GE
Energy

Mark* V to Mark VIe Migration

fact sheet

You can now add significant new performance enhancements to your Mark V gas turbine control. GE Energy offers an upgrade package with many new features and algorithms for new turbine functions such as advanced dry low NO_x systems and operational flexibility (OpFlex) enhancements. The upgrade includes a complete modernization of operator stations and networks to current technology.

New Technology

Your existing 196 processors are replaced with modern Mark VIe compatible processors with substantially more compute power. These boards include redundant 100 MB Ethernet® ports to replace your existing ARCNET® communications both within the Mark V for I/O networks and for external communications. Your operator stations will communicate directly with the upgraded, redundant controllers <R> <S> <T> and not through the Mark V <C> module, thereby eliminating a single point failure along with the need for a backup display on the door.

Your new network provides high-speed peer-to-peer communications between Mark Vs and the ability to add redundant networks without the need for a Mark V gateway module <D> in the control. For sites with EX2000 generator excitation systems, an ARCNET-to-Ethernet gateway can be provided, or the control section of the exciter can be upgraded with a new Digital Front End (DFE) that uses the same software configuration and diagnostics tool, ToolboxST*, and networks as the upgraded Mark V.

Operator and Maintenance Software

Existing operator and maintenance stations are replaced with our current Proficy® HMI/SCADA CIMPLICITY® graphics system with vastly improved graphics, screen navigation, alarm/event management, and trending tools. If you have one of the original <I> stations, this also gives you a Windows™ operating system with modern client/server networking capability. We still support your existing Modbus® and TCP-IP GSM links to plant controls and complement these with OPC, and HMI Client-to-PI server interface.

Your existing application software is converted to a modern 32-bit floating-point data format with automation tools to ensure a seamless and accurate conversion. This new software environment is part of the ToolboxST software suite with major enhancements over your current tools, including: drag-and-drop type editors, math blocks, macros, trending with video type forward-reverse-freeze capability, watch windows, code-compare tools, etc. Also, you will be able to download changes on-line without rebooting the new controllers.

I/O Interface

What about all the field wiring and turbine devices? No change. We replace the brains of the system and give it new, modern technology while leaving the I/O interface alone. This minimizes installation time and upgrade cost.

Of course, you wind up with today's I/O capability to add and distribute Mark VIe I/O blocks, local or remote, and communicate 100 MB Ethernet via category 5 or fiber cable. These include many more I/O types than are currently available in your Mark V control system. A variety of I/O busses are also available such as HART® and PROFIBUS-DP.

Value

A Mark V upgrade brings you up-to-date with today's technology with no impact on site wiring or turbine devices. Resultant benefits include:

- Increased compute power and I/O capacity for new features to improve turbine performance and reliability
- Modern, high-speed networks at all levels with Ethernet client/server capability
- Many new I/O types to choose from and distribute in any configuration
- Elimination of single-point communication failures within the control and options for cost-effective network redundancy between controls and HMIs
- Ease of operation with improved graphics, alarm/event management, trending, etc.
- More efficient maintenance with one, modern software tool for configuration of networks, processors, and I/O boards, along with editors, block libraries, and diagnostics
- Minimum down time with only a three-day (or less) outage due to retention of existing field terminations and turbine devices
- Compatible with current programs for compliance with cyber-security standards, maintenance programs, and remote monitoring & diagnostics

Above all, a Mark V upgrade gives you a clear path for future enhancements and life cycle support.

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