

NorthWind 100 Wind Turbine

SYSTEM

Type	3Ph Grid Connected
Configuration	Horizontal Axis
Rotor Diameter	19 m, 20 m
Centerline Hub Height	25 m, 32 m, 37m
Drive Train	Direct Drive

DESIGN SPECIFICATIONS

Turbine Class	IEC WTGS Class S
Design Life	30 year
Design Standards	In accordance with IEC 61400-1

PERFORMANCE PARAMETERS

Rated Electrical Power	100 kW @15 m/s
Wind Speed Ratings:	
cut-in	4 m/s
shut-down (high wind)	25 m/s
design speed	59.5 m/s
Calculated Annual Output @ 100 % availability	5.0 m/s 150,300 kWh 6.0 m/s 227,800kWh 7.0 m/s 305,400 kWh

ROTOR

Type of Hub	Fixed Pitch
Rotor Diameter	19 m, 20 m
Swept Area	284 m ² , 314 m ²
Power Regulation	Variable Speed Stall
Number of Blades	3
Rotor Speed @ rated wind speed	67 rpm
Location Relative to Tower	Upwind
Cone Angle	0°
Speed Range	45 - 69 rpm

BLADES

Aerofoil	S819, S820, S821Series
Material	Fiberglass Reinforced Plastic (FRP)
Lightning Protection	Standard Integrated System

DRIVE TRAIN

Configuration	Variable Speed Direct Drive
Tilt Angle	4°
Generator Type	Salient Pole Synchronous
Insulation Class	50 kW
Generating Speed	45 - 69 rpm
Generator Rating	100 kW w/ 1.15 Service Factor
Speed Control	Caliper Brake, Dynamic Brake

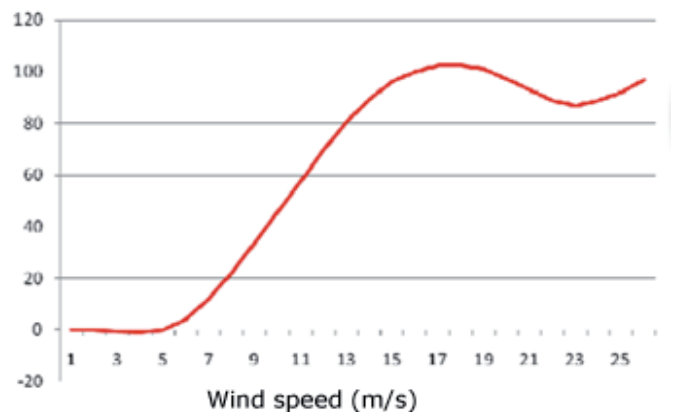
GRID CONNECTION

Grid Tolerance	+10/-15% voltage; +/- 2Hz
Electrical Output	400 VAC, 3 phase, 50Hz
Power Factor Compensation	>0.99 PF at rated
Inverter Output Reactive Power	+/- 45kVar@480V



YAW SYSTEMS

Type	Active Upwind
Damping System	Adjustable Friction
Yaw Drive	Electrically Driven Planetary Gearbox
Yaw Bearing	Slew Ring



For more information on the NorthWind 100 Wind Turbine please call 01908 488124 or email: enquiries@perpetualenergy.co.uk

BRAKING SYSTEMS

Type Main Shaft Disc Brake w/ Dual Spring Applied Calipers
Electro-Dynamic Brake Parking and emergency backup

TOWER

Type Tubular Steel
Hub Height 25 m, 32 m, 37 m
Corrosion Protection Marine Grade Paint

FOUNDATION

Type Concrete pads, piers or special

SERVICE ENVIRONMENT

Tower Fully Enclosed, Ladder, Safety Climb
Nacelle Fully Enclosed

CONROLLER

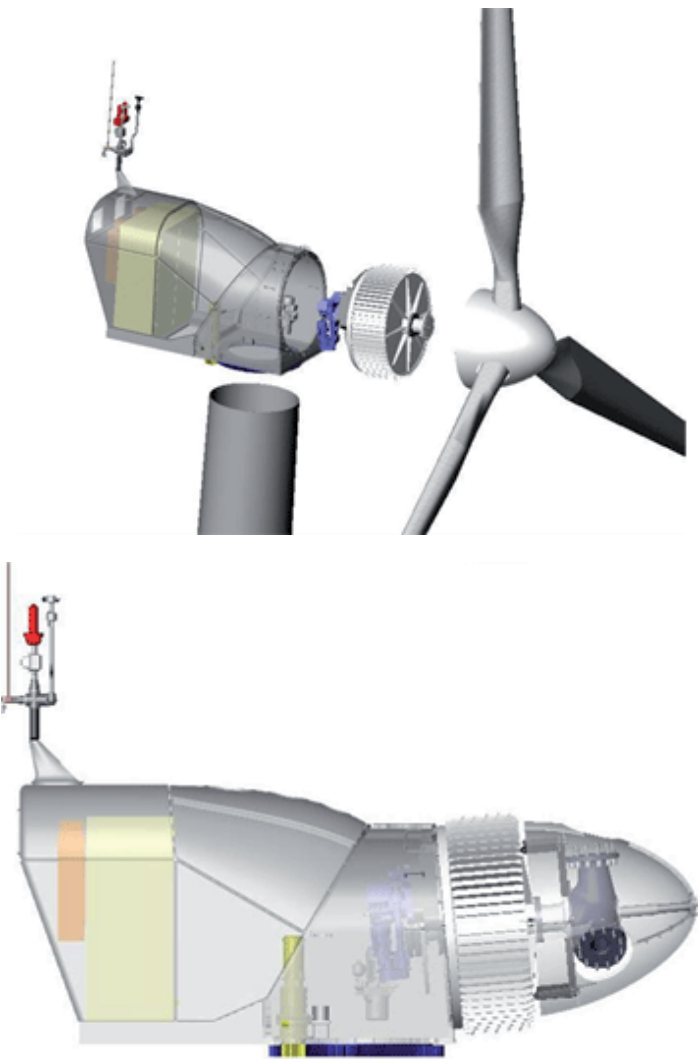
Type Northern WTGS-100 Controller, Microprocessor-based
Functions Complete Supervisory Control and Data Acquisition
Remote Control/ Monitoring Integrated SmartView™ Access
Power Electronics IGBT Pulse Width Modulation (PWM) Converter

ENVIRONMENT SPECIFICATIONS

Temp Operating Range -46°C to 50°C (-50°F to 122°F)
Lightning Protection In Accordance with IEC 61024-1
Icing/Dust/Dirt Ice Cover to 30mm
Seismic Loading Zone 4

MASSES

Rotor 875 Kg
Nacelle (excluding rotor) 6587 Kg
Tower (25 m) 6500 Kg



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