

(ME#22) ASME B31.1 POWER PIPING DESIGN

Turning GOOD Engineers into GREAT Engineers!

COURSE OVERVIEW

Worldwide competitiveness is forcing the need to construct more effective piping systems, possible only if existing piping codes and standards are understood and the intentions realized. This intensive three day course brings you up to the minute on current Power Piping Code requirements and provides insight into how these requirements have evolved and what future changes in the Code may be expected. This course explores the background, rules and trends in piping design, analysis, and fabrication – vital elements of power, industrial and institutional plant construction and maintenance – within the context of meeting the requirements and intent of ASME B31.1 and its appendices.

WHO SHOULD ATTEND

- Engineers entering the piping design and analysis field
- Practicing piping engineers requiring background on Code compliance and trends in piping design, analysis and fabrication
- Piping fabricators and suppliers wishing to understand the relationship of fabrication and manufacture to the design and construction of piping systems
- QA/QC personnel.

LEARNING APPROACH

An intensive course that will give attendees the background required to understand the requirement for ASME B31.1 codes. Each session will be conducted in lectures, discussion & problem solving format

INTERESTING TOPICS COVERED DURING THE COURSE

Introduction

- Piping history
- Code philosophy
- General requirements
- Organization

Piping design criteria

- Failure modes
- Stress categories-sustained (primary) stresses
- Cyclic (secondary) stress ranges
- Basis of allowable stresses acceptance criteria

Piping design conditions

- Normal design loads
- Consideration for unusual loads
- Load categorization

Component (pressure) design

- Determining wall thickness
- Joint efficiency factors and manufacturing quality factors
- Bends and elbows
- Area replacement rules for branch connections
- Qualification of standard components
- Pressure-temperature ratings and schedule or weight designations
- Variations from normal operation

System (external load) design

- Weight
- Occasional loads (earthquake and wind)
- Consideration of dynamic loads
- Flexibility analysis

- Fatigue considerations
- Stress intensification factors and stress indices
- Combinations of loads
- Cold spring
- Simplified analysis methods
- Layout techniques

Pipe support design

- Support types
- Loading and combinations considered
- Design methods
- Guidelines for locating supports
- Variable supports
- Lugs and attachments