Best Technology Solutions (BTS)

Process Piping Materials, Fabrication, Examination & Testing (Conforms to ASME Code B31.3) Training program

Introduction:

This comprehensive course is designed to illustrate the relationship of the Fabrication & Examination rules of the B31.3 Code to the Design and Materials rules. Examples of problems that occur as a result of not understanding the relationship of the ASME code to design rules and materials selection are featured. The primary goal of this course is to provide insight into the rules relating to the ASME B31.3 Fabrication and Examination code.

Who Should Attend?

Piping engineers and designers, fabricators and erectors, QA/QC personnel, engineers and maintenance personnel who desire a more in depth understanding of the Fabrication and Examination rules of the ASME Codes & Standards, operation, mechanical and maintenance personnel, inspection and quality personnel responsible for specifying, operating, inspecting and maintaining piping systems, code compliance personnel, regulatory personnel, consulting engineers, design engineers, maintenance engineers, project engineers, maintenance personnel, service engineers, planners and schedulers, M & E foremen, technical assistants & coordinators & technicians

Course Objectives:

By the end of this course delegates will learn about:

- Identify what issues to take into consideration when designing process piping
- Explain the pressure design of piping and piping components
- Analyze piping flexibility and gauge the limitations of piping and piping components
- Identify pipe supports, leak testing, piping failures and their causes
- Describe the materials selection process and limitations
- Identify fabrication rules and their bases
- Describe the relationship between B31.3 design and the fabrication & examination requirements
- Explain the welding qualification requirements
- Identify the inspection, examination, and testing requirements

Course Outline:

- History of Codes
- Definitions
- Considerations of Design
- Pressure Design of Piping and Piping Components

- Piping Flexibility Analysis
- Limitations of Piping and Piping Components
- Pipe Supports
- Piping Failures and their Causes
- Materials-Control and Selection
- Brief Introduction to B31.3 Design Requirements for New Construction
- Design Minimum Temperature
- Quality Factors for Castings and Welds
- Pressure Design of Straight Pipe
- Pipe Under-Tolerance and How to Order Pipe Accordingly
- Steels and ASTM Specifications
- Metallurgy – Steels
- Welding Metallurgy
- Fabrication of Piping Systems
- Fabrication by Welding
- Responsibilities
- Weld and Joint Types
- Preheat Requirements
- Postweld Heat Treatment Requirements
- Hardness Testing Requirements

- Welding Qualifications
- Inspection, Examination & Testing
- Inspection and Testing for New Construction
- Responsibilities of the Fabricator, Purchaser and Inspector
- Examination Requirements: Extent, Supplementary and Typical Weld Imperfections
- Examination Methods for Evaluating Weld Imperfections and Acceptance Criteria
- Leak Testing for New Construction
- General Requirements
- Preparation for Leak Testing
- Brittle Fracture Considerations for Leak Testing
- Hydrostatic Testing
- Pneumatic Testing
- Inspection Data Evaluation, Analysis, and Recording
- Corrosion Rate Determination
- Maximum Allowable Working Pressure Determination
- Retirement Thickness Determination
- Assessment of Inspection Findings
- Reporting and Records for Piping System Inspection

- API 570 Frequency and Extent of Inspection
- Piping Service Classes
- Inspection Intervals
- Extent of Visual External and CUI Inspections