PetroKnowledge

A Successful 3-Day In-house Training Course

Process Safety Engineering

04-OCT-16

ISO 29990 : 2010 Certified

ACS REGISTRARS ISO 29990

ISO 9001: 2015 Certified

ACS REGISTRARS Quality Assurance ISO 9001

This course is Designed, Developed, and Delivered under
ISO 29990:2010 Standards & **ISO 9001:2015**

Process Safety Engineering

WHY CHOOSE THIS TRAINING COURSE?

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

WHO IS THIS TRAINING COURSE FOR?

- 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

WHAT ARE THE GOALS?

- 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

HOW WILL THIS TRAINING COURSE BE PRESENTED?

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.

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Daily Topics

DAY ONE
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
- 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

DAY TWO
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 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 3
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

Quality Certifications

ISO 29990 : 2010 Certified
ACS REGISTRARS ISO 29990

ISO 9001: 2015 Certified
ACS REGISTRARS Quality Assurance ISO 9001

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PetroKnowledge Limited
P. O. Box 135120
Abu Dhabi, United Arab Emirates

+971.2.557.7389
info@petroknowledge.com
www.petroknowledge.com

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