 20:01 19:04	06:33 19:04 17:13	07:09 17:13 16:40	07:27 16:40 16:40	07:27 11:27-11:58/31 16:40	11:26-12:25/59
29	07:38 17:20	07:05 18:02 18:38	06:12 18:59 19:59	06:12 20:49 21:04	05:38 21:04 20:45	05:35 20:45 20:05	05:59 20:05 19:59	06:34 19:59 19:02	07:10 19:02 17:11	07:28 17:11 16:40	07:28 11:25-12:00/35 16:40	11:26-12:25/59
30	07:37 17:22	07:03 18:02 18:38	06:10 18:59 19:59	06:10 20:50 21:03	05:37 21:03 20:44	05:35 20:44 20:01	06:00 20:01 19:57	06:35 19:57 19:00	07:11 19:00 17:10	07:29 17:10 16:39	07:29 11:24-12:02/38 16:39	11:28-12:26/58
31	07:36 17:23	07:01 18:02 18:38	06:09 18:59 19:59	06:09 20:51 21:03	05:37 21:03 20:43	06:01 20:43 19:56	06:37 19:56 19:00	07:12 19:00 17:09	07:29 17:09 16:46	07:30 16:46 16:46	07:30 16:46 16:46	11:28-12:26/58
Potential sun hours	288	292	369	403	457	463	469	434	376	342	290	277
Sum of minutes with flicker	706	0	0	0	0	0	0	0	0	0	153	1741

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: WON033_ShadowFlickering WTG: 2 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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
1	07:51 16:47	07:35 14:54-15:44/50 17:25	06:55 18:03	06:59 19:42	06:09 20:18	05:36 18:47-19:26/39 20:52
2	07:52 16:48	07:34 14:53-15:45/52 17:26	06:53 18:04	06:57 19:43	06:07 20:20	05:35 18:47-19:26/39 20:53
3	07:52 16:49	07:33 14:53-15:45/52 17:27	06:51 18:06	06:55 19:44	06:06 20:21	05:35 18:47-19:26/39 20:53
4	07:52 16:50	07:32 14:53-15:46/53 17:29	06:50 18:07	06:54 19:46	06:04 20:22	05:34 18:48-19:27/39 20:54
5	07:51 16:51	07:30 14:53-15:46/53 17:30	06:48 18:08	06:52 19:47	06:03 20:23	05:34 18:48-19:26/38 20:55
6	07:51 16:52	07:29 14:53-15:47/54 17:32	06:46 18:10	06:50 19:48	06:02 20:24	05:34 18:48-19:27/39 20:56
7	07:51 16:53	07:28 14:53-15:47/54 17:33	06:44 18:11	06:48 19:49	06:00 19:00-19:09/9 20:26	05:33 18:49-19:27/38 20:56
8	07:51 16:54	07:27 14:52-15:47/55 17:34	06:43 18:12	06:46 19:51	05:59 18:57-19:13/16 20:27	05:33 18:49-19:26/37 20:57
9	07:51 16:55	07:25 14:53-15:48/55 17:36	06:41 18:13	06:45 19:52	05:58 18:55-19:15/20 20:28	05:33 18:49-19:26/37 20:58
10	07:51 16:56	07:24 14:53-15:48/55 17:37	06:39 18:15	06:43 19:53	05:56 18:52-19:16/24 20:29	05:32 18:50-19:27/37 20:58
11	07:50 16:57	07:23 14:53-15:48/55 17:39	06:37 18:16	06:41 19:54	05:55 18:51-19:18/27 20:30	05:32 18:50-19:27/37 20:59
12	07:50 16:59	07:21 14:54-15:48/54 17:40	06:36 18:17	06:39 19:55	05:54 18:50-19:19/29 20:31	05:32 18:51-19:27/36 20:59
13	07:50 17:00	07:20 14:53-15:47/54 17:41	06:34 18:18	06:38 19:57	05:53 18:49-19:20/31 20:33	05:32 18:51-19:27/36 21:00
14	07:49 17:01	07:18 14:54-15:48/54 17:43	06:32 18:20	06:36 19:58	05:52 18:48-19:21/33 20:34	05:32 18:51-19:28/37 21:00
15	07:49 17:02	07:17 14:54-15:47/53 17:44	06:30 18:21	06:34 19:59	05:50 18:48-19:22/34 20:35	05:32 18:52-19:28/36 21:01
16	07:48 17:03	07:15 14:55-15:47/52 17:45	06:28 18:22	06:33 20:00	05:49 18:47-19:22/35 20:36	05:32 18:52-19:28/36 21:01
17	07:48 15:09-15:20/11 17:05	07:14 14:56-15:46/50 17:47	06:27 18:24	06:31 20:02	05:48 18:47-19:23/36 20:37	05:32 18:52-19:28/36 21:02
18	07:47 15:07-15:24/17 17:06	07:12 14:57-15:46/49 17:48	06:25 18:25	06:29 20:03	05:47 18:46-19:23/37 20:38	05:32 18:52-19:28/36 21:02
19	07:46 15:05-15:27/22 17:07	07:11 14:57-15:45/48 17:50	06:23 18:26	06:27 20:04	05:46 18:46-19:23/37 20:39	05:32 18:53-19:28/35 21:02
20	07:46 15:03-15:29/26 17:08	07:09 14:59-15:44/45 17:51	06:21 18:27	06:26 20:05	05:45 18:46-19:24/38 20:40	05:32 18:53-19:28/35 21:03
21	07:45 15:01-15:30/29 17:10	07:08 15:00-15:43/43 17:52	06:19 18:28	06:24 20:06	05:44 18:45-19:24/39 20:41	05:32 18:53-19:28/35 21:03
22	07:44 15:00-15:32/32 17:11	07:06 15:02-15:43/41 17:54	06:17 18:30	06:23 20:08	05:43 18:45-19:24/39 20:42	05:32 18:53-19:28/35 21:03
23	07:43 15:00-15:35/35 17:12	07:05 15:03-15:41/38 17:55	06:16 18:31	06:21 20:09	05:42 18:46-19:25/39 20:43	05:33 18:54-19:29/35 21:03
24	07:43 14:59-15:36/37 17:14	07:03 15:04-15:39/35 17:56	06:14 18:32	06:19 20:10	05:42 18:46-19:25/39 20:44	05:33 18:54-19:29/35 21:03
25	07:42 14:58-15:37/39 17:15	07:01 15:07-15:38/31 17:58	06:12 18:33	06:18 20:11	05:41 18:45-19:25/40 20:45	05:33 18:53-19:29/36 21:04
26	07:41 14:57-15:38/41 17:16	07:00 15:10-15:35/25 17:59	06:10 18:35	06:16 20:12	05:40 18:45-19:25/40 20:46	05:34 18:54-19:30/36 21:04
27	07:40 14:57-15:40/43 17:18	06:58 15:13-15:31/18 18:00	06:08 18:36	06:15 20:14	05:39 18:46-19:26/40 20:47	05:34 18:54-19:30/36 21:04
28	07:39 14:56-15:41/45 17:19	06:56 15:20-15:24/4 18:02	06:06 18:37	06:13 20:15	05:39 18:46-19:26/40 20:48	05:34 18:55-19:31/36 21:04
29	07:38 14:56-15:42/46 17:20		07:05 19:38	06:12 20:16	05:38 18:47-19:26/39 20:49	05:35 18:54-19:30/36 21:04
30	07:37 14:55-15:43/48 17:22		07:03 19:40	06:10 20:17	05:37 18:46-19:26/40 20:50	05:35 18:54-19:30/36 21:04
31	07:36 14:54-15:43/49 17:23		07:01 19:41		05:37 18:46-19:26/40 20:51	
Potential sun hours	288	292	369	403	457	463
Sum of minutes with flicker	520	1282	0	0	841	1098

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: WON033_ShadowFlickering WTG: 2 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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

	July		August		September		October		November		December	
1	05:36	18:54-19:31/37	06:02	19:01-19:29/28	06:38	07:12			06:52	14:22-15:17/55	07:30	
	21:03		20:42		19:54	18:59			17:07		16:39	
2	05:36	18:54-19:31/37	06:04	19:02-19:28/26	06:39	07:14			06:53	14:22-15:17/55	07:31	
	21:03		20:40		19:52	18:57			17:06		16:39	
3	05:37	18:54-19:32/38	06:05	19:03-19:26/23	06:40	07:15			06:54	14:22-15:17/55	07:32	
	21:03		20:39		19:50	18:55			17:04		16:38	
4	05:37	18:55-19:32/37	06:06	19:05-19:24/19	06:41	07:16			06:56	14:23-15:17/54	07:34	
	21:03		20:38		19:48	18:53			17:03		16:38	
5	05:38	18:54-19:32/38	06:07	19:07-19:21/14	06:42	07:17			06:57	14:23-15:17/54	07:35	
	21:03		20:36		19:47	18:51			17:02		16:38	
6	05:39	18:55-19:33/38	06:08	19:12-19:16/4	06:44	07:18			06:58	14:23-15:17/54	07:36	
	21:02		20:35		19:45	18:50			17:00		16:38	
7	05:39	18:55-19:33/38	06:09		06:45	07:20			07:00	14:23-15:16/53	07:37	
	21:02		20:34		19:43	18:48			16:59		16:37	
8	05:40	18:54-19:33/39	06:10		06:46	07:21			07:01	14:23-15:15/52	07:38	
	21:01		20:32		19:41	18:46			16:58		16:37	
9	05:41	18:55-19:33/38	06:11		06:47	07:22			07:02	14:24-15:15/51	07:39	
	21:01		20:31		19:39	18:44			16:57		16:37	
10	05:41	18:55-19:34/39	06:13		06:48	07:23			07:04	14:25-15:15/50	07:40	
	21:01		20:30		19:38	18:42			16:56		16:37	
11	05:42	18:54-19:33/39	06:14		06:49	07:25			07:05	14:26-15:15/49	07:40	
	21:00		20:28		19:36	18:41			16:55		16:37	
12	05:43	18:55-19:34/39	06:15		06:50	07:26			07:06	14:26-15:14/48	07:41	
	21:00		20:27		19:34	18:39			16:53		16:37	
13	05:44	18:55-19:34/39	06:16		06:52	07:27			07:08	14:28-15:14/46	07:42	
	20:59		20:25		19:32	18:37			16:52		16:37	
14	05:45	18:55-19:35/40	06:17		06:53	07:28	15:49-16:01/12		07:09	14:28-15:13/45	07:43	
	20:58		20:24		19:30	18:35			16:51		16:37	
15	05:46	18:55-19:35/40	06:18		06:54	07:30	15:44-16:05/21		07:10	14:29-15:12/43	07:44	
	20:58		20:22		19:28	18:34			16:50		16:38	
16	05:46	18:54-19:34/40	06:19		06:55	07:31	15:40-16:07/27		07:12	14:30-15:11/41	07:44	
	20:57		20:21		19:26	18:32			16:49		16:38	
17	05:47	18:55-19:34/39	06:21		06:56	07:32	15:38-16:10/32		07:13	14:31-15:10/39	07:45	
	20:56		20:19		19:25	18:30			16:48		16:38	
18	05:48	18:55-19:35/40	06:22		06:57	07:33	15:35-16:11/36		07:14	14:33-15:10/37	07:46	
	20:55		20:17		19:23	18:29			16:47		16:38	
19	05:49	18:55-19:35/40	06:23		06:58	07:35	15:33-16:12/39		07:15	14:34-15:09/35	07:47	
	20:55		20:16		19:21	18:27			16:47		16:39	
20	05:50	18:55-19:35/40	06:24		07:00	07:36	15:32-16:13/41		07:17	14:35-15:07/32	07:47	
	20:54		20:14		19:19	18:25			16:46		16:39	
21	05:51	18:56-19:35/39	06:25		07:01	07:37	15:30-16:14/44		07:18	14:37-15:06/29	07:48	
	20:53		20:13		19:17	18:24			16:45		16:40	
22	05:52	18:56-19:35/39	06:26		07:02	07:38	15:29-16:15/46		07:19	14:39-15:05/26	07:48	
	20:52		20:11		19:15	18:22			16:44		16:40	
23	05:53	18:56-19:34/38	06:27		07:03	07:40	15:28-16:15/47		07:21	14:41-15:03/22	07:49	
	20:51		20:09		19:13	18:21			16:43		16:41	
24	05:54	18:56-19:34/38	06:29		07:04	07:41	15:26-16:16/50		07:22	14:44-15:01/17	07:49	
	20:50		20:08		19:12	18:19			16:43		16:41	
25	05:55	18:57-19:34/37	06:30		07:05	06:42	14:26-15:17/51		07:23	14:47-14:58/11	07:50	
	20:49		20:06		19:10	17:17			16:42		16:42	
26	05:56	18:57-19:34/37	06:31		07:07	06:44	14:25-15:17/52		07:24		07:50	
	20:48		20:04		19:08	17:16			16:41		16:42	
27	05:57	18:58-19:33/35	06:32		07:08	06:45	14:24-15:16/52		07:25		07:50	
	20:47		20:03		19:06	17:14			16:41		16:43	
28	05:58	18:58-19:32/34	06:33		07:09	06:46	14:24-15:17/53		07:27		07:51	
	20:46		20:01		19:04	17:13			16:40		16:44	
29	05:59	18:59-19:32/33	06:34		07:10	06:48	14:23-15:17/54		07:28		07:51	
	20:45		19:59		19:02	17:11			16:40		16:45	
30	06:00	18:59-19:31/32	06:35		07:11	06:49	14:23-15:18/55		07:29		07:51	
	20:44		19:57		19:00	17:10			16:39		16:45	
31	06:01	19:00-19:30/30	06:37			06:50	14:23-15:17/54				07:51	
	20:43		19:56			17:09					16:46	
Potential sun hours	469		434		376	342			290		277	
Sum of minutes with flicker	1167		114		0	766			1053		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: WON033_ShadowFlickering WTG: 3 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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	07:51 14:38-15:03/25 16:47	07:35 17:25 18:03	06:55 18:03	06:59 19:42	06:09 16:57-18:14/77 20:19	05:36 16:49-18:32/103 20:52
2	07:52 14:39-15:03/24 16:48	07:34 17:26 18:04	06:53 18:04	06:57 19:43	06:07 16:57-18:15/78 20:20	05:35 16:48-18:32/104 20:53
3	07:52 14:40-15:03/23 16:49	07:33 17:27 18:06	06:51 18:06	06:55 19:44	06:06 16:55-18:16/81 20:21	05:35 16:49-18:32/103 20:53
4	07:52 14:41-15:04/23 16:50	07:32 17:29 18:07	06:50 18:07	06:54 19:46	06:04 16:54-18:17/83 20:22	05:35 16:50-18:33/103 20:54
5	07:51 14:41-15:03/22 16:51	07:30 17:30 18:08	06:48 18:08	06:52 19:47	06:03 16:53-18:19/86 20:23	05:34 16:49-18:33/104 20:55
6	07:51 14:42-15:03/21 16:52	07:29 17:32 18:10	06:46 16:46-16:58/12 18:10	06:50 19:48	06:02 16:52-18:19/87 20:24	05:34 16:50-18:33/103 20:56
7	07:51 14:43-15:03/20 16:53	07:28 17:33 18:11	06:44 16:43-17:00/17 18:11	06:48 19:49	06:00 16:51-18:20/89 20:26	05:33 16:50-18:34/104 20:56
8	07:51 14:44-15:03/19 16:54	07:27 17:34 18:12	06:43 16:41-17:01/20 18:12	06:46 19:51	05:59 16:51-18:21/90 20:27	05:33 16:50-18:33/103 20:57
9	07:51 14:45-15:02/17 16:55	07:25 17:36 18:13	06:41 16:40-17:02/22 18:13	06:45 19:52	05:58 16:50-18:22/92 20:28	05:33 16:50-18:34/104 20:58
10	07:51 14:46-15:02/16 16:56	07:24 17:37 18:15	06:39 16:39-17:03/24 18:15	06:43 19:53	05:56 16:49-18:22/93 20:29	05:32 16:51-18:34/103 20:58
11	07:50 14:48-15:02/14 16:57	07:23 17:39 18:16	06:37 16:38-17:03/25 18:16	06:41 19:54	05:55 16:49-18:23/94 20:30	05:32 16:51-18:35/104 20:59
12	07:50 14:50-15:01/11 16:59	07:21 17:40 18:17	06:36 16:37-17:03/26 18:17	06:39 19:55	05:54 16:48-18:23/95 20:31	05:32 16:52-18:35/103 20:59
13	07:50 14:53-14:59/6 17:00	07:20 17:41 18:18	06:34 16:36-17:03/27 18:18	06:38 19:57	05:53 16:48-18:24/96 20:33	05:32 16:52-18:35/103 21:00
14	07:49 17:01	07:18 17:43 18:20	06:32 16:37-17:04/27 18:20	06:36 19:58	05:52 16:48-18:25/97 20:34	05:32 16:52-18:36/104 21:00
15	07:49 17:02	07:17 17:44 18:21	06:30 16:37-17:03/26 18:21	06:34 19:59	05:51 16:48-18:25/97 20:35	05:32 16:53-18:36/103 21:01
16	07:48 17:03	07:15 17:46 18:22	06:28 16:37-17:02/25 18:22	06:33 20:00	05:49 16:48-18:26/98 20:36	05:32 16:53-18:36/103 21:01
17	07:48 17:05	07:14 17:47 18:24	06:27 16:37-17:01/24 18:24	06:31 20:02	05:48 16:47-18:26/99 20:37	05:32 16:53-18:36/103 21:02
18	07:47 17:06	07:12 17:48 18:25	06:25 16:38-17:00/22 18:25	06:29 20:03	05:47 16:47-18:27/100 20:38	05:32 16:53-18:36/103 21:02
19	07:46 17:07	07:11 17:50 18:26	06:23 16:38-16:58/20 18:26	06:28 20:04	05:46 16:47-18:27/100 20:39	05:32 16:53-18:37/104 21:02
20	07:46 17:08	07:09 17:51 18:27	06:21 16:41-16:57/16 18:27	06:26 20:05	05:45 16:47-18:28/101 20:40	05:32 16:53-18:37/104 21:03
21	07:45 17:10	07:08 17:52 18:28	06:19 16:43-16:55/12 18:28	06:24 17:24-17:50/26 20:06	05:44 16:47-18:28/101 20:41	05:32 16:53-18:37/104 21:03
22	07:44 17:11	07:06 17:54 18:30	06:17 18:30	06:23 17:18-17:54/36 20:08	05:43 16:47-18:28/101 20:42	05:32 16:54-18:38/104 21:03
23	07:43 17:12	07:05 17:55 18:31	06:16 18:31	06:21 17:15-17:58/43 20:09	05:43 16:48-18:29/101 20:43	05:33 16:54-18:38/104 21:03
24	07:43 17:14	07:03 17:56 18:32	06:14 18:32	06:19 17:11-18:01/50 20:10	05:42 16:47-18:29/102 20:44	05:33 16:54-18:37/103 21:03
25	07:42 17:15	07:01 17:58 18:33	06:12 18:33	06:18 17:09-18:04/55 20:11	05:41 16:47-18:30/103 20:45	05:33 16:54-18:37/103 21:04
26	07:41 17:16	07:00 17:59 18:35	06:10 18:35	06:16 17:06-18:06/60 20:12	05:40 16:47-18:30/103 20:46	05:34 16:55-18:38/103 21:04
27	07:40 17:18	06:58 18:00 18:36	06:08 18:36	06:15 17:04-18:08/64 20:14	05:39 16:48-18:31/103 20:47	05:34 16:55-18:38/103 21:04
28	07:39 17:19	06:56 18:02 18:37	06:06 18:37	06:13 17:02-18:09/67 20:15	05:39 16:48-18:31/103 20:48	05:34 16:56-18:39/103 21:04
29	07:38 17:21	07:05 19:38	07:05 19:38	06:12 17:01-18:11/70 20:16	05:38 16:48-18:31/103 20:49	05:35 16:55-18:39/104 21:04
30	07:37 17:22	07:03 19:40	07:03 19:40	06:10 16:58-18:12/74 20:17	05:37 16:48-18:31/103 20:50	05:35 16:56-18:39/103 21:04
31	07:36 17:23	07:01 19:41	07:01 19:41		05:37 16:48-18:31/103 20:51	
Potential sun hours	288	292	369	403	457	463
Sum of minutes with flicker	241	0	345	545	2959	3102

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: WON033_ShadowFlickering WTG: 3 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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	05:36 16:56-18:39/103 21:03	06:02 16:59-18:34/95 20:42	06:38 19:54	07:13 17:17-17:43/26 18:59	06:52 17:07	07:30 14:31-14:44/13 16:39
2	05:36 16:56-18:39/103 21:03	06:04 16:59-18:33/94 20:40	06:39 19:52	07:14 17:16-17:42/26 18:57	06:53 17:06	07:31 14:30-14:45/15 16:39
3	05:37 16:56-18:39/103 21:03	06:05 17:00-18:32/92 20:39	06:40 19:50	07:15 17:16-17:41/25 18:55	06:54 17:04	07:32 14:29-14:46/17 16:38
4	05:37 16:56-18:40/104 21:03	06:06 17:00-18:31/91 20:38	06:41 19:48	07:16 17:16-17:40/24 18:53	06:56 17:03	07:34 14:28-14:47/19 16:38
5	05:38 16:56-18:39/103 21:03	06:07 17:01-18:30/89 20:36	06:42 19:47	07:17 17:18-17:39/21 18:51	06:57 17:02	07:35 14:28-14:48/20 16:38
6	05:39 16:56-18:40/104 21:02	06:08 17:01-18:29/88 20:35	06:44 19:45	07:18 17:19-17:37/18 18:50	06:58 17:01	07:36 14:28-14:49/21 16:38
7	05:39 16:57-18:40/103 21:02	06:09 17:02-18:28/86 20:34	06:45 19:43	07:20 17:20-17:35/15 18:48	07:00 16:59	07:37 14:28-14:50/22 16:37
8	05:40 16:56-18:39/103 21:01	06:10 17:03-18:28/85 20:32	06:46 19:41	07:21 17:23-17:31/8 18:46	07:01 16:58	07:38 14:28-14:51/23 16:37
9	05:41 16:56-18:40/104 21:01	06:11 17:04-18:26/82 20:31	06:47 19:39	07:22 18:44	07:02 16:57	07:39 14:28-14:51/23 16:37
10	05:42 16:57-18:40/103 21:01	06:13 17:05-18:25/80 20:30	06:48 19:38	07:23 18:42	07:04 16:56	07:40 14:28-14:52/24 16:37
11	05:42 16:56-18:39/103 21:00	06:14 17:06-18:24/78 20:28	06:49 19:36	07:25 18:41	07:05 16:55	07:40 14:28-14:53/25 16:37
12	05:43 16:56-18:40/104 21:00	06:15 17:06-18:22/76 20:27	06:50 19:34	07:26 18:39	07:06 16:53	07:41 14:29-14:54/25 16:37
13	05:44 16:57-18:40/103 20:59	06:16 17:08-18:20/72 20:25	06:52 19:32	07:27 18:37	07:08 16:52	07:42 14:29-14:54/25 16:37
14	05:45 16:57-18:40/103 20:58	06:17 17:09-18:18/69 20:24	06:53 19:30	07:28 18:35	07:09 16:51	07:43 14:29-14:54/25 16:38
15	05:46 16:57-18:40/103 20:58	06:18 17:10-18:16/66 20:22	06:54 19:28	07:30 18:34	07:10 16:50	07:44 14:29-14:55/26 16:38
16	05:46 16:57-18:40/103 20:57	06:19 17:11-18:14/63 20:21	06:55 19:26	07:31 18:32	07:12 16:49	07:44 14:30-14:56/26 16:38
17	05:47 16:56-18:39/103 20:56	06:21 17:13-18:12/59 20:19	06:56 19:25	07:32 18:30	07:13 16:48	07:45 14:31-14:57/26 16:38
18	05:48 16:57-18:39/102 20:55	06:22 17:15-18:09/54 20:18	06:57 19:23	07:33 18:29	07:14 16:47	07:46 14:30-14:57/27 16:39
19	05:49 16:57-18:39/102 20:55	06:23 17:19-18:07/48 20:16	06:58 19:21	07:35 18:27	07:15 16:47	07:47 14:31-14:58/27 16:39
20	05:50 16:57-18:39/102 20:54	06:24 17:21-18:03/42 20:14	07:00 19:19	07:36 18:25	07:17 16:46	07:47 14:31-14:57/26 16:39
21	05:51 16:57-18:39/102 20:53	06:25 17:25-17:59/34 20:13	07:01 19:17	07:37 18:24	07:18 16:45	07:48 14:32-14:58/26 16:40
22	05:52 16:57-18:39/102 20:52	06:26 17:30-17:53/23 20:11	07:02 19:15	07:38 18:22	07:19 16:44	07:48 14:32-14:58/26 16:40
23	05:53 16:57-18:38/101 20:51	06:27 20:09	07:03 19:13	07:40 18:21	07:21 16:43	07:49 14:33-14:59/26 16:41
24	05:54 16:58-18:38/100 20:50	06:29 20:08	07:04 19:12	07:41 18:19	07:22 16:43	07:49 14:33-14:59/26 16:41
25	05:55 16:58-18:38/100 20:49	06:30 20:06	07:05 19:10	07:42 17:17	07:23 16:42	07:50 14:34-15:01/27 16:42
26	05:56 16:58-18:37/99 20:48	06:31 20:04	07:07 19:08	07:43 17:16	07:24 16:41	07:50 14:34-15:01/27 16:42
27	05:57 16:58-18:37/99 20:47	06:32 20:03	07:08 19:06	07:44 17:14	07:25 16:41	07:50 14:35-15:01/26 16:43
28	05:58 16:58-18:36/98 20:46	06:33 20:01	07:09 19:04	07:45 17:13	07:27 16:40	07:51 14:35-15:01/26 16:44
29	05:59 16:58-18:36/98 20:45	06:34 19:59	07:10 19:02	07:46 17:11	07:28 16:40	07:51 14:36-15:01/25 16:45
30	06:00 16:59-18:35/96 20:44	06:36 19:57	07:11 19:00	07:47 17:10	07:29 16:39	07:51 14:37-15:02/25 16:45
31	06:01 16:59-18:34/95 20:43	06:37 19:56		06:50 17:09		07:51 14:38-15:03/25 16:46
Potential sun hours	469	434	376	342	290	277
Sum of minutes with flicker	3151	1566	192	163	17	740

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

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
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SHADOW - Calendar per WTG

Calculation: WON033_ShadowFlickering WTG: 4 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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
1	07:51 14:07-15:03/56 16:47	07:35 16:02-16:14/12 17:25 14:16-15:16/60	06:55 18:03	06:59 16:35-17:48/73 19:42	06:09 16:26-17:58/92 20:18	05:36 17:00-17:32/32 20:52
2	07:51 14:07-15:04/57 16:48	07:34 16:00-16:16/16 17:26 14:17-15:16/59	06:53 18:04	06:57 16:34-17:51/77 19:43	06:07 16:27-17:57/90 20:20	05:36 17:02-17:31/29 20:53
3	07:52 14:07-15:05/58 16:49	07:33 16:00-16:17/17 17:27 14:18-15:16/58	06:51 18:06	06:55 16:32-17:53/81 19:44	06:06 16:27-17:56/89 20:21	05:35 17:04-17:28/24 20:53
4	07:52 14:08-15:06/58 16:50	07:32 15:59-16:19/20 17:29 14:19-15:15/56	06:50 18:07	06:54 16:31-17:54/83 19:46	06:04 16:28-17:56/88 20:22	05:35 17:06-17:18/12 20:54
5	07:51 14:07-15:05/58 16:51	07:30 15:58-16:19/21 17:30 14:19-15:14/55	06:48 18:08	06:52 16:29-17:55/86 19:47	06:03 16:29-17:55/86 20:23	05:34 17:10-17:14/4 20:55
6	07:51 14:07-15:06/59 16:52	07:29 15:58-16:20/22 17:32 14:20-15:14/54	06:46 18:10	06:50 16:28-17:56/88 19:48	06:02 16:29-17:54/85 20:24	05:34 20:56
7	07:51 14:08-15:07/59 16:53	07:28 15:58-16:21/23 17:33 14:22-15:14/52	06:44 18:11	06:48 16:27-17:58/91 19:49	06:00 16:30-17:53/83 20:26	05:33 20:56
8	07:51 14:08-15:08/60 16:54	07:27 15:57-16:20/23 17:34 14:22-15:12/50	06:43 18:12	06:47 16:26-17:59/93 19:51	05:59 16:31-17:53/82 20:27	05:33 20:57
9	07:51 14:08-15:08/60 16:55	07:25 15:57-16:21/24 17:36 14:24-15:12/48	06:41 18:13	06:45 16:25-17:59/94 19:52	05:58 16:32-17:52/80 20:28	05:33 20:58
10	07:51 14:08-15:09/61 16:56	07:24 15:58-16:21/23 17:37 14:26-15:11/45	06:39 18:15	06:43 16:24-17:59/95 19:53	05:56 16:32-17:50/78 20:29	05:32 20:58
11	07:50 14:09-15:10/61 16:57	07:23 15:58-16:20/22 17:39 14:27-15:09/42	06:37 18:16	06:41 16:24-18:01/97 19:54	05:55 16:33-17:49/76 20:30	05:32 20:59
12	07:50 14:09-15:10/61 16:59	07:21 15:59-16:20/21 17:40 14:30-15:08/38	06:36 18:17	06:39 16:23-18:01/98 19:55	05:54 16:34-17:48/74 20:31	05:32 20:59
13	07:50 14:09-15:11/62 17:00	07:20 15:59-16:19/20 17:41 14:32-15:05/33	06:34 18:18	06:38 16:23-18:01/98 19:57	05:53 16:36-17:48/72 20:33	05:32 21:00
14	07:49 14:09-15:11/62 17:01	07:18 16:00-16:19/19 17:43 14:35-15:03/28	06:32 18:20	06:36 16:23-18:02/99 19:58	05:52 16:37-17:47/70 20:34	05:32 21:00
15	07:49 14:10-15:13/63 17:02	07:17 16:01-16:17/16 17:44 14:38-15:00/22	06:30 18:21	06:34 16:22-18:02/100 19:59	05:51 16:38-17:47/69 20:35	05:32 21:01
16	07:48 14:10-15:13/63 17:03	07:15 16:03-16:16/13 17:46 14:44-14:55/11	06:28 18:22	06:33 16:22-18:02/100 20:00	05:49 16:39-17:46/67 20:36	05:32 21:01
17	07:48 14:09-15:13/64 17:05	07:14 16:06-16:13/7 17:47	06:27 18:24	06:31 16:22-18:02/100 20:02	05:48 16:40-17:45/65 20:37	05:32 21:02
18	07:47 14:10-15:14/64 17:06	07:12 17:48	06:25 18:25	06:29 16:22-18:02/100 20:03	05:47 16:41-17:45/64 20:38	05:32 21:02
19	07:46 14:10-15:14/64 17:07	07:11 17:50	06:23 18:26	06:28 16:21-18:02/101 20:04	05:46 16:42-17:44/62 20:39	05:32 21:02
20	07:46 14:10-15:14/64 17:08	07:09 17:51	06:21 18:27	06:26 16:22-18:02/100 20:05	05:45 16:43-17:43/60 20:40	05:32 21:03
21	07:45 14:10-15:15/65 17:10	07:08 17:52	06:19 18:28	06:24 16:22-18:02/100 20:06	05:44 16:44-17:42/58 20:41	05:32 21:03
22	07:44 14:11-15:15/64 17:11	07:06 17:54	06:17 18:30	06:23 16:21-18:01/100 20:08	05:43 16:45-17:41/56 20:42	05:32 21:03
23	07:43 14:12-15:16/64 17:12	07:05 17:55	06:16 18:31	06:21 16:22-18:01/99 20:09	05:43 16:47-17:41/54 20:43	05:33 21:03
24	07:43 14:12-15:16/64 17:14	07:03 17:56	06:14 18:32	06:19 16:22-18:01/99 20:10	05:42 16:48-17:40/52 20:44	05:33 21:03
25	07:42 14:12-15:16/64 17:15	07:01 17:58	06:12 15:59-16:17/18 18:33	06:18 16:23-18:01/98 20:11	05:41 16:49-17:39/50 20:45	05:33 21:04
26	07:41 14:13-15:16/63 17:16	07:00 17:59	06:10 15:52-16:22/30 18:35	06:16 16:23-18:00/97 20:12	05:40 16:50-17:38/48 20:46	05:34 21:04
27	07:40 14:13-15:17/64 17:18	06:58 18:00	06:08 15:49-16:27/38 18:36	06:15 16:24-18:00/96 20:14	05:39 16:52-17:37/45 20:47	05:34 21:04
28	07:39 14:14-15:17/63 17:19	06:56 18:02	06:06 15:45-16:32/47 18:37	06:13 16:24-17:59/95 20:15	05:39 16:53-17:36/43 20:48	05:34 21:04
29	07:38 14:14-15:17/63 17:21		07:05 16:42-17:35/53 19:38	06:12 16:25-17:59/94 20:16	05:38 16:55-17:36/41 20:49	05:35 21:04
30	07:37 14:15-15:17/62 17:22		07:03 16:40-17:42/62 19:40	06:10 16:25-17:58/93 20:17	05:37 16:56-17:34/38 20:50	05:35 21:03
31	07:36 16:04-16:11/7 17:23 14:15-15:16/61		07:01 16:37-17:46/69 19:41		05:37 16:58-17:33/35 20:51	
Potential sun hours	288	292	369	403	457	463
Sum of minutes with flicker	1918	1030	317	2825	2052	108

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

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	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: WON033_ShadowFlickering WTG: 4 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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

	July	August	September	October	November	December
1	05:36 21:03	06:03 16:45-17:59/74 20:41	06:38 16:23-18:00/97 19:54	07:13 18:59	06:52 15:27-15:50/23 17:07 13:55-14:40/45	07:30 13:51-14:52/61 16:39
2	05:36 21:03	06:04 16:44-18:00/76 20:40	06:39 16:23-17:58/95 19:52	07:14 18:57	06:53 15:27-15:50/23 17:06 13:54-14:41/47	07:31 13:52-14:52/60 16:39
3	05:37 21:03	06:05 16:43-18:01/78 20:39	06:40 16:23-17:57/94 19:50	07:15 18:55	06:54 15:27-15:50/23 17:04 13:52-14:42/50	07:32 13:52-14:52/60 16:38
4	05:37 21:03	06:06 16:41-18:02/81 20:38	06:41 16:23-17:56/93 19:48	07:16 18:53	06:56 15:28-15:50/22 17:03 13:51-14:43/52	07:33 13:52-14:52/60 16:38
5	05:38 21:02	06:07 16:40-18:03/83 20:36	06:42 16:23-17:54/91 19:47	07:17 18:51	06:57 15:27-15:49/22 17:02 13:50-14:44/54	07:35 13:53-14:52/59 16:38
6	05:39 21:02	06:08 16:39-18:03/84 20:35	06:44 16:24-17:52/88 19:45	07:18 18:50	06:58 15:29-15:50/21 17:01 13:50-14:45/55	07:36 13:54-14:52/58 16:38
7	05:39 21:02	06:09 16:38-18:04/86 20:34	06:45 16:24-17:51/87 19:43	07:20 18:48	07:00 15:29-15:48/19 16:59 13:48-14:45/57	07:37 13:54-14:53/59 16:37
8	05:40 21:01	06:10 16:38-18:05/87 20:32	06:46 16:26-17:50/84 19:41	07:21 18:46	07:01 15:30-15:47/17 16:58 13:47-14:46/59	07:38 13:55-14:53/58 16:37
9	05:41 21:01	06:11 16:37-18:06/89 20:31	06:47 16:26-17:47/81 19:39	07:22 18:44	07:02 15:31-15:46/15 16:57 13:47-14:47/60	07:39 13:55-14:53/58 16:37
10	05:42 21:01	06:13 16:36-18:06/90 20:30	06:48 16:27-17:45/78 19:38	07:23 18:42	07:04 15:33-15:44/11 16:56 13:46-14:47/61	07:39 13:56-14:53/57 16:37
11	05:42 21:00	06:14 16:35-18:06/91 20:28	06:49 16:28-17:42/74 19:36	07:25 18:41	07:05 15:36-15:42/6 16:55 13:47-14:48/61	07:40 13:57-14:54/57 16:37
12	05:43 20:59	06:15 16:34-18:06/92 20:27	06:50 16:29-17:38/69 19:34	07:26 18:39	07:06 13:46-14:48/62 16:53	07:41 13:58-14:54/56 16:37
13	05:44 20:59	06:16 16:33-18:07/94 20:25	06:52 16:30-17:34/64 19:32	07:27 18:37	07:08 13:46-14:49/63 16:52	07:42 13:58-14:54/56 16:37
14	05:45 20:58	06:17 16:32-18:07/95 20:24	06:53 16:32-17:26/54 19:30	07:28 18:35	07:09 13:46-14:49/63 16:51	07:43 13:58-14:54/56 16:38
15	05:46 20:58	06:18 16:31-18:07/96 20:22	06:54 16:34-17:22/48 19:28	07:30 18:34	07:10 13:45-14:48/63 16:50	07:44 13:59-14:54/55 16:38
16	05:46 20:57	06:19 16:30-18:07/97 20:21	06:55 16:36-17:16/40 19:26	07:31 18:32	07:12 13:46-14:49/63 16:49	07:44 14:00-14:55/55 16:38
17	05:47 20:56	06:21 16:29-18:07/98 20:19	06:56 16:41-17:13/32 19:25	07:32 18:30	07:13 13:45-14:49/64 16:48	07:45 14:01-14:56/55 16:38
18	05:48 20:55	06:22 16:29-18:06/97 20:17	06:57 16:45-17:07/22 19:23	07:33 18:29	07:14 13:46-14:50/64 16:47	07:46 14:01-14:55/54 16:39
19	05:49 20:55	06:23 16:29-18:07/98 20:16	06:58 19:21	07:35 18:27	07:15 13:46-14:50/64 16:47	07:46 14:02-14:56/54 16:39
20	05:50 20:54	06:24 16:28-18:07/99 20:14	07:00 19:19	07:36 18:25	07:17 13:46-14:50/64 16:46	07:47 14:02-14:56/54 16:39
21	05:51 20:53	06:25 16:27-18:07/100 20:13	07:01 19:17	07:37 18:24	07:18 13:46-14:51/65 16:45	07:48 14:03-14:57/54 16:40
22	05:52 20:52	06:26 16:26-18:06/100 20:11	07:02 19:15	07:38 18:22	07:19 13:46-14:50/64 16:44	07:48 14:03-14:57/54 16:40
23	05:53 20:51	06:27 16:26-18:06/100 20:09	07:03 19:13	07:40 18:21	07:21 13:46-14:50/64 16:43	07:49 14:04-14:58/54 16:41
24	05:54 20:50	06:29 16:25-18:05/100 20:08	07:04 19:12	07:41 18:19	07:22 13:47-14:51/64 16:43	07:49 14:04-14:58/54 16:41
25	05:55 20:49	06:30 16:25-18:05/100 20:06	07:05 19:10	06:42 15:35-15:44/9 17:17	07:23 13:48-14:51/63 16:42	07:50 14:05-14:59/54 16:42
26	05:56 20:48	06:31 16:24-18:04/100 20:04	07:07 19:08	06:44 15:32-15:46/14 17:16 14:12-14:26/14	07:24 13:48-14:51/63 16:42	07:50 14:05-15:00/55 16:42
27	05:57 20:47	06:32 16:24-18:03/99 20:03	07:08 19:06	06:45 15:30-15:47/17 17:14 14:07-14:30/23	07:25 13:49-14:52/63 16:41	07:50 14:05-15:00/55 16:43
28	05:58 20:46	06:33 16:23-18:03/100 20:01	07:09 19:04	06:46 15:30-15:49/19 17:13 14:04-14:34/30	07:27 13:49-14:51/62 16:40	07:51 14:05-15:00/55 16:44
29	05:59 20:45	06:34 16:24-18:03/99 19:59	07:10 19:02	06:48 15:28-15:49/21 17:11 14:01-14:35/34	07:28 13:49-14:51/62 16:40	07:51 14:05-15:01/56 16:45
30	06:00 20:44	06:36 16:23-18:02/99 19:57	07:11 19:00	06:49 15:28-15:50/22 17:10 13:59-14:38/39	07:29 13:50-14:51/61 16:39	07:51 14:06-15:02/56 16:45
31	06:01 20:43	06:37 16:23-18:01/98 19:56		06:50 15:27-15:50/23 17:09 13:57-14:39/42		07:51 14:07-15:03/56 16:46
Potential sun hours	469	434	376	342	290	277
Sum of minutes with flicker	1188	2880	1291	307	2004	1745

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: WON033_ShadowFlickering WTG: 5 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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
1	07:51 16:47	07:35 17:25	06:55 16:52-17:14/22 18:03	06:59 18:26-18:48/22 19:42	06:09 20:19	05:36 20:52
2	07:52 16:48	07:34 17:26	06:53 16:52-17:15/23 18:04	06:57 18:25-18:50/25 19:43	06:07 20:20	05:36 20:53
3	07:52 15:46-15:50/4 16:49	07:33 17:28	06:51 16:51-17:15/24 18:06	06:56 18:24-18:50/26 19:44	06:06 20:21	05:35 20:53
4	07:52 15:45-15:52/7 16:50	07:32 17:29	06:50 16:51-17:16/25 18:07	06:54 18:23-18:51/28 19:46	06:04 20:22	05:35 20:54
5	07:52 15:44-15:52/8 16:51	07:30 17:30	06:48 16:50-17:16/26 18:08	06:52 18:22-18:51/29 19:47	06:03 20:23	05:34 20:55
6	07:51 15:44-15:54/10 16:52	07:29 17:32	06:46 16:49-17:16/27 18:10	06:50 18:21-18:51/30 19:48	06:02 20:25	05:34 20:56
7	07:51 15:44-15:55/11 16:53	07:28 17:33	06:44 16:49-17:16/27 18:11	06:48 18:22-18:51/29 19:49	06:00 20:26	05:33 20:56
8	07:51 15:44-15:56/12 16:54	07:27 17:34	06:43 16:49-17:15/26 18:12	06:47 18:22-18:51/29 19:51	05:59 20:27	05:33 20:57
9	07:51 15:43-15:57/14 16:55	07:25 17:36	06:41 16:50-17:15/25 18:13	06:45 18:21-18:50/29 19:52	05:58 20:28	05:33 20:58
10	07:51 15:44-15:58/14 16:56	07:24 17:37	06:39 16:50-17:14/24 18:15	06:43 18:21-18:49/28 19:53	05:56 20:29	05:33 20:58
11	07:50 15:44-15:59/15 16:58	07:23 17:39	06:37 16:51-17:13/22 18:16	06:41 18:23-18:49/26 19:54	05:55 20:30	05:32 20:59
12	07:50 15:44-15:59/15 16:59	07:21 17:40	06:36 16:51-17:11/20 18:17	06:40 18:23-18:48/25 19:55	05:54 20:32	05:32 20:59
13	07:50 15:44-16:00/16 17:00	07:20 17:41	06:34 16:53-17:09/16 18:19	06:38 18:24-18:46/22 19:57	05:53 20:33	05:32 21:00
14	07:49 15:44-16:00/16 17:01	07:18 17:43	06:32 16:56-17:07/11 18:20	06:36 18:26-18:45/19 19:58	05:52 20:34	05:32 21:00
15	07:49 15:45-16:01/16 17:02	07:17 17:44	06:30 18:21	06:34 18:28-18:43/15 19:59	05:51 20:35	05:32 21:01
16	07:48 15:45-16:01/16 17:03	07:16 17:46	06:28 18:22	06:33 18:31-18:39/8 20:00	05:49 20:36	05:32 21:01
17	07:48 15:45-16:01/16 17:05	07:14 17:47	06:27 18:24	06:31 20:02	05:48 20:37	05:32 21:02
18	07:47 15:46-16:02/16 17:06	07:13 17:48	06:25 18:25	06:29 20:03	05:47 20:38	05:32 21:02
19	07:46 15:46-16:02/16 17:07	07:11 17:50	06:23 18:26	06:28 20:04	05:46 20:39	05:32 21:02
20	07:46 15:47-16:01/14 17:09	07:09 17:51	06:21 18:27	06:26 20:05	05:45 20:40	05:32 21:03
21	07:45 15:48-16:01/13 17:10	07:08 17:52	06:19 18:29	06:24 20:06	05:44 20:41	05:32 21:03
22	07:44 15:49-16:00/11 17:11	07:06 17:54	06:17 18:30	06:23 20:08	05:43 20:42	05:32 21:03
23	07:44 15:51-16:00/9 17:12	07:05 16:58-17:01/3 17:55	06:16 18:31	06:21 20:09	05:43 20:43	05:33 21:03
24	07:43 15:53-15:59/6 17:14	07:03 16:55-17:04/9 17:56	06:14 18:32	06:19 20:10	05:42 20:44	05:33 21:03
25	07:42 17:15	07:01 16:54-17:06/12 17:58	06:12 18:33	06:18 20:11	05:41 20:45	05:33 21:04
26	07:41 17:16	07:00 16:52-17:07/15 17:59	06:10 18:35	06:16 20:13	05:40 20:46	05:34 21:04
27	07:40 17:18	06:58 16:51-17:10/19 18:00	06:08 18:36	06:15 20:14	05:39 20:47	05:34 21:04
28	07:39 17:19	06:57 16:51-17:12/21 18:02	06:06 18:37	06:13 20:15	05:39 20:48	05:34 21:04
29	07:38 17:21		07:05 18:35-18:41/6 19:38	06:12 20:16	05:38 20:49	05:35 21:04
30	07:37 17:22		07:03 18:31-18:45/14 19:40	06:10 20:17	05:37 20:50	05:35 21:04
31	07:36 17:23		07:01 18:28-18:47/19 19:41		05:37 20:51	
Potential sun hours	288	292	369	403	457	463
Sum of minutes with flicker	275	79	357	390	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: WON033_ShadowFlickering WTG: 5 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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

	July	August	September	October	November	December
1	05:36 21:03	06:03 20:42	06:38 18:22-18:48/26 19:54	07:13 17:32-17:50/18 18:59	06:52 17:07	07:30 15:26-15:41/15 16:39
2	05:36 21:03	06:04 20:40	06:39 18:20-18:48/28 19:52	07:14 17:30-17:51/21 18:57	06:53 17:06	07:31 15:27-15:41/14 16:39
3	05:37 21:03	06:05 20:39	06:40 18:19-18:48/29 19:50	07:15 17:28-17:51/23 18:55	06:54 17:04	07:32 15:27-15:41/14 16:38
4	05:37 21:03	06:06 20:38	06:41 18:19-18:48/29 19:49	07:16 17:27-17:52/25 18:53	06:56 17:03	07:34 15:28-15:40/12 16:38
5	05:38 21:03	06:07 20:36	06:42 18:18-18:47/29 19:47	07:17 17:27-17:53/26 18:51	06:57 17:02	07:35 15:29-15:40/11 16:38
6	05:39 21:02	06:08 20:35	06:44 18:18-18:47/29 19:45	07:19 17:26-17:52/26 18:50	06:58 17:01	07:36 15:30-15:40/10 16:38
7	05:39 21:02	06:09 20:34	06:45 18:17-18:46/29 19:43	07:20 17:25-17:52/27 18:48	07:00 16:59	07:37 15:31-15:40/9 16:38
8	05:40 21:01	06:10 20:32	06:46 18:18-18:46/28 19:41	07:21 17:25-17:51/26 18:46	07:01 16:58	07:38 15:32-15:39/7 16:37
9	05:41 21:01	06:11 20:31	06:47 18:18-18:45/27 19:39	07:22 17:25-17:51/26 18:44	07:02 16:57	07:39 15:34-15:38/4 16:37
10	05:42 21:01	06:13 20:30	06:48 18:18-18:43/25 19:38	07:23 17:25-17:50/25 18:42	07:04 16:56	07:40 16:37
11	05:42 21:00	06:14 20:28	06:49 18:19-18:41/22 19:36	07:25 17:25-17:49/24 18:41	07:05 16:55	07:40 16:37
12	05:43 21:00	06:15 20:27	06:50 18:20-18:39/19 19:34	07:26 17:25-17:48/23 18:39	07:06 16:53	07:41 16:37
13	05:44 20:59	06:16 20:25	06:52 18:21-18:36/15 19:32	07:27 17:25-17:47/22 18:37	07:08 16:52	07:42 16:37
14	05:45 20:58	06:17 20:24	06:53 18:24-18:33/9 19:30	07:28 17:24-17:45/21 18:35	07:09 16:51	07:43 16:38
15	05:46 20:58	06:18 20:22	06:54 19:28	07:30 17:24-17:42/18 18:34	07:10 16:50	07:44 16:38
16	05:47 20:57	06:19 20:21	06:55 19:27	07:31 17:24-17:37/13 18:32	07:12 16:49	07:45 16:38
17	05:47 20:56	06:21 20:19	06:56 19:25	07:32 17:26-17:37/11 18:30	07:13 16:48	07:45 16:38
18	05:48 20:56	06:22 20:18	06:57 19:23	07:33 17:27-17:35/8 18:29	07:14 15:27-15:33/6 16:48	07:46 16:39
19	05:49 20:55	06:23 20:16	06:59 19:21	07:35 18:27	07:15 15:25-15:34/9 16:47	07:47 16:39
20	05:50 20:54	06:24 20:14	07:00 19:19	07:36 18:25	07:17 15:24-15:35/11 16:46	07:47 16:39
21	05:51 20:53	06:25 20:13	07:01 19:17	07:37 18:24	07:18 15:24-15:37/13 16:45	07:48 16:40
22	05:52 20:52	06:26 20:11	07:02 19:15	07:38 18:22	07:19 15:23-15:37/14 16:44	07:48 16:40
23	05:53 20:51	06:28 20:09	07:03 19:13	07:40 18:21	07:21 15:22-15:38/16 16:44	07:49 16:41
24	05:54 20:50	06:29 20:08	07:04 19:12	07:41 18:19	07:22 15:23-15:39/16 16:43	07:49 16:41
25	05:55 20:49	06:30 20:06	07:05 19:10	06:42 17:17	07:23 15:23-15:39/16 16:42	07:50 16:42
26	05:56 20:48	06:31 20:04	07:07 19:08	06:44 17:16	07:24 15:23-15:39/16 16:42	07:50 16:43
27	05:57 20:47	06:32 18:33-18:41/8 20:03	07:08 19:06	06:45 17:14	07:26 15:24-15:40/16 16:41	07:50 16:43
28	05:58 20:46	06:33 18:28-18:44/16 20:01	07:09 19:04	06:46 17:13	07:27 15:24-15:40/16 16:40	07:51 16:44
29	05:59 20:45	06:34 18:27-18:46/19 19:59	07:10 17:37-17:46/9 19:02	06:48 17:11	07:28 15:24-15:40/16 16:40	07:51 16:45
30	06:00 20:44	06:36 18:25-18:47/22 19:57	07:11 17:34-17:49/15 19:00	06:49 17:10	07:29 15:25-15:40/15 16:40	07:51 16:45
31	06:01 20:43	06:37 18:23-18:47/24 19:56		06:50 17:09		07:51 16:46
Potential sun hours	469	434	376	342	290	277
Sum of minutes with flicker	0	89	368	383	180	96

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

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-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: WON033_ShadowFlickering WTG: 6 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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	
1	07:52 14:32-16:12/100 16:47	07:35 14:40-16:30/110 17:25	06:55 15:30-15:45/15 18:03	06:59 19:42	06:09 07:41-09:14/93 20:19	05:36 07:32-09:16/104 20:52 20:11-20:25/14	
2	07:52 14:33-16:13/100 16:48	07:34 14:40-16:30/110 17:26	06:53 18:04	06:57 19:43	06:07 07:40-09:15/95 20:20	05:36 07:33-09:17/104 20:53 20:11-20:27/16	
3	07:52 14:33-16:13/100 16:49	07:33 14:41-16:30/109 17:28	06:52 18:06	06:56 19:45	06:06 07:39-09:15/96 20:21	05:35 07:32-09:16/104 20:54 20:10-20:27/17	
4	07:52 14:33-16:14/101 16:50	07:32 14:41-16:30/109 17:29	06:50 18:07	06:54 19:46	06:05 07:38-09:16/98 20:22	05:35 07:33-09:16/103 20:54 20:10-20:28/18	
5	07:52 14:34-16:15/101 16:51	07:30 14:42-16:31/109 17:30	06:48 18:08	06:52 19:47	06:03 07:38-09:16/98 20:23	05:34 07:32-09:16/104 20:55 20:09-20:28/19	
6	07:52 14:33-16:15/102 16:52	07:29 14:42-16:30/108 17:32	06:46 18:10	06:50 19:48	06:02 07:37-09:17/100 20:25	05:34 07:33-09:16/103 20:56 20:09-20:29/20	
7	07:51 14:34-16:16/102 16:53	07:28 14:43-16:30/107 17:33	06:45 18:11	06:48 19:49	06:00 07:36-09:16/100 20:26	05:33 07:33-09:16/103 20:57 20:10-20:30/20	
8	07:51 14:34-16:17/103 16:54	07:27 14:44-16:30/106 17:35	06:43 18:12	06:47 19:51	05:59 07:35-09:17/102 20:27	05:33 07:34-09:17/103 20:57 20:10-20:31/21	
9	07:51 14:34-16:17/103 16:55	07:25 14:44-16:29/105 17:36	06:41 18:14	06:45 19:52	05:58 07:35-09:17/102 20:28	05:33 07:33-09:16/103 20:58 20:09-20:31/22	
10	07:51 14:34-16:18/104 16:56	07:24 14:45-16:29/104 17:37	06:39 18:15	06:43 19:53	05:57 07:35-09:17/102 20:29	05:33 07:34-09:16/102 20:58 20:09-20:31/22	
11	07:50 14:35-16:20/105 16:58	07:23 14:45-16:28/103 17:39	06:38 18:16	06:41 19:54	05:55 07:33-09:17/104 20:30	05:32 07:34-09:16/102 20:59 20:09-20:32/23	
12	07:50 14:34-16:20/106 16:59	07:21 14:46-16:28/102 17:40	06:36 18:17	06:40 19:56	05:54 07:33-09:17/104 20:32	05:32 07:34-09:17/103 21:00 20:09-20:33/24	
13	07:50 14:35-16:21/106 17:00	07:20 14:48-16:28/100 17:42	06:34 18:19	06:38 19:57	05:53 07:33-09:17/104 20:33	05:32 07:35-09:17/102 21:00 20:09-20:33/24	
14	07:49 14:35-16:21/106 17:01	07:19 14:48-16:26/98 17:43	06:32 18:20	06:36 08:34-08:39/5 19:58	05:52 07:33-09:17/104 20:34	05:32 07:35-09:17/102 21:01 20:09-20:34/25	
15	07:49 14:36-16:23/107 17:02	07:17 14:50-16:26/96 17:44	06:30 18:21	06:34 08:23-08:48/25 19:59	05:51 07:32-09:17/105 20:35	05:32 07:35-09:17/102 21:01 20:09-20:34/25	
16	07:48 14:35-16:23/108 17:04	07:16 14:51-16:25/94 17:46	06:28 18:22	06:33 08:13-08:53/40 20:00	05:50 07:32-09:17/105 20:36	05:32 07:36-09:17/101 21:01 20:09-20:35/26	
17	07:48 14:35-16:23/108 17:05	07:14 14:52-16:24/92 17:47	06:27 18:24	06:31 08:09-08:57/48 20:02	05:48 07:32-09:17/105 20:37	05:32 07:36-09:17/101 21:02 20:10-20:35/25	
18	07:47 14:36-16:25/109 17:06	07:13 14:53-16:23/90 17:48	06:25 18:25	06:29 08:04-08:59/55 20:03	05:47 07:32-09:17/105 20:38	05:32 07:36-09:17/101 21:02 20:10-20:35/25	
19	07:47 14:36-16:25/109 17:07	07:11 14:54-16:21/87 17:50	06:23 18:26	06:28 08:01-09:01/60 20:04	05:46 07:32-09:17/105 20:39	05:32 07:36-09:17/101 21:03 20:10-20:35/25	
20	07:46 14:36-16:25/109 17:09	07:10 14:57-16:20/83 17:51	06:21 18:27	06:26 07:59-09:04/65 20:05	05:45 07:31-09:17/106 20:40	05:32 07:36-09:17/101 21:03 20:10-20:35/25	
21	07:45 14:36-16:26/110 17:10	07:08 14:58-16:18/80 17:52	06:19 18:29	06:24 07:56-09:05/69 20:07	05:44 07:31-09:16/105 20:41	05:32 07:36-09:17/101 21:03 20:10-20:35/25	
22	07:44 14:37-16:27/110 17:11	07:06 15:01-16:17/76 17:54	06:18 18:30	06:23 07:54-09:07/73 20:08	05:44 07:32-09:17/105 20:43	05:33 07:37-09:18/101 21:03 20:11-20:36/25	
23	07:44 14:37-16:27/110 17:13	07:05 15:03-16:15/72 17:55	06:16 18:31	06:21 07:52-09:08/76 20:09	05:43 07:32-09:17/105 20:44	05:33 07:37-09:18/101 21:03 20:11-20:36/25	
24	07:43 14:37-16:28/111 17:14	07:03 15:05-16:12/67 17:56	06:14 18:32	06:19 07:51-09:10/79 20:10	05:42 07:31-09:17/106 20:45	05:33 07:37-09:18/101 21:04 20:11-20:36/25	
25	07:42 14:38-16:28/110 17:15	07:02 15:08-16:09/61 17:58	06:12 18:34	06:18 07:49-09:10/81 20:11	05:41 07:31-09:16/105 20:46	05:33 07:38-09:19/101 21:04 20:12-20:37/25	
26	07:41 14:38-16:29/111 17:17	07:00 15:12-16:05/53 17:59	06:10 18:35	06:16 07:47-09:11/84 20:13	05:40 07:32-09:17/105 20:47	05:34 07:38-09:19/101 21:04 20:11-20:37/26	
27	07:40 14:38-16:29/111 17:18	06:58 15:16-15:54/38 18:00	06:08 18:36	06:15 07:46-09:12/86 20:14	05:39 07:32-09:17/105 20:47	05:34 07:37-09:19/102 21:04 20:11-20:36/25	
28	07:39 14:39-16:29/110 17:19	06:57 15:24-15:51/27 18:02	06:07 18:37	06:13 07:45-09:13/88 20:15	05:39 07:31-09:16/105 20:48	05:34 07:38-09:20/102 21:04 20:12-20:37/25	
29	07:38 14:39-16:30/111 17:21		07:05 19:38	06:12 07:43-09:13/90 20:16	05:38 07:32-09:17/105 20:49	05:35 07:38-09:20/102 21:04 20:12-20:36/24	
30	07:37 14:40-16:30/110 17:22		07:03 19:40	06:10 07:42-09:14/92 20:17	05:37 07:32-09:16/104 20:50	05:35 07:39-09:21/102 21:04 20:13-20:37/24	
31	07:36 14:40-16:30/110 17:23		07:01 19:41		05:37 07:32-09:17/105 20:51		
Potential sun hours	288	292	369	403	457	463	
Sum of minutes with flicker	3303	2496	15	1116	3250	3748	

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: WON033_ShadowFlickering WTG: 6 - VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 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

	July	August	September	October	November	December
1	05:36 07:38-09:21/103 21:04 20:13-20:36/23	06:03 07:44-09:27/103 20:42	06:38 07:13 19:54	07:13 18:59	06:52 14:15-15:59/104 17:07	07:30 14:17-16:02/105 16:39
2	05:36 07:39-09:21/102 21:03 20:14-20:37/23	06:04 07:44-09:27/103 20:40	06:39 07:14 19:52	07:14 18:57	06:53 14:13-15:59/106 17:06	07:31 14:17-16:02/105 16:39
3	05:37 07:39-09:21/102 21:03 20:14-20:36/22	06:05 07:45-09:27/102 20:39	06:40 07:15 19:50	07:15 18:55	06:54 14:12-15:59/107 17:05	07:33 14:18-16:01/103 16:38
4	05:38 07:39-09:22/103 21:03 20:15-20:36/21	06:06 07:45-09:27/102 20:38	06:41 07:16 19:49	07:16 18:53	06:56 14:13-16:00/107 17:03	07:34 14:18-16:01/103 16:38
5	05:38 07:39-09:22/103 21:03 20:15-20:35/20	06:07 07:45-09:26/101 20:37	06:43 07:17 19:47	07:17 18:51	06:57 14:12-16:00/108 17:02	07:35 14:19-16:01/102 16:38
6	05:39 07:39-09:22/103 21:02 20:15-20:35/20	06:08 07:47-09:27/100 20:35	06:44 07:19 19:45	07:19 18:50	06:58 14:12-16:00/108 17:01	07:36 14:19-16:01/102 16:38
7	05:39 07:40-09:23/103 21:02 20:16-20:35/19	06:09 07:47-09:26/99 20:34	06:45 07:20 19:43	07:20 18:48	07:00 14:11-16:00/109 16:59	07:37 14:20-16:01/101 16:38
8	05:40 07:39-09:23/104 21:02 20:16-20:34/18	06:10 07:47-09:26/99 20:33	06:46 07:21 19:41	07:21 18:46	07:01 14:12-16:01/109 16:58	07:38 14:20-16:01/101 16:37
9	05:41 07:40-09:23/103 21:01 20:17-20:34/17	06:12 07:48-09:25/97 20:31	06:47 07:22 19:40	07:22 18:44	07:02 14:11-16:01/110 16:57	07:39 14:21-16:01/100 16:37
10	05:42 07:40-09:24/104 21:01 20:18-20:34/16	06:13 07:48-09:24/96 20:30	06:48 07:23 19:38	07:23 18:43	07:04 14:11-16:01/110 16:56	07:40 14:22-16:02/100 16:37
11	05:42 07:40-09:24/104 21:00 20:19-20:34/15	06:14 07:49-09:24/95 20:28	06:49 07:25 19:36	07:25 18:41	07:05 14:11-16:01/110 16:55	07:41 14:22-16:02/100 16:37
12	05:43 07:40-09:24/104 21:00 20:19-20:33/14	06:15 07:50-09:23/93 20:27	06:51 07:26 19:34	07:26 18:39	07:06 14:10-16:01/111 16:54	07:41 14:23-16:02/99 16:37
13	05:44 07:40-09:24/104 20:59 20:20-20:32/12	06:16 07:50-09:22/92 20:25	06:52 07:27 19:32	16:00-16:21/21 18:37	07:08 14:11-16:02/111 16:52	07:42 14:24-16:03/99 16:37
14	05:45 07:40-09:25/105 20:58 20:21-20:32/11	06:17 07:51-09:21/90 20:24	06:53 07:28 19:30	15:54-16:25/31 18:36	07:09 14:11-16:01/110 16:51	07:43 14:25-16:03/98 16:38
15	05:46 07:41-09:25/104 20:58 20:22-20:32/10	06:18 07:52-09:20/88 20:22	06:54 07:30 19:28	15:46-16:33/47 18:34	07:10 14:11-16:02/111 16:50	07:44 14:25-16:02/97 16:38
16	05:47 07:41-09:26/105 20:57 20:23-20:31/8	06:20 07:53-09:19/86 20:21	06:55 07:31 19:27	15:42-16:39/57 18:32	07:12 14:11-16:01/110 16:49	07:45 14:25-16:03/98 16:38
17	05:47 07:41-09:26/105 20:56 20:24-20:31/7	06:21 07:54-09:17/83 20:19	06:56 07:32 19:25	15:39-16:42/63 18:30	07:13 14:11-16:01/110 16:48	07:45 14:26-16:04/98 16:38
18	05:48 07:41-09:26/105 20:56 20:25-20:29/4	06:22 07:56-09:17/81 20:18	06:57 07:33 19:23	15:35-16:44/69 18:29	07:14 14:11-16:02/111 16:48	07:46 14:26-16:03/97 16:39
19	05:49 07:41-09:26/105 20:55 20:26-20:28/2	06:23 07:57-09:15/78 20:16	06:59 07:35 19:21	15:33-16:47/74 18:27	07:16 14:11-16:01/110 16:47	07:47 14:27-16:04/97 16:39
20	05:50 07:41-09:26/105 20:54 20:27-20:28/1	06:24 07:58-09:13/75 20:14	07:00 07:36 19:19	15:30-16:48/78 18:26	07:17 14:12-16:02/110 16:46	07:47 14:28-16:05/97 16:39
21	05:51 07:41-09:27/106 20:53	06:25 07:59-09:12/73 20:13	07:01 07:37 19:17	15:28-16:49/81 18:24	07:18 14:12-16:02/110 16:45	07:48 14:28-16:05/97 16:40
22	05:52 07:42-09:27/105 20:52	06:26 08:01-09:10/69 20:11	07:02 07:39 19:15	15:27-16:51/84 18:22	07:19 14:12-16:01/109 16:44	07:48 14:29-16:06/97 16:40
23	05:53 07:42-09:27/105 20:51	06:28 08:03-09:07/64 20:10	07:03 07:40 19:14	15:24-16:52/88 18:21	07:21 14:13-16:02/109 16:44	07:49 14:29-16:06/97 16:41
24	05:54 07:42-09:27/105 20:50	06:29 08:05-09:05/60 20:08	07:04 07:41 19:12	15:22-16:53/91 18:19	07:22 14:13-16:02/109 16:43	07:49 14:29-16:06/97 16:41
25	05:55 07:42-09:27/105 20:49	06:30 08:08-09:02/54 20:06	07:06 06:42 19:10	14:22-15:54/92 17:18	07:23 14:13-16:01/108 16:42	07:50 14:30-16:07/97 16:42
26	05:56 07:42-09:28/106 20:48	06:31 08:11-08:58/47 20:04	07:07 06:44 19:08	14:20-15:55/95 17:16	07:24 14:14-16:02/108 16:42	07:50 14:30-16:07/97 16:43
27	05:57 07:43-09:28/105 20:47	06:32 08:16-08:54/38 20:03	07:08 06:45 19:06	14:19-15:56/97 17:15	07:26 14:15-16:02/107 16:41	07:50 14:30-16:08/98 16:43
28	05:58 07:43-09:28/105 20:46	06:33 08:26-08:50/24 20:01	07:09 06:46 19:04	14:18-15:56/98 17:13	07:27 14:15-16:01/106 16:41	07:51 14:30-16:08/98 16:44
29	05:59 07:43-09:28/105 20:45	06:34 19:59	07:10 19:02	14:16-15:57/101 17:12	07:28 14:15-16:01/106 16:40	07:51 14:32-16:10/98 16:45
30	06:00 07:43-09:28/105 20:44	06:36 19:58	07:11 19:01	14:16-15:58/102 17:10	07:29 14:16-16:02/106 16:40	07:51 14:32-16:10/98 16:45
31	06:02 07:44-09:27/103 20:43	06:37 19:56		14:15-15:58/103 17:09		07:51 14:32-16:11/99 16:46
Potential sun hours	469	434	376	342	290	277
Sum of minutes with flicker	3514	2292	0	1472	3260	3075

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

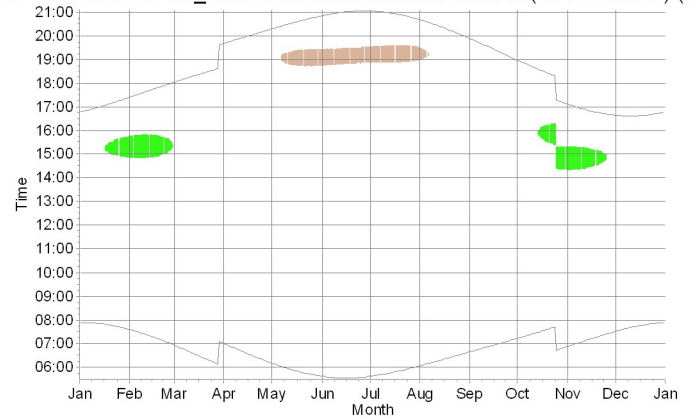
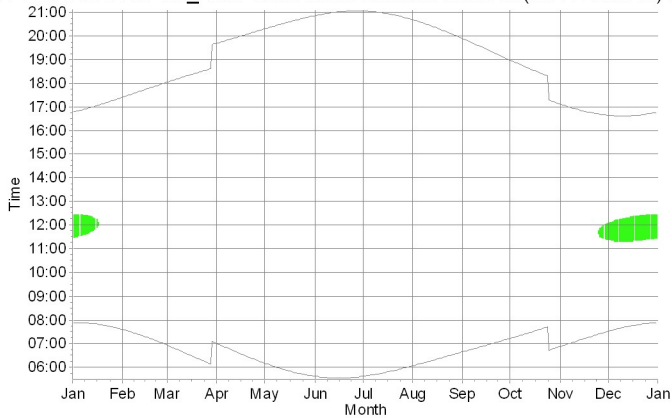
Project:
WON033

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Calculated:
06/03/2024 14:46/3.6.377

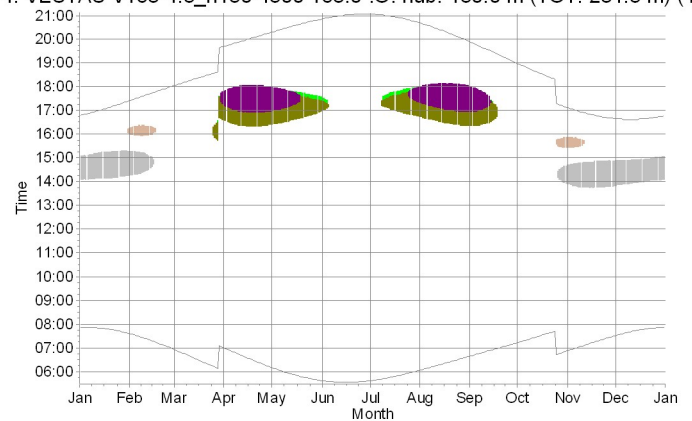
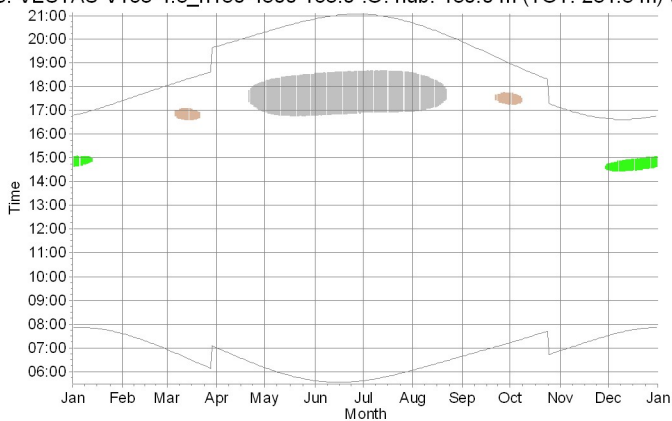
SHADOW - Calendar per WTG, graphical

Calculation: WON033_ShadowFlickering

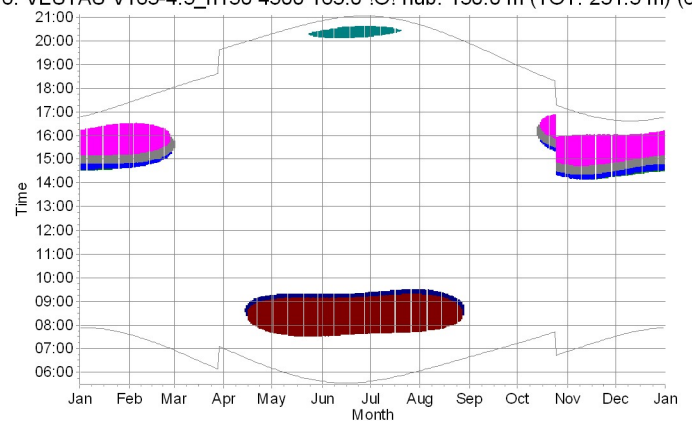
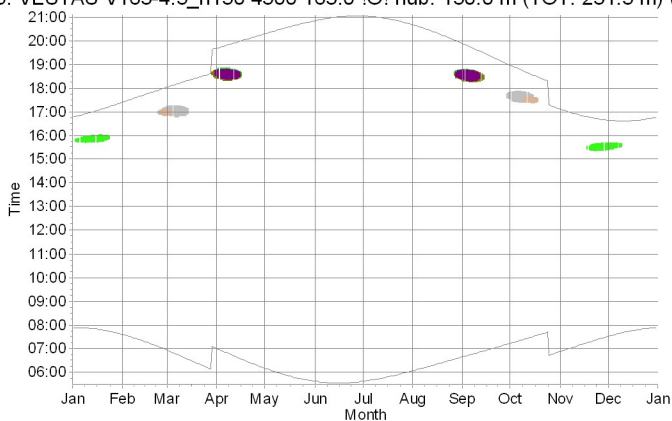
1: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (2: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (2)



3: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (4: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (4)



5: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (6: VESTAS V163-4.5_h150 4500 163.0 !O! hub: 150.0 m (TOT: 231.5 m) (6)



Shadow receptors

A: Shadow Receptor: 1.0 x 1.0 Azimuth: 40.0° Slope: 90.0° (15)
B: Shadow Receptor: 1.0 x 1.0 Azimuth: 50.0° Slope: 90.0° (16)
C: Shadow Receptor: 1.0 x 1.0 Azimuth: 50.0° Slope: 90.0° (17)
D: Shadow Receptor: 1.0 x 1.0 Azimuth: 50.0° Slope: 90.0° (18)
E: Shadow Receptor: 1.0 x 1.0 Azimuth: 50.0° Slope: 90.0° (19)
F: Shadow Receptor: 1.0 x 1.0 Azimuth: 120.0° Slope: 90.0° (20)
G: Shadow Receptor: 1.0 x 1.0 Azimuth: -100.0° Slope: 90.0° (21)

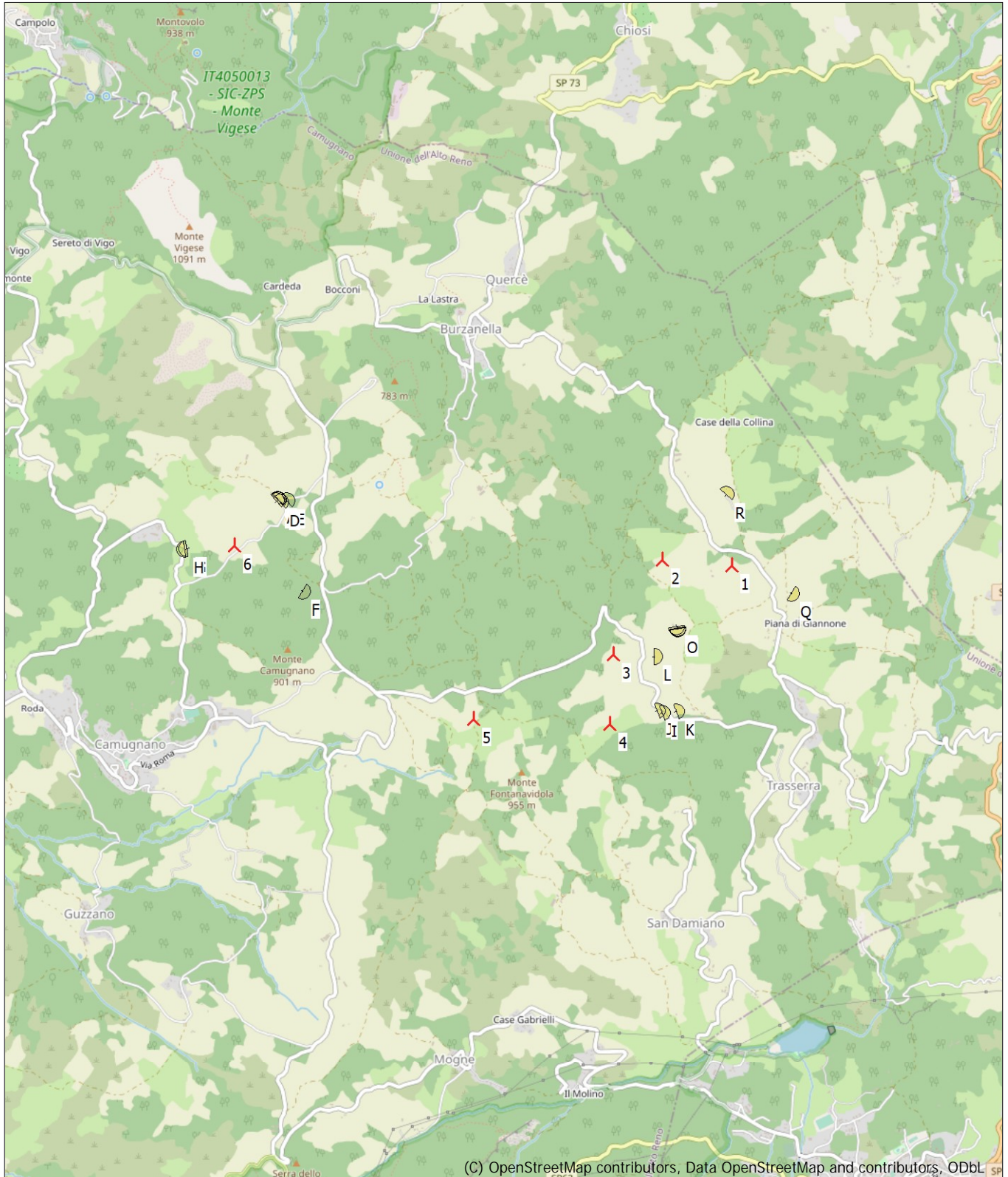
H: Shadow Receptor: 1.0 x 1.0 Azimuth: -100.0° Slope: 90.0° (22)
I: Shadow Receptor: 1.0 x 1.0 Azimuth: 70.0° Slope: 90.0° (23)
J: Shadow Receptor: 1.0 x 1.0 Azimuth: 70.0° Slope: 90.0° (24)
K: Shadow Receptor: 1.0 x 1.0 Azimuth: 70.0° Slope: 90.0° (25)
L: Shadow Receptor: 1.0 x 1.0 Azimuth: 90.0° Slope: 90.0° (26)
Q: Shadow Receptor: 1.0 x 1.0 Azimuth: 120.0° Slope: 90.0° (31)
R: Shadow Receptor: 1.0 x 1.0 Azimuth: 40.0° Slope: 90.0° (32)

Project:
WON033

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+393487125089
Fabio Paccapelo / francesca.saccarola@hopegroup.it
Calculated:
06/03/2024 14:46/3.6.377

SHADOW - Map

Calculation: WON033_ShadowFlickering



0 500 1000 1500 2000 m

Map: EMD OpenStreetMap , Print scale 1:40,000, Map center UTM (north)-WGS84 Zone: 32 East: 669,525 North: 4,893,994

New WTG

Shadow receptor

Flicker map level: Elevation Grid Data Object: WON033_EMDGrid_1.wpg (2)