



*Training Course:
Troubleshooting Fire & Gas Detection Systems in
Industrial Facilities*

*24 November - 5 December 2025
Milan (Italy)*

Training Course: Troubleshooting Fire & Gas Detection Systems in Industrial Facilities

Training Course code: SC236190 From: 24 November - 5 December 2025 Venue: Milan (Italy) - Training Course Fees: 9600 € Euro

Introduction:

This training program, designed by Global Horizon Training Center, aims to equip professionals working in industrial environments with the technical skills and systematic approaches required to troubleshoot, maintain, and restore operations in fire and gas F&G detection systems. As these systems are critical to facility safety and regulatory compliance, any failure or malfunction must be identified and resolved promptly and effectively. This program focuses on real-world scenarios, field diagnostics, and practical solutions for fire alarm panels, suppression devices, gas detectors, and integrated safety networks. Participants will engage with industry standards, hands-on case studies, and best practices to build robust troubleshooting competence.

Objectives:

By the end of this program, participants will be able to:

- Understand the design, functionality, and components of fire and gas detection systems in industrial settings.
- Identify and diagnose common faults and failures in fire alarm systems and gas detection devices.
- Apply effective troubleshooting methodologies using standard tools and software.
- Perform inspection, testing, calibration, and maintenance procedures safely and accurately.
- Interpret alarm signals, system logs, and diagnostic outputs for root cause analysis.
- Reduce downtime and improve the reliability and integrity of fire and gas systems.
- Comply with international codes and safety regulations NFPA, ISA, IEC, etc..

Course Methodology:

- Interactive theoretical presentations and real-world applications
- Hands-on troubleshooting simulations equipment, panels, sensors
- Group discussions and problem-solving workshops
- Case studies from oil & gas, petrochemical, and manufacturing sectors
- Live demonstrations using diagnostic tools and software where applicable
- Daily reviews and practical exercises

Organizational Impact:

- Minimize risks and incidents through improved safety system reliability
- Reduce costly system downtimes with timely and accurate fault resolution
- Ensure compliance with industrial safety standards and audits
- Enhance technical team capability in diagnosing and solving F&G issues
- Support continuous operational safety improvement initiatives

Target Audience:

- Fire & Safety Engineers
- Instrumentation & Control Technicians
- Maintenance Engineers and Supervisors
- HSE Professionals
- Electrical & Electronic Engineers working in hazardous environments
- Facility and Operations Managers in industrial sectors

Course Outline:

Day 1: Fundamentals of Fire & Gas Detection Systems

- Purpose and significance in industrial safety
- System architecture and types addressable, conventional, hybrid
- Overview of detection devices smoke, heat, flame, gas sensors
- Fire protection codes and standards NFPA, IEC, ISA, API

Day 2: Fire Detection System Components and Operation

- Fire alarm control panels FACP - structure and interfaces
- Detection devices smoke, flame, heat: types and characteristics
- Manual call points, sounders, and beacons
- System zoning and configuration principles

Day 3: Gas Detection Systems Overview

- Combustible vs toxic gas detection: principles and technologies
- Fixed vs portable gas detectors
- Sensor technologies: catalytic, IR, electrochemical, ultrasonic
- Alarm thresholds and response actions

Day 4: System Integration and Communication Protocols

- Interface with SCADA, DCS, ESD, and PLC systems
- Modbus, HART, and proprietary protocols
- Networked safety systems: redundancy and fail-safe designs
- Common integration issues and diagnostic points

Day 5: Fire System Troubleshooting Techniques

- Fault indicators and diagnostic menus
- Troubleshooting false alarms and signal loss
- Power supply, cabling, and grounding issues
- Testing procedures: loop testing, device replacement, battery tests

Day 6: Gas System Troubleshooting Techniques

- Sensor failure identification and replacement
- Calibration procedures and gas bump testing
- Addressing drift, interference, and zeroing problems
- Software-based diagnostics and calibration certificates

Day 7: Advanced Fault Diagnosis

- Root cause analysis techniques Ishikawa, 5 Whys
- Reading error codes and event logs
- Environmental influences on system accuracy

- Historical data review and pattern recognition

Day 8: Preventive Maintenance and Inspection Protocols

- Daily, monthly, and annual maintenance checklists
- Test reports, maintenance logs, and audit trails
- Planning predictive vs preventive maintenance strategies
- Safety precautions and lockout/tagout LOTO procedures

Day 9: Case Studies and Industrial Scenarios

- Fire & gas incidents due to failure or poor maintenance
- Troubleshooting reports from oil & gas, chemical, and energy sectors
- Group exercises: simulate faults and corrective actions
- Industry audit requirements and lessons learned

Day 10: System Testing, Compliance & Certification

- Final system testing and performance verification
- Functional acceptance testing FAT and site acceptance testing SAT
- Compliance checklists for regulatory and insurance audits
- Course review, Q&A, and final assessment optional

Registration form on the Training Course: Troubleshooting Fire & Gas Detection Systems in Industrial Facilities

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Complete & Mail or fax to Global Horizon Training Center (GHTC) at the address given below

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Payment Method

- ☐ Please find enclosed a cheque made payable to Global Horizon
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