

GENERAL INFORMATION

Type		Horizontal Axis Wind Turbine
Rated Power at Grid	kW	60
Model		ATB DD60.28_C36
Design Standards		EN IEC 61400 / CEI 021
Wind Class		III A
Cut-in Speed	m/s	3,0
Rated Wind Speed	m/s	7,5
Cut-out Wind Speed	m/s	19,0
Orientation		Upwind
Air Density	kg/m ³	1,225
Operation Temperature		from -10° to + 45°
Survival Temperature		from -20° to + 50°
Solar radiation intensity	W/m ²	1.500
Wind share exponent		0,2
Weibull distribution	k	2

ROTOR & BLADES

Nr of blades	n°	2
Rotor diameter	m	28
Swept area	m ²	616
Power per area	W/m ²	97,4
Blades material		Glass-Fibre reinforced Epoxy
Overall length	m	13,4
Rotor speed range	rpm	from 12 to 52
Rated rotor speed	rpm	46,0
Tip speed	m/s	66,0
Rotation direction		clockwise
Hub material		steel
Lightning protection		Aluminium Receptor system
Aerodynamic Profile		Windblade
Maximum Chord length	m	1,29
Production method		VI or HL
Pitch Sensors		1 x digital incl. 2 x limit switches

NACELLE

main frame material		steel
No of drives	n°	2
Yaw area	deg	-720 to +720
Yaw speed	deg/s	1
normal pitch speed	deg/s	5
Max pitch speed	deg/s	9
Yaw Sensor		1 x digital incl. limit switches

GENERATOR

Type		Permanent Magnet Generator
Nominal voltage	Vac	400 3ph
Transmission		direct drive
Cooling		passive air cooling
Protection class		IP56

FULL POWER CONVERTER

Type		IGBT Based Modular Designed Full Power Converter with LC Filter
Nominal voltage	Vac	400 3ph
Frequency (line side)	Hz	50 / 60
Power Factor		0.9 cap. to 0.9 ind.
Grid code		EON grid code 2008

CONTROL

Control System		PLC Controller
Control Concept		Variable speed
Supervisory System		Scada
Connection		Modem GPRS/UMTS/ADSL /Wifi
Rotor speed		digital
wind speed / direction		ultrasonic

SAFETY SYSTEM

Over Speed		safety relay
Vibrations		safety relay

BRAKE SYSTEM

Areodynamic brake		emergency stop via pitch hydraulic
Hydraulic brake		fail safe rotor brake system

TOWER

Tower type		concrete
Rotor Hub Height	m	37
Number of tower sections	n°	3
Weigth without fixtures	t	35

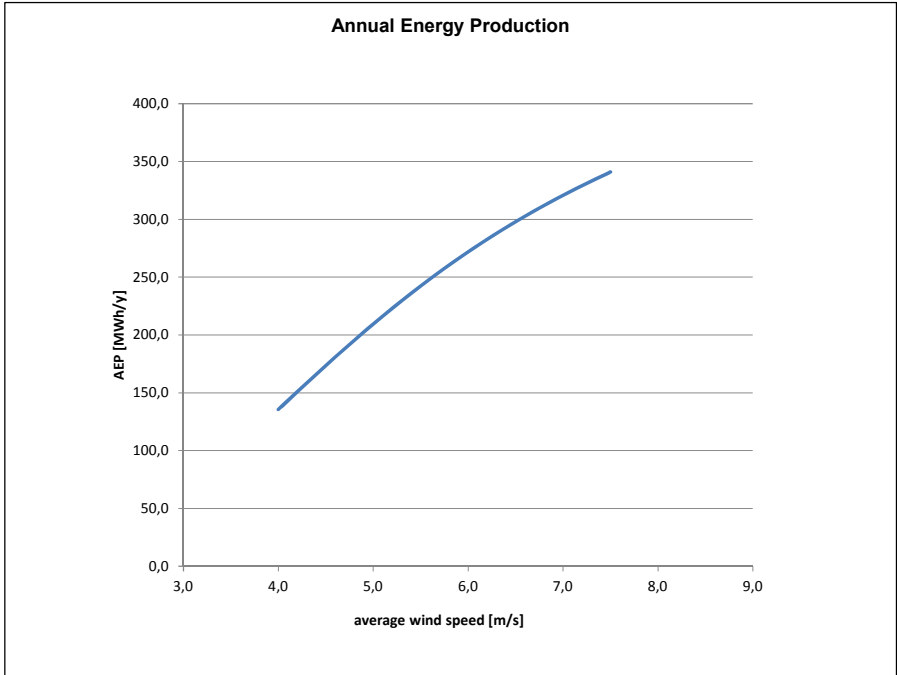
LUBRICATION SYSTEMS

Lubrication central systems		Automatic lubrication for all bearings
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LIGHTING PROTECTION

According to		IEC 61400-24 IEC 61024 & IEC 62305
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WIND SPEED [m/s]	POWER [kW]	AVERAGE WIND SPEED [m/s]	AEP [MWh/y]
3	4,0		
4	9,4	4,0	135,6
5	18,8	4,5	173,5
6	33,2	5,0	209,4
7	52,8	5,5	242,3
8	60,0	6,0	271,8
9	60,0	6,5	297,9
10	60,0	7,0	320,8
11	60,0	7,5	340,9
12	60,0		
13	60,0		
14	60,0		
15	60,0		
16	60,0		
17	60,0		
18	60,0		
19	60,0		



(*) Active power is given at the turbine main switch and does not consider high voltage transformer losses nor other subsequent site specific grid connection losses.
 Availability 100%
 Wind share exponent 0,2

All data can be changed without any notice
 This schedule can be modified at any time

