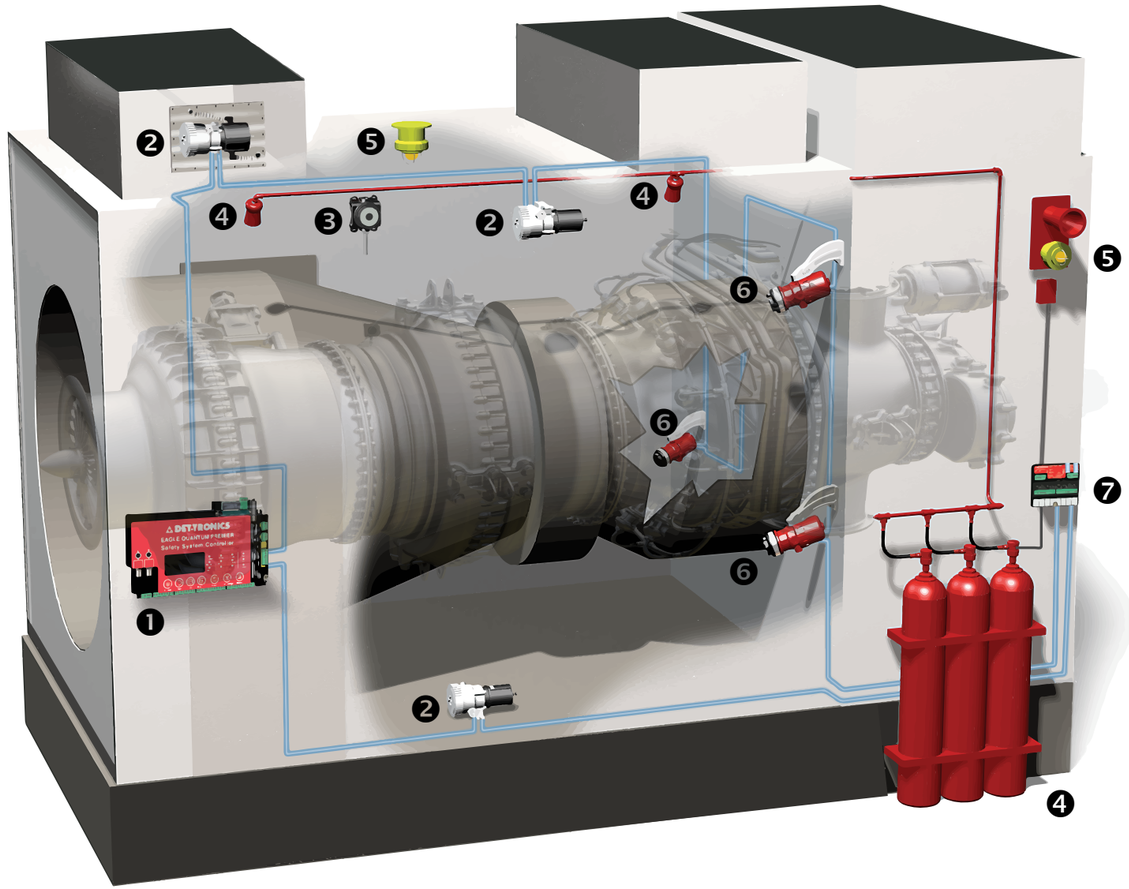
DET-TRONICS

Gas Turbine Safety Systems

Certified Fire & Gas Safety System for Gas Turbine Enclosures

DET-TRONICS



// Det-Tronics offers an engineered fire and gas control system designed to monitor and protect mission-critical assets. The components of this fire and gas safety system include high-performance flame and gas detection that are certified SIL 2 capable and carry global certifications.

Eagle Quantum Premier® (EQP) Safety System Controller

« 1 The **Safety System** manages and controls the fire and gas detection/releasing system. It is a configurable, distributed, intelligent safety system that provides fire and gas detection, alarm signaling, notification, extinguishing agent release, and deluge operation. All system components are integrated together on a fault-tolerant Class X SLC digital communication network. The certified SIL 2-capable system has a robust design with Division 2 area classification and extended temperature range.

// Key Components of Det-Tronics Fire and Gas Systems:

PointWatch Eclipse® PIRECL Infrared Gas Detector

« 2 **Infrared Gas Detectors** provide accurate point detection of combustible hydrocarbon gases and measures in the LFL range. The Eclipse detector provides continuous self-testing and is immune to most poisons. The Eclipse uses stainless steel construction and is available in duct mount options.

3 » **Heat Detectors** are sensing devices that warn of excessive heat or fire and can send an output to the alarm panel for notification/signaling or actuation of a suppression system.

HD Heat Detector

Fire Suppression

« 4 **Fire Suppression** agents for gas turbine enclosures include water mist and carbon dioxide (CO_2). Water mist suppression systems are typically pre-engineered systems that are listed/approved by a recognized agency to standard NFPA 750. CO_2 systems are designed using the 'total flooding' method in accordance with NFPA 12.

5 » **Notification Devices** provide audible or visual notification of a potential emergency. These appliances include horns, strobes, beacons and combination units. In the event of a detected fire, the EQP control panel activates the notification appliances to provide pre-discharge alarm to people in the area.

Notification Devices

X3301 Multispectrum Infrared Gas Detector

« 6 **Multispectrum Infrared Flame Detectors** are FM Approved for hydrogen, as well as methane, methanol and syngas. The IR flame detectors have a patented detection algorithm, heated optics and signal processing features which increase false alarm rejection.

7 » **Distributed Input/Output Modules** provide eight channels of configurable input or output points that can be programmed for supervised or unsupervised operation. Each input point can accept fire detection devices such as heat, smoke or unitized flame detectors. Each output point can be configured for signaling or releasing output operation.

Input/Output Module (EDIO)

// Det-Tronics Fire and Gas Systems are:

Pre-action releasing system approved to FM 3010 in accordance with NFPA 72®: National Fire Alarm and Signaling Code, 2013 Edition

Fault-tolerant Class A flame, gas and releasing signaling line circuit (SLC)

Certified for Class I Div 2 hazardous locations

Listed systems available in pre-configured cabinets

Multiple communication options:

- RS-458 Modbus RTU
- Ethernet/Modbus TCP/IP
- EtherNet IP™, DLR
- ControlNet™

// Turbine Fire Safety Codes, Standards and Guidelines:

There are multiple codes and standards applicable to address turbine fire and gas safety systems. National Fire Protection Association (NFPA) has recognized global standards for this application.

NFPA 37 is the most prevalently used standard for stationary combustion engines and stationary gas turbines.

NFPA 72 provides the safety provisions for fire detection and signaling.

Considerations for code usage include:

1) Location and local/regional code requirements
2) Authority Having Jurisdiction (AHJ)
3) Project and customer specifications
3) Corporate Loss Prevention Engineer
4) Insurance Underwriter

Codes, standards and guidelines that address turbine fire safety:

- NFPA 37 – Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines
- API STD 616 – Gas Turbines for the Petroleum, Chemical, and Gas Industry Services
- FM Global Property Loss Prevention Data Sheet 7-79 – Fire Protection for Gas Turbines and Electric Generators

Referenced within the above are:

- NFPA 12 – Standard on Carbon Dioxide Extinguishing Systems
- NFPA 70® – National Electrical Code®
- NFPA 72® – National Fire Alarm and Signaling Code®
- NFPA 750 – Standard on Water Mist Fire Protection Systems

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