



location : Sweden - Norrköping - Timmermansgatan
100 | P.O.BOX : 60359



Course: Safety in Process Design

Code	City	Hotel	Start	End	Price	Language - Hours
HS-368	Milan (Italy)	Hotel Meeting	2026-01-26	2026-01-30	5950 €	En - 25

Introduction

Safety in Process Design includes a wide range of subjects with many applications in Oil & Gas, Chemical and Process industries, related to hydrocarbons and chemical processing. This course provides an overview of important elements of process safety as they are often encountered in today's industrial practice. The emphasis is on engineering design aspects of Process Safety Management and it will highlight the safeguarding aspects of processing equipment inside the plant. Techniques for analyzing and mitigating process safety hazards applicable to oil and gas processing will be reviewed. Integration of the concepts required to achieve an optimum approach to Process Safety Engineering is the main goal of this course. Exercises and useful examples will be utilized throughout the course to emphasize the key learning points.

Upon completion of this course, the delegates will learn:

- Importance of the concept of "Inherently Safer Design"
- Design principles based on Codes and Standards for safe operation of process equipment
- Selection and sizing of safety valves and pressure relief systems
- Common process hazards analysis methods: HAZOP, LOPA, FMEA

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- Detection and prevention methods for fire and explosion accidents
- Plant Equipment Inspection (NDT) and Maintenance Procedures

Objectives

- Comprehensive understanding of different aspects of process design that influence process safety
- Ability to select an "inherently safer design" for the entire process plant operation
- Knowledge on the mechanical structure integrity of process equipment
- Familiarity with hazards associated with process fluids regarding material degradation
- Experience with the Code requirements for sizing relief valves, methodology for determining the relief flows and handling the relief streams
- Knowledge of how to operate with emergency depressuring systems (EDP) system for prevention of fire and gas explosions

Training Methodology

The seminar will be conducted along workshop principles with formal lectures and



interactive examples, which will result in the active participation of all delegates in discussions and teamwork. Real life examples will be selected to illustrate the efficient operation and potential technical failures as well as their root causes. The emphasis will be on troubleshooting the problems and maintaining plant safety. There will be ample opportunities for active, open discussion and sharing professional experiences on various safety issues. All course materials will be provided.

Organizational Impact

On completion of this seminar the delegate will be able to critically analyse the safety methodologies employed within the organisation and instigate improvements where required.

The knowledge gained in this seminar will:

- Enable the delegate to optimise the operation of various components of equipment while maintaining safety of the plant
- Give the delegate confidence to carry out risk minimization analyses on process equipment thereby avoiding failures
- Enable measures to enhance equipment status for the given operating conditions
- Give better handling of pressure relief system
- Enable better specification of new and replacement of old elements of piping system

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• Allow tighter control of maintenance budgets by the avoidance of unplanned equipment failures in service

Personal Impact

- Improved confidence when considering safety issues
- Better understanding of how the process design impacts safety of the plant
- Better grasp of maintenance and instrumentation on incident prevention
- Improved personal knowledge of risk and hazard analysis
- · Better ability to troubleshoot difficult and hazardous situations
- Confidence and ability to select the appropriate depressuring plan thereby improving reliability and personal profile to senior management

Who Should Attend?

- Engineers and technicians in oil & gas, chemical and process industries
- Process, mechanical and chemical engineers



- Engineers and technicians who deal with reactors and piping systems
- Design engineers, project engineers and HSE managers
- Control, automation and instrumentation engineers
- Operators and maintenance personnel

Seminar outline

Overview of Safety in Process Design

Definition of Safety in Process Design

Overview of Historical Incidents and Problem Areas

Components of Process Safety: People, Plant, Process

Risk Identification and Safety Analysis

Process Hazard Analysis: HAZOP, LOPA, FMEA

Hazards Associated with Specific Plant Systems

Elimination of Hazards through Process Design

Prevention of Human Error through Process Control and Monitoring

Inherently Safer Design

"Inherently Safer Design" Methodology

Pre-Design and Design Phases

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Materials of Construction and Optimized Fabrication

Hazard Associated with Process Fluids and Chemical Reactions

Corrosion, Erosion and Material Degradation

Leakage and Loss of Primary Containment

Dispersion of Hydrocarbon Release

Flammability of Chemicals



Safety of Process Equipment

Hazard Associated with Process Equipment

Safety Considerations in Reactor Design

Design Procedure for Safety of Pressure Vessels, Storage Tanks, Reactors, Heat Exchangers

Venting of Tanks and Vessels: Codes, Standards and Best Practices

Piping System Design and Safety

Design of Piping System Accessories: Valves, Fittings, Supports

Assessment of Material Degradation during In-Life Cycle: Fitness for Service

Monitoring, Testing and Inspection (NDT)

Design of Pressure Relief Systems

Design of Safety Valves

Operation of Pressure Relief System

Calculation and Sizing of Relief Loads of Pressure Relief Systems

Pressure Relief Valves vs. Rupture Discs

Codes, Standards and Best Practices

Specifics of Pressure Relief Systems for Pumps, Compressors, Turbines

Process Plant Disposal Systems

Disposal Hazards, Risk Assessment and Environmental Factors

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Process Monitoring and Control

Safety Instrumented Systems

Process Plant Monitoring and Control System: **SCADA**

Emergency Depressuring Systems (EDP)

Prevention of Fire and Gas or Dust Explosions

Safety Consideration in Plant Layout and **Equipment Spacing**

Management of Change and Integrity Operation Window

Plant Equipment Inspection and Maintenance **Procedures**

Final Conclusions



The Scandinavian Academy for Training and Development adopts the latest scientific and professional methodologies in training and human resource development, aiming to enhance the efficiency of individuals and organizations. Training programs are delivered through a comprehensive approach that includes:

- Theoretical lectures supported by PowerPoint presentations and visual materials (videos and short films).
- Scientific evaluation of participants before and after the program to measure progress and knowledge acquisition.
- Brainstorming sessions and practical role-playing to simulate real-life scenarios.
- Case studies tailored to align with the training content and participants work nature.
- Assessment tests conducted at the end of the program to evaluate the achievement of training objectives.

Each participant receives the training material (both theoretical and practical) in printed form and saved on a CD or flash drive. Detailed reports, including attendance records, final results, and overall program evaluations, are also provided.

Training materials are prepared professionally by a team of experts and specialists in various fields. At the end of the program, participants are awarded a professional attendance certificate, signed and accredited by the Scandinavian Academy for Training and Development.

Program Timings:

- 9:00 AM to 2:00 PM in Arab cities.
- 10:00 AM to 3:00 PM in European and Asian cities.

The program includes:

• A daily buffet provided during the sessions to ensure participants comfort.

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