



(ME#23) DETAILS ENGINEERING OF PIPING SYSTEMS AND PROCESS EQUIPMENT

Course Overview

Detail engineering in piping projects consist of the engineering, design, detail and layout of process and utility equipment, piping and instrumentation. This course will be of interest to people employed in any area that piping is present, be it Refinery, Chemical, Power, Pulp and Paper, Utility etc. It shall 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 will include 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.

Traditionally there has been little formal training in this area and design decisions often have to be made based on practical considerations without formulae or code reinforcement. Completing piping drawings take up the majority of man-hours in the design of a process plant

This is a course that will give attendees the background required to design, engineer and complete piping assignments. *WORKSHOP consisting of a series of projects where attendees will have an opportunity to produce specifications, develop a P&ID and perform the calculations involved, including line sizing, pump sizing and selection.*

Who Should Attend

- Piping engineering and design personnel wishing to expand their knowledge of piping and instrumentation.
- Engineers, designers, CAD operators and draftspersons in the piping field.
- Practicing engineers and designers who may have experience in related disciplines and wish to expand their knowledge of the piping area.
- Piping fabricators, contractors and suppliers wishing to understand the relationship of manufacture and fabrication to the design, layout and construction of piping systems.

Duration

4-days

Content

- Piping Terminology, Process Flow Diagram, Development of Piping and Instrumentation Diagram (P&ID), Piping and Instrumentation Functions.
- Equipment Function, Sizing and selection of pumps, exchangers, pressure vessels.
- Pipe Sizing Isometric and Orthographic Drawings Bills of Material for piping drawings
- Valve and Piping Fitting function Dimensioning of piping fittings and valves Piping Documentation, Specifications,
- Instrumentation Specs. Instrumentation - Pressure, Level, Temperature and Flow, Process Control.
- 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.
- Interpreting Plot Plans and Equipment Layouts. Preliminary Stress Analysis. Applicable Codes and standards.

Instructor

Robert Boyle Wilson has been in the piping business since 1963, working with a number of large petrochemical and processing companies in Canada, the U.S. and Europe as piping designer, office supervisor, piping engineer, project coordinator & piping stress analyst. His experience covers piping stress analysis, piping design & equipment layout, pipe sizing, specification writing, and pump selection and has been involved both at the design and site supervisory levels. As a professor at Sheridan College for 11 years taught engineering subjects in the Mechanical Department & published a textbook in *Piping Design*. He has conducted many piping design, engineering, pipe support and stress analysis courses & seminars since 1974, and had a number of publications in Engineering Journals.

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