

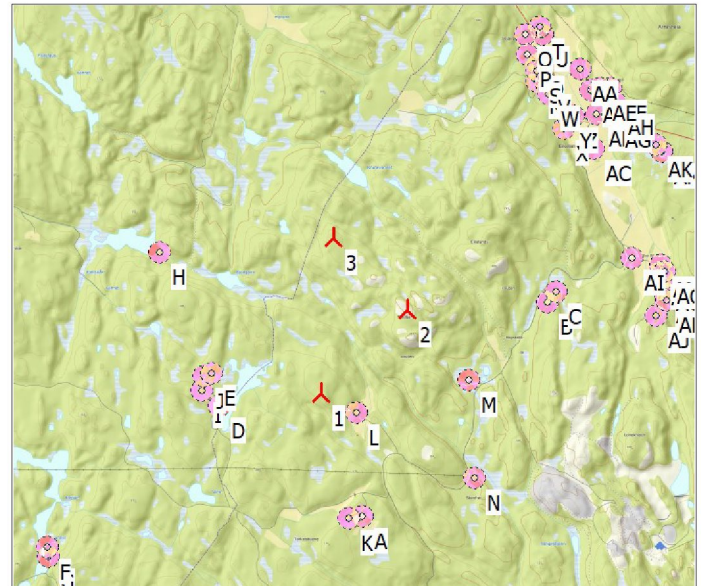
NORD2000 - Main Result

Calculation: 202001_3xV150_4.2MW_130mHH_wc

Assumptions

Weather stability	
Relative humidity	70.0 %
Air temperature	8.0 °C
Height for air temperature	2.0 m
Stability parameters	Night; Clear sky
Inverse Monin Obukhov length	0.0100
Temperature scale T*	0.0500
Terrain	
Elevation based on object	
Elevation Grid Data Object: E18_EMDGrid_0.wpg (2)	
Roughness based on line object	
Roughness lines (online)	
Terrain type based on area object	
Terrain Hardness (N50)	
Month for calculation	January
Wind speed criteria	
Uniform wind speed at 10 m agl.	
Wind speed	Max noise wind speed
Max noise wind speed	All receptors downwind
Wind direction	4.0 m
Height above ground level for receiver	
Wind speed has been extrapolated to calculation height using	
IEC profile shear (z0 = 0.05m)	
No stability correction	6.004
Version	

All coordinates are in
UTM (north)-ETRS89 Zone: 32



Scale 1:50,000
 New WTG
 Noise sensitive area

WTGs

	Easting	Northing	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Setting	Noise data	
					Valid	Manufact.	Type-generator					Creator	Name
1	456,866	6,458,658	170.4	VESTAS V150-4.2-Lille...	Yes	VESTAS	V150-4.2-Lillesand-4,200	4,200	150.0	130.0	Day	USER	PO1 - 0067-4767_V06 - 104.9dB
											Evening	USER	PO1 - 0067-4767_V06 - 104.9dB
											Night	USER	PO1 - 0067-4767_V06 - 104.9dB
2	457,447	6,459,204	200.0	VESTAS V150-4.2-Lille...	Yes	VESTAS	V150-4.2-Lillesand-4,200	4,200	150.0	130.0	Day	USER	PO1 - 0067-4767_V06 - 104.9dB
											Evening	USER	PO1 - 0067-4767_V06 - 104.9dB
											Night	USER	PO1 - 0067-4767_V06 - 104.9dB
3	456,962	6,459,688	180.0	VESTAS V150-4.2-Lille...	Yes	VESTAS	V150-4.2-Lillesand-4,200	4,200	150.0	130.0	Day	USER	PO1 - 0067-4767_V06 - 104.9dB
											Evening	USER	PO1 - 0067-4767_V06 - 104.9dB
											Night	USER	PO1 - 0067-4767_V06 - 104.9dB

Calculation Results

Sound level

Noise sensitive area

No.	Name	Easting	Northing	Z	Imission height [m]	Demands Noise [dB(A)]	Sound level From WTGs [dB(A)]	Demands fulfilled? Noise [dB(A)]
A	Noise sensitive point: Norwegian - Yellow zone (161)	457,130	6,457,835	160.0	4.0	45.0	43.8	Yes
	A Day						37.4	
	A Evening						37.4	
	A Night						37.4	
B	Noise sensitive point: Norwegian - Yellow zone (162)	458,383	6,459,242	99.5	4.0	45.0	40.8	Yes
	B Day						34.4	
	B Evening						34.4	
	B Night						34.4	
C	Noise sensitive point: Norwegian - Yellow zone (163)	458,438	6,459,315	99.9	4.0	45.0	40.3	Yes
	C Day						33.9	
	C Evening						33.9	
	C Night						33.9	
D	Noise sensitive point: Norwegian - Yellow zone (164)	456,191	6,458,583	160.0	4.0	45.0	43.5	Yes
	D Day						37.1	
	D Evening						37.1	
	D Night						37.1	
E	Noise sensitive point: Norwegian - Yellow zone (165)	456,138	6,458,796	162.4	4.0	45.0	43.6	Yes

To be continued on next page...

NORD2000 - Main Result

Calculation: 202001_3xV150_4.2MW_130mHH_wc

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z [m]	Imission height [m]	Demands Noise [dB(A)]	Sound level From WTGs [dB(A)]	Demands fulfilled? Noise [dB(A)]
	E Day						37.2	
	E Evening						37.2	
	E Night						37.2	
F	Noise sensitive point: Norwegian - Yellow zone (166)	455,035	6,457,655	120.0	4.0	45.0	32.4	Yes
	F Day						26.0	
	F Evening						26.0	
	F Night						26.0	
G	Noise sensitive point: Norwegian - Yellow zone (167)	455,040	6,457,591	120.0	4.0	45.0	32.2	Yes
	G Day						25.8	
	G Evening						25.8	
	G Night						25.8	
H	Noise sensitive point: Norwegian - Yellow zone (168)	455,803	6,459,606	120.0	4.0	45.0	39.8	Yes
	H Day						33.4	
	H Evening						33.4	
	H Night						33.4	
I	Noise sensitive point: Norwegian - Yellow zone (169)	456,075	6,458,683	160.0	4.0	45.0	42.5	Yes
	I Day						36.1	
	I Evening						36.1	
	I Night						36.1	
J	Noise sensitive point: Norwegian - Yellow zone (170)	456,089	6,458,781	164.2	4.0	45.0	42.6	Yes
	J Day						36.2	
	J Evening						36.2	
	J Night						36.2	
K	Noise sensitive point: Norwegian - Yellow zone (171)	457,040	6,457,825	160.0	4.0	45.0	42.0	Yes
	K Day						35.6	
	K Evening						35.6	
	K Night						35.6	
L	Noise sensitive point: Norwegian - Yellow zone (172)	457,102	6,458,523	120.0	4.0	45.0	51.5	No
	L Day						45.1	
	L Evening						45.1	
	L Night						45.1	
M	Noise sensitive point: Norwegian - Yellow zone (173)	457,849	6,458,736	100.0	4.0	45.0	45.4	No
	M Day						39.0	
	M Evening						39.0	
	M Night						39.0	
N	Noise sensitive point: Norwegian - Yellow zone (174)	457,882	6,458,085	100.0	4.0	45.0	40.0	Yes
	N Day						33.6	
	N Evening						33.6	
	N Night						33.6	
O	Noise sensitive point: Norwegian - Yellow zone (175)	458,255	6,461,024	60.0	4.0	45.0	36.1	Yes
	O Day						29.7	
	O Evening						29.7	
	O Night						29.7	
P	Noise sensitive point: Norwegian - Yellow zone (176)	458,264	6,460,887	60.0	4.0	45.0	36.4	Yes
	P Day						30.0	
	P Evening						30.0	
	P Night						30.0	
Q	Noise sensitive point: Norwegian - Yellow zone (177)	458,325	6,460,822	60.0	4.0	45.0	33.4	Yes
	Q Day						27.0	
	Q Evening						27.0	
	Q Night						27.0	
R	Noise sensitive point: Norwegian - Yellow zone (178)	458,328	6,460,709	72.2	4.0	45.0	33.9	Yes
	R Day						27.5	
	R Evening						27.5	
	R Night						27.5	
S	Noise sensitive point: Norwegian - Yellow zone (179)	458,329	6,460,780	61.2	4.0	45.0	27.0	Yes
	S Day						20.6	
	S Evening						20.6	
	S Night						20.6	
T	Noise sensitive point: Norwegian - Yellow zone (180)	458,345	6,461,071	60.0	4.0	45.0	34.9	Yes
	T Day						28.5	
	T Evening						28.5	
	T Night						28.5	
U	Noise sensitive point: Norwegian - Yellow zone (181)	458,364	6,461,023	60.0	4.0	45.0	35.4	Yes
	U Day						29.0	

To be continued on next page...

NORD2000 - Main Result

Calculation: 202001_3xV150_4.2MW_130mHH_wc

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z [m]	Imission height [m]	Demands Noise [dB(A)]	Sound level From WTGs [dB(A)]	Demands fulfilled? Noise [dB(A)]
	U Evening						29.0	
	U Night						29.0	
	V Noise sensitive point: Norwegian - Yellow zone (182)	458,381	6,460,703	65.6	4.0	45.0	35.0	Yes
	V Day						28.6	
	V Evening						28.6	
	V Night						28.6	
	W Noise sensitive point: Norwegian - Yellow zone (183)	458,402	6,460,628	68.4	4.0	45.0	35.9	Yes
	W Day						29.5	
	W Evening						29.5	
	W Night						29.5	
	X Noise sensitive point: Norwegian - Yellow zone (184)	458,501	6,460,395	60.3	4.0	45.0	28.9	Yes
	X Day						22.5	
	X Evening						22.5	
	X Night						22.5	
	Y Noise sensitive point: Norwegian - Yellow zone (185)	458,530	6,460,480	60.0	4.0	45.0	34.1	Yes
	Y Day						27.7	
	Y Evening						27.7	
	Y Night						27.7	
	Z Noise sensitive point: Norwegian - Yellow zone (186)	458,566	6,460,481	60.0	4.0	45.0	35.5	Yes
	Z Day						29.1	
	Z Evening						29.1	
	Z Night						29.1	
	AA Noise sensitive point: Norwegian - Yellow zone (187)	458,611	6,460,789	60.0	4.0	45.0	35.6	Yes
	AA Day						29.2	
	AA Evening						29.2	
	AA Night						29.2	
	AB Noise sensitive point: Norwegian - Yellow zone (188)	458,681	6,460,650	60.0	4.0	45.0	35.7	Yes
	AB Day						29.3	
	AB Evening						29.3	
	AB Night						29.3	
	AC Noise sensitive point: Norwegian - Yellow zone (189)	458,700	6,460,263	60.0	4.0	45.0	37.0	Yes
	AC Day						30.6	
	AC Evening						30.6	
	AC Night						30.6	
	AD Noise sensitive point: Norwegian - Yellow zone (190)	458,721	6,460,488	60.0	4.0	45.0	36.1	Yes
	AD Day						29.7	
	AD Evening						29.7	
	AD Night						29.7	
	AE Noise sensitive point: Norwegian - Yellow zone (191)	458,746	6,460,663	60.0	4.0	45.0	35.4	Yes
	AE Day						29.0	
	AE Evening						29.0	
	AE Night						29.0	
	AF Noise sensitive point: Norwegian - Yellow zone (192)	458,814	6,460,658	60.0	4.0	45.0	35.1	Yes
	AF Day						28.7	
	AF Evening						28.7	
	AF Night						28.7	
	AG Noise sensitive point: Norwegian - Yellow zone (193)	458,829	6,460,479	60.0	4.0	45.0	35.7	Yes
	AG Day						29.3	
	AG Evening						29.3	
	AG Night						29.3	
	AH Noise sensitive point: Norwegian - Yellow zone (194)	458,846	6,460,564	60.0	4.0	45.0	34.5	Yes
	AH Day						28.1	
	AH Evening						28.1	
	AH Night						28.1	
	AI Noise sensitive point: Norwegian - Yellow zone (195)	458,946	6,459,534	60.0	4.0	45.0	37.5	Yes
	AI Day						31.1	
	AI Evening						31.1	
	AI Night						31.1	
	AJ Noise sensitive point: Norwegian - Yellow zone (196)	459,098	6,459,146	89.8	4.0	45.0	35.6	Yes
	AJ Day						29.2	
	AJ Evening						29.2	
	AJ Night						29.2	
	AK Noise sensitive point: Norwegian - Yellow zone (197)	459,109	6,460,283	60.0	4.0	45.0	34.0	Yes
	AK Day						27.6	
	AK Evening						27.6	

To be continued on next page...

NORD2000 - Main Result

Calculation: 202001_3xV150_4.2MW_130mHH_wc

...continued from previous page

Noise sensitive area

No.	Name	Easting	Northing	Z [m]	Imission height [m]	Demands	Sound level	Demands fulfilled?
						Noise [dB(A)]	From WTGs [dB(A)]	Noise [dB(A)]
	AK Night						27.6	
	AL Noise sensitive point: Norwegian - Yellow zone (198)	459,125	6,459,435	60.0	4.0	45.0	35.7	Yes
	AL Day						29.3	
	AL Evening						29.3	
	AL Night						29.3	
	AM Noise sensitive point: Norwegian - Yellow zone (199)	459,136	6,459,485	60.0	4.0	45.0	36.1	Yes
	AM Day						29.7	
	AM Evening						29.7	
	AM Night						29.7	
	AN Noise sensitive point: Norwegian - Yellow zone (200)	459,149	6,460,239	60.0	4.0	45.0	33.8	Yes
	AN Day						27.4	
	AN Evening						27.4	
	AN Night						27.4	
	AO Noise sensitive point: Norwegian - Yellow zone (201)	459,151	6,459,394	60.0	4.0	45.0	37.4	Yes
	AO Day						31.0	
	AO Evening						31.0	
	AO Night						31.0	
	AP Noise sensitive point: Norwegian - Yellow zone (202)	459,156	6,459,316	61.3	4.0	45.0	35.1	Yes
	AP Day						28.7	
	AP Evening						28.7	
	AP Night						28.7	
	AQ Noise sensitive point: Norwegian - Yellow zone (203)	459,158	6,459,441	60.0	4.0	45.0	35.4	Yes
	AQ Day						29.0	
	AQ Evening						29.0	
	AQ Night						29.0	
	AR Noise sensitive point: Norwegian - Yellow zone (204)	459,174	6,459,249	80.0	4.0	45.0	35.1	Yes
	AR Day						28.7	
	AR Evening						28.7	
	AR Night						28.7	

Project:

Lillesand Vindkraftverk

Licensed user:

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Data / data@meventus.com

Calculated:

31.01.2020 15:23/3.3.274

NORD2000 - Assumptions for NORD2000 calculation

Calculation: 202001_3xV150_4.2MW_130mHH_wc

Assumptions

Weather stability

Relative humidity	70.0 %
Air temperature	8.0 °C
Height for air temperature	2.0 m
Stability parameters	Night;Clear sky
Inverse Monin Obukhov length	0.0100
Temperature scale T*	0.0500

Terrain

Elevation based on object

Elevation Grid Data Object: E18_EMDGrid_0.wpg (2)

Roughness based on line object

Roughness lines (online)

Terrain type based on area object

Terrain Hardness (N50)

Month for calculation

January

Wind speed criteria

Uniform wind speed at 10 m agl.

Wind speed

Max noise wind speed

Max noise wind speed

All receptors downwind

Wind direction

4.0 m

Height above ground level for receiver

Wind speed has been extrapolated to calculation height using

IEC profile shear (z0 = 0.05m)

No stability correction

6.004

Version

All coordinates are in

UTM (north)-ETRS89 Zone: 32

Setup for Lden calculation

Variant	Name	From hour	To hour	Hours	Penalty [dB]	Days per year
1	Day	7	19	12	0	365
2	Evening	19	23	4	5	365
3	Night	23	7	8	10	365

WTG: VESTAS V150-4.2-Lillesand 4200 150.0 !O!

Noise: PO1 - 0067-4767_V06 - 104.9dB

Source Source/Date Creator Edited

Vestas 15.03.2018 USER 31.01.2020 10:49

Octave data

Wind speed [m/s]	LwA,ref [dB(A)]	63 [dB(A)]	125 [dB(A)]	250 [dB(A)]	500 [dB(A)]	1000 [dB(A)]	2000 [dB(A)]	4000 [dB(A)]	8000 [dB(A)]
3.0	91.1	70.7	78.8	83.9	86.1	85.5	81.9	75.5	66.1
4.0	91.3	70.5	78.9	84.2	86.5	85.7	81.7	74.7	64.6
5.0	93.2	72.3	80.7	86.0	88.3	87.6	83.9	77.2	67.4
6.0	96.4	75.4	83.7	89.0	91.4	90.9	87.4	80.9	71.4
7.0	99.9	78.8	87.1	92.4	94.9	94.4	91.1	84.8	75.7
8.0	103.3	82.1	90.3	95.7	98.2	97.9	94.7	88.7	79.7
9.0	104.9	83.7	91.9	97.2	99.8	99.5	96.4	90.5	81.7
10.0	104.9	83.9	91.9	97.1	99.7	99.5	96.5	90.8	82.2
11.0	104.9	84.1	91.9	97.0	99.6	99.4	96.7	91.3	83.2
12.0	104.9	84.2	92.3	97.4	99.8	99.4	96.0	90.0	80.9
13.0	104.9	83.9	92.0	97.2	99.7	99.4	96.4	90.5	81.9
14.0	104.9	83.6	91.7	97.0	99.7	99.5	96.6	91.0	82.6
15.0	104.9	83.4	91.5	96.9	99.6	99.6	96.8	91.4	83.2
16.0	104.9	83.2	91.3	96.7	99.5	99.6	97.0	91.8	83.8
17.0	104.9	82.9	91.1	96.5	99.4	99.6	97.1	92.1	84.3
18.0	104.9	82.8	90.9	96.4	99.3	99.6	97.3	92.4	84.8
19.0	104.9	82.6	90.8	96.3	99.3	99.6	97.3	92.5	85.0
20.0	104.9	82.7	91.0	96.5	99.4	99.6	97.2	92.1	84.4

Project:

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Calculated:

31.01.2020 15:23/3.3.274

NORD2000 - Assumptions for NORD2000 calculation

Calculation: 202001_3xV150_4.2MW_130mHH_wc

NSA: Noise sensitive point: Norwegian - Yellow zone (161)-A

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (162)-B

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (163)-C

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (164)-D

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (165)-E

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (166)-F

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (167)-G

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (168)-H

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (169)-I

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (170)-J

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (171)-K

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

Project:

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Calculated:

31.01.2020 15:23/3.3.274

NORD2000 - Assumptions for NORD2000 calculation

Calculation: 202001_3xV150_4.2MW_130mHH_wc

NSA: Noise sensitive point: Norwegian - Yellow zone (172)-L

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (173)-M

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (174)-N

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (175)-O

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (176)-P

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (177)-Q

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (178)-R

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (179)-S

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (180)-T

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (181)-U

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (182)-V

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

Project:

Lillesand Vindkraftverk

Licensed user:

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NORD2000 - Assumptions for NORD2000 calculation

Calculation: 202001_3xV150_4.2MW_130mHH_wc

NSA: Noise sensitive point: Norwegian - Yellow zone (183)-W

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (184)-X

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (185)-Y

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (186)-Z

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (187)-AA

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (188)-AB

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (189)-AC

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (190)-AD

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (191)-AE

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (192)-AF

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (193)-AG

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

Project:

Lillesand Vindkraftverk

Licensed user:

Meventus AS

Kongsgård Allé 59

NO-4632 Kristiansand

+47 3860 7115

Data / data@meventus.com

Calculated:

31.01.2020 15:23/3.3.274

NORD2000 - Assumptions for NORD2000 calculation

Calculation: 202001_3xV150_4.2MW_130mHH_wc

NSA: Noise sensitive point: Norwegian - Yellow zone (194)-AH

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (195)-AI

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (196)-AJ

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (197)-AK

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (198)-AL

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (199)-AM

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (200)-AN

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (201)-AO

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (202)-AP

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (203)-AQ

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

NSA: Noise sensitive point: Norwegian - Yellow zone (204)-AR

Predefined calculation standard: Yellow zone

Imission height(a.g.l.): Use standard value from calculation model

Distance demand: 0.0 m

SHADOW - Main Result

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)

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 Dec
0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50

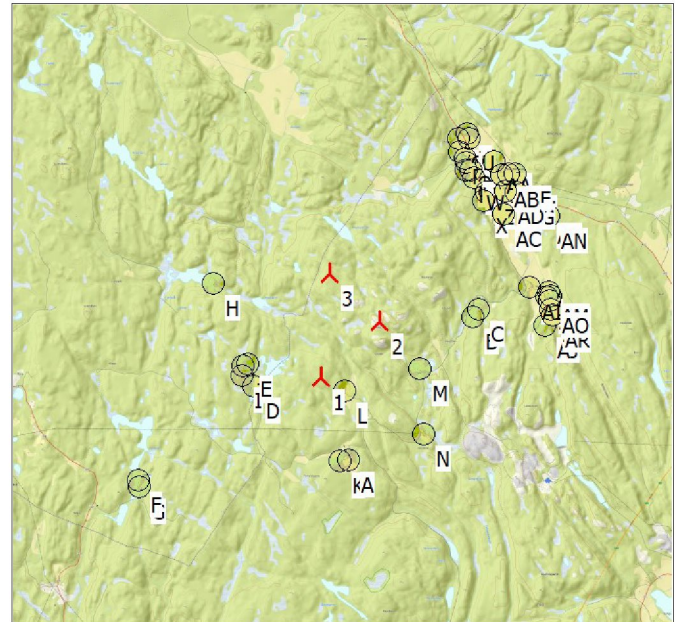
Operational time
N NNE ENE ESE SSE S SSW WSW W WNW NNW Sum
325 305 509 1,053 390 395 333 513 928 1,010 705 535 7,001

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: E18_EMDGrid_0.wpg (2)
Obstacles used in calculation
Eye height for map: 1.8 m
Grid resolution: 1.0 m

All coordinates are in
UTM (north)-ETRS89 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]
1	456,866	6,458,658	170.4 VESTAS V150-4.2-Lillesan...	Yes	VESTAS	V150-4.2-Lillesand-4,200	4,200	150.0	130.0	1,903	10.4
2	457,447	6,459,204	200.0 VESTAS V150-4.2-Lillesan...	Yes	VESTAS	V150-4.2-Lillesand-4,200	4,200	150.0	130.0	1,903	10.4
3	456,962	6,459,688	180.0 VESTAS V150-4.2-Lillesan...	Yes	VESTAS	V150-4.2-Lillesand-4,200	4,200	150.0	130.0	1,903	10.4



Scale 1:75,000
New WTG Shadow receptor

Shadow receptor-Input

No.	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
	[m]	[m]	[m]	[m]	[m]	[m]	[°]		[m]
A	457,130	6,457,835	160.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
B	458,383	6,459,242	99.5	2.0	2.0	2.0	90.0	"Green house mode"	4.0
C	458,438	6,459,315	99.9	2.0	2.0	2.0	90.0	"Green house mode"	4.0
D	456,191	6,458,583	160.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
E	456,138	6,458,796	162.4	2.0	2.0	2.0	90.0	"Green house mode"	4.0
F	455,035	6,457,655	120.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
G	455,040	6,457,591	120.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
H	455,803	6,459,606	120.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
I	456,075	6,458,683	160.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
J	456,089	6,458,781	164.2	2.0	2.0	2.0	90.0	"Green house mode"	4.0
K	457,040	6,457,825	160.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
L	457,102	6,458,523	120.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
M	457,849	6,458,736	100.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
N	457,882	6,458,085	100.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
O	458,255	6,461,024	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
P	458,264	6,460,887	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
Q	458,325	6,460,822	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
R	458,328	6,460,709	72.2	2.0	2.0	2.0	90.0	"Green house mode"	4.0
S	458,329	6,460,780	61.2	2.0	2.0	2.0	90.0	"Green house mode"	4.0
T	458,345	6,461,071	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
U	458,364	6,461,023	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
V	458,381	6,460,703	65.6	2.0	2.0	2.0	90.0	"Green house mode"	4.0
W	458,402	6,460,628	68.4	2.0	2.0	2.0	90.0	"Green house mode"	4.0
X	458,501	6,460,395	60.3	2.0	2.0	2.0	90.0	"Green house mode"	4.0
Y	458,530	6,460,480	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
Z	458,566	6,460,481	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0

To be continued on next page...

SHADOW - Main Result

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)

...continued from previous page

No.	Easting	Northing	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	[m]	window		(ZVI) a.g.l.
							[°]		[m]
AA	458,611	6,460,789	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AB	458,681	6,460,650	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AC	458,700	6,460,263	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AD	458,721	6,460,488	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AE	458,746	6,460,663	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AF	458,814	6,460,658	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AG	458,829	6,460,479	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AH	458,846	6,460,564	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AI	458,946	6,459,534	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AJ	459,098	6,459,146	89.8	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AK	459,109	6,460,283	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AL	459,125	6,459,435	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AM	459,136	6,459,485	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AN	459,149	6,460,239	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AO	459,151	6,459,394	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AP	459,156	6,459,316	61.3	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AQ	459,158	6,459,441	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AR	459,174	6,459,249	80.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0

Calculation Results

Shadow receptor

No.	Shadow, worst case			Shadow, expected values	
	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]	
A	0:00	0	0:00	0:00	
B	44:38	108	0:40	12:47	
C	38:19	105	0:35	11:02	
D	75:12	122	0:57	22:09	
E	50:55	103	0:47	14:24	
F	0:00	0	0:00	0:00	
G	0:00	0	0:00	0:00	
H	35:43	104	0:31	9:34	
I	47:33	102	0:44	13:51	
J	45:48	97	0:44	13:02	
K	0:00	0	0:00	0:00	
L	0:00	0	0:00	0:00	
M	20:59	47	0:35	6:10	
N	33:00	70	0:33	8:26	
O	7:36	30	0:20	2:05	
P	20:07	78	0:20	5:21	
Q	0:00	0	0:00	0:00	
R	11:39	44	0:21	3:04	
S	0:00	0	0:00	0:00	
T	0:00	0	0:00	0:00	
U	0:00	0	0:00	0:00	
V	17:58	67	0:21	4:57	
W	17:57	66	0:22	4:59	
X	0:00	0	0:00	0:00	
Y	9:18	34	0:22	2:32	
Z	8:58	33	0:21	2:27	
AA	0:00	0	0:00	0:00	
AB	0:00	0	0:00	0:00	
AC	14:22	55	0:22	4:08	
AD	7:32	29	0:20	2:04	
AE	0:00	0	0:00	0:00	
AF	0:00	0	0:00	0:00	
AG	6:52	28	0:19	1:54	
AH	0:00	0	0:00	0:00	
AI	8:22	28	0:23	2:27	
AJ	7:51	28	0:21	2:16	
AK	0:00	0	0:00	0:00	
AL	6:56	27	0:21	2:02	

To be continued on next page...

SHADOW - Main Result

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)

...continued from previous page

No.	Shadow, worst case		Shadow, expected values	
	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
AM	6:49	26	0:20	2:00
AN	0:00	0	0:00	0:00
AO	6:47	26	0:20	1:59
AP	6:57	26	0:20	2:02
AQ	6:40	26	0:20	1:57
AR	6:51	26	0:20	2:00

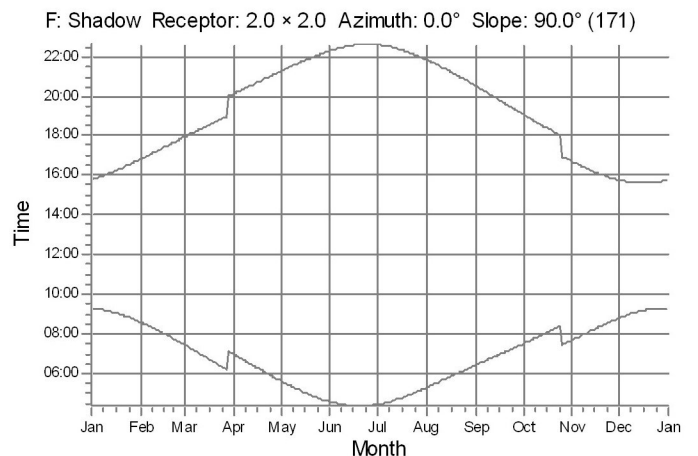
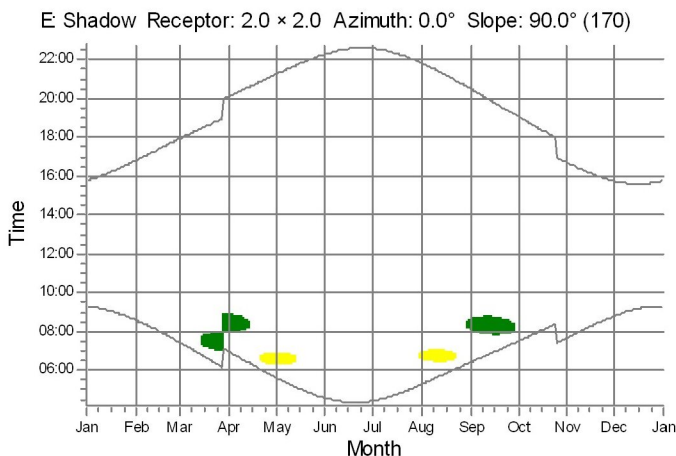
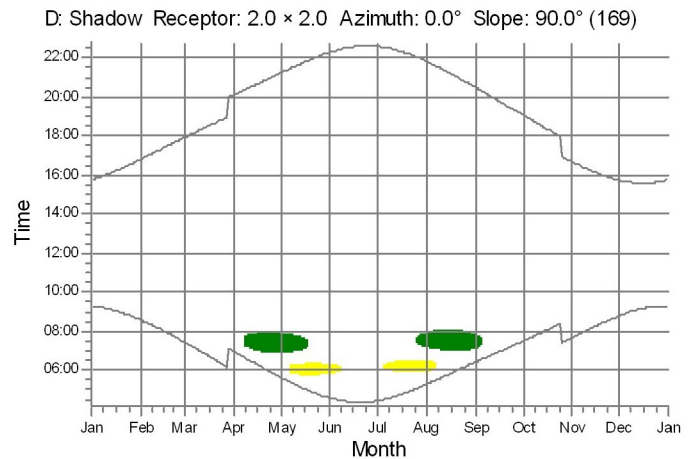
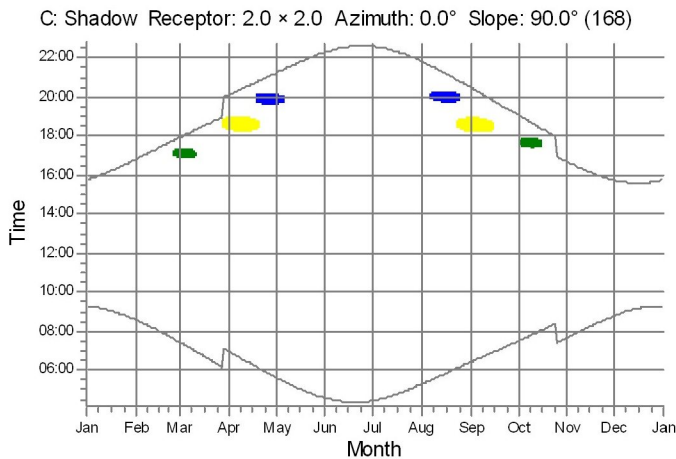
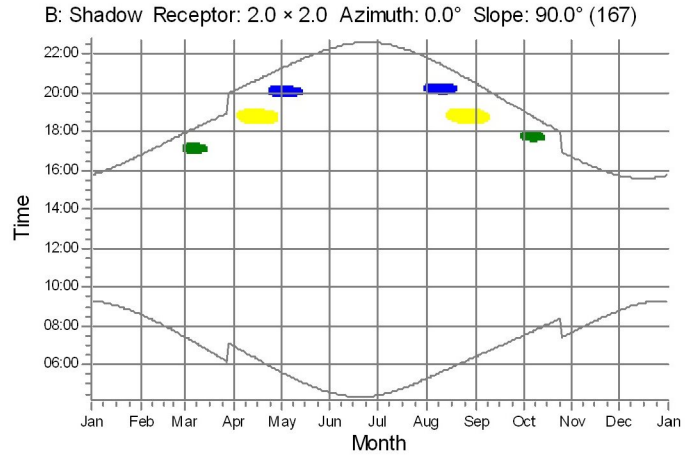
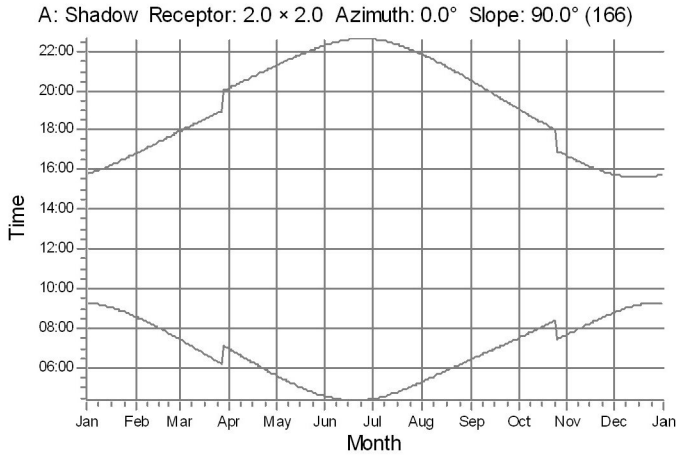
Total amount of flickering on the shadow receptors caused by each WTG

No.	Name			Worst case [h/year]	Expected [h/year]	
1	VESTAS V150-4.2-Lillesand	4200	150.0 !O!	hub: 130.0 m (TOT: 205.0 m) (89)	189:47	53:03
2	VESTAS V150-4.2-Lillesand	4200	150.0 !O!	hub: 130.0 m (TOT: 205.0 m) (90)	173:20	49:20
3	VESTAS V150-4.2-Lillesand	4200	150.0 !O!	hub: 130.0 m (TOT: 205.0 m) (91)	67:44	19:10

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, graphical

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)



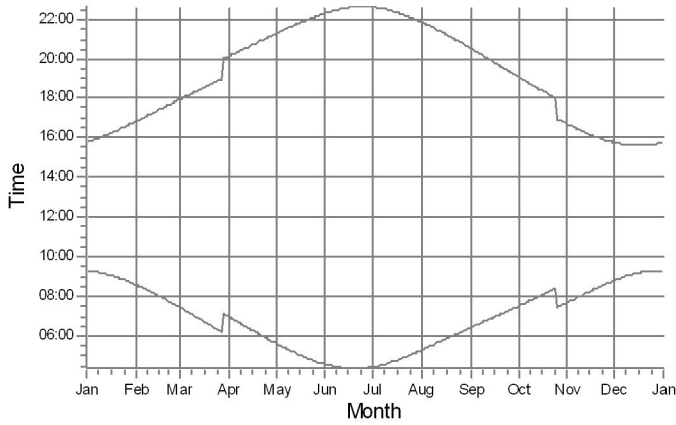
WTGs

- 1: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (89)
- 2: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (90)
- 3: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (91)

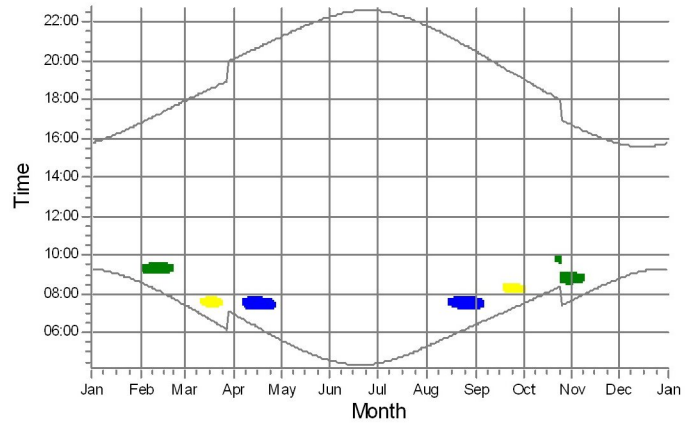
SHADOW - Calendar, graphical

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)

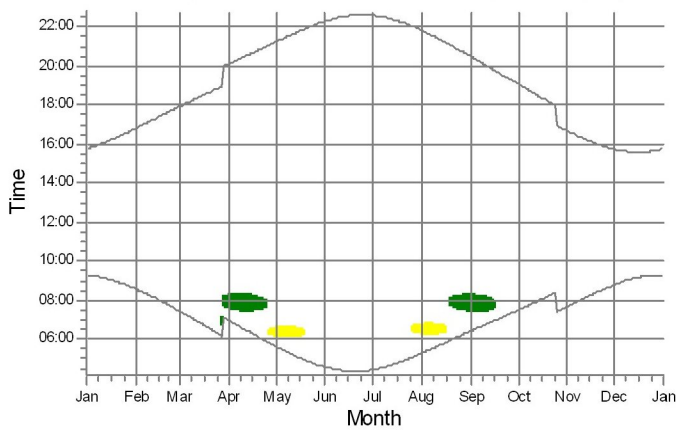
G: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (172)



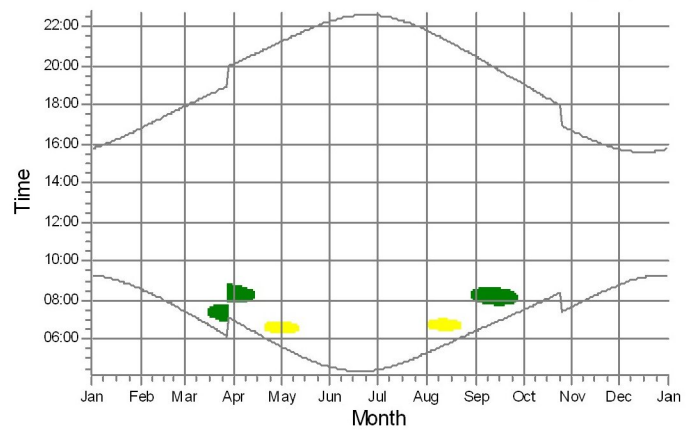
H: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (173)



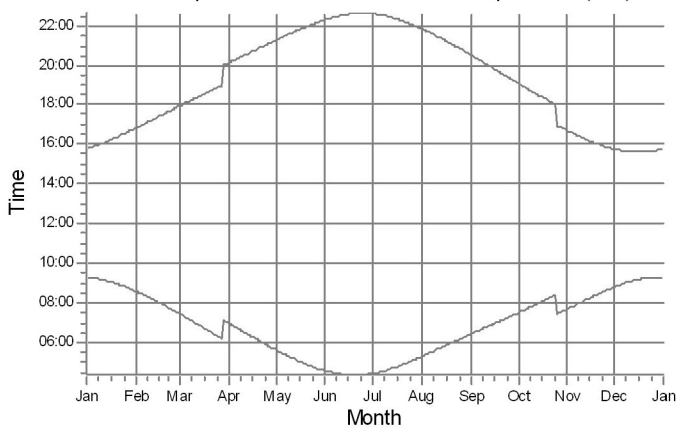
I: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (174)



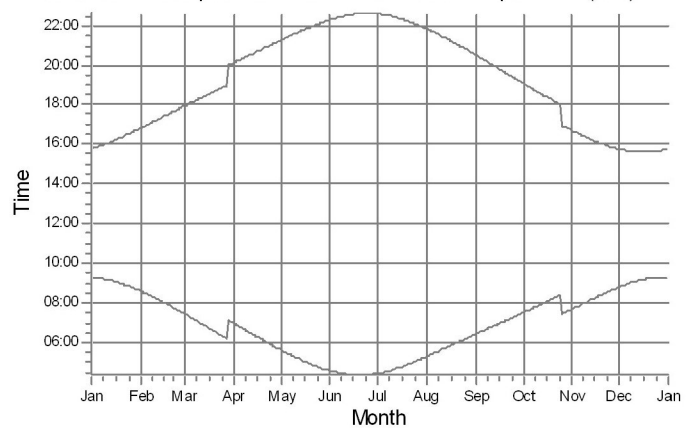
J: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (175)



K: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (176)



L: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (177)

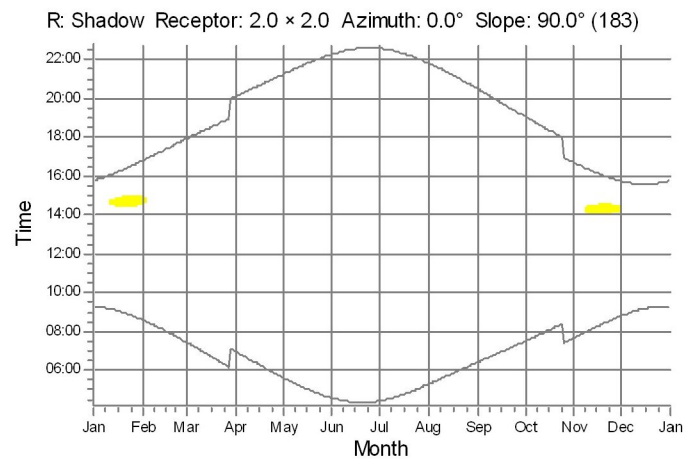
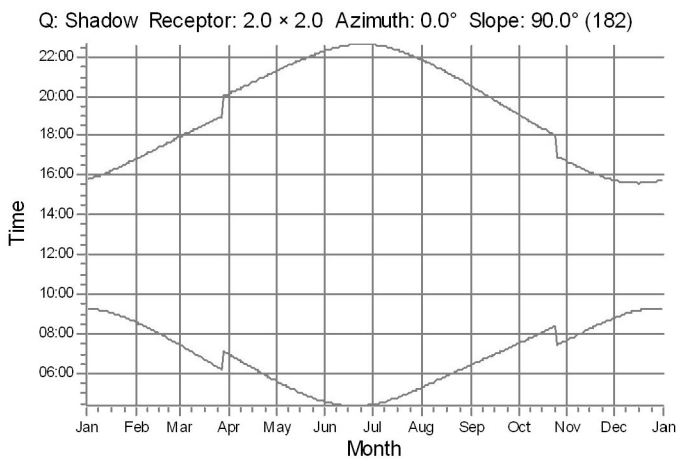
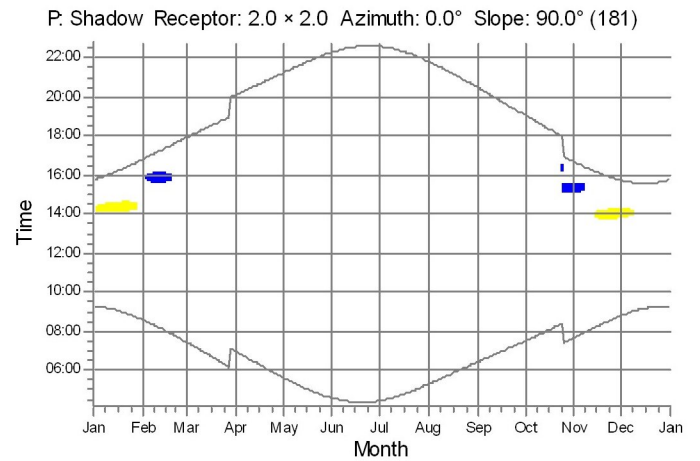
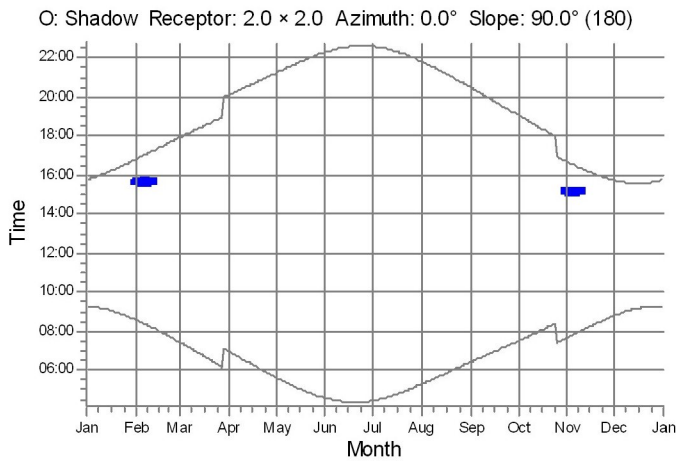
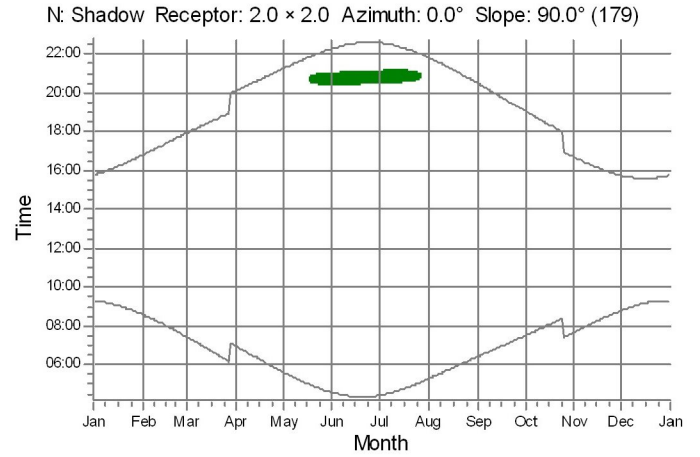
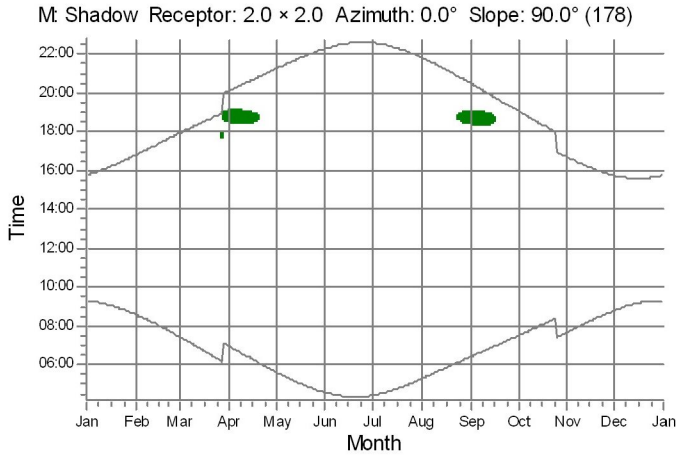


WTGs

- 1: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (89)
- 2: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (90)
- 3: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (91)

SHADOW - Calendar, graphical

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)

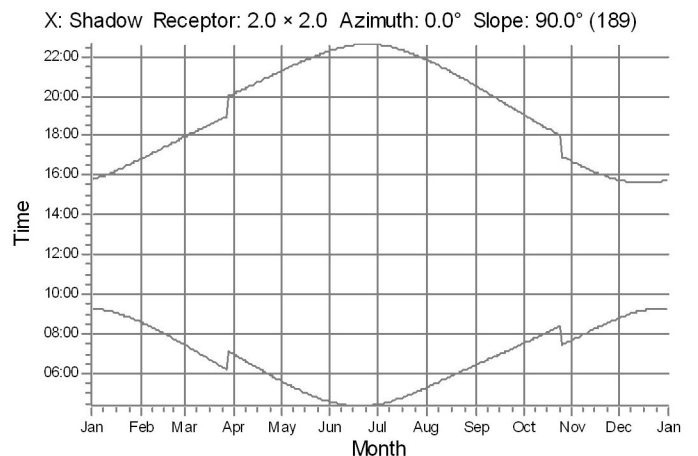
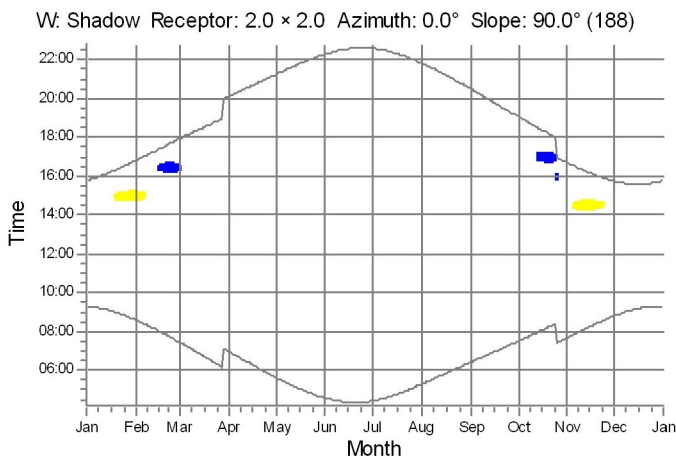
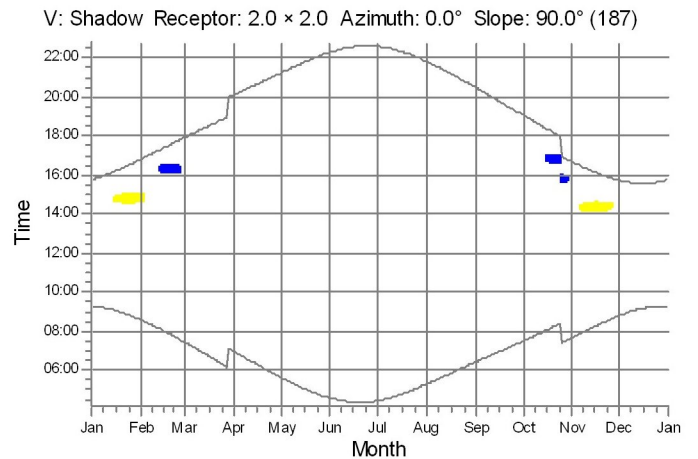
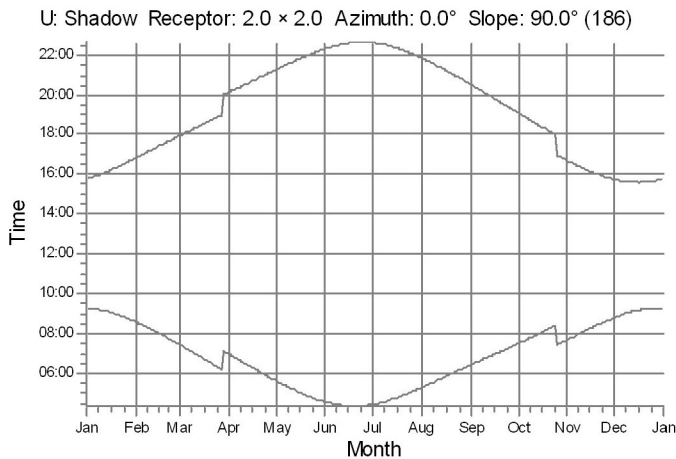
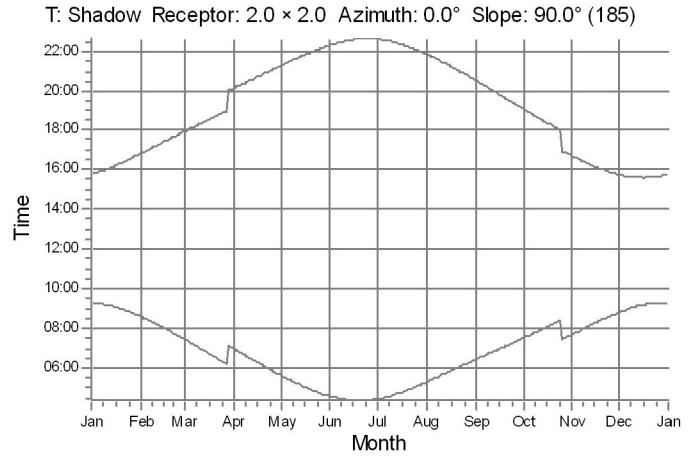
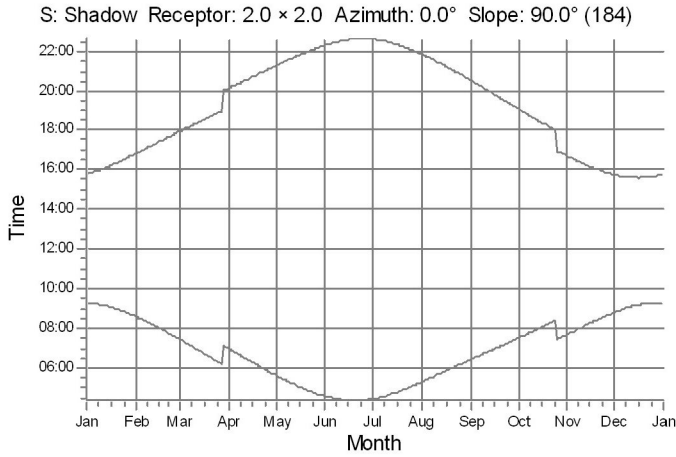


WTGs

- 1: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (89)
- 2: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (90)
- 3: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (91)

SHADOW - Calendar, graphical

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)



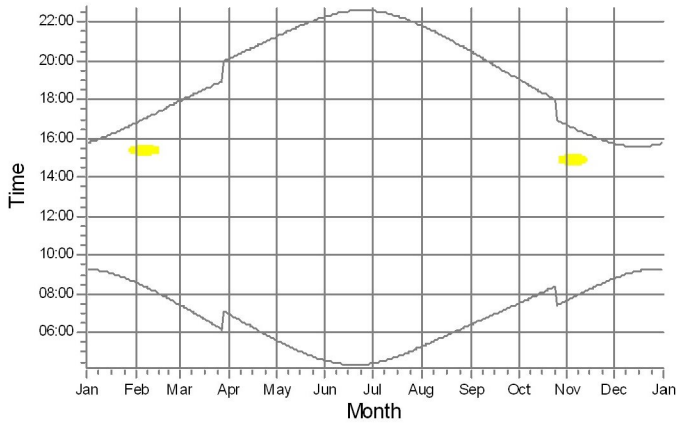
WTGs

- 2: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (90)
- 3: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (91)

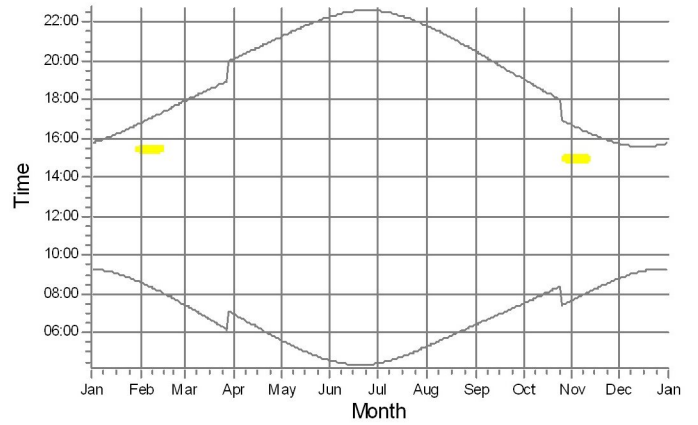
SHADOW - Calendar, graphical

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)

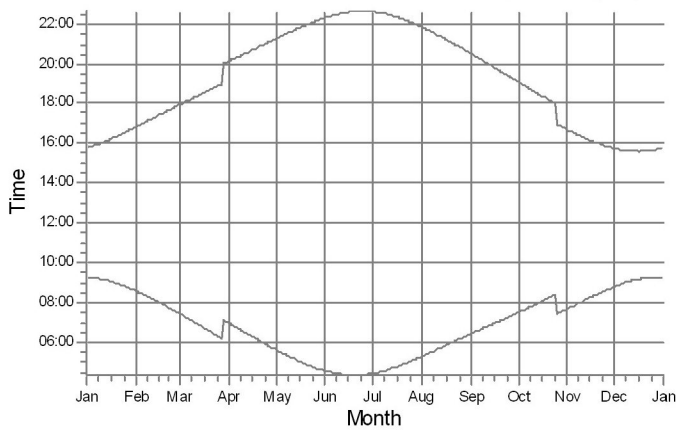
Y: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (190)



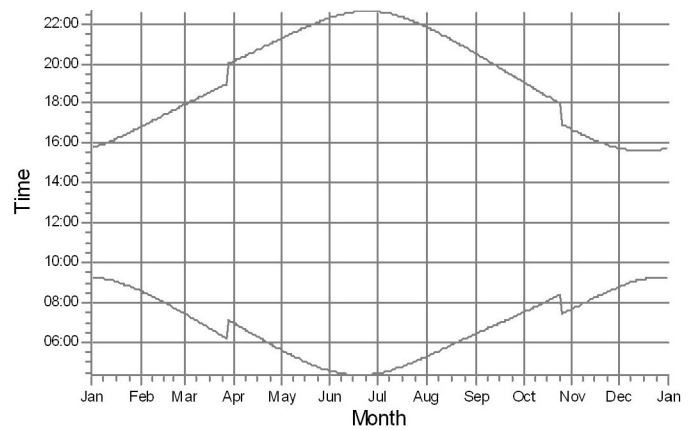
Z: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (191)



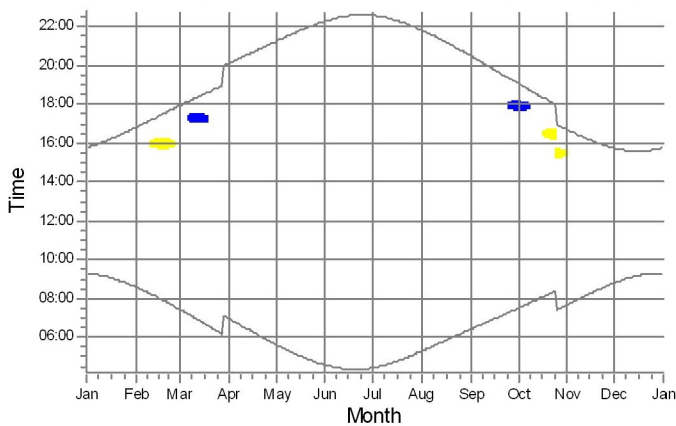
AA: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (192)



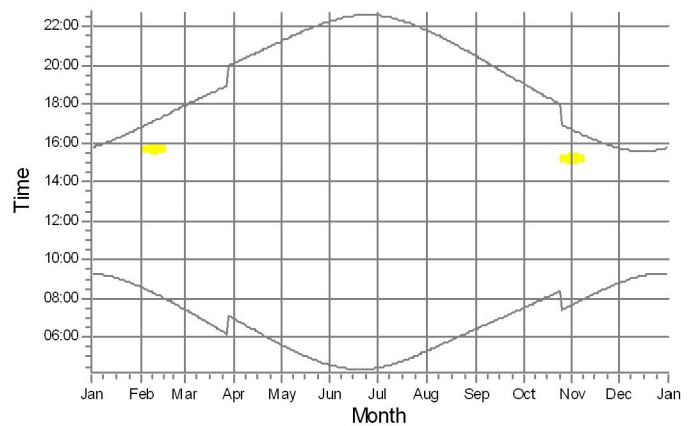
AB: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (193)



AC: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (194)



AD: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (195)



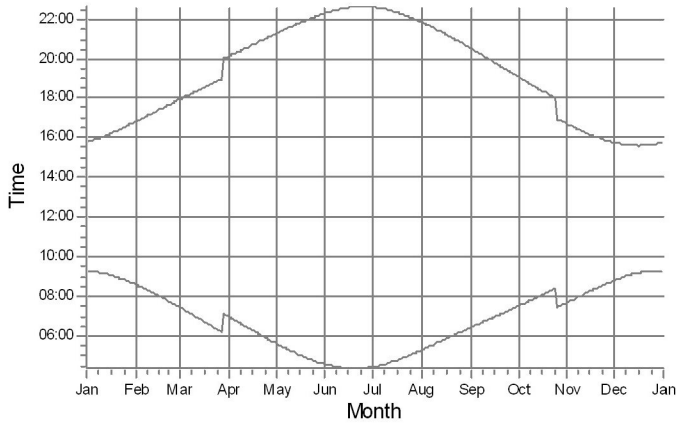
WTGs

- 2: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (90)
- 3: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (91)

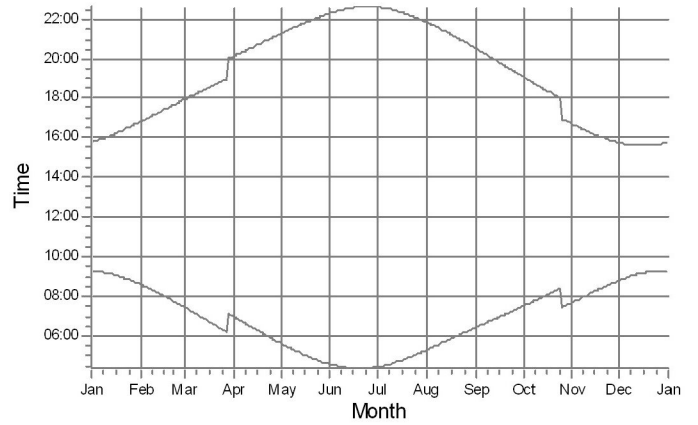
SHADOW - Calendar, graphical

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)

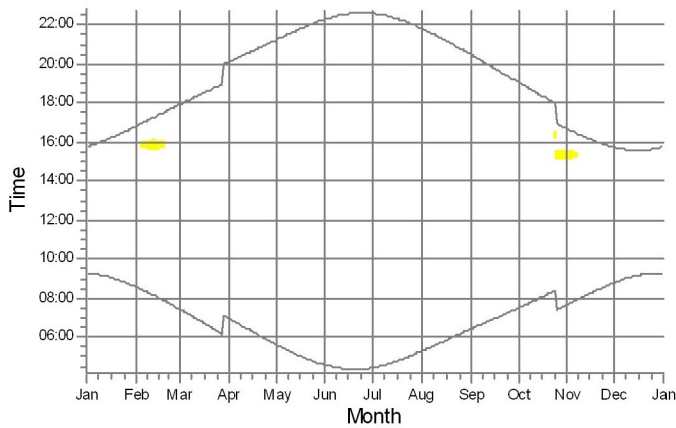
AE: Shadow Receptor: 2.0 × 2.0 Azimuth: 0.0° Slope: 90.0° (196)



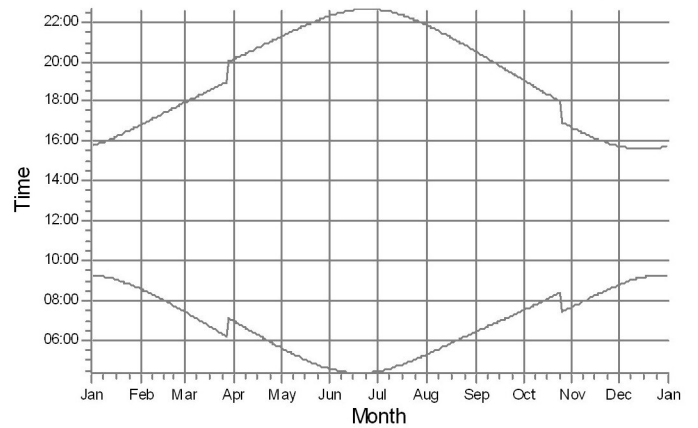
AF: Shadow Receptor: 2.0 × 2.0 Azimuth: 0.0° Slope: 90.0° (197)



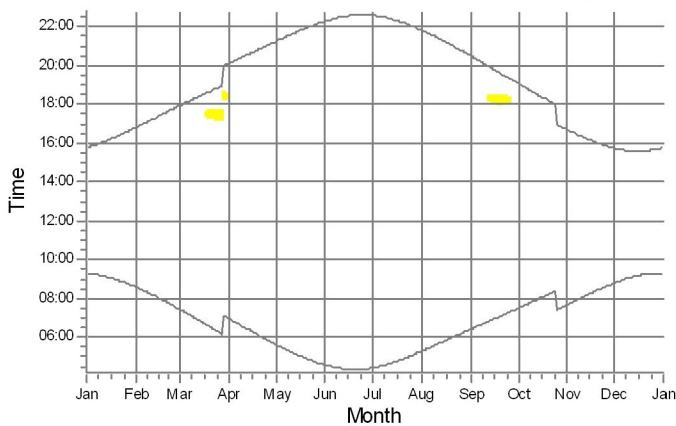
AG: Shadow Receptor: 2.0 × 2.0 Azimuth: 0.0° Slope: 90.0° (198)



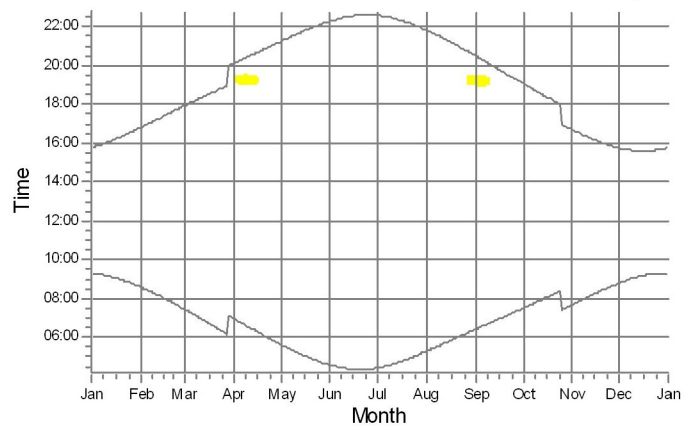
AH: Shadow Receptor: 2.0 × 2.0 Azimuth: 0.0° Slope: 90.0° (199)




AI: Shadow Receptor: 2.0 × 2.0 Azimuth: 0.0° Slope: 90.0° (200)



AJ: Shadow Receptor: 2.0 × 2.0 Azimuth: 0.0° Slope: 90.0° (201)



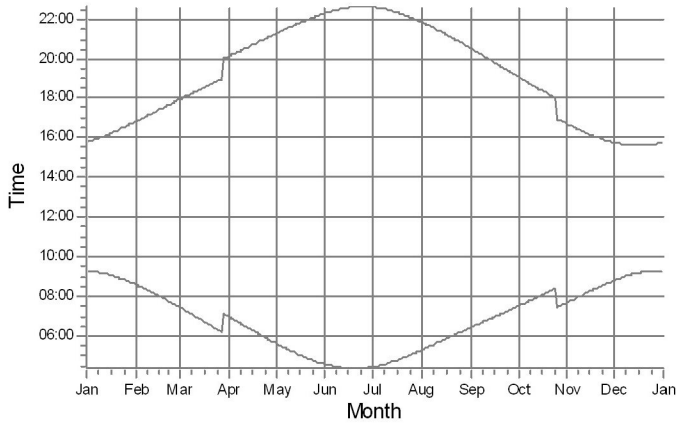
WTGs

 2: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (90)

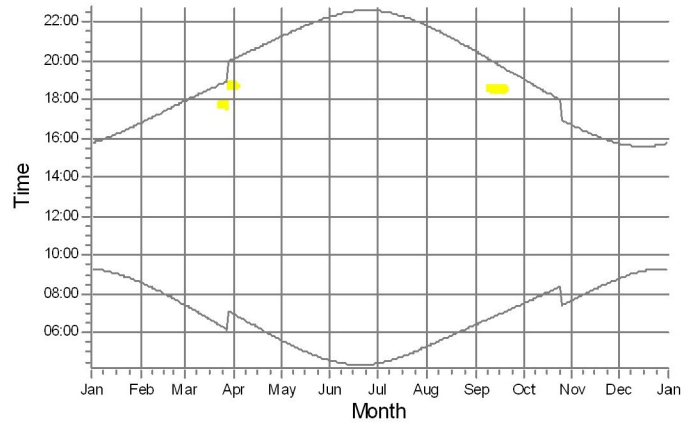
SHADOW - Calendar, graphical

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)

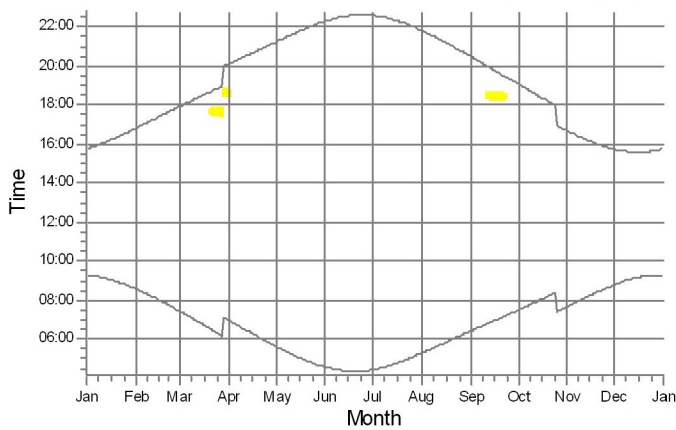
AK: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (202)



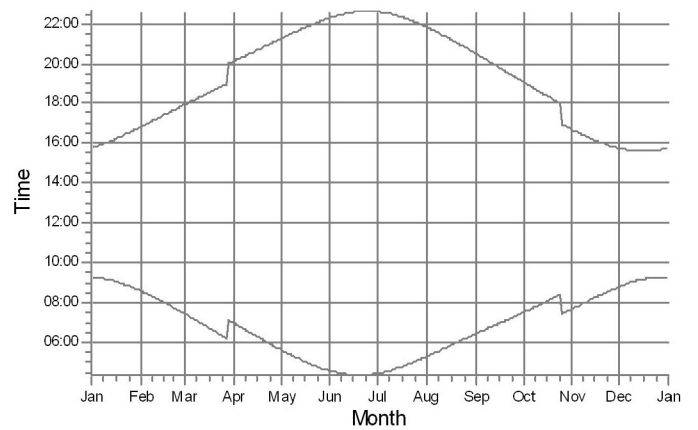
AL: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (203)



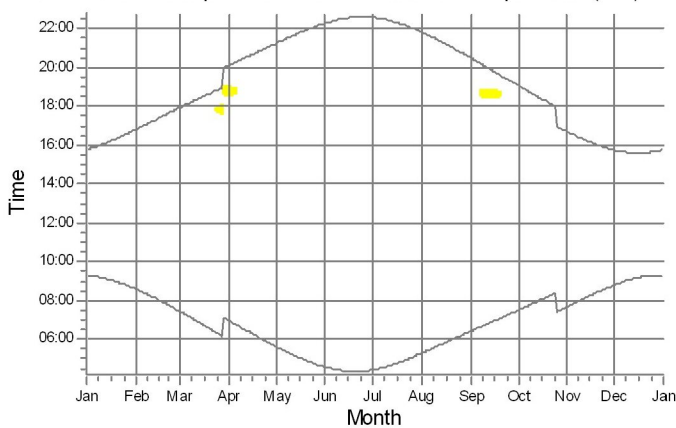
AM: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (204)



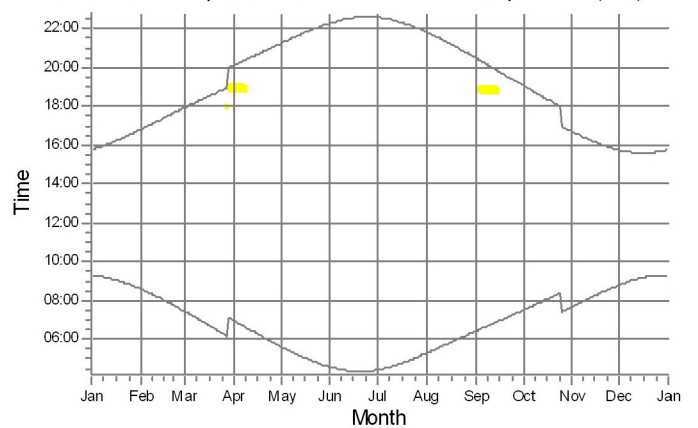
AN: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (205)



AO: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (206)



AP: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (207)



WTGs

2: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (90)

Project:

Lillesand Vindkraftverk

Licensed user:

Meventus AS

Kongsgård Allé 59

NO-4632 Kristiansand

+47 3860 7115

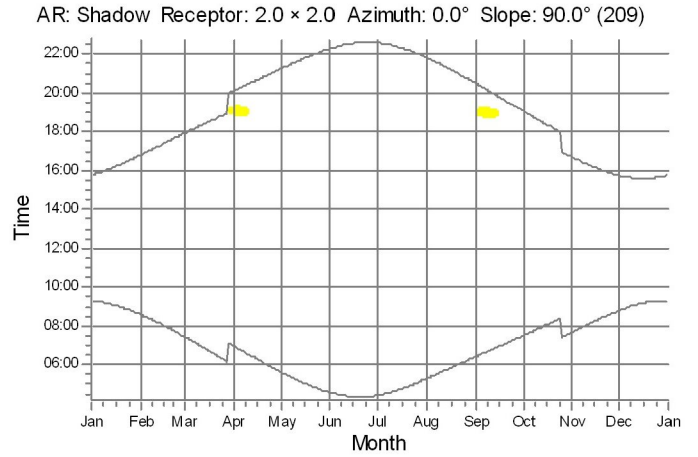
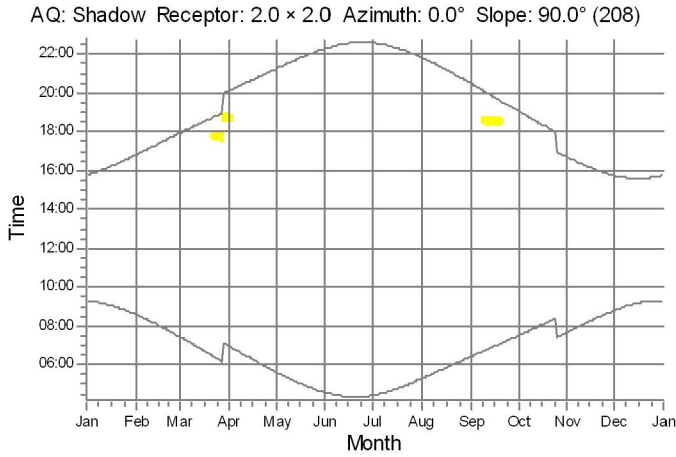
Kyle Brennan / kyle@meventus.com

Calculated:

19.11.2019 10:32/3.2.744

SHADOW - Calendar, graphical

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19)



WTGs

2: VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (90)

SHADOW - Main Result

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19) w Curtailment

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 Dec
0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50 0.50

Operational time
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
325 305 509 1,053 390 395 333 513 928 1,010 705 535 7,001

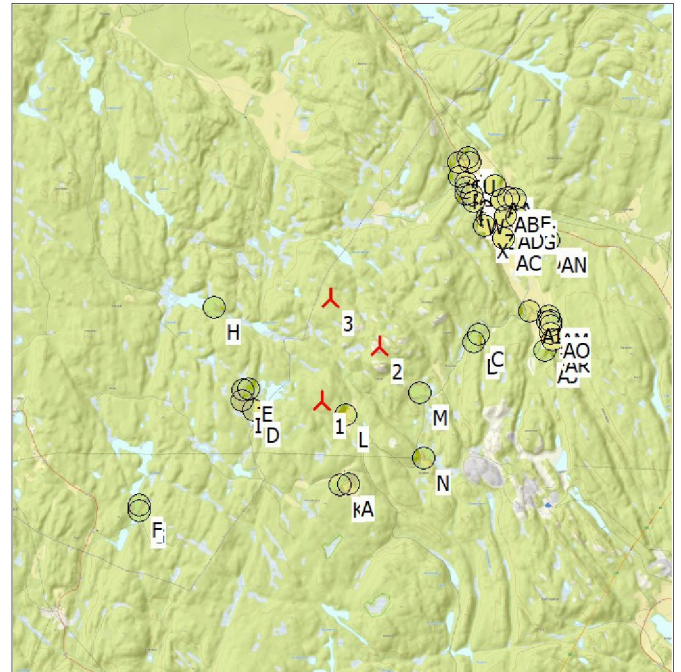
Flicker curtailment by stopping specific turbines

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: E18_EMDGrid_0.wpg (2)
Obstacles used in calculation
Eye height for map: 1.8 m
Grid resolution: 1.0 m

All coordinates are in
UTM (north)-ETRS89 Zone: 32

WTGs

Row	Easting	Northing	Z	Row data/Description	WTG type			Shadow data				
					Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
1	456,866	6,458,658	170.4	VESTAS V150-4.2-Lillesan...	Yes	VESTAS	V150-4.2-Lillesand-4,200	4,200	150.0	130.0	1,903	10.4
2	457,447	6,459,204	200.0	VESTAS V150-4.2-Lillesan...	Yes	VESTAS	V150-4.2-Lillesand-4,200	4,200	150.0	130.0	1,903	10.4
3	456,962	6,459,688	180.0	VESTAS V150-4.2-Lillesan...	Yes	VESTAS	V150-4.2-Lillesand-4,200	4,200	150.0	130.0	1,903	10.4



Shadow receptor-Input

No.	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window [°]	Direction mode	Eye height (ZVI) a.g.l. [m]
A	457,130	6,457,835	160.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
B	458,383	6,459,242	99.5	2.0	2.0	2.0	90.0	"Green house mode"	4.0
C	458,438	6,459,315	99.9	2.0	2.0	2.0	90.0	"Green house mode"	4.0
D	456,191	6,458,583	160.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
E	456,138	6,458,796	162.4	2.0	2.0	2.0	90.0	"Green house mode"	4.0
F	455,035	6,457,655	120.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
G	455,040	6,457,591	120.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
H	455,803	6,459,606	120.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
I	456,075	6,458,683	160.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
J	456,089	6,458,781	164.2	2.0	2.0	2.0	90.0	"Green house mode"	4.0
K	457,040	6,457,825	160.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
L	457,102	6,458,523	120.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
M	457,849	6,458,736	100.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
N	457,882	6,458,085	100.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
O	458,255	6,461,024	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
P	458,264	6,460,887	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
Q	458,325	6,460,822	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
R	458,328	6,460,709	72.2	2.0	2.0	2.0	90.0	"Green house mode"	4.0
S	458,329	6,460,780	61.2	2.0	2.0	2.0	90.0	"Green house mode"	4.0
T	458,345	6,461,071	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
U	458,364	6,461,023	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
V	458,381	6,460,703	65.6	2.0	2.0	2.0	90.0	"Green house mode"	4.0
W	458,402	6,460,628	68.4	2.0	2.0	2.0	90.0	"Green house mode"	4.0
X	458,501	6,460,395	60.3	2.0	2.0	2.0	90.0	"Green house mode"	4.0

To be continued on next page...

SHADOW - Main Result

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19) w Curtailment

...continued from previous page

No.	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
Y	458,530	6,460,480	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
Z	458,566	6,460,481	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AA	458,611	6,460,789	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AB	458,681	6,460,650	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AC	458,700	6,460,263	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AD	458,721	6,460,488	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AE	458,746	6,460,663	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AF	458,814	6,460,658	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AG	458,829	6,460,479	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AH	458,846	6,460,564	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AI	458,946	6,459,534	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AJ	459,098	6,459,146	89.8	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AK	459,109	6,460,283	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AL	459,125	6,459,435	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AM	459,136	6,459,485	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AN	459,149	6,460,239	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AO	459,151	6,459,394	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AP	459,156	6,459,316	61.3	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AQ	459,158	6,459,441	60.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0
AR	459,174	6,459,249	80.0	2.0	2.0	2.0	90.0	"Green house mode"	4.0

Calculation Results

Shadow receptor

No.	Shadow, worst case			Shadow, expected values			
	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Avoided hours per year [h/year]	Avoided days per year [days/year]	Shadow hours per year [h/year]	Avoided hours per year [h/year]
A	0:00	0	0:00			0:00	
AA	0:00	0	0:00			0:00	
AB	0:00	0	0:00			0:00	
AC	14:22	55	0:22			4:08	
AD	7:32	29	0:20			2:04	
AE	0:00	0	0:00			0:00	
AF	0:00	0	0:00			0:00	
AG	6:52	28	0:19			1:54	
AH	0:00	0	0:00			0:00	
AI	8:22	28	0:23			2:27	
AJ	7:51	28	0:21			2:16	
AK	0:00	0	0:00			0:00	
AL	6:56	27	0:21			2:02	
AM	6:49	26	0:20			2:00	
AN	0:00	0	0:00			0:00	
AO	6:47	26	0:20			1:59	
AP	6:57	26	0:20			2:02	
AQ	6:40	26	0:20			1:57	
AR	6:51	26	0:20			2:00	
B*	24:22	51	0:37	20:16	57	7:08	5:39
C*	27:23	78	0:35	10:56	27	7:54	3:08
D*	20:48	64	0:27	54:24	58	6:08	16:01
E*	10:06	43	0:23	40:49	60	2:58	11:25
F	0:00	0	0:00			0:00	
G	0:00	0	0:00			0:00	
H*	28:38	78	0:31	7:05	26	7:39	1:55
I*	21:36	58	0:33	25:57	44	6:15	7:36
J*	14:30	96	0:23	31:18	1	4:11	8:51
K	0:00	0	0:00			0:00	
L	0:00	0	0:00			0:00	
M	20:59	47	0:35			6:10	
N*	0:00	0	0:00	33:00	70	0:00	8:26
O	7:36	30	0:20			2:05	
P	20:07	78	0:20			5:21	
Q	0:00	0	0:00			0:00	
R	11:39	44	0:21			3:04	

To be continued on next page...

SHADOW - Main Result

Calculation: 201911_3xV150_4.2MW_130mHH (Layout 2019-11-19) w Curtailment

...continued from previous page

No.	Shadow, worst case			Shadow, expected values			
	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Avoided hours per year [h/year]	Avoided days per year [days/year]	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S	0:00	0	0:00			0:00	
T	0:00	0	0:00			0:00	
U	0:00	0	0:00			0:00	
V	17:58	67	0:21			4:57	
W	17:57	66	0:22			4:59	
X	0:00	0	0:00			0:00	
Y	9:18	34	0:22			2:32	
Z	8:58	33	0:21			2:27	

* Receptors where shadow flicker is reduced by curtailment

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

No.	Name	Worst case [h/year]	Stopped due to flicker curtailment [h/year]	Expected [h/year]
1	VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (89)	56:17	133:30	15:36
2	VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (90)	152:16	21:04	43:17
3	VESTAS V150-4.2-Lillesand 4200 150.0 !O! hub: 130.0 m (TOT: 205.0 m) (91)	55:10	12:34	15:47

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.