



ASME Section I with ASME B31.1

HSB, a Munich Re company, is a technology-driven company built on a foundation of specialty insurance, engineering and technology, all working together to drive innovation in a modern world.

Course Description: This seminar is a basic introductory overview of the Section I Power Boiler Code and related requirements of ASME B31.1 Power Piping. It focuses on the ASME Certificate Holder engaged in welded construction, and Repair Organizations working on ASME Code Power Boilers under the National Board Inspection Code (NBIC).

The course describes the formatting and structure of Section I, its scope and its implementation in a Code Power Boiler fabrication program. The ASME B31.1 segment focuses on Boiler External Piping (BEP) construction details, including weld joint preparation and alignment, tack welds, required weld sizing, welding qualification requirements, final weld acceptance criteria, preheat recommendations, postweld heat treatment (PWHT) requirements and exemptions, NDE requirements, pressure testing, Section I Code stamping requirements and Data Report preparation.

Topics Covered

Overview of ASME Section I

Organization and Formatting of Section I

- Scope of Section I
- Pressure and Temperature Scope
- Scope and Exemptions
- Effective Code of Construction
- Boiler Type
- Boiler Service
- Boiler Sizes

Other Section I Components

- Feedwater Heaters
- Economizers
- Superheaters
- Water Columns
- Unfired Steam Boilers

ASME B31.1 - Power Piping

- Code Jurisdictional Boundaries
- BEP - Boiler External Piping
 - Steam Piping
 - Feedwater Piping

- Receiving Inspections
- Identification and Marking
 - Coded Markings
 - Subdivided Materials
- Documentation Requirements
 - Test Reports
 - Certificates of Compliance
 - Partial Data Reports
- Material Recertification (PG-10)
- Standard Pressure Parts
- Authorized Inspector Involvement

Fabrication Requirements

- Cutting Plates and Other Stock
- Joint Preparation
 - Edge Alignment
 - Dissimilar Thickness
 - Tack Welds
 - Joint Cleaning

Welded Fabrication Requirements

- Acceptable Welding Processes
- Procedure and Performance Qualifications
 - Blowoff Piping
 - Miscellaneous Piping
- NBEP - Non-Boiler External Piping

Design Requirements

- Basic Design Philosophy
- Design Loads
- Determining Design Parameters

Material Requirements

- Pressure Retaining
 - Water Wetted
 - Steam Touched
 - Water Level Indicators and Piping
- Non-pressure Retaining
- Heat Treat of Austenitic Stainless Steels
- Creep Stress Enhanced Ferritic Steels
- Joint Stress Reduction Factors
- Acceptability

- Material Metal Selection
- Filler Metal Section
- Purchase Orders

Overview of ASME B31.1

Structure and Organization of B31.1

- Scope and Definitions
- Scope Exemptions
- Section I Referenced Edition

Materials

- Acceptable Materials
- Allowable Stresses
- BEP Restrictions
- Components

Welding

- Procedure (WPS) Qualification
- WPS Qualification by Others
- Filler Metal Selection
- Backing Rings
- End Preparations
- Cleaning
- Alignment
- Socket Spacing and Dimensions
- Tack Welds
- Joint Preparation
- Final Welding Inspection Criteria
- Postweld Heat Treatment
 - Exemptions
 - Time at Temperature
 - Heating and Cooling Rates
 - Thermocouple Placement
- NDE Requirements
 - Examination Methods
 - Acceptance Criteria
 - Personnel Qualifications
 - Sequencing of NDE
- Defect Repairs
- Welded Attachments
- Inspection Openings

Pressure Testing

- Test Pressure Determination
- Test Application

Code Stamping

- Location
- Required Information

Manufacturer's Data Reports

- Preparation and Certification
- Distribution and Record Retention
- Girth Butt Welds
- Weld Reinforcement
- Longitudinal Butt Welds
- Performance Qualification
 - Previous Qualification
 - Collective Qualification

Welding Preheat

Post Heat Treatment

NDE Requirements

- Examination Methods
- Personnel Qualifications

Pressure Testing

- Test Pressure and Temperature
- Temporary Supports
- Overpressure Protection
- Surface Exposure
- BEP vs. NBEP
- Pneumatic

Code Stamping for BEP

Manufacturer's Data Reports for BEP

- Preparation and Certification
- Distribution
- Record Retention

For more information, contact GetInfo@hsb.com