

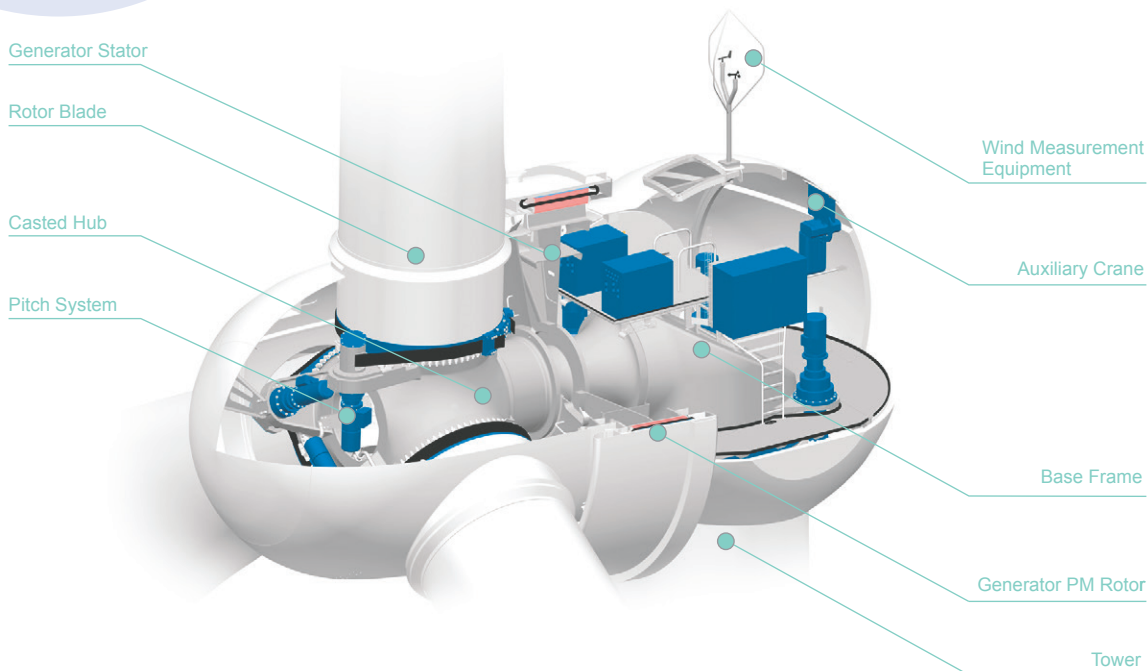


PMDD WIND TURBINE

1.5MW



1.5MW PMDD WIND TURBINE



GOLDWIND 1.5MW PERMANENT MAGNET DIRECT-DRIVE (PMDD) WIND TURBINE

HIGH POWER GENERATING EFFICIENCY

- Permanent magnet generator (PMG) eliminates the need for electrical field excitation and associated energy losses.
- PMG operates more efficiently at partial load compared to other generator types.
- Passive cooling design results in fewer components and no energy lost to external cooling systems.

HIGH POWER TO WEIGHT RATIO

- Goldwind 1.5MW wind turbines feature a smaller external diameter compared to wound rotor designs.
- The combination of a PMG and direct-drive technology results in lowest-in-class top head mass and reduced crane requirements.

SUPERIOR POWER QUALITY AND GRID CODE COMPLIANCE

- Full power conversion and flexible power control ensure compliance with demanding grid code requirements
- The 1.5MW wind turbine features low-voltage and zero-voltage ride through capabilities
- Intelligent control systems provide curtailment and ramp-rate control.

ADVANCED PITCH-DRIVE BELT SYSTEM

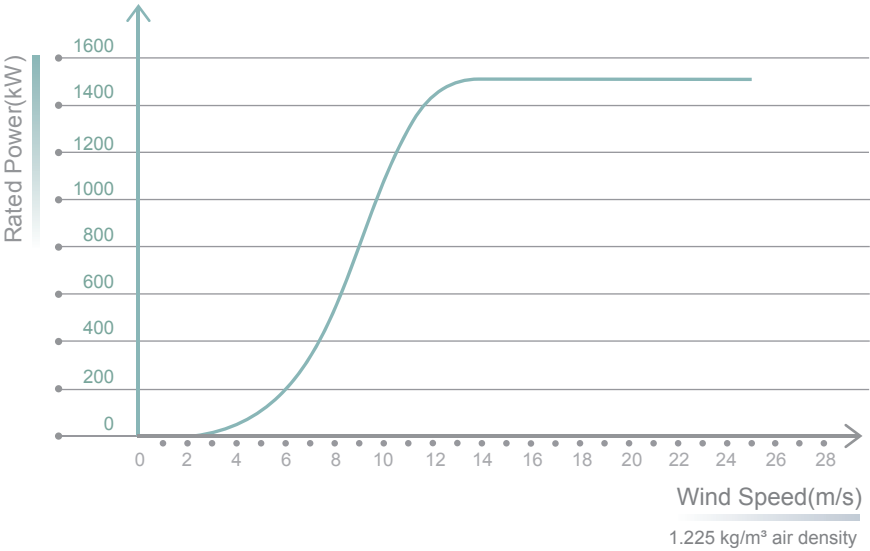
- Goldwind's advanced pitch-drive belt system eliminates localized wear experienced by gear-driven pitch systems, reducing the replacement of expensive parts and associated crane service requirements
- Ultra capacitors replace lead acid or gel batteries for Goldwind's pitch control system, offering higher power density and faster charge speed, ideal for a pitch system that requires quick bursts of power
- Ultra capacitors have a wider operating temperature range, higher reliability, and reduced maintenance intervals compared to conventional battery systems.

SIGNIFICANTLY REDUCED MAINTENANCE COST AND TOTAL OPERATING EXPENDITURE

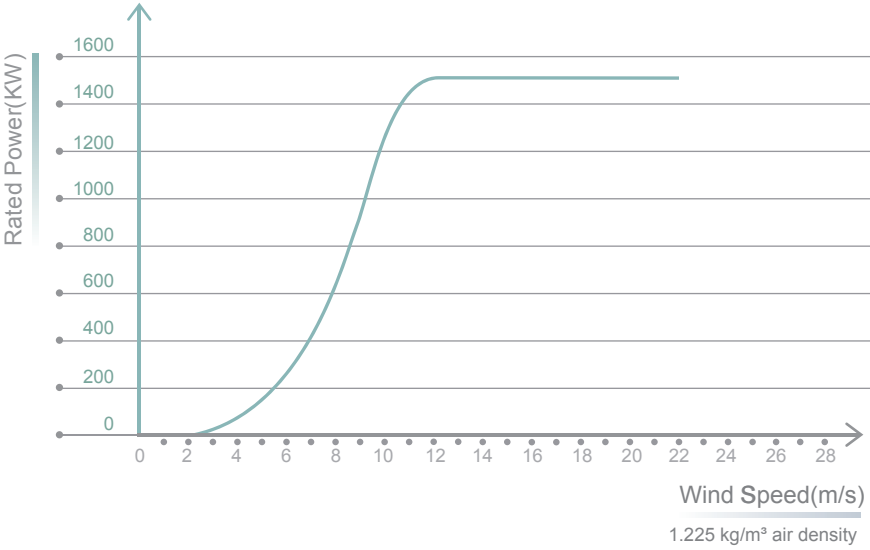
- The design principles of the 1.5MW PMDD wind turbine avoid sources of expensive faults that require crane mobilization
- The absence of high-current carbon brush slip-rings in the generator reduces faults, downtime and overall cost over the lifetime of the turbine
- Only one moving part in the drive train increases reliability compared to hundreds of total parts in a conventional gearbox including highspeed gears, bearings and couplings.
- The generator and rotor require only two bearings compared with more than 20 for conventional gearbox machines
- Automatic lubricating system for the yaw bearing reduces the frequency of unplanned maintenance

DYNAMIC POWER CURVE

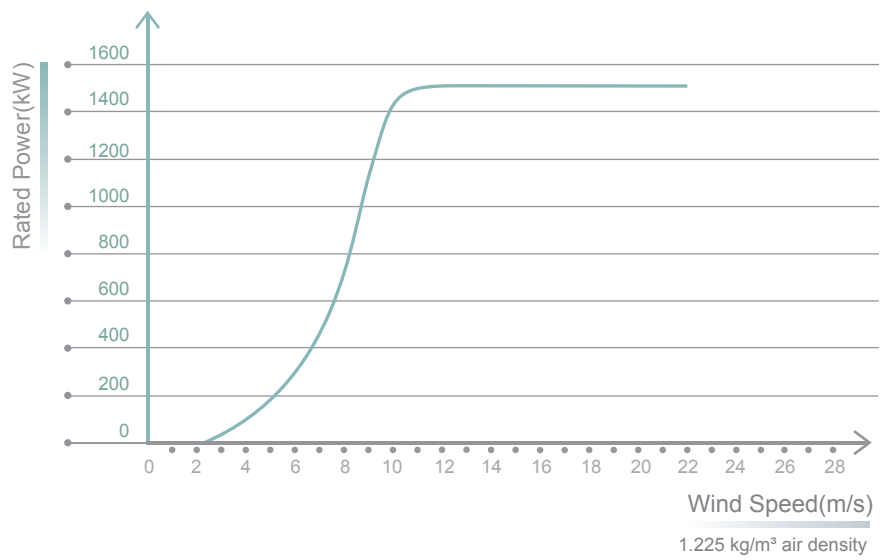
GW 70/1500



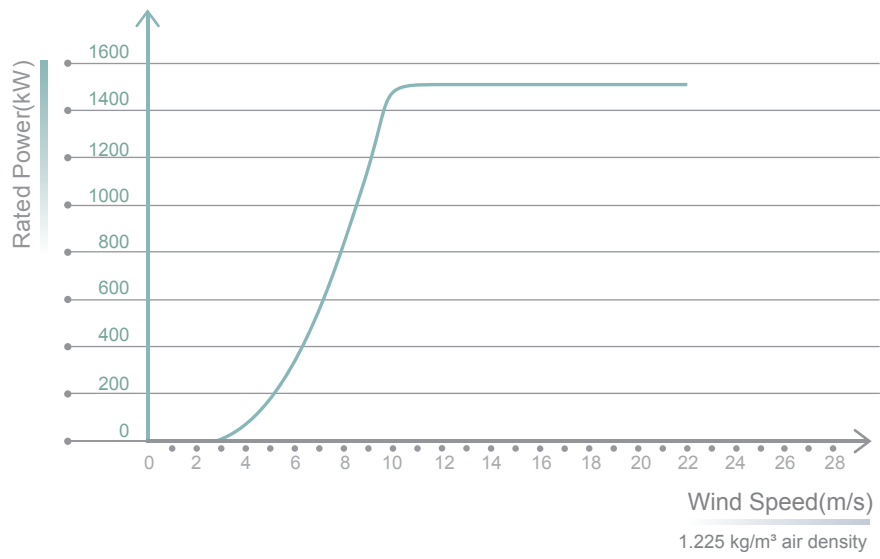
GW 77/1500



GW 82/1500



GW 87/1500



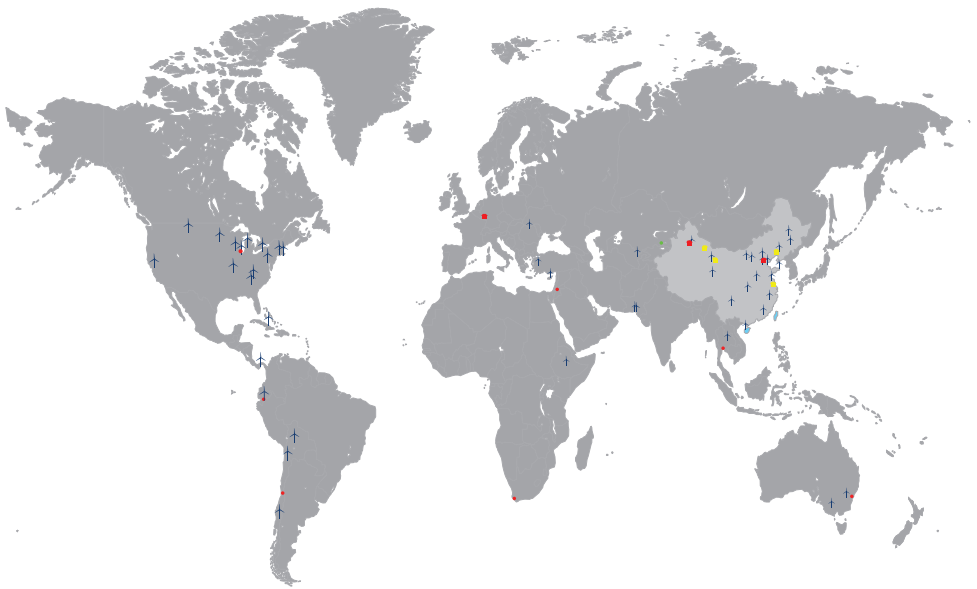
GOLDWIND 1.5MW PMDD WIND TURBINE SERIES

GENERAL TECHNICAL SPECIFICATIONS

Technical Data	GW 70/1500	GW 77/1500	GW 82/1500	GW 87/1500
Operation Parameters				
IEC Wind Class	IA	IIA	IIIA	IIB
Rated Power	1500kW			
Cut-in Wind Speed	3m/s			
Rated Wind Speed (Static)	11.8m/s	11m/s	10.3m/s	9.9m/s
Cut-out Wind Speed (10 min avg.)	25 m/s	22 m/s		
Rotor				
Diameter	70m	77m	82m	87m
Swept Area	3886m²	4649m²	5325m²	5890m²
Number of Blades	3			
Power Control	Collective Pitch Control / Rotor Speed Control			
Safety System	Independent Blade Pitch Control			
	Hydraulic Disk Brake			
	Mechanical Pin Rotor Lock			
Generator	Permanent Magnet Direct Drive Synchronous Generator			
Rated Voltage	690V			
Yaw System	3 Induction Motors with Hydraulic Brakes			
Tower	Tubular Steel Tower			
Foundation	Flat Foundation (Other Options)			
Converter	Full Power Converter (IGBT) Modular System			
Control System	Microprocessor Controlled with Remote Monitoring			







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