

Course Name: Safe Operation procedures for Process Plant.

Code:

DATE:

Course Objective:

At the end of this Safety in Process Equipment Design and Operation training course, the participants will learn:

- The understanding of different aspects of process design that influence process safety
- The Importance of the concept of "Inherently Safer Design"
- To design principles based on Codes and Standards for safe operation of process equipment
- The Selection and sizing of safety valves and pressure relief systems
- Common process hazards analysis methods: HAZOP, LOPA, FMEA
- Detection and prevention methods for fire and explosion accidents
- Plant Equipment Inspection (NDT) and Maintenance Procedures
- Appreciate "inherently safer design" for the entire process plant operation
- Evaluate mechanical integrity of process equipment
- Identify hazards associated with process fluids regarding impact on material degradation
- Follow code requirements for sizing relief valves to handle relief streams
- Operate Emergency De-Pressuring Systems (EDP) in case of fire and gas explosions

Who Should attend?

- Operation, Technical Service and Maintenance Professionals
- Technical Professionals responsible for maintenance and repair of equipment
- Professionals involved in inspection and maintenance and repair
- Project Engineers and HSE Professionals
- Technical Professionals dealing with risk assessment and integrity analysis

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Course Outline:

Day 1

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

Day 2

Inherently Safer Design

- Inherently Safer Design Methodology
- Pre-Design and Design Phases
- 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

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Day 3

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)

Day 4

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

Day 5

Process Monitoring and Control

- Safety Instrumented Systems

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- Process Plant Monitoring and Control System: SCADA
- Emergency De-Pressuring 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

Course Duration: (5) Day

Venue:

Time:

Numbers of hours: Hours

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