PIPING DIPLOMA TRAINING SYLLABUS

Module-1 Piping Design and Engineering (fundamentals)

- Introduction to piping designing & engineering – role of piping engineers in various industries.
- Evolution of piping
- Manufacturing methods
- Engineering flow diagrams – BFD, PFD, PUD etc.
- Piping & instrumentation diagram (P&ID'S)
- Piping codes & standards – (ASME,ISANSI,DIN,BS)
- Pipe Fittings
- Pipe class Components.
- Statutory Regulations in piping.
- Pipeline Sizing.
- Pumps & Compressors (All types)
- Process Instrumentation from Piping.

Module-2 Piping Materials:

- Piping Material & selection procedure
- Valve selection & specification
- (Fluids & Hydraulic)
- Pipe Supports & span calculations.
- Pipe fittings selection procedure
- Pipe Design Codes.
  - ASME B 31.3
  - ASME B 31.1
  - ASME B 31.4
  - ASME B 31.8

Module-3 Piping Design & Layout

- Equipment Layout
- Plot Plan Design & Requirement as per OISD
- Dyke Wall/Tank from layout
- Piping G.A
- Isometric Drawings
- Bill of Material, Costing.
- Column Piping /Tower Piping Layout
- Condenser / Exchanger Piping Layout
- Tank Piping & Pump Piping
- Plot plan /Plant Layout/Legends P& ID/Equipment Layout/Piping Plan & Elevation
- General Arrangement of Pipe Racks
- Piping Plot Plan Calculations.

Module-4 Process Design & Flow diagram

Module-5 Types of Valves & Functions

Module-6 Piping Insulation

Module-7 Heat Tracing

Module-8 Testing & Costing

Module-9- Input/output documents for Piping Routing

Module-10 Reinforcement Pad Calculation

- Reinforcement Pad & Requirements.
- R.Pad Calculations Formula As per ASME B 31.3 Stress & strain Diagram.
- Calculations for Various Cases

Module-10 Piping Design and Drafting

- Pipe Data Tables
- Type Of Pipe Joints
- Type Of Drawing
- Symbol Used In Piping Drawing
- Fittings Or Piping Drawing
- Symbols For Pipe Fitting & Valves
- Projection Exercise
- Isometric To Orthographic Exercise
- Piping Isometric

PIPING DIPLOMA TRAINING SYLLABUS

Module-12 Pipe Stress Analysis

- Material Specifications and Commonly used CS & SS materials for Piping components
- Fundamentals of SOM relevant to Pipe stress analysis
- Preliminary Load calculations based on pressure and pipe/fluid weights
- Primary and Secondary Loads. Concept of principal stresses
- Combined pipe stress analysis including weight analysis, Thermal analysis, Flexibility, analysis.
- Introduction to wind and seismic analysis
- Expansion Joints & Expansion bellows including simple loop calculations (Detailed Hands-On Calculations)

Module-12 Software:

CAESAR – II Software

- Basic Inputting
- Modeling of Piping & Equipment
- Wind, Snow and Seismic Factors
- Supports and their Considerations in CAESAR
- Different Load cases
- Qualifying the System for Stresses
- Reading Output
- Standard Thumb Rule for Analysis
- Report generation & Documentation
- Final Document for IFC
- Small Projects and Exercises

E3D OR SP3D Software

- Equipment
- Piping
- Structure
- Electrical
- Hangers Supports
- Report (MTO)
- Spooler & ISO Draft
- Draft
- Commands.

Duration: 120 Hours