

Product note

Wind power generators

High speed permanent magnet generator (HS PMG)



- New offshore design to expand the proven HS PMG family up to 7 MW
- Easy upgrade for doubly-fed turbine OEMs to the full converter concept
- Robust PM generators offer the smallest possible size and weight
- High efficiencies, especially at low speeds, reaching up to 98%
- Superior grid compliance and all the benefits of the full converter concept

Easy offshore solution

Designing a new turbine type or upgrading from the doubly-fed (DF) to full converter (FC) concept, could mean major engineering work. Using the ABB modular platform which supports all high speed solutions – either induction, DF or permanent magnet – time consuming changes in turbine design can be avoided. ABB has already launched two easily available HS product families based on the modular principle. For turbine manufacturers this means fast-track market entry – now also for multi-MW class offshore turbines.

No need to change the turbine platform

The high speed (HS) solution is especially interesting for 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.

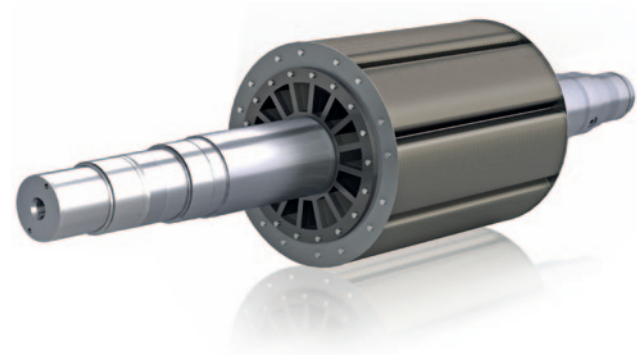
The advanced full converter (FC) concept can be realized by using robust high efficiency PM generators that are designed to fit most turbine types in use today.

ABB launched the first HS PMG already in 2003, and is now expanding the generator family up to 7 MW with a product in frame size 710.

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

Typical data for standard HS PM generators up to 7 MW or more:

Power/Frame size	1.5–2.5 MW: 500 frame
	2.5–3.6 MW: 560 frame
	3.2–7.9 MW: 710 frame
Efficiency at rated speed	approx. 98% (> 97% down to 20% load)
Cooling	air or water cooling
Mounting and protection	IM1001 (inclined 4..6 deg), IP54
Voltage	690 V or 3.3 kV
Rated speed options	between 1000...1800 rpm
Operation speed range	0..2000 rpm
Max. overspeed	up to 3000 rpm (depending on size)
Insulation class/Temp.rise	F/B
Typical dimensions, with water cooling (LxWxH, 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. It is also designed to handle unexpected overspeeds.

Your reliable partner

ABB is a leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. The ABB group of companies operates in around 100 countries and employs about 145 000 people.

In the wind power sector, ABB is the largest worldwide supplier of electrical solutions and the market and technology leader in generators, converters, circuit breakers/contactors, motors, transformers and HVDC power transmission systems.

ABB has supplied more than 35 000 wind power generators over the last 30 years, based on more than 120 years of experience in manufacturing motors and generators. Leading turbine manufacturers of all drivetrain types rely on ABB technology for induction, doubly-fed and permanent magnet generators. ABB offers solutions including inner or outer rotor direct drive, integrated medium speed generators and the flexible high speed platform. ABB introduced the first MW class PM generator for wind power in 1999.

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