GE Energy

Mark* VIe for Gas Turbines with SIL Capable Protection

fact sheet

The certified safety and reliability solution

GE Energy's Mark VIe Turbine Control System with SIL capable protection is designed for peace of mind, meeting the functional safety requirements of IEC 61508 and 61511. It integrates the SIL certified robustness of the Mark VIeS platform with the proven control technology of the Mark VIe for gas turbines to provide reliable protection while minimizing the cost of installation and operation.

Benefits

- SIL 3 capable
- Option to complete IEC 61511 requirements
- Optimizes availability
- No single point of failure
- Minimizes footprint and hardwiring between systems
- Flexible allocation of safety channels and controls
- Common operations, maintenance and troubleshooting tools
- Lower cost of ownership than multi-vendor solutions

Advantages of integration

The Mark VIe Turbine Control System with SIL capable protection meets the requirements of controller separation, but also provides additional benefits not offered by other stand-alone systems. Field instrument signals needed in both safety and non-safety control systems are shared between the two systems using the *exida*® certified Shared I/ONet. Signal isolation is achieved by allowing only one-way communication between safety and non-safety controllers. No safety outputs can be driven directly by non-safety controllers. System integration also provides flexible input signal expansion, with safety inputs being available for use in either system.

Scalable SIL

In order to achieve the optimal level of reliability and performance for any given site, GE engineers can configure the precise level of protection relative to the needs of specific operations.

Drivers for safety instrumented systems

In response to major accidents, many industries are calling for functional safety standards to be applied on a broader scale than in the past. These requirements are slowly entering the power generation markets in some regions, and being mandated in others. The purpose of a Safety Instrumented System (SIS) is to place equipment in a fail-safe condition based on preselected inputs that are continuously interrogated by the logic solver. These safety systems have a higher reliability rate and feature advanced abilities to keep equipment and plant personnel safe by detecting hardware and instrument failures.

Compliance confirmed

The Mark* VIe Turbine Control System with SIL capable protection provides the ability to meet IEC 61511 functional safety requirements. It is ready-made for prescribed functional safety validation activities, either by the end user or from third party Functional Safety Experts recognized by the industry.

Typical safety instrumented functions**

GE Energy's Mark VIe Turbine Control System with SIL capable protection has been internally validated on the following Safety Instrumented Functions (SIFs) to meet the application requirements of IEC 61511:

- Emergency Overspeed
- Emergency Stop (Local/Remote)
- Flame Detection
- Exhaust Purge Timer
- Excess Firing Fuel Flow
- Seismic Vibration
- Fire Detection
- Hazardous Gas Detection
- False Start Drain Temp

The final determination of applicable safety functions is dependent on site analysis of equipment configurations, and risk assessments performed by the end user.

**These SIF loops are given as an example of a typical turbine. Actual SIF loops are required to be determined by the end user and based on site equipment configuration. Although GE has a recommended SIL target established for these SIFs, it is up to the end user to confirm that the risk reduction is applicable.

For complete product specifications and ordering information, contact your GE Energy sales representative:

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