



## Fundamentals of Process plant layout and piping design

### Duration 5 Days

#### Introduction

The process plant layout and piping design course is a comprehensive, highly practical and interactive 5-days course. You will have an opportunity to learn and discuss the techniques and procedures used in the design and engineering of complex process plants. You will learn the fundamentals of plant layout, the equipment used, design principles and procedures. You will also learn the fundamentals of piping system components and the specification and design of these components.

Practical examples from actual projects will be used extensively to illustrate the principles and drive home the point.

#### Who Should Attend

This course is designed for personnel who want to understand the design and engineering principles involved in process plant layout and piping design.

#### Course Objectives

At the end of this workshop delegates will understand:

- Plant Layout fundamentals and procedures
- Fundamental principles of Chemical Process Technology
- Terminology and symbols used in plant layout
- Equipment used in process plants
- Piping Design and Engineering principles
- Terminology, Symbols and Abbreviations in Piping Design
- Documents (Bill of Materials, Equipment Specifications, etc.) and Drawings (PFDs, P&IDs, etc.) used in plant layout and piping design
- 3D modeling of plants and piping systems

#### Course Outlines:

##### MODULE 1 Introduction to Process Plant Layout and Piping Design

- Plant layout fundamentals
- Procedures and workflow
- Physical quantities, units, trigonometry

##### MODULE 2 Introduction to Chemical Processing Methods

- Unit operations and unit processes
- Process flow diagrams (PFDs)
- Utilities

##### MODULE 3 Equipment Used in Process Plants

- Process equipment - reactors, towers, Exchangers, vessels
- Mechanical equipment - pumps, Compressors, turbines
- Equipment drawings, nozzle specifications, Vendor drawings
- Equipment foundations and supports

##### MODULE 4 Plant Layout and Plot Plans

- Plant layout specifications
- Codes
- Safety considerations
- Plot plans
- Equipment arrangement drawings

##### MODULE 5 Process and Instrumentation Diagrams (P&IDs)

- Instruments and instrument symbols
- Control valve manifolds
- Meter runs



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#### **MODULE 6 Plant Layout and Piping Design Documentation and Tools**

- Line lists
- Equipment lists
- Bill of materials
- P&IDs
- Piping isometrics
- 3D models
- Piping specifications
- Piping codes

#### **MODULE 7 Fundamentals of Pipe**

- Pipe dimensions
- Pipe data
- Pipe joining methods
- Pipe representation
- Common abbreviations

#### **MODULE 8 Piping System Components**

- Fittings - elbows, tees, reducers, end caps
- Fitting makeup and dimensions
- Flanges
- Valves
- Pipe racks
- Pipe supports
- Anchors, guides

#### **MODULE 9 Pipe Routing**

- Piping isometrics
- Piping plans, sections, elevations
- 3D representation