

Product note

Synchronous generators for steam and gas turbines Pre-engineered generator line

ABB is a leading supplier of synchronous turbine-driven generators to power utilities, paper mills, sugar plants, oil and gas installations, and many other sectors. We have been manufacturing generators for more than 120 years and have extensive application experience with tens of thousands of installations all over the world. ABB offers reliable and efficient power generation with worldwide support.

Generators for steam and gas turbine applications

ABB can supply a complete generator package for your steam and gas turbine applications, including the generator, cooling system, foundation details, main terminal box and generator control panel. ABB's extensive experience and a global service network ensure full support is available over the entire life cycle of the generator.

The modular design offers great flexibility, ensuring that the right generator can be selected for each installation. ABB has supplied generators to customers all over the world, giving us extensive experience in meeting different standards. Pre-engineered generators are designed according to IEC and NEMA standards, and can as an option also be installed in hazardous areas.

From the very beginning of a project we can offer our customers expert generator support. After installation ABB's worldwide aftermarket organization will be available to help. The generator plays the central role in electricity production, and an efficient, high quality product with low downtime is essential for a profitable installation.

What is a pre-engineered generator?

Pre-engineered generators represent an alternative to the AMS series. The generators have been developed using advanced 3D design methods and FEM simulation, combined with ABB's extensive experience in manufacturing synchronous generators. The result is a series of generators which have the electrical and mechanical performance to meet most



customer requirements, while providing commonly needed features. These state-of-the-art synchronous generators for steam and gas turbine applications feature vacuum pressure impregnation (VPI) of the stator winding system, providing the strength necessary to withstand all mechanical and electrical stresses during operation. The robust stator and the rigid rotor construction - which incorporates solid salient poles - makes the pre-engineered generators extremely reliable.

Pre-engineered generators

Pre-engineered generators are synchronous models with fixed core designs. They can be supplied with several pre-engineered optional items and features to meet your needs. When an order is received, pre-engineered modular items and features are configured as necessary - no engineering work is performed to order. The optimized order process enables short delivery times and availability of high quality documentation as soon as the order is received. Major long lead items are eliminated by stockholding.

Technical information

The active components are selected for each specific application in order to achieve high efficiency and reliable operation. These 4-pole generators have a salient pole rotor design, with class H rotor insulation. The stator is vacuum pressure impregnated for ultimate insulation (class F) and protection. The compact design of the generators gives them a world-class output per unit of weight. The generators can be skid mounted or installed on a foundation at the site.

Main features

- synchronous generator with brushless excitation
- rigid construction with flange mounted bearings
- temperature rise / insulation class: B/F
- standard cooling form is open ventilated (IC3A1/TEPV, duct connection for inlet and outlet air)
- totally enclosed, air-to-water cooled (IC8A1W7/TEWAC) and air-to-air cooled (IC6A1A6/CACA) generators can also be supplied
- protection classes IP20 (IC3A1), IP54 or IP56
- direction of main connection can be freely determined
- main terminal box can be included as an optional item
- design according to IEC 60034-1 or NEMA MG 1
- available for installation in hazardous area (Ex nA, Class I Div 2 or Class I Zone A)
- two different painting systems:
 - epoxy industrial & coastal painting (C3)
 - epoxy offshore painting (C5M)
- clockwise or counterclockwise direction of rotation
- wide range of features and accessories

Technical data	
Power	up to 20,9 MVA
Voltages for NEMA	6,9 ± 5% kV
	12,47 ± 5% kV
	13,2 ± 5% kV
	13,8 ± 5% kV
Voltages for IEC	6,3 ± 5% kV
	6,6 ± 5% kV
	10,5 ± 5% kV
	11 ± 5% kV
Frequency	50 Hz or 60 Hz
Shaft height	900 mm
Number of poles	4 poles
Standards	IEC60034-1 or NEMA MG1
Ambient temperature	-20°C to +40°C
	-4°F to +104°F
Hazardous area	Ex nA IIC T3
	Class I Division 2 Group A, B, C, D, T3
Protection forms	IP20, IP54 & IP56
Cooling forms	Duct in Duct out (IC3A1 or IC2A1)
	TEWAC (IC8A1W7)
	CACA (IC6A1A6)

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More than just a generator

Generator management is part of an overall system and must form a good fit with the turbine and all auxiliary equipment. ABB offers a wide range of systems for collecting and transmitting information from the generator for protection and monitoring purposes. These systems ensure that the generator meets our customer's needs and the requirements of the installation.

What are the benefits for the customer?

- **flexible and standardized generators**
pre-engineered generators are based on standard modules. The modules are set up to meet customer's specific requirements.
- **short delivery time**
standardization makes it possible to keep long lead items in stock to reduce lead time and deliver generators with short delivery times.
- **3D generator model**
a 3D model can be included with the quotation. This will reduce the time required for site design and preparation.
- **references from customers worldwide**
ABB has supplied synchronous generators to customers all over the world. ABB is one of the world's leading suppliers of medium voltage generators.
- **high quality product**
ABB generators are reliable and robust, built for a long operating life with minimum downtime.
- **support and service**
long-term profitable operation of these machines requires reliable performance from every component. To achieve this we offer services that extend well beyond the warranty period.