Global Horizon
TRAINING CENTER

Training Course:
Safety in Process Equipment Design and Operation

12 - 16 July 2026
Cairo (Egypt)

Training Course:
Safety in Process Equipment Design and Operation

Training Course code: HE236535 From: 12 - 16 July 2026 Venue: Cairo (Egypt) - Training Course Fees: 4100 Euro

Introduction

This training program, "Safety in Process Equipment Design and Operation," has been specifically designed by Global Horizon Training Center GHTC to provide engineers, technical professionals, supervisors, and operational personnel with a comprehensive understanding of safety principles associated with process equipment throughout its lifecycle from design and specification to operation, maintenance, and integrity management.

Process industries such as oil and gas, petrochemicals, chemical manufacturing, power generation, and industrial processing rely heavily on the safe design and operation of equipment including pressure vessels, piping systems, heat exchangers, pumps, compressors, storage tanks, reactors, and associated safety systems. Failures in process equipment can result in severe consequences including personnel injury, environmental damage, production losses, and reputational risks.

This program focuses on internationally recognized engineering practices, process safety principles, equipment integrity requirements, risk management methodologies, safety standards, and operational safeguards necessary to ensure safe and reliable process equipment performance. Participants will gain valuable knowledge on hazard identification, equipment protection systems, safety design considerations, operational controls, and lifecycle integrity management without practical workshops, allowing for a structured theoretical and technical learning experience delivered by a single subject-matter expert trainer.

Program Objectives

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

- Understand fundamental principles of process equipment safety.
- Identify hazards associated with process equipment design and operation.
- Apply risk-based approaches in equipment design and lifecycle management.
- Recognize safety requirements for pressure-containing equipment.
- Understand mechanical integrity and reliability principles.
- Evaluate safety systems and protective devices used in process facilities.
- Interpret international standards related to process equipment safety.
- Identify common causes of equipment failures and incidents.
- Understand safe operating limits and operational control measures.
- Improve equipment reliability through effective safety management practices.

- Enhance organizational compliance with process safety requirements.
- Contribute to safer plant design and operational decision-making.

Course Methodology

The program will be delivered through:

- Interactive instructor-led presentations.
- Technical lectures and discussions.
- Industry case studies and incident reviews.
- Engineering design reviews and examples.
- Group discussions and knowledge-sharing sessions.
- Analysis of international standards and guidelines.
- Safety-focused equipment assessment exercises.
- Question-and-answer sessions.

Organizational Impact

Upon completion of this program, organizations can expect:

- Improved process safety awareness among engineering and operations personnel.
- Enhanced equipment reliability and operational integrity.
- Reduction in equipment-related incidents and failures.
- Better compliance with international safety standards and regulations.
- Strengthened risk management and hazard control practices.
- Improved decision-making during equipment design and operational phases.
- Increased understanding of safety-critical systems and safeguards.
- Enhanced protection of personnel, assets, and the environment.
- Reduced downtime associated with equipment failures.
- Support for continuous improvement in process safety performance.

Target Audience

This program is suitable for:

- Process Engineers
- Mechanical Engineers
- Operations Engineers
- Maintenance Engineers
- Plant Managers
- Production Supervisors
- Reliability Engineers
- Asset Integrity Engineers
- Safety Engineers
- Process Safety Specialists
- Technical Managers
- Project Engineers
- Inspection Engineers
- HSE Professionals
- Plant Operations Personnel

Course Outline

Day 1: Fundamentals of Process Equipment Safety

Introduction to Process Safety

- Process safety versus occupational safety
- Major accident hazards in process industries
- Process safety management principles
- Safety lifecycle concept

Process Equipment Overview

- Pressure vessels
- Storage tanks
- Heat exchangers
- Pumps and compressors
- Reactors and process units
- Piping systems

Safety in Equipment Design

- Inherently safer design principles
- Design safety considerations
- Hazard elimination and mitigation
- Engineering safety barriers

Historical Industry Incidents

- Lessons learned from major accidents
- Equipment failure case reviews
- Root causes and preventive measures

Day 2: Hazard Identification and Risk Assessment

Process Hazard Identification

- Hazard recognition methodologies
- Equipment-specific hazards
- Chemical and process hazards

Risk Assessment Principles

- Risk concepts and terminology
- Consequence and likelihood evaluation

- Risk ranking methodologies

Equipment Failure Mechanisms

- Corrosion and erosion
- Fatigue and vibration
- Overpressure scenarios
- Mechanical failures

Process Safety Studies

- HAZID principles
- HAZOP overview
- What-if analysis
- Layer of Protection Analysis LOPA concepts

Risk Reduction Strategies

- Engineering controls
- Administrative controls
- Safety barriers and safeguards

Day 3: Safety Design of Process Equipment

Pressure Equipment Safety

- Pressure vessel safety considerations
- Design pressure and temperature limits
- Mechanical integrity requirements

Relief and Protection Systems

- Pressure relief devices
- Safety valves
- Rupture disks

- Flare and vent systems

Piping System Safety

- Piping design considerations
- Isolation systems
- Emergency shutdown interfaces
- Pipe stress and integrity considerations

Equipment Protection Systems

- Instrumented protection systems
- Interlock systems
- Alarm management concepts
- Fail-safe design philosophy

Applicable Standards and Codes

- Overview of API standards
- ASME requirements
- ISO standards
- Industry best practices

Day 4: Safe Operation and Equipment Integrity Management

Operating Safety Principles

- Safe operating envelopes
- Operating procedures and controls
- Startup and shutdown safety considerations
- Process monitoring requirements

Mechanical Integrity Management

- Integrity management systems

- Inspection strategies
- Reliability-centered approaches
- Equipment lifecycle management

Asset Reliability and Safety

- Reliability and safety relationship
- Preventive maintenance concepts
- Condition monitoring techniques
- Failure prevention strategies

Management of Change MOC

- MOC principles
- Equipment modification controls
- Risk evaluation during changes
- Documentation requirements

Human Factors in Equipment Safety

- Human error prevention
- Operational discipline
- Communication and safety culture

Day 5: Process Equipment Safety Performance and Continuous Improvement

Incident Investigation Principles

- Equipment-related incident analysis
- Root cause identification
- Corrective and preventive actions

Process Safety Performance Indicators

- Leading and lagging indicators

- Equipment integrity metrics
- Performance monitoring systems

Emergency Preparedness and Response

- Equipment failure response planning
- Emergency shutdown philosophy
- Crisis management considerations

Regulatory Compliance and Governance

- Process safety regulations overview
- Compliance monitoring
- Safety audits and reviews

Building a Sustainable Process Safety Culture

- Leadership commitment
- Continuous improvement frameworks
- Organizational learning from incidents
- Future trends in process equipment safety

Program Summary and Technical Review

- Key learning points
- Expert discussion session
- Final knowledge assessment and course wrap-up

Registration form on the Training Course: Safety in Process Equipment Design and Operation

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

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Position: .....
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Company Information

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Person Responsible for Training and Development

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Payment Method

☐ Please find enclosed a cheque made payable to Global Horizon

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Telephone: +201095004484 to provisionally reserve your place.	Fax your completed registration form to: +20233379764	E-mail to us : info@gh4t.com or training@gh4t.com	Complete & return the booking form with cheque to:Global Horizon 3 Oudai street, Aldouki, Giza, Giza Governorate, Egypt.