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Renewable generators High speed permanent magnet generator (HS PMG) Compact design, maximized power perweight ratio



Proven ABB solutions provide continuous operation for maximum energy production with the lowest lifetime cost.

- Wind turbine proven High speed permanent magnet generator family available for other Renewable applications
- Easy upgrade for doubly-fed turbine OEMs to the full converter concept
- Robust PM generators offer the smallest possible size and weight
- High efficiencies, also in partial load, reaching up to 98%
- Grid code compliance and all the benefits of the full converter concept

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ABB High speed
Permanent magnet
wind generators

Easy offshore solution

ABB modular platform includes high speed Doubly-fed, Induction and Permanent magnet generators.

With Full Converter Supply Permanent magnet generators offers best efficiency characteristics over entire operation range. Compared to the cage induction machine, PM rotor is equally robust, but stator current is lower having thus lower cabling costs. Compared to conventional electrically magnetized synchronous generator or Doubly-fed wound rotor generators, stator current is low, but rotor is much simpler without insulated windings, slip-rings and excitation machines.

With a compact size, permanent magnet high speed generators are fit for geared drive trains in wind, hydro and tidal turbines.

No need to change the turbine platform

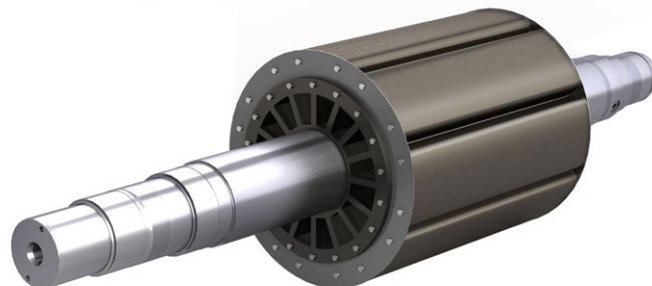
The high speed (HS) solution is especially interesting for doubly-fed (DF) turbine manufacturers who can use the same familiar HS drivetrain for new offshore turbines without having to do extensive re-engineering. It also enables them to use their existing manufacturing facilities and established supply chain for easy logistics.

The advanced full converter (FC) concept can be realized by using robust high efficiency PM generators that are designed to fit most turbine types in use today.

ABB has almost 20 years of experiences in HS PMG and the generator family has been expanded up to 7 MW with a product in frame size 710.

Typical data for medium speed generators up to 7.9 MW	
Frame size	500, 560 and 710
Power	1.5 - 7.9 MW
Efficiency at rated speed	Up to 98% (> 97% down to 20% load)
Cooling	Air and water cooling
Mounting and protection	IM1001 (inclined 4...6 deg), IP54
Voltage	690 V, 1000 V, 3.3 kV
Rated speed options	Between 1000...1800 rpm
Operation speed range	0...2000 rpm
Max. overspeed	Up to 2500 rpm (depending on size)
Insulation class / Temp. rise	F/B and F/F
Typical dimensions with water cooling (L x W x H, weight)	2.5 MW: 2400 x 1700 x 1800; ~ 7 tn
	3.0 MW: 2500 x 1700 x 2000; ~ 10 tn
	5.0 MW: 3100 x 1800 x 2300; ~ 13 tn
	7.0 MW: 3300 x 1800 x 2400; ~ 15 tn

Patented ABB PM rotor technology has proven short circuit withstand without demagnetization.



Rotor of the PM generator



Your reliable partner

ABB motors are based on reliable designs, proven in thousands of installations, and provide high productivity in demanding conditions.

With ABB you always have a partner to discuss different motor solutions to optimize your process. Our services do not stop at sales. We make it easy for you to reach us at every stage of your motor's life cycle.

ABB's extensive global network ensures local service delivery whenever and wherever you need it. The worldwide network includes over 60 service centers and more than 150 authorized service providers.

We offer predefined maintenance programs for all lifetime phases of all ABB motors, and preventive diagnosis and updates can help to further boost your competitiveness when needed.

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