

GE
Marine

LM2500+ Marine Gas Turbine

GE's LM2500+ gas turbine is based on the industry standard-setting GE LM2500 marine gas turbine. Its main features are increased power (20%) compared to the LM2500, the same high availability and reliability, and an even higher efficiency (lower SFC) than the LM2500. As in the case of the LM2500, the LM2500+'s simple modular design with its split compressor casing, in-place blade and vane replacement, in-place hot section maintenance and external fuel nozzles provides for easy maintenance.

Comparing the Design of the LM2500+ to the LM2500

The primary difference between the two engines is the addition of one stage of compressor blades forward of the LM2500'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 LM2500+'s stage one blades have been redesigned without mid-span dampers. The LM2500+'s 19-stage compressor has an increased pressure ratio to 23.1:1 from 18:1 of the LM2500.

Aft of the LM2500+'s 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 LM2500 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 LM2500+.

Pre-wired, pre-piped and factory-tested for easy installation, the LM2500+ module weighs just 50,600 pounds (23,000 kg) with shock mounts and 48,090 pounds (21,859 kg) without. 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 m). The inlet duct flow area is 57 square feet (5.35 sq m) and the exhaust flow area is 36 square feet (3.3 sq m).

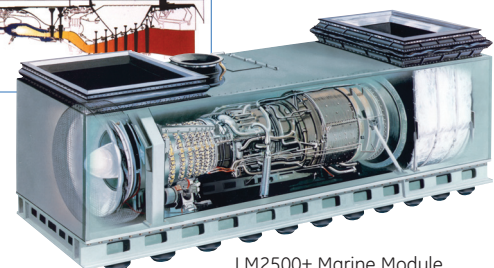
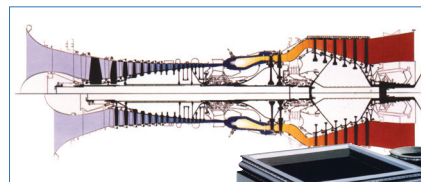
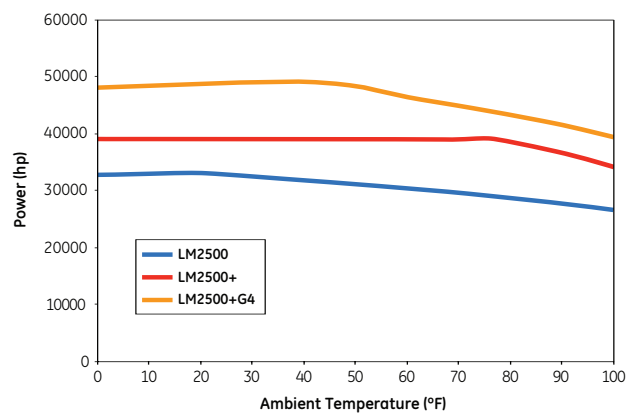
Performance

Output	40,500 shp (30,200 kW)
SFC	.354 lb/shp-hr
Heat rate	6,522 Btu/shp-hr 8,746 Btu/kWs-hr 9,227 kJ/kWs-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 Hz, 59°F, sea level, 60% relative humidity, no inlet/exhaust losses

Max Power vs. Ambient Temperature

(losses: inlet/exhaust 4/6 inches water)



LM2500+ Marine Module



LM2500+ Marine Gas Turbine

LM2500+ Marine Gas Turbine - Genset

The LM2500+ marine gas turbine can be coupled with an electric generator making an LM2500+ marine gas turbine-generator set. The LM2500+ gensets are ideal for military applications for which electric drive is the propulsion system of choice. The Japanese Asuka is already using the similar LM2500 in an electric drive propulsion system. More than 17 cruise ships are in service or under construction that use GE's LM2500 and LM2500+ gas turbine gensets as the total propulsion and on-board energy system. GE furnishes the complete LM2500+ gas turbine-generator set using a generator from a generator manufacturer acceptable to the customer.

Dimensions*

Base plate width		123 in (3.12 m)
Base plate length		566 in (14.38 m)
Enclosure height		157 in (3.99 m)
Base plate weight		208,000 lbs (94,545 kg)
Duct flow areas	Inlet	57 sq ft (5.3 sq. m)
	Exhaust	36 sq ft (3.3 sq. m)

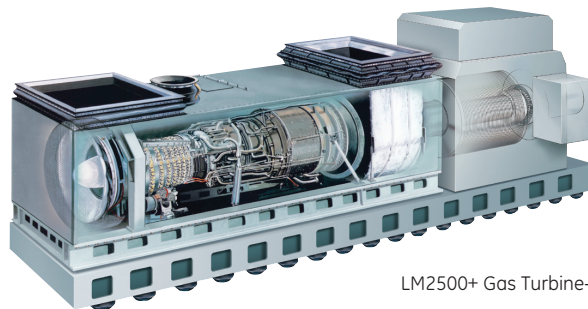
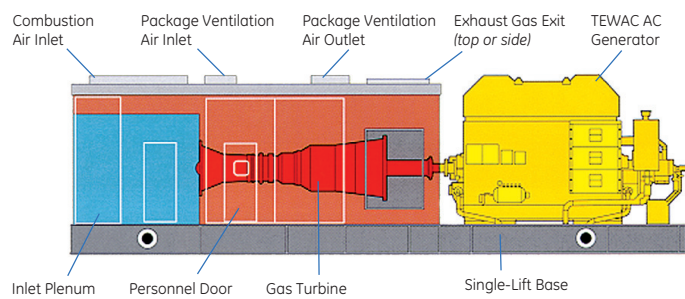
Performance*

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

Average performance, 60 Hz, 59°F, sea level, 60% relative humidity, 4 in. water inlet loss, 6 in. water exhaust loss

Specific Qualifications

The LM2500+ gas turbine propulsion system (turbine, base and enclosure and lube oil storage and conditioning assembly) is undergoing evaluation and acceptance testing for the U.S. Navy. It will be tested for shock, vibration, EMI and electrical bonding plus airborne and structure-borne noise to meet U.S. requirements for surface combatant vessels. The first military application of the LM2500+ will be on the Navy's LHD 8 assault ship. Each LM2500+ production unit is tested by GE and is available for customer witness. The LM2500+ marine gas turbine has been granted type approval by ABS, DNV and RINA.



LM2500+ Gas Turbine-Generator Set



Contact us at www.ge.com/marine

*Exact dimensions, weight and performance vary with the specific generator selected. Other product sheets are available on the LM500, LM1600, LM2500, LM2500+G4 and LM6000.