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SHADOW - Main Result

Calculation: 3 x V117, real case **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

Sunshine probability S/S0 (Sun hours/Possible sun hours) []Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec0.500.500.500.500.500.500.50

Operational time

 N
 NNE
 ENE
 E
 ESE
 SSE
 S
 SSW
 WSW
 W
 WNW
 NNW
 Sum

 499
 518
 393
 536
 1,602
 856
 560
 818
 955
 615
 494
 409
 8,256

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: Height Contours: CONTOURLINE_ONLINEDATA_3.wpo Obstacles not used in calculation Eye height for map: 1.5 m Grid resolution: 1.0 m

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

WTGs



从 New WTG

Scale 1:20,000 Shadow receptor

		WTG type							Shadow data			
	Easting	Northing	Ζ	Row data/Description	Valid	Manufact.	Type-generator	Power,	Rotor	Hub	Calculation	RPM
								rated	diameter	height	distance	
			[m]					[kW]	[m]	[m]	[m]	[RPM]
1	530,126	7,076,386	2.1	VESTAS V117-4.2 4200 117.0 !O! hub	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	86.0	1,735	13.6
2	530,486	7,076,376	3.0	VESTAS V117-4.2 4200 117.0 !O! hub	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	86.0	1,735	13.6
3	530,578	7,076,656	3.1	VESTAS V117-4.2 4200 117.0 !O! hub	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	86.0	1,735	13.6

Shadow receptor-Input

No.	Name	Easting	Northing	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
							a.g.l.	window		(ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
A	Vågan farm appr	531,355	7,077,463	3.2	2.0	2.0	2.0	90.0	"Green house mode"	4.0
В	House 2	531,501	7,077,299	4.1	2.0	2.0	2.0	90.0	"Green house mode"	4.0

Calculation Results

Shadow recentor

0110									
			Shadow, expected values						
No.	Name	Shadow hours	Shadow days	Max shadow	Shadow hours				
		per year	per year	hours per day	per year				
		[h/year]	[days/year]	[h/day]	[h/year]				
P	Vågan farm appr	16:37	41	0:39	4:50				
E	B House 2	12:36	42	0:26	3:48				

Total amount of flickering on the shadow receptors caused by each WTG No. Name Worst case Expected

	[h/year]	[h/year]
1 VESTAS V117-4.2 4200 117.0 !O! hub: 86.0 m (TOT: 144.5 m) (57)	4:39	1:24
2 VESTAS V117-4.2 4200 117.0 !O! hub: 86.0 m (TOT: 144.5 m) (58)	9:54	2:54
3 VESTAS V117-4.2 4200 117.0 !O! hub: 86.0 m (TOT: 144.5 m) (59)	16:48	5:00

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.



Project: 18138_Valsnesset

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SHADOW - Calendar, graphical

Calculation: 3 x V117, real case



WTGs



1: VESTAS V117-4.2 4200 117.0 !O! hub: 86.0 m (TOT: 144.5 m) (57) 2: VESTAS V117-4.2 4200 117.0 !O! hub: 86.0 m (TOT: 144.5 m) (58) 3: VESTAS V117-4.2 4200 117.0 !O! hub: 86.0 m (TOT: 144.5 m) (59)





Project: 18138_Valsnesset

Description:

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SHADOW -Map Calculation: 3 x V117, real case

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