



OpFlex* Software Enhancement Modules

Operational Productivity Package

Enhanced System Features and Functionality

GE is proud to provide controls you can trust. You can now benefit from new and improved features on your Mark* Vle control system and add significant new performance enhancements that provide improved Reliability, Diagnostic, Trip Prevention, and Productivity capabilities to your Mark Vle turbine control.

Benefits

- Improved availability and system reliability
- Improved operator understanding of gas turbine operation
- Enhanced operational features to improve operator performance
- Equipment and energy savings functionality

The Operational Productivity Package consists of the following modules:

Automated Overspeed Trip Test

The Mark Vle Automatic Overspeed Trip Test Procedure helps in conducting gas turbine overspeed (110 % of GT rated speed), automatically. Once the operator has selected Automatic Overspeed test mode, the unit will accelerate to 110% of rated speed without any further operator action. Upon reaching 108% speed, the unit will auto adjust its rate from the fast rate to the slow rate. Upon reaching 110% speed, both the turbine controller and the protection system will record the trip.

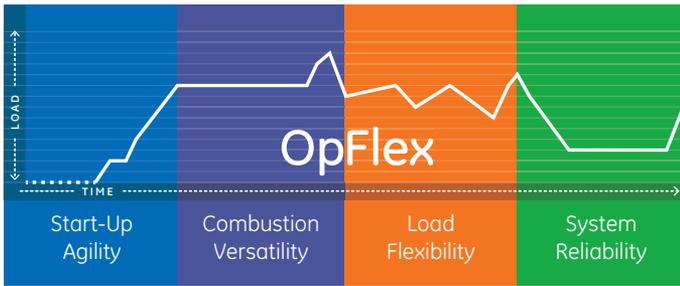
DC Lube Oil Pump Test

The Online DC Lube Oil System and Pump Test function allows the operator to test the pump while the unit is running via a pushbutton on the HMI rather than waiting for the next start. The operator selects the test method (system or pump), via pushbutton from the HMI to start the test. If the pressure switch does not indicate sufficient pressure in five seconds, an alarm is activated. This provides increased confidence that the DC lube oil pump will start when needed—reducing the risk of coasting down the unit with inadequate lube oil pressure. This function also allows the operator to test the DC lube oil pump while the unit is running.

Lead Lag Motor Run Time Optimization

The Enhanced Motor Lead/Lag Run Time control software upgrade contains features that will allow motors to evenly cycle by tracking the run hours of each motor and automatically cycling between motors at a preset number of hours. This helps avoid unnecessary loading of a particular motor. The upgrade features an updated HMI screen that provides the run hours of each motor, allows the operator to enable/disable the lead/lag feature, and to enter the lead/lag preset hours for motor rotation. The ability to choose which motor is running remains.





Enhanced Cooling Water Fan Control

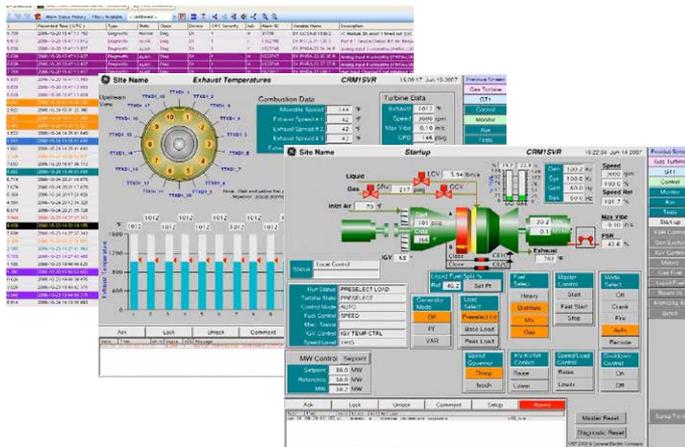
The Enhanced Cooling Water Fan Control package is focused on providing the customer energy savings—and reduced cooling fan equipment maintenance—by providing a means to reduce fan run times while maintaining optimal cooling water and lube oil temperature set points.

Enhanced Water Wash Screens

The enhanced offline water wash screen modification provides an improved operator interface that increases the operator’s awareness of the offline water wash process, compared to the standard screen. There is no associated modification to the offline water wash software. However, this offering assumes the unit utilizes the standard offline water wash sequencing. This will identify the time elapsed and the total time for each step in the water wash cycle.

Shift Data Report

The Shift Data Report package provides an automated means to capture and archive turbine operating data at user selectable time periods. This feature creates a Trender file and a text file on the HMI that can be opened in Excel and used to archive operating conditions during shift change. The benefits of this package are the elimination of manual record keeping of turbine data and user selectable start and interval times.



Applicability

Feature	Package	Frame Applicability								
		2-Shaft		3-Shaft						
		32	52	B/E Class			F Class			
		51	6B	7E	9E	6FA	7F	9F		
Automated Overspeed Trip Test	Operational Productivity	X	X	X	X	X	X	X	X	X
DC Lube Oil Pump Test	Operational Productivity	X	X	X	X	X	X	X	X	X
Enhanced Cooling Water Fan Control	Operational Productivity	0	0	0	0	0	0	X	X	X
Enhanced Water Wash Screens	Operational Productivity	0	0	0	0	0	0	0	X	X
Lead Lag Motor Runtime Optimization	Operational Productivity	X	X	X	X	X	X	X	X	X
Shift Data Report	Operational Productivity	X	X	X	X	X	X	X	X	X

Note: "X" indicates available feature. "0" means feature not available.

For more information please contact:

GE Measurement & Control

North America:

1-888-943-2272; 1-540-387-8726

Latin America (Brazil): +55-11-3958-0098

Europe (France): +33-2-72-249901

Asia/China (Singapore): +65-6622 1623

Africa/India/Middle East (U.A.E.):

+971-2-699 7119

Email: ControlsConnect@ge.com

Customer Portal: ge-controlsconnect.com

1800 Nelson Road

Longmont, CO, USA 80538

www.ge-mcs.com/control solutions

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