

PARK - Main Result

Calculation: SUZLON_2.1*6_Resource

Wake Model

N.O. Jensen (RISØ/EMD) Park 2 2018

Calculation performed in UTM (north)-WGS84 Zone: 44

At the site centre the difference between grid north and true north is: -0.5°

Power curve correction method

New windPRO method (adjusted IEC method, improved to match turbine control) <RECOMMENDED>

Air density calculation method

Height dependent, temperature from climate station

Station: BEGAMPET V3 2014

Base temperature: 26.6 °C at 545.0 m

Base pressure: 1013.3 hPa at 0.0 m

Air density for Site center in key hub height: 0.0 m + 112.0 m = 1.152 kg/m³ -> 94.0 % of Std

Relative humidity: 0.0 %

Wake Model Parameters

Wake decay constant

0.090 DTU default onshore

Hub height independent

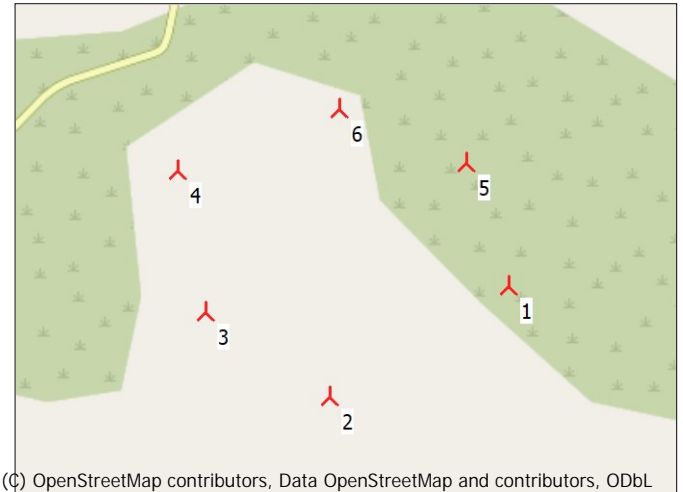
Omnidirectional displacement height from objects

Wake calculation settings

Angle [°] Wind speed [m/s]

start end step start end step

0.5 360.0 1.0 0.5 30.5 1.0



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

Scale 1:40,000

New WTG

Resource file(s)

C:\Users\student\Desktop\Soni_Patil_10\PROJECT_GUJ\Project_Guj_Res_50_Hub_135.0_150.0_110.0_0.rsf

Calculated Annual Energy for Wind Farm

WTG combination	Result		GROSS (no loss)	Wake loss	Specific results=)			Full load hours	Mean wind speed @hub height
	PARK	Free WTGs			Capacity factor	Mean WTG result			
	[MWh/y]	[MWh/y]		[%]	[%]	[MWh/y]	[Hours/year]		[m/s]
Wind farm	39,026.7	39,924.5		2.2	35.3	6,504.5	3,097		6.9

=) Based on wake reduced results and any curtailments.

Calculated Annual Energy for each of 6 new WTGs with total 12.6 MW rated power

Links	Valid	WTG type		Type-generator	Power, rated	Rotor diameter	Hub height	Power curve		Annual Energy Result	Wake loss	Free mean wind speed
		Manufact.						Creator	Name			
					[kW]	[m]	[m]			[MWh/y]	[%]	[m/s]
1 A	Yes	Suzlon	S97-2,100	109.9	2,100	97.0	112.0	EMD	Level 0 - Calculated - SB47 S97 - 03-2013	6,420.5	3.7	6.88
2 A	Yes	Suzlon	S97-2,100	100.0	2,100	97.0	112.0	EMD	Level 0 - Calculated - SB47 S97 - 03-2013	6,519.8	2.2	6.88
3 A	Yes	Suzlon	S97-2,100	97.5	2,100	97.0	112.0	EMD	Level 0 - Calculated - SB47 S97 - 03-2013	6,441.5	1.4	6.82
4 A	Yes	Suzlon	S97-2,100	107.5	2,100	97.0	112.0	EMD	Level 0 - Calculated - SB47 S97 - 03-2013	6,472.3	0.4	6.81
5 A	Yes	Suzlon	S97-2,100	120.0	2,100	97.0	112.0	EMD	Level 0 - Calculated - SB47 S97 - 03-2013	6,598.3	3.2	6.95
6 A	Yes	Suzlon	S97-2,100	120.0	2,100	97.0	112.0	EMD	Level 0 - Calculated - SB47 S97 - 03-2013	6,574.2	2.5	6.92

Annual Energy result includes shown losses. Additional losses and uncertainty must be considered for an investment decision.

WTG siting

UTM (north)-WGS84 Zone: 44

Easting Northing Z Row data/Description

[m]

1 New	527,077	2,550,325	109.9	Suzlon S97 2100 97.0 !O! hub: 112.0 m (TOT: 160.5 m) (11)
2 New	526,132	2,549,743	100.0	Suzlon S97 2100 97.0 !O! hub: 112.0 m (TOT: 160.5 m) (12)
3 New	525,475	2,550,184	97.5	Suzlon S97 2100 97.0 !O! hub: 112.0 m (TOT: 160.5 m) (13)
4 New	525,328	2,550,923	107.5	Suzlon S97 2100 97.0 !O! hub: 112.0 m (TOT: 160.5 m) (14)
5 New	526,852	2,550,966	120.0	Suzlon S97 2100 97.0 !O! hub: 112.0 m (TOT: 160.5 m) (15)
6 New	526,178	2,551,250	120.0	Suzlon S97 2100 97.0 !O! hub: 112.0 m (TOT: 160.5 m) (16)