30 MW
Marine Gas Turbine

GE's 30 MW marine gas turbine is based on the industry standard-setting 25 MW marine gas turbine. Its main features are increased power (20%) compared to the 25 MW unit, the same high availability and reliability, and an even higher efficiency (lower SFC). As in the case of GE's 25 MW gas turbine, the 30 MW unit's simple modular design provides for easy maintenance with its split compressor casing, in-place blade and vane replacement, in-place hot section maintenance and external fuel nozzles.

Comparing the Design of the 30 MW to the 25 MW Marine Gas Turbine

The primary difference between the two gas turbines is the addition of one stage of compressor blades forward of the 25 MW's first stage blading which results in approximately a 20% airflow increase at full power. This "zero" stage is a wide-chord, single-piece bladed disk or blisk. The 30 MW stage one blades have been redesigned without mid-span dampers. The 30 MW 17-stage compressor has an increased pressure ratio to 23.1:1 from 18:1 of the 25 MW marine gas turbine.

Aft of the 30 MW gas turbine compressor is the fully annular combustor with externally mounted fuel nozzles; a two-stage air-cooled high-pressure turbine which drives the compressor and the accessory-drive gearbox; and a six-stage aerodynamically coupled, low-pressure power turbine which is driven by the gas generator's high energy exhaust gas flow. The increase in power warranted several design changes in the existing 25 MW power turbine. The overall flow function was increased 11% to account for the higher airflow. Stage 1 and Stage 6 blades are optimized for aerodynamic efficiency to keep the power turbine at its previously high level of efficiency. The power turbine rotor has been strengthened for the higher torque and potential energy of the 30 MW marine gas turbine. Pre-wired, pre-piped and factory-tested for easy installation, the 30 MW module weighs just 48,090 pounds (21,859 kilograms). It requires only 338 x 108 x 120 cubic inches of ship space (28.2 x 9 x 10 feet) (7.16 x 2.74 x 3.05 meters). The inlet duct flow area is 57 square feet (5.35 square meters) and the exhaust flow area is 36 square feet (3.3 square meters).

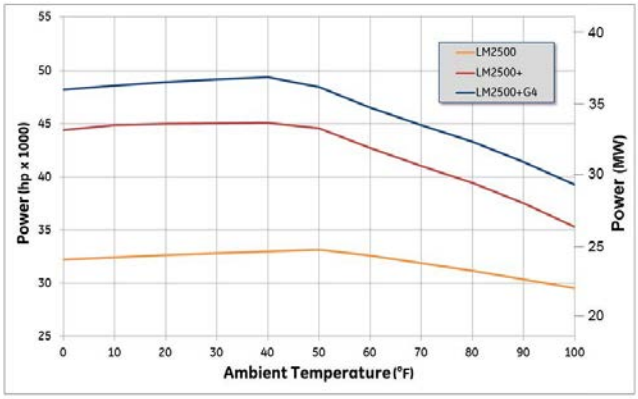
Performance

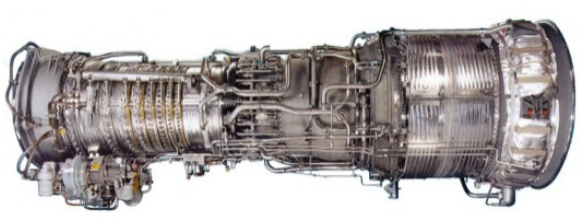
Output	40,500 shp (30,200 kW)
SFC	.354 lb/shp-hr (215 g/kW-hr)
Heat rate	6,522 Btu/shp-hr
	8,746 Btu/kW-hr
	9,227 kJ/kW-hr
Exhaust gas flow	189 lb/sec (85.9 kg/sec)
Exhaust gas temperature	965°F (518°C)
Power turbine speed	3600 rpm

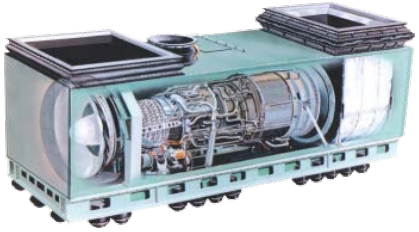
Average performance, 60 Hertz, 59°F (15°C), sea level, 60% relative humidity, no inlet/exhaust losses

Max Power vs. Ambient Temperature

losses: inlet/exhaust 4/6 inches (10/15 centimeters) water







30 MW marine gas turbine module

GE Aviation (Cincinnati, OH)
www.ge.com/marine

Imagination at work.

30 MW Marine Gas Turbine

30 MW Marine Gas Turbine Genset

The 30 MW marine gas turbine can be coupled with an electric generator making a 30 MW marine gas turbine-generator set. The 30 MW genset is ideal for applications for which electric drive is the propulsion system of choice. Seventeen cruise ships in service use GE's 25 MW and 30 MW gas turbine gensets as the total propulsion and on-board energy system. There also are 18 fast ferries powered by these marine gas turbines. GE furnishes the complete 30 MW gas turbine-generator set using a generator from a generator manufacturer acceptable to the customer.

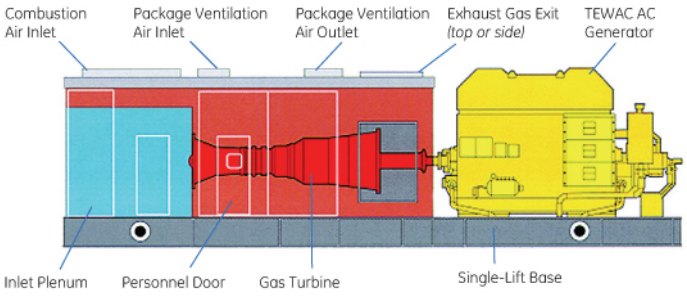
Specific Qualifications

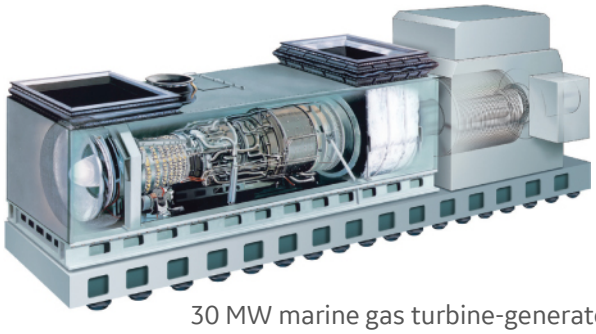
Each 30 MW production unit is tested by GE and is available for customer witness. The 30 MW marine gas turbine has been granted type approval by ABS, BV, DNV GL and Lloyd's Register.

Dimensions*

Base plate width		123 in (3.12 m)
Base plate length		566 in (14.38 m)
Enclosure height		157 in (3.98 m)
Base plate weight		208,000 lb (94,545 kg)
Duct flow areas	Inlet	57 ft^2 (5.3 m^2)
	Exhaust	36 ft^2 (3.3 m^2)

* Exact dimensions, weight and performance vary with the specific generator selected.





30 MW marine gas turbine-generator set

Performance

Output	29,000 kW
Heat rate	8,856 Btu/kW-hr
Thermal efficiency	38%

Average performance, 60 Hertz, 59°F (15°C), sea level, 60% relative humidity, 4 inches (10 centimeters) water inlet loss, 6 inches (15 centimeters) water exhaust loss

GE Aviation (Cincinnati, OH)
www.ge.com/marine
Other product sheets are available on GE's 4.5 MW, 25 MW, 35 MW, 46 MW and 52 MW gas turbines.

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