GE VERNOVA

LMS100 UPGRADE SOLUTIONS

Repower Outcomes

Model	Output (MW)	Heat Rate (BTU/kW hr)	HS Interval (hrs)	MOH Interval (hrs)	Start Time (min)	Exhaust Flow (lb/s)	Exhaust Temp. (°F)
PA	105	7,966	25,000	50,000	10	479	770
PB	102	7,998	25,000	50,000	10	486	789
PA+	111	7,980	25,000	50,000	10	503	778

Upgrade Solutions

Product Offering	Description	SC Output Change (%)	CC Output Change (%)	SC Heat Rate Change (%)	CC Heat Rate Change (%)	Availability	Flexibility	Reliability	HS/MOH Life (khrs)	Emissions	Safety	Regulatory
PA Uprate (PA to PA+)	The power turbine on the LMS100PA will be replaced with a rotable high flow power turbine and requisite controls modifications will be performed to upgrade the LMS100PA to the LMS100PA+.	**Up to 6% higher output**		**Up to 0.2% lower HR**								
PA+ OpFlex* Peak Performance	Hot day performance increase by adjusting engine parameters to improve power while taking a slight hit on life.	**Up to 10 MW more than a PA+**	✓	✓	✓							
Inlet Chilling	An inlet chilling system (chiller + inlet coils) will cool the compressor intake air, increasing the air density and engine output.	✓	✓	✓	✓		✓					
Evaporative Cooling	Provides a power output and efficiency increase for sites with high ambient temperatures and low relative humidity.	✓	✓	✓	✓		✓					
Automatic Online Water Wash	Automatic online water wash to help reduce power loss due to compressor degradation.	✓		✓	✓	✓		✓		✓		
Anti-Icing Upgrade	Prevents ice related internal damage to engine blades, reducing turbine downtime and repair times.					✓		✓				
Hybrid Electric Gas Turbine (EGT)	Adding battery system and controllers allows unit to operate in spinning reserve mode without operating the turbine. Also allows some sync condensing operations with the battery system.						✓			✓		
Conversion Gas to Dual Fuel	This upgrade provides the capability to run either on gas or liquid fuel, with or without water injection for NO_x control.					✓	✓					
MetalSCAN	System used to better monitor bearing life and predict bearing issues. Tracks metal chip count in each turbine lube oil sumps during operation.					✓		✓				
Software Core Upgrade	Upgrade to the latest core software with the reliability improvements and optional Power and Start Time improvements.	**Optional Optimized T2.5**		**Optional Optimized T2.5**		✓	✓	✓				
J3 Air Compressor Elimination	Uses engine air for the J3 bearing and eliminates the J3 bearing need for instrument air.							✓				

Product Offering	Description	SC Output Change (%)	CC Output Change (%)	SC Heat Rate Change (%)	CC Heat Rate Change (%)	Availability	Flexibility	Reliability	HS/MOH Life (khrs)	Emissions	Safety	Regulatory
Automatic Voltage Regulator Upgrade	The EX2100e excitation control is GE Vernova's advanced platform for generator excitation systems.					✓	✓	✓				
Human Machine Interface (HMI) Upgrade	Allows the user to control the gas turbine more effectively during operation, as well as to monitor live and historical turbine operating data.					✓	✓	✓				
Water Injection For NO_X Reduction	For non-Dry Low Emissions (DLE) turbines without a NO_X abatement system, a water injection system can be added that lowers NO_X to 25 ppm (gas fuel) or 42 ppm (liquid fuel).	✓					✓			✓		✓
Primary Frequency Control Upgrade	Enables a customized frequency response to maintain grid stability.					✓	✓					✓
Asset Performance Management (APM)	Identify the impact of each critical failure mode on total plant reliability, mitigate each with digital solutions, to the extent possible, and measure the effect of the solution as reliability improvement.				✓		✓			✓		

To learn more about this product and its applicability to your gas turbine, please contact your GE Vernova sales representative.

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PA+ OpFlex* Peak Performance	Hot day performance increase by adjusting engine parameters to improve power while taking a slight hit on life.	**Up to 10 MW more than a PA+**	✓	✓	✓							
Inlet Chilling	An inlet chilling system (chiller + inlet coils) will cool the compressor intake air, increasing the air density and engine output.	✓	✓	✓	✓		✓					
Evaporative Cooling	Provides a power output and efficiency increase for sites with high ambient temperatures and low relative humidity.	✓	✓	✓	✓		✓					
Automatic Online Water Wash	Automatic online water wash to help reduce power loss due to compressor degradation.	✓		✓	✓	✓		✓		✓		
Anti-Icing Upgrade	Prevents ice related internal damage to engine blades, reducing turbine downtime and repair times.					✓		✓				
Hybrid Electric Gas Turbine (EGT)	Adding battery system and controllers allows unit to operate in spinning reserve mode without operating the turbine. Also allows some sync condensing operations with the battery system.						✓			✓		
Conversion Gas to Dual Fuel	This upgrade provides the capability to run either on gas or liquid fuel, with or without water injection for NO_x control.					✓	✓					
MetalSCAN	System used to better monitor bearing life and predict bearing issues. Tracks metal chip count in each turbine lube oil sumps during operation.					✓		✓				

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