D-R DI-TRONICS 8080

Control Systems

Steam Turbine Compressor DI-TRONICS® Model # STC 8080

To safely and efficiently operate a steam turbine centrifugal compressor train, the control system must be technologically advanced and capable of meeting the operational challenges found in today's demanding industrial environments.

Dresser-Rand Controls Systems have been designing control systems for various applications for more than 50 years and with this heritage comes a wealth of experience designed into every system. The DI-TRONICS® steam turbine compressor (STC) control system is an integrated solution designed to monitor vibration, temperature, steam flow, surge control, and other process variables to safely and efficiently operate an advanced steam turbine-driven centrifugal compressor train. These latest systems use the most up-to-date state-of-the-art technology as described below.

At the heart of the system is a programmable logic controller (PLC). Today's PLCs are technically advanced, flexible in configuration and can be programmed in many common program languages including ladder logic and IEC1131. The DI-TRONICS process control programs are ready-to-use with comprehensive documentation. Governor control, surge control, and other high-level programs are developed in segregated blocks to ensure the highest level of system reliability and security.

The DI-TRONICS PLC-based controllers interface with the instrumentation of the steam turbine compressor through an input/output (I/O) system and communicate both internally and externally in a variety of standard industry protocols.

These benefits translate into lower life cycle costs associated with spare parts, ease of operation, reduced maintenance, and comprehensive training as well as improvement in performance and throughput. In addition, the use of advanced packaging techniques provides easy access to panel internal components with the smaller panels offering a distinct advantage where space is limited.

System Configuration and Benefits

The DI-TRONICS steam turbine compressor control system, contained in a free-standing enclosure, is based on either an Allen Bradley, GE, or Triconex PLC controllers, incorporating the following standard functions:

- Steam turbine governor control
- Bearing vibration and axial position monitoring
- Bearing temperature monitoring
- Anti-surge control
- Pressure monitoring
- Process and auxiliaries temperature monitoring
- Oil systems monitoring
- Start, stop, alarm, and shutdown sequencing
- Capacity/performance control system

System Communication

Communication to external system devices is provided using the MODBUS TCP/IP protocol.

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Hard-wired Relay Backup Shutdown System

A hard-wired relay backup system is used to shut down the DI-TRONICS control system in critical situations including PLC failure, turbine over-speed, vibration exceeding designated limits, and other critical system inputs.

Standard System Components

The following components and displays are provided as part of the core system:

- 17” touch screen monitor (D-R HMI – panel mounted)
- Indicator Lights:
  - Permissive to start – Green
  - Unit running – Green
  - Common alarm – Amber
  - Common shut down – Red
  - PLC failure – Red
  - Normal stop – Blue
- Pushbuttons:
  - Unit start
  - Unit normal stop
  - Alarm silence
  - Acknowledge
  - Reset
  - Speed raise
  - Speed lower
  - ESD – Pull to stop (no guard)
- Selector Switches:
  - Mode select (local/remote)
  - Speed controls (auto/manual)
  - External light switch

System Options and Enhancements

The following options are available and can be included upon request:

- Dresser-Rand ENVISION™ condition monitoring system (see separate literature)
- Additional operator pushbuttons and/or pilot lights
- Non-standard communications protocols
- RS232/485 serial communications
- DCS communications
- Hazardous area panel classification and certification
- Local operator panel NEMA 4X or equivalent
- Laptop computer (programming and maintenance device)
- Steam turbine single extraction control
- Steam turbine valve servo position controllers
- Single extraction steam turbine governor
- Third party steam turbine governor
- Third party single extraction steam turbine governor
- Two-out-of-three over-speed protection
- Non-standard HMI systems (replace DI-TRONICS HMI)
- Intrinsically safe barriers or isolators
- Additional anti-surge loops
- Additional compressor casings
- Upgrade to redundant configuration
- Client-witnessed factory acceptance test (FAT)

For more information on the **DI-TRONICS control system**, contact:

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