

LM6000 Value Packs

SPRINT/Enhanced Flow & Speed (EFS) Systems

GE has developed an advanced spray injection system, called SPRINT (SPRay INTercooling), which improves the output and efficiency characteristics of the LM6000PC or LM6000PA Uprate gas turbine. The SPRINT system injects an atomized spray of water into the inlet of the low-pressure compressor (LPC) as well as into the high-pressure compressor (HPC) to lower the compressor discharge temperature, which increases the engine's power output capability. The SPRINT/EFC systems increase LM6000PC or PA Uprate performance by 10 to over 20% while reducing simple- and combined-cycle life cycle costs.

LM Reduced Emissions (Wet)

GE Aero Energy offers both water and steam injection systems for reducing NOx and other exhaust gas components that can be installed on existing field units. Conversions include on-engine modifications as well as package and control system modifications.

LM Dry Low Emissions

For LM6000 field units operating either with no emissions suppression or with water or steam injection, GE Aero Energy offers conversion to Dry Low Emissions (DLE), which reduces NOx and CO emissions down to 25ppm without the need for water or steam injection.

LM6000 PA to PC Uprate

GE has developed an uprate kit to incorporate the improvements developed for the production PC model into the PA model LM6000s. This kit results in an uprated PA model that exhibits the same performance as the production PC model. The LM6000PA Uprate provides increased power, improved heat rate, and increased reliability through the improvements made to the LPC section (including higher efficiency 0-3 vanes) and to the LPT section (including higher efficiency blades and vanes).

Remote Monitoring and Diagnostics

GE Aero Energy offers Remote Monitoring and Diagnostic Services to enable aeroderivative turbine plant operators to improve availability, reliability, operating performance, and maintenance effectiveness. Monitoring of key parameters by factory experts leads to early warning of equipment problems and avoidance of expensive secondary damage. Diagnostic programs seek out emerging trends and alert monitoring personnel, enabling proactive intervention to avoid forced outages and extended down-time. GE is currently monitoring over 50 LM series gas turbine installations worldwide.

MetalSCAN

For all LM Series gas turbines, GE offers a real-time oil debris monitoring system. MetalSCAN monitors the accumulation of mass of ferrous material in the fluid lines and initially warns the operators of any abnormal activity. Once certain thresholds have been attained, MetalSCAN triggers an alarm to indicate significant wear component damage. This sensor provides early warning of bearing and gear damage, reducing the occurrences of unplanned outages.

Inlet Conditioning Systems

GE Aero Energy offers a variety of inlet conditioning systems that can be installed in the field. These products include inlet chilling/heating systems and fine mist or traditional evaporative cooling systems. Increased engine performance is obtained by optimizing the compressor inlet air temperature to the gas turbine.

Fuel System Upgrades

GE Aero Energy can convert any type of fuel system including single to dual fuel, fuel additions such as naphtha, and single fuel to single fuel. Complete system conversions include on engine hardware changes, package piping and wiring, controls software modifications, fuel pump skids and all associated F&ID hardware. Halon to CO2 Fire System Conversion GE Aero Energy offers replacement fire protection systems utilizing CO2 in place of Halon. Halon is becoming expensive procure and may no longer be allowed in certain geographic areas. In addition, many older fire protection systems use panels and components that are no longer manufactured, making replacement parts difficult to find or unavailable.

Liquid Fuel Treatment Systems

GE Aero Energy offers centrifugal liquid fuel treatment systems for use with all LM series gas turbines, Avon and GG4 gas turbines. These systems significantly improve the quality of the fuel entering the gas turbine.

Inlet Filtration Systems

Undersized or improperly designed inlet filtration systems can result in restricted power output due to increase drops, higher maintenance costs, and reduced availability of the unit. GE Aero Energy can replace and upgrade existing inlet filtration systems to mini-mize air inlet problems.

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HMI Upgrades

As older model HMI (Human Machine Interface) systems become obsolete, replacement parts are becoming difficult to obtain and more expensive. These older HMI systems can be upgraded to the latest Windows graphical based applications available and are installed in Pentium Desktop PC's or Panel mounted PC's. These upgrades may be installed on older systems without a pro-gram change to the turbine control panel.

Water Wash Systems

GE Aero Energy offers portable water wash systems that can be rolled into place and used to water wash gas turbines. This portable systems is especially useful for multiple unit sites.

Vibration System Upgrades

As older model vibration monitoring systems are phased out of production, maintenance and spare parts become increasingly difficult to obtain. GE can upgrade older systems to the latest available vibration monitoring systems, and possible integrate the display into the customer's HMI computer.

Lube Oil Chip Detectors and Oil Monitoring System

For all LM series gas turbines, GE offers an electronic chip detector system, or a lube oil monitoring system that continuously monitors the number of metallic and non-metallic particles in the gas turbine lube oil. Both of these systems allow early detection of potential bearing problems.

Fuel Heating System

For improved performance, GE offers both gas and liquid fuel heating systems for all LM series gas turbines.

LM6000 Grid Support Operation

Utilization of LM6000 packages in peaking operation can be increased by providing grid support services, allowing the gas turbine generator to act as a synchronous condenser to assist in controlling grid voltage. This is accomplished by the addition of a Synchronous Condenser Clutch Module between the generator and gas turbine that disengages the turbine as the turbine is normally shut down, and the generator is controlled as if it were a motor, consuming Volt-Amp Reactive power (VARs) for grid stability.

Anti-Icing Systems

GE Aero Energy offers several anti-icing systems for use in areas where icing conditions could exist. Systems offered include bleed air systems, exhaust air heat exchanger systems and hot water systems using inlet chiller coils installed in the inlet plenums.

