

Course Outline

PIPING DESIGN ENGINEERING COURSE

Piping Fundamentals

- Introduction to Process Plants
- Scope of Piping in Projects.

Definition & Application of Pipe

- Pipe Designators – NPS
- IPS
- NB
- Pipe Wall Thickness & Schedule, Pipe Weights,
- Lengths
- Grades
- Ends
- Joining Methods
- Methods of Manufacture
- Pipe Ratings, Pipe Symbols.

ASME Codes & Standards

- Introduction to ASME Pressure Piping Design Codes.
- ASME Standards for Common Piping Elements.
- ANSI Codes

Pipe Fittings

- Symbols & Dimensioning.
- Types of Fittings – Butt Weld, Screwed & Socket Weld.
- Elbow – 90 degree (LR & SR), 45 degree, Reducing Ell. ,
- Pipe Bends – Miter Bends, 180 degree Return.
- Branch Connections – Weld Straight & Reducing Tee, Cross & Lateral.
- Fabricated Branch Connections – Stub In & Stub On, Welding Minimums for Stub In,
- Reducers – Concentric & Eccentric, Reducer Offsets.
- Types of Couplings, Weld Cap.
- Fitting Makeup – Dimensioning, Minimum Pipe Length Requirements

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Pipe Flanges

- Types of Flanges based on Face and Application,
- P-T. Ratings. – Forged
- Steel and Cast Iron Flanges.
- Flange Facings – Flat Face, Raised Face,
- RTJ, & Male - Female,
- Tongue & Groove.
- Flange Face Finish.
- Weld Neck,
- Slip on
- Threaded, Socket Weld
- Lap Joint
- Reducing

Gaskets

- Types
- Thickness
- Bolts & Nuts.
- Dimensioning Exercises.

Valves

- Valve Functions
- Locations & End Connections.
- Valve Types – Gate
- GlobeBall
- Check
- Butterfly
- Angle
- PRV/PSV & Plug etc.
- Control Valve Manifold. – Layout Representation & Requirements.
- Valve Operators.
- Valve Layout Considerations.
- Valve Data Sheets
- Valve Selection

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Piping Specifications

- Piping Specifications
- Material Selection
- P-T ratings
- Valve Data Sheets

Plot Plan, Equipment Layout, Piping Layout & GA Drawings.

- Plot Plan Development & Requirements.
- Equipment Layout Terminology, Control Point & Battery Limits.
- Preparation of Equipment Layout.
- Piping GA Drawing Requirements and Layout Procedure.
- Pump GA Drawing and Layout Consideration.
- Tank & Vessel Layout Consideration.
- GA - Print Reading Exercise.

Piping Isometrics

- Definition
- Drawing Piping Isometrics
- Isometric Dimensions, Notes & Callouts.