

## GENERAL INFORMATION

Type	Horizontal Axis Wind Turbine	
Rated Power at Grid	kW	500
Model	ATB 500.54	
Design to IEC Standard	CEI EN IEC 61400 1	
Wind Class	IEC IIIA	
Cut-in Speed	m/s	3,5
Rated Wind Speed	m/s	10,0
Cut-out Wind Speed	m/s	25,0
Orientation	Upwind	
Air Density	kg/m <sup>3</sup>	1,225
Operation Temperature	from -10° to + 45°	
Survival Temperature	from -20° to + 50°	
Solar radiation intensity	W/m <sup>2</sup>	1.500
Wind share exponent	0,2	
Weibull distribution	k	2
Nacelle Weight	Kg	30.000
Tower Weight	Kg	46.000
Total WTG Weight	Kg	92.000

## ROTOR & BLADES

Nr of blades	n°	3
Rotor diameter	m	54,0
Swept area	m <sup>2</sup>	2.290
Power per area	W/m <sup>2</sup>	218,3
Blades material	Glass-reinforced plastic	
Overall length	m	26,35
Rotor speed range	rpm	from 7.0 to 29.0
Rated rotor speed	rpm	26,5
Tip speed	m/s	75,0
Maximum overspeed	rpm	34,5
Lightning protection	acc. IEC 61400-24	
Rotation direction	clockwise	
Rotor hub weight (inc. blades)	kg	16.000
Hub material	EN-GJS-40018U-LT	
Rated rotor frequency	1/s	0,442

## PITCH CONTROL

Nr of pitch control	n°	three independent
Rotor speed control	Inverter COMBIVERT P6	
Type of pitch control	Electrical full span adjustment	

## NACELLE

Main gearbox	type	2 stage planetary/1 stage helical
Gear ratio	1 : 56.36	
Yaw area	deg	-720 to +720
Yaw speed	deg/s	0.3 to 0.5
normal pitch speed	deg/s	5,0
Max pitch speed	deg/s	8,0
Over speed	two independent rotation sensors	
Vibration	certified vibration device	
Lifting cap. nacelle crane	kg	500

## GENERATOR

Type	PMR 450B	
Protection class	IP54	
Nominal output	kW	570
Nominal voltage	Vac	690 3ph
Rated frequency	Hz	75
Speed range	rpm	374 to 1645
Cooling	air-air heat exchanger	
Rated speed	rpm	1.495

## FULL POWER CONVERTER

Type	0,5 MW power converter	
Rated current	A	590
Nominal voltage	Vac	690 3ph
Frequency (line side)	Hz	50/60
Reactive pow. Cap (cosφ)	-0,9 to 0,9	
Cooling	Liquid cooling	
Grid code	EON grid code 2008	

## SAFETY SYSTEM

Rotor Lock	For maintenance purposes mechanical rotor lock is supplied	
Aerodynamic brake	3 independent pitch redundantly controlled can rotate 90° by safety system	
Pitch back up	Each rotor blade has its own independent battery module to ensure power supply in emergency	
Active yaw control	Yaw brakes are engaged to prevent rotation	
Lubrication central systems	Automatic lubrication device for pitch and yaw pinions is working to each blades and yaw movement	
Access to the nacelle	Safety climbing system for ascend/descent via the ladder inside the tower	

## TOWER

Tower type	Conical/Cylindrical - inner flanged	
Rotor Hub Height	m	50/73
Number of tower sections	n°	2/3
Weight without fixtures	kg	43.200/77.000
Corrosion protection	multi layer epoxy/polyurethane	

## CONTROL

Control System	PLC Controller	
Control Concept	Variable speed	
Supervisory System	Scada	
Connection	modem GPRS/UMTS/ADSL /Wifi	

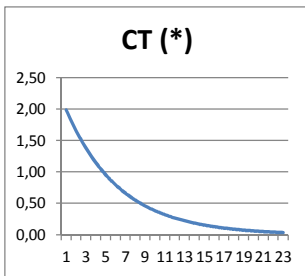
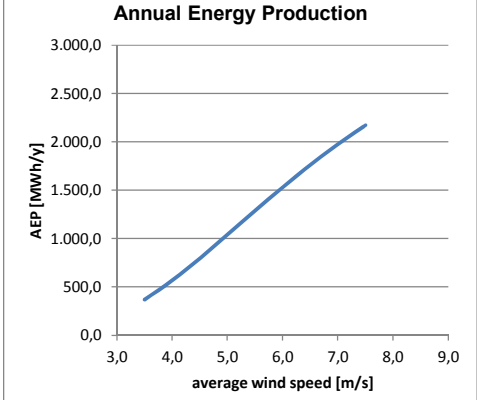
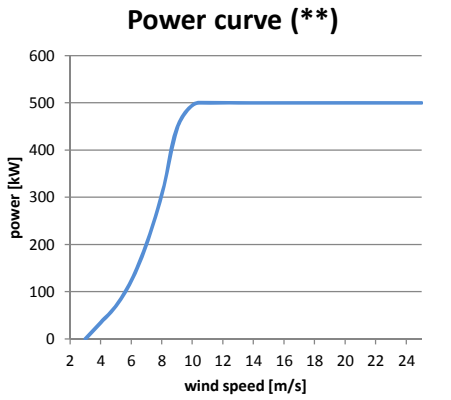
## LIGHTING PROTECTION

According to	IEC 61400-24 IEC 61024 & IEC 62305	
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## NOISE

Noise level	see Sound power level table (overleaf)	
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WIND SPEED [m/s]	POWER [kW]	CT (*)	AVERAGE WIND SPEED [m/s]	AEP [MWh/y]
3	0	2,03	3,5	369,2
4	34,8	1,41	4,0	566,9
5	69,7	1,24	4,5	795,0
6	123,5	1,14	5,0	1.039,7
7	200,7	1,09	5,5	1.288,2
8	306,6	0,98	6,0	1.530,8
9	446,4	0,84	6,5	1.761,2
10	495,0	0,64	7,0	1.975,7
11	500,0	0,63	7,5	2.172,6
12	500,0	0,37		
13	500,0	0,27		
14	500,0	0,22		
15	500,0	0,18		
16	500,0	0,16		
17	500,0	0,13		
18	500,0	0,12		
19	500,0	0,10		
20	500,0	0,08		
21	500,0	0,07		
22	500,0	0,06		
23	500,0	0,05		
24	500,0	0,05		
25	500,0	0,05		



WIND SPEED AT HEIGHT OF 10m [m/s]	SOUND POWER LEVEL LW [dB] A-weighted
5,0	95,9
6,0	97,2
7,0	98,2
8,0	99,0
9,0	99,5
10,0	99,7

(\*) Thrust coefficient. Calculation is based on the 10 min mean thrust out of a load simulation

(\*\*) 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

