

NORWIN 29-STALL-200 kW

TECHNICAL DATA

Nominal electric power:	200 kW
Power regulation:	Stall
Rotor diameter:	29.1 m (95.4 ft)
Rotor speed:	37.6 rpm at full load
Rotor:	Three blades placed upwind of tower
Swept area:	664 m ² (7145 ft ²)
Tilt angle:	5°
Coning angle:	0°
Blades make:	LM 13.4 m
Pitch angle:	App.: -2.3° (Will be adjusted during running in)
Air brake:	Turnable blade tips
Mechanical brake:	A fail-safe type disk brake on the high-speed shaft of the gearbox
Brake torque:	2.0 times of nominal torque or soft brake system (1 times of nominal torque) by normal braking sequences
RPM max. value:	1600 (50 Hz) or 1920 (60 Hz), observed on the high-speed shaft
Generator:	Closed, 4-pole, asynchronous, single wound, induction, IP54
Generator speed:	1500 (50 Hz) or 1800 (60 Hz) rpm at sync. speed
Loss in generator:	App.: 3% at full load
Generator cut-in:	Thyristor controlled gradual cut-in
Grid connection:	50 Hz - 400 V or 60 Hz - 480 V
Yaw motors:	2 pcs. active drives, electrical
Yaw brakes:	3 pcs. active hydraulic operated brakes
Yaw bearing:	Slide bearing)
Tower type:	Conical steel tower
Hub height:	30 m (98.4 ft) or 40 m (131.2 ft)
Controller:	PLC and microprocessor based
Cut-in wind speed:	4 m/s (9 mph)
Cut-out wind speed:	25 m/s (60 mph), based on 5-min. average
Survival wind speed:	67 m/s (150 mph)
Approximate masses:	
Nacelle excl. rotor:	7.63 tons
Complete rotor:	5.30 tons
Nacelle total:	12.93 tons
Tower 30 m:	13.25 tons
Tower 40 m:	20.70 tons
Maximum noise level:	98 dBA

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