
N619: Introduction to ASME B31.3 Process Piping Code

Format and Duration

Instructor(s): Don Frikken

Classroom - 2 Days

Summary

This two-day course will introduce participants to the ASME B31.3 Process Piping Code. The Code provides requirements for the design, fabrication, examination and testing of metallic piping systems designed for the wide variety of fluid services used in the process industries. Selection of materials, pipe, valves and fittings will be discussed. Participants are encouraged to bring a copy of the code (not included in course fees) to the session. Each session is conducted in a lecture/discussion/problem solving format designed to provide intensive instruction and guidance on understanding Code requirements. The instructor will be available following each day's session to provide participants with further opportunity for discussion and consideration of specific problems.

Learning Outcomes

Participants will learn to:

1. Develop an understanding of when the rules of ASME B31.3 should be applied.
2. Choose ASME B31.3 fluid service designations for specific applications.
3. Develop an understanding of the advantages and limitations of various types of piping components.
4. Recognize when to seek help to select materials of construction.
5. Select wall thicknesses and component ratings based on design pressure and design temperature.
6. Define fabrication and installation requirements for piping systems.
7. Select examination and testing methods for piping systems.

Training Method

Two classroom days providing 1.4 CEU (Continuing Education Credits) or 14 PDH (Professional Development Hours)

Who Should Attend

Engineering, design, construction, maintenance, quality assurance, inspection and manufacturing personnel who work with process piping (e.g., in the chemical, petroleum, plastic processing, pulp and paper, and bioprocessing fields) will find it a time-saving means to broaden and update their knowledge of piping.

Course Content

Day One

1. Introduction
 - a. General Definitions
 - b. Piping Development Process
 - c. B31 Piping Codes
 - d. The ASME B31.3 Code
 - e. Fluid Service Definitions

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2. Metallic Pipe & Fitting Selection
 - a. Piping System Failure
 - b. Bases for Selection
 - c. Listed versus Unlisted Piping Components
 - d. Fluid Service Requirements
 - e. Piping components
3. Materials
 - a. Strength of Materials
 - b. Bases for Design Stresses
 - c. B31.3 Material Requirements
 - d. Deterioration in Service

Day Two

1. Pressure Design (metallic)
 - a. Design Pressure & Temperature
 - b. Quality & Weld Joint Strength Factors
 - c. Pressure Design of Components
 - d. Piping Material Specifications
2. Valve Selection
 - a. Code Requirements
 - b. Selection by Valve Type
3. Introduction to Flexibility Analysis
 - a. What are we trying to achieve?
 - b. Flexibility Analysis Example
4. Fabrication and Installation
 - a. Welder/Brazer Qualification
 - b. Welding Processes
 - c. Weld Preparation
 - d. Typical Welds
 - e. Preheating & Heat Treatment
 - f. Bending & Forming
 - g. Typical Owner Added Requirements
 - h. Installation
 - i. Flange Joints
5. Inspection, Examination and Testing
 - a. Inspection
 - b. Examination
 - c. Leak Testing



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6. Systems

- a. Instrument Piping
- b. Pressure Relieving Systems