Technical specifications – E-138 EP3

General	
Manufacturer	ENERCON GmbH Dreekamp 5 26605 Aurich Germany
Type designation	E-138 EP3
Nominal power	3500 kW
Hub heights	81 m, 111 m, 131 m, 160 m
Rotor diameter	138.6 m
IEC wind class (ed. 3)	IIIA
Extreme wind speed at hub height (10-minute mean)	37.5 m/s
	Corresponds to a load equivalent of approx. 52.5 m/s (3-second gust)
Annual average wind speed at hub height	7.5 m/s

Rotor with pitch control	
Type	Upwind rotor with active pitch control
Rotational direction	Clockwise
Number of rotor blades	3
Rotor blade length	66.89 m
Swept area	15085 m^2
Rotor blade material	GRP/epoxy resin/balsa wood/foam
Lowest power feed speed to nominal speed	4.4 to 10.5 rpm (81 m and 131 m (hybrid tower) hub height); 5 to 10.5 rpm (111 m, 131 m (steel tower) and 160 m hub height)
Speed setpoint	10.8 rpm
Tip speed at speed setpoint	Up to 78.38 m/s
Power reduction wind speed	22 to 28 m/s (with ENERCON storm control)
Conical angle	2.5°
Rotor axis angle	7°
Pitch control	One independent electrical pitch system per rotor blade with dedicated emergency power supply

Drive train with generator	
Wind energy converter concept	Gearless; variable speed; full-scale converter
Hub	Rigid

© ENERCON GmbH. All rights reserved.

Drive train with generator	
Bearing	2 tapered roller bearings
Generator	Direct-drive ENERCON annular generator
Grid feed	ENERCON inverters with high clock speed and sinusoidal current
IP Code/insulation class	At least IP 23/F

Brake system	
Aerodynamic brake	Three independent pitch systems with emergency power supply
Rotor brake	Hydraulic
Rotor lock	Latching every 10°

Yaw system	
Type	Electrical with yaw motors
Control	Active via yaw gears

Control system	
Type	Microprocessor
Grid feed	ENERCON inverter
Remote monitoring system	ENERCON SCADA
Uninterruptible power supply (UPS)	Integrated

Tower types			
Hub height	**Total height**	**Type**	**Wind class**
81 m	150 m	Tubular steel tower	IEC IIIA[1] DIBt WZ2 GK II[2]
111 m	180 m	Tubular steel tower	IEC IIIA[1] DIBt WZ2 GK II[2]
131 m	200 m	Tubular steel tower	IEC IIIA[1] DIBt WZ2 GK II[2]
131 m	200 m	Hybrid tower	IEC IIIA[1] DIBt WZ2 GK II[2]
160 m	230 m	Hybrid tower	IEC IIIA[1] DIBt WZ2 GK II[2]

[1]Edition 3
[2]Edition 2012

© ENERCON GmbH. All rights reserved.