Training Course on Safety in Process Equipment, Design and Operation

Professional Development Training Course Outline

Category	Development	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Ensuring the **safety** of **process equipment** is paramount in any industrial setting. Training Course on Safety in Process Equipment, Design & Operation delves into the critical aspects of **design safety** and **operational safety** concerning a wide range of process equipment. Participants will gain in-depth knowledge of potential hazards, risk assessment methodologies, and best practices for mitigating risks throughout the lifecycle of equipment, from initial design to ongoing operation and maintenance. Understanding and implementing robust **safety protocols** is not only crucial for preventing accidents and protecting personnel but also for maintaining operational efficiency and regulatory compliance.

This intensive program emphasizes a proactive approach to **hazard identification** and **risk management** in the context of **industrial safety**. By exploring relevant **safety standards**, **engineering controls**, and **human factors**, attendees will develop the skills necessary to contribute to a safer working environment. The course covers essential topics such as pressure vessel safety, piping integrity, material handling equipment, and emergency shutdown systems, equipping participants with the practical knowledge to implement effective **safety measures** and contribute to a culture of **process safety** within their organizations.

Programme Curriculum

Training Course on Safety in Process Equipment, Design & Operation

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Course Duration

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Course Objectives

Upon completion of this training course, participants will be able to:

1. Identify and analyze potential **hazards in process equipment** design and operation.
2. Apply various **risk assessment techniques** to evaluate safety risks associated with process equipment.
3. Understand and interpret relevant **industrial safety standards** and regulations.
4. Implement effective **engineering controls** to mitigate identified hazards in process equipment.
5. Evaluate the principles of **inherently safer design** in process equipment development.
6. Develop and implement **safe operating procedures** for various types of process equipment.
7. Understand the importance of **human factors in safety** and their impact on equipment operation.
8. Apply principles of **pressure vessel safety** and integrity management.
9. Ensure the **mechanical integrity** of piping systems and related components.
10. Implement safe practices for the operation and maintenance of **material handling equipment**.
11. Understand the function and importance of **emergency shutdown systems (ESD)** and safety interlocks.
12. Participate effectively in **safety audits and inspections** of process equipment.
13. Contribute to the development and implementation of a strong **process safety culture** within their organization.

Organizational Benefits

Organizations that invest in this training will experience several key benefits, including:

- **Reduced workplace accidents and injuries:** Leading to lower insurance costs and improved employee morale.
- **Enhanced operational efficiency:** By minimizing downtime caused by safety incidents and equipment failures.
- **Improved regulatory compliance:** Ensuring adherence to relevant safety standards and avoiding potential penalties.
- **Stronger safety culture:** Fostering a proactive and responsible approach to safety at all levels.

- **Increased employee competence and confidence:** Equipping personnel with the necessary skills to handle process equipment safely.
- **Better risk management:** Enabling the organization to identify, assess, and control hazards effectively.
- **Protection of assets and the environment:** Preventing costly damage and environmental incidents.
- **Enhanced reputation:** Demonstrating a commitment to safety to stakeholders, customers, and the community.

Target Participants

This training course is designed for professionals in various roles, including:

1. Process Engineers
2. Mechanical Engineers
3. Maintenance Engineers and Technicians
4. Safety Officers and Managers
5. Operations Personnel
6. Plant Managers and Supervisors
7. Project Engineers
8. HSE Professionals

Course Outline

Module 1: Fundamentals of Process Equipment Safety

- Introduction to Process Safety and its Importance
- Overview of Different Types of Process Equipment
- Legal and Regulatory Frameworks for Process Safety
- Ethical Considerations in Process Equipment Safety
- Understanding Potential Hazards in Process Industries

Module 2: Hazard Identification and Risk Assessment

- Common Hazard Identification Techniques (e.g., HAZOP, What-If)
- Principles of Risk Assessment and Risk Evaluation
- Developing Risk Matrices and Prioritization Strategies
- Layer of Protection Analysis (LOPA) Overview
- Case Studies of Process Equipment Accidents and Lessons Learned

Module 3: Safety in Design and Engineering

- Principles of Inherently Safer Design (ISD)
- Material Selection and Compatibility Considerations
- Design Codes and Standards for Process Equipment
- Ergonomics and Human Factors in Equipment Design
- Safety Interlocks and Control Systems Design

Module 4: Operational Safety and Procedures

- Developing Safe Operating Procedures (SOPs)
- Permit-to-Work Systems and their Implementation
- Lockout/Tagout (LOTO) Procedures for Equipment Maintenance
- Emergency Preparedness and Response Planning

- Safe Start-up and Shutdown Procedures for Process Equipment

Module 5: Mechanical Integrity of Process Equipment

- Understanding Corrosion Mechanisms and Prevention
- Non-Destructive Testing (NDT) Methods for Equipment Inspection
- Pressure Vessel Inspection and Maintenance Requirements
- Piping Inspection and Integrity Management Programs
- Fitness-for-Service (FFS) Assessments

Module 6: Safety of Specific Process Equipment

- Safe Operation and Maintenance of Pumps and Compressors
- Safety Considerations for Heat Exchangers and Reactors
- Safe Handling and Storage of Vessels and Tanks
- Material Handling Equipment Safety (e.g., Cranes, Conveyors)
- Dust Explosion Hazards and Prevention

Module 7: Emergency Shutdown Systems and Safety Interlocks

- Principles of Emergency Shutdown Systems (ESD)
- Types of Safety Interlocks and their Functions
- Testing and Maintenance of ESD and Interlock Systems
- Human Machine Interface (HMI) Design for Emergency Situations
- Safety Instrumented Systems (SIS) Overview

Module 8: Safety Management Systems and Culture

- Elements of a Process Safety Management (PSM) System
- Importance of Safety Audits and Inspections
- Incident Investigation and Root Cause Analysis
- Promoting a Strong Process Safety Culture
- Continuous Improvement in Process Safety Performance

Training Methodology

This training course will employ a variety of interactive and engaging methodologies to ensure effective learning, including:

- **Lectures and Presentations:** Delivering core concepts and theoretical knowledge.
- **Interactive Discussions:** Facilitating the exchange of ideas and experiences among participants.
- **Case Studies:** Analyzing real-world incidents to understand the application of safety principles.
- **Group Exercises:** Applying learned concepts to practical scenarios and problem-solving.
- **Video Demonstrations:** Illustrating safe operating procedures and potential hazards.
- **Quizzes and Assessments:** Evaluating participants' understanding of key concepts.
- **Practical Examples:** Providing relatable examples from various industrial settings.
- **Role-Playing:** Simulating emergency response scenarios.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com