Best Technology Soultions **(BTS)**

Training Program

ASME's Detailed Engineering And Layout Of Piping Systems

Training Program

Introduction:

Traditionally there has been little formal training in the area of piping systems and layout of piping systems. For this reason design decisions have to be made based on practical considerations without formulae or code reinforcement. Completing piping arrangements take up the majority of hours in the design of a process plant and the designer is required to apply acceptable layout procedures. For this reason, this course will familiarize engineers, designers and construction personnel with layout, design procedures and practices involved in the location of equipment and layout of and piping systems. This includes pipe sizing, pressure drop calculations, pump and equipment sizing and selection, preparation of equipment specifications and drawings, piping specifications, instrumentation and process control as well as piping component familiarization including valves and fittings, piping hangers and supports.

This course is for engineering in piping projects and includes the engineering, design, detail and layout of process and utility equipment, piping and instrumentation. It will also introduce engineers, designers and construction personnel to the various procedures involved in the development and engineering of Piping and Instrumentation, Diagrams (P&IDs), Equipment Plot Plans, Piping Arrangements and Fabrication Drawings. This course will deliver the background required to design, engineer and complete piping engineering assignments and to complete a typical equipment layout and piping arrangement.

Who Should Attend?

Engineers, designers and construction people in any area that piping is present, which may include a Refinery, Chemical, Power, Pulp and Paper, Utility and Petrochemicals

Course Objectives:

By the end of this course delegates will be able to:

- Understand the layout procedures involved in the layout and piping up of a typical process unit containing pumps, exchangers, horizontal drums, vertical towers
- Appreciate the consequence of related disciplines (civil, structural, electrical, instrumentation etc.) in piping design and layout
- Determine maintenance and accessibility requirements of piping and related disciplines
- Apply nozzle orientation procedures
- Understand pipe support requirements
- Comprehend the latest CAD Techniques used in piping layout
- Apply Piping Stress Analysis Techniques

Course Outline:

- Equipment Layout and Plot Plans
- Civil, Structural, Electrical, Instrumentation and Maintenance considerations
- Distribution Systems
- Pipe Racks
- Pumps and Piping
- Layout at Horizontal Centrifugal
- Vertical Inline
- Double Suction
- Positive Displacement
- Performance characteristics

- Maintenance
- Cavitation
- Suction Piping
- Strainers
- Valving
- Parallel Layouts
- Series Layouts
- Supports
- Loads at Nozzles
- Heat Exchanger Piping
- Maintenance Requirements
- Shell and Tube
- Plate
- Fin Fan
- Valving
- T.E.M.A. standards
- Horizontal and Vertical Vessels
- Placement
- Nozzle Orientation
- Internals
- Platforms
- Ladders
- Manholes
- Maintenance Requirements
- Valving
- Instrumentation
- Process considerations
- Process and Utility Piping
- Pipe Supports and Hangers

- Selection and Location
- Anchors, Guides
- Restraints
- Steam and Condensate Piping
- Steam Traps
- Condensate Collection Systems
- Drip Legs
- Piping Stress Analysis Basics and Layout of Hot Piping
- Pipe sizing and pressure drop calculations