GE Energy

# Integrated Turbine-Compressor Control

fact sheet

Get the most out of your compressors – while minimizing the risk of surge. GE Energy's Integrated Turbine-Compressor Control (ITCC) system is designed to provide maximized protection of the compressor from harmful surge conditions, while enhancing process system efficiency and availability. For compressor applications, this integrated control solution provides critical process control for the entire turbine and compressor train. Compatible with a variety of turbine and compressor OEMs, ITCC runs on Woodward™ and GE Mark families of controls platforms for new or retrofit applications.

### Significantly Improved Compressor Station Efficiency & Reliability

ITCC is a fully digital control that contributes to machinery performance gains. The independent actions of separate turbine and compressor controls can adversely impact the process, and in turn, diminish the overall efficiency of the machinery it controls. By integrating compressor and turbine control into one, integrated system, GE Energy's ITCC can optimize performance and maintain the necessary degree of reliability within each component.

GE Energy's ITCC simplifies operations and provides faster, more accurate operating data. Providing access to a variety of types of data in a common database, ITCC streamlines the monitoring and control process and helps to enhance compressor function and pipeline and process stability. The system is password protected and fully programmable using function blocks and ladder diagrams, with extensive block libraries to further simplify setup. Anti-surge algorithms can optionally support remote I/O and hazardous area applications.

## Benefits

- Comprehensive, integrated control for an entire turbine-compressor train
- Applicable to a variety of OEMs and able to run on Woodward™ or GE controls hardware
- Compatible with single or multi-stage compressor systems
- Highly reliable – less electronics, less opportunity for single-point failures
- Easy to use – access to all process data in a single database
- Upgradeable as turbine and compressor enhancements become available
- Advanced diagnostics for quick location of process faults
- Fewer spare parts needed – one control platform, multi-function I/O boards

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## Faster Response to Minimize Surge Events

Operating compressors at the verge of surge can increase process operating range and overall efficiency, but the practice also contains inherent risk. GE Energy's ITCC minimizes that risk by enabling the compressor to be operated very close to the surge line. Utilizing proprietary algorithms, precision instrumentation, and fast-acting communications, ITCC senses early indicators of surge and quickly controls the compressor at a safer operating value.

Anti-surge protection for compressors not only enhances compressor train reliability and pipeline and process uptime, but it also reduces maintenance costs. By preventing machinery surge, repair and replacement hardware costs are minimized, leading to a higher return on investment.

## Simplified Maintenance and Repairs

GE Energy's integrated controls system eliminates the need for independent controllers, resulting in fewer electronics and reduced opportunities for single-point failures. Additionally, utilizing a single control platform cuts the required inventory of spare parts and removes the need for additional operator training.

ITCC is available in simplex, duplex, and triplex redundancies and interfaces with redundant Serial or Ethernet networks. On-line diagnostics simplify troubleshooting and help isolate faults quickly, while "plug-and-play" I/O boards speed repairs for minimized mean time to repair. Online logic changes are supported in all configurations, enabling software modifications to be downloaded via Ethernet to the control processors.

## Specifications

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| Applications | Integrated gas and steam turbine controls with centrifugal and axial compressor controls |
| Control Platforms Supported | Woodward and GE Mark family of controls hardware |
| Redundancy | Simplex, duplex, or triplex |
| On-line Repair | Supported |
| Local & Remote I/O | Supported |
| Class 1, Div. 2 | Supported |
| Primary Plant Networks | 10/100MB Ethernet; simplex or duplex; Serial ModBus® RTU |
| Barrier type Terminations | Full set of boards, plug-and-play |
| Power | |
| – Sources for electronics | 24Vdc, 125Vdc, 115/230Vac |
| – Sources for I/O wetting | 24Vdc, 48Vdc, 125Vdc, 115/230Vac |
| Software | |
| – Format | 32-bit IEEE-854 floating point |
| – Graphic representation | Function blocks and ladder diagrams; multiple block libraries |
| – Programmability | Fully programmable with password protection |
| – On-line downloads | Supported in all configurations |

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