

Technical specifications of wind energy converter

General		
Manufacturer	ENERCON GmbH Dreekamp 5 26605 Aurich Germany	
Type designation	E-160 EP5 E3 R1	
Nominal active power	5560 kW	
Rotor diameter	160 m	
Wind class (IEC 4th edition)	IIIA	S ¹
Design service life	20 years	25 years
Extreme wind speed at hub height (10-minute mean)	37.50 m/s	37.50 m/s
Corresponds to a load equivalent of approx. (3-second gust)	52.50 m/s	52.50 m/s
Annual average wind speed at hub height	7.50 m/s	8.50 m/s

Rotor with pitch control	
Type	Upwind rotor with active pitch unit
Rotational direction	Clockwise (viewed from upwind)
Number of rotor blades	3
Rotor blade length	78.3 m
Swept area	20 106 m ²
Rotor blade material	Glass fibre and polyester
Minimum operating speed ²	4.4 rpm
Power reduction wind speed (with ENERCON storm control)	25 m/s (12-second mean)
Cut-out wind speed (with ENERCON storm control)	28 m/s (10-minute mean)
Conical angle	5°
Rotor axis angle to the horizontal	6°
Pitch control	One independent electrical pitch unit per rotor blade with dedicated emergency power supply

¹ Wind class S comprises wind class IIIA with 20 years design service life (operating and ultimate loads) and wind class IIB with 25 years design service life (operating loads).

² Rotational speed at which power feed starts.

Drive train with generator	
Wind energy converter concept	Gearless, variable speed, full-scale converter
Hub	Rigid
Bearing	2 tapered roller bearings
Generator	Direct-driven, permanent magnet synchronous generator
IP code/insulation class	IP 54/F

Brake system	
Aerodynamic brake	Aerodynamic via 3 independent pitch units with emergency power supply
Rotor holding brake	Electrical
Rotor lock	Latching every 30°

Yaw control	
Yaw system	Electrical yaw system
Yaw brake	Electrical

Control system of the wind energy converter	
Type	Programmable logic controller
Grid feed	Full-scale converter with integrated microprocessor control system
Remote monitoring system	ENERCON SCADA
Uninterruptible power supply (UPS)	Integrated

Tower types				
Hub height	Total height	Type	IEC wind class ³	Turbulence category IEC ³
99.00 m	179.0 m	Tubular steel tower	III	A
			S ¹	S
119.83 m	199.8 m	Hybrid steel tower	III	A
			S ¹	S
160.00 m	240.0 m	Hybrid tower	III	A
			S ¹	S
166.60 m	246.6 m	Hybrid tower	III	A
			S ¹	S

³ Issue of the directive Edition 4