

## **5 priedas**

**SĄVEIKA SU GRETIMOJE APLINKOJE PLANUOJAMA ANALOGIŠKA ŪKINE VEIKLA.  
PROGNOSTINIAI ŠEŠĖLIAVIMO MODELIAVIMO REZULTATAI**

Project:

5 VE statyba Akmenės rajone

Description:

Organizatorius: UAB "GREEN CHARGE"

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Calculated:

2018.10.19 09:21/2.9.269

**Prognostiniai šešėliavimo modeliavimo rezultatai**

**VE modelis: Vestas V150-4.2, 4200 kW, bokšto aukštis 166 m, rotoriaus skersmuo 150 m, bendras aukštis 241 m**

**SHADOW - Main Result --- Sąveika su gretimoje aplinkoje planuojama analogiška ūkine veikla****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 (Average daily sunshine hours) [KAUNAS]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1,41	2,36	4,03	5,55	8,35	8,36	8,16	7,72	5,06	3,23	1,33	0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data 12 sectors; Radius: 20.000 m (2)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
882	568	274	277	528	623	740	958	1.156	1.035	802	578	8.423

Idle start wind speed: Cut in wind speed from power curve

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: MAPFILES\_Akmene\_0.map (1)

Obstacles used in calculation

Eye height: 1,5 m

Grid resolution: 10,0 m

**WTGs**

	Lithuanian TM LKS94-LKS94 (LT)				WTG type			Shadow data				
	East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
SVE1	436.218	6.242.046	75,0	REpower MD 77 1500 77.0 ...	No	REpower	MD 77-1.500	1.500	77,0	85,0	1.415	17,3
SVE2	435.983	6.242.269	75,0	REpower MD 77 1500 77.0 ...	No	REpower	MD 77-1.500	1.500	77,0	85,0	1.415	17,3
SVE3	435.969	6.242.576	75,0	REpower MD 77 1500 77.0 ...	No	REpower	MD 77-1.500	1.500	77,0	85,0	1.415	17,3
SVE4	435.934	6.241.944	75,0	REpower MD 77 1500 77.0 ...	No	REpower	MD 77-1.500	1.500	77,0	85,0	1.415	17,3
VE01	436.894	6.242.632	75,0	VESTAS V150-4.2 4200 15...	Yes	VESTAS	V150-4.2-4.200	4.200	150,0	166,0	1.901	10,4
VE02	437.205	6.242.132	75,0	VESTAS V150-4.2 4200 15...	Yes	VESTAS	V150-4.2-4.200	4.200	150,0	166,0	1.901	10,4
VE03	437.702	6.242.746	75,0	VESTAS V150-4.2 4200 15...	Yes	VESTAS	V150-4.2-4.200	4.200	150,0	166,0	1.901	10,4
VE04	438.120	6.243.221	75,0	VESTAS V150-4.2 4200 15...	Yes	VESTAS	V150-4.2-4.200	4.200	150,0	166,0	1.901	10,4
VE05	438.797	6.243.113	75,0	VESTAS V150-4.2 4200 15...	Yes	VESTAS	V150-4.2-4.200	4.200	150,0	166,0	1.901	10,4
VTP1	436.467	6.242.486	75,0	ENERCON E-66/18.70 180...	No	ENERCON	E-66/18.70-1.800	1.800	70,0	63,0	1.487	22,0

**Shadow receptor-Input**

No.	Lithuanian TM LKS94-LKS94 (LT)				Width [m]	Height [m]	Height a.g.l. [m]	Degrees from south cw [°]	Slope of window [°]	Direction mode
	East	North	Z							
A1	436.960	6.241.376	75,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
A2	437.280	6.241.359	75,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
A3	437.608	6.241.424	75,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
A4	437.784	6.241.456	75,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
B	438.148	6.242.100	75,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
C	438.304	6.242.148	75,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
D	438.956	6.242.384	75,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	

Project:

11 VE parko statyba Akmenės rajone

Description:

Organizatorius: UAB "VĖJO PARKAI"

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**SHADOW - Main Result****Calculation Results**

Shadow receptor

**Shadow, expected values**

No. Shadow hours

per year

[h/year]

A1	1:41
A2	1:43
A3	0:00
A4	0:00
B	11:17
C	7:25
D	5:33

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

No.	Name	Worst case [h/year]	Expected [h/year]
SVE1	REpower MD 77 1500 77.0 !-! hub: 85,0 m (TOT: 123,5 m) (89)	5:46	1:43
SVE2	REpower MD 77 1500 77.0 !-! hub: 85,0 m (TOT: 123,5 m) (90)	0:00	0:00
SVE3	REpower MD 77 1500 77.0 !-! hub: 85,0 m (TOT: 123,5 m) (91)	0:00	0:00
SVE4	REpower MD 77 1500 77.0 !-! hub: 85,0 m (TOT: 123,5 m) (92)	5:40	1:41
VE01	VESTAS V150-4.2 4200 150.0 !O! hub: 166,0 m (TOT: 241,0 m) (83)	26:47	7:44
VE02	VESTAS V150-4.2 4200 150.0 !O! hub: 166,0 m (TOT: 241,0 m) (84)	36:10	8:47
VE03	VESTAS V150-4.2 4200 150.0 !O! hub: 166,0 m (TOT: 241,0 m) (85)	15:14	4:12
VE04	VESTAS V150-4.2 4200 150.0 !O! hub: 166,0 m (TOT: 241,0 m) (86)	0:00	0:00
VE05	VESTAS V150-4.2 4200 150.0 !O! hub: 166,0 m (TOT: 241,0 m) (87)	0:00	0:00
VTP1	ENERCON E-66/18.70 1800 70.0 !O! hub: 63,0 m (TOT: 98,0 m) (88)	0:00	0:00