LM500

Marine Gas Turbine

GE's LM500 marine gas turbine is derived from GE's CF34 turbofan engine that is currently in use in many military and commercial aircraft applications. The LM500 is basically a CF34 engine without its fan and is very similar in materials and design to GE's industry-leading LM2500. The LM500 is a simple-cycle, two-shaft gas turbine with an aerodynamically coupled power turbine. It incorporates a variable stator compressor driven by an air-cooled, two-stage turbine. The LM500 incorporates the latest in proven design technology and corrosion-resistant materials to provide a mature design with maximum reliability and component life. Ideally suited for marine applications requiring light weight and fuel economy, the LM500 offers the highest efficiency of any gas turbine in its output class.

The LM500's single shaft gas generator consists of a 14-stage, 14.5:1 pressure ratio high-pressure (HP) compressor with variable inlet guide vanes and variable stator vanes in the first five stages, a machined ring (annular) combustor with 18 externally mounted fuel injectors and an air-cooled two-stage HP turbine. The aerodynamically coupled power turbine on the second shaft has four stages. The output shaft to which the load is connected is on the air inlet end of the engine.

The LM500 is designed using corrosion-resistant materials for long life in a marine environment. It has built-in borescope ports and a water wash manifold for compressor cleaning. The low-speed shaft, with no differential bearings, provides for front end drive. It is built for fast start-up, good stall margin and flexibility of control over a wide speed and power range. The two-stage, air-cooled HP turbine permits high turbine inlet temperatures for high efficiency with long hot section parts life. GE provides a lube oil, ignition, and starting system along with a digital engine control system. The LM500 engine is designed with a split casing for ease of maintenance. The LM500 mounted on a marine base as shown at the right below, is 144 inches long, 65 inches high (1.65 meters) and weighs 6,173 pounds (2,779 kilograms) including the inlet air collector and the exhaust gas plenum. The inlet duct flow area is 12 square feet (1.12 square meters) and the exhaust duct flow area is 7 square feet (.65 square meters).

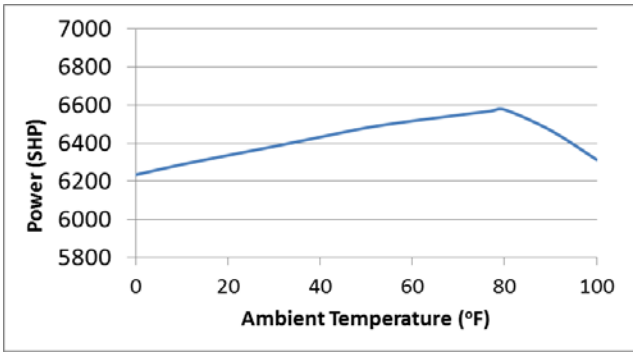
Performance

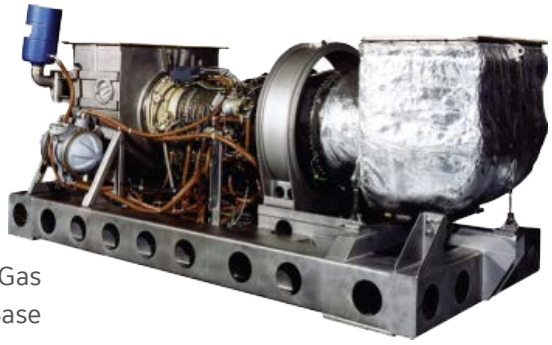
Output	6,130 shp (4,570 kW)
SFC	.443 lb/shp-hr (269.5 g/kW-hr)
Heat rate	8,140 Btu/shp-hr
	10,916 Btu/kWs-hr
	11,520 kJ/kWs-hr
Exhaust gas flow	36 lb/sec (16.4 kg/sec)
Exhaust gas temperature	1,049°F (565°C)
Power turbine speed	7000 rpm

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

Max Power vs. Ambient Temperature

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





LM500 Marine Gas Turbine on Marine Base

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Imagination at work.

LM500 Marine Gas Turbine

LM500 Marine Gas Turbine Genset

The LM500 coupled with an electric generator offers customers a proven performance record and high reliability in both marine and industrial applications. The LM500 is being considered for repowering many older on-board power systems.

Dimensions*

Base plate width		93 in (2.36 m)
Base plate length		281 in (7.14 m)
Enclosure height		94 in (2.39 m)
Base plate weight		60,000 lb (27,273 kg)
Duct flow areas	Inlet	12 sq ft (1.12 sq m)
	Exhaust	7 sq ft (0.65 sq m)

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

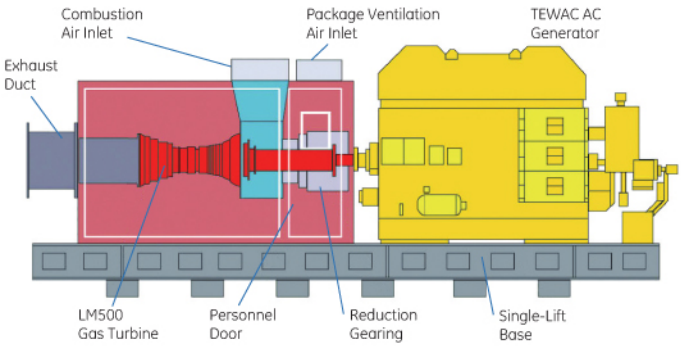
Performance

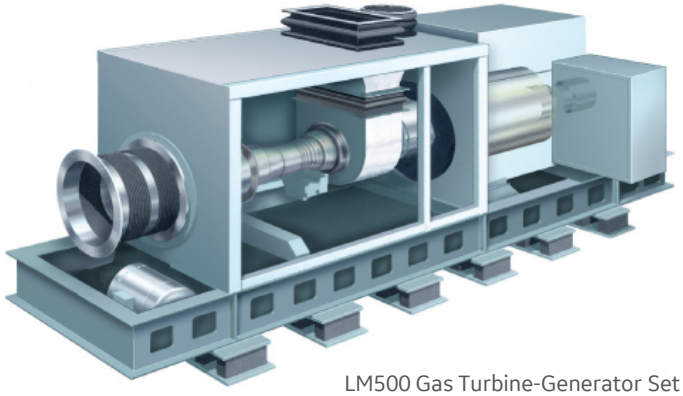
Output	4,200 kW
Heat rate	11,603 Btu/kW-hr

Average performance, 60 Hertz, 59°F, sea level, 60% relative humidity, 4 inches water inlet loss, 6 inches water exhaust loss

Specific Qualifications

The LM500 gas turbine powers the Republic of Korea's PKX-A and PKX-B patrol boats, the Japanese Maritime Self Defense Force's 24DDH and 22DDH destroyers, along with its *Sparviero*-class hydrofoils and *Hayabusa*-class patrol boats, and the Stanflex 300 multipurpose patrol boats. The LM500 also powers TurboJET's Foilcat fast ferries that link Hong Kong to Macau. The LM500 has been used as a generator drive in several industrial cogeneration applications. This gas turbine has been granted type approval by ABS.





LM500 Gas Turbine-Generator Set

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Other product sheets are available on the LM2500, LM2500+, LM2500+G4 and LM6000 gas turbines.

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