

PD442 – ASME BPV CODE SECTION VIII, DIVISION 1: DESIGN & CONSTRUCTION

PDH: 23 Hours

EXPRESS ENGINEERING
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INTRODUCTION

Are you tasked with the design or fabrication of pressure vessels, but are not sure where to begin with code requirements? This course is a comprehensive introduction to the requirements of the current Edition of the ASME Boiler and Pressure Vessel Code (B&PVC), Section VIII, Division 1. Beginning with a unique insight into the background and organization of the code, the course will then focus on the design and construction requirements of the code. Participants will also explore requirements applicable to materials, fabrication, inspection, testing, and certification of pressure vessels. The course highlights the most commonly applied subsections, paragraphs, and appendices.

INTRODUCTION

This course focuses on the design, fabrication, and certification of pressure vessels with respect to BPVC VIII-1. In this course, participants will perform relevant example calculations on Appendix 2 flanges, nozzle reinforcement, and much more! Real world case studies highlight areas such as Opening Reinforcements/ Nozzle Reinforcement and Appendix 2 Bolted Flange Calculation.

BY PARTICIPATING IN THIS COURSE, YOU WILL LEARN HOW TO SUCCESSFULLY:

- Describe scope, purpose, and organization of the Code.
- Define allowable materials, explain how to reclassify materials and identify material traceability requirements.
- Explain how to apply the Code rules to common design and fabrication situations.
- Identify the calculations for some of the loadings & situations not addressed by the Code.
- Describe the preparation of design specifications, design reports, data reports, & other documentation.

WHO SHOULD ATTEND?

This course is designed primarily for beginners as well as, experienced vessel designers who would like to update their knowledge with the latest version of the Code.

Those involved with the purchase, design, fabrication, or inspection of pressure vessels. Some technical background will be helpful, but attendees are not required to have an Engineering degree or previous work experience in the subject matter.

BENEFITS

KEY TOPICS COVERED IN THIS COURSE INCLUDE:

- Introduction to ASME Codes and Section VIII
- General Design Requirements
- Design for cylindrical shells, dished heads, Flat Heads, Covers and Openings for internal and external pressure
- Fabrication, Testing, Welding, and Examination
- Requirements for Steels and Heat-Treated Materials



BENEFITS

COURSE MATERIALS:

Participants will receive access to the following ASME Codes/Standards via **ASME's Digital Collection for the course duration:**

- BPVC Section VIII, Division 1: Rules for Construction of Pressure Vessels, for the duration of the course.
- ASME BPVC, Section VIII, Division 2: Rules for Construction of Pressure Vessels - Alternative Rules
- ASME Boiler & Pressure Vessel Code, Section II.D: Properties (Customary)
- Digital course notes via ASME's Learning Platform



BENEFITS

SPECIAL FEATURES INCLUDE:

- An Overview of Code Organization
- Overview of Updated Editions

SUPPLEMENTAL COURSE MATERIALS (NOT INCLUDED WITH COURSE, PURCHASE SEPARATELY)

- A calculator is required.

BENEFITS

Participants will receive a **Four Month Membership to ASME portal** with following benefits **absolutely free..!**

Publishing	
Mechanical Engineering Magazine (Bi-monthly)	✓ (Digital Format)
R&D Pulse	✓
ASME Smart Brief	✓
ASME News	✓
Learning Resources	
AccessEngineering	✓
Career Resources	
TEC Talk Webinar Series	✓
ASME Career Center	✓
Career Webinar Series	✓
Day in the Life Webinars	✓
Networking	
Technical Divisions	✓
Sections	✓

COURSE CONTENT

MODULE 1:

INTRODUCTION TO ASME BOILER & PRESSURE VESSEL (BPV) CODE & SECTION VIII EDITIONS, INTERPRETATIONS, & CODE CASES

- Foreword
- Responsibilities
- Scope
- Comparison between Divisions 1 & 2

MODULE 2:

MATERIALS REQUIREMENTS

- Code accepted materials
- Exceptions to material requirements
- Recertification of materials
- Basis for allowable stresses
- Other material properties

COURSE CONTENT

MODULE 3 :

GENERAL DESIGN REQUIREMENTS

- Stresses and Load Conditions
- Joint Types and Efficiencies
- Joint Categories
- Alternate Design Rules
- Rules for Pressure Vessel Designers
- Mandatory Appendices
- Nonmandatory Appendices

MODULE 4 :

WELDING REQUIREMENTS

- Weld Joint Categories
- Weld Joint Types
- Limitations on Weld Joint Types
- Joint Efficiencies
- Full and Spot Radiography Requirements

COURSE CONTENT

MODULE 5 :

DESIGN FOR INTERNAL PRESSURE

- Cylindrical Shells
- Spheres
- Formed Heads
- Flat Heads and Covers
- Openings and Reinforcement

MODULE 6 :

DESIGN FOR EXTERNAL PRESSURE AND BUCKLING

- Axial Compression
- External Pressure applied to
- Cylinders
- Formed heads
- Spheres
- Design of stiffening rings

COURSE CONTENT

MODULE 7 :

BOLTED FLANGE CONNECTIONS WITH RING-TYPE GASKETS

- Flange Standards
- Flange Facings and Gaskets
- Use of Appendix 2
- Moments and Stresses
- Flange Rigidity

MODULE 8 :

FABRICATION REQUIREMENTS

- Cutting and forming
- Shape Tolerances
- Inspection Requirements
- Special Service Requirements
- Design of welded joints
- Postweld Heat Treatment (PWHT)
- Nondestructive Examination (NDE)

COURSE CONTENT

MODULE 9 :

REQUIREMENTS FOR CARBON, HIGH ALLOY, AND HIGH STRENGTH STEELS

- Fabrication
- Specific Heat Treatment Requirements
- Toughness Requirements
- Toughness Testing Exemptions
- High Alloy Steels
- High Strength Steels

MODULE 10 :

TESTING, STAMPING, DATA REPORTS, AND PRESSURE RELIEF

- Pressure Test Requirements
 - Hydrostatic
 - Pneumatic
- Applying the ASME Mark
- Manufacturers Data Reports
- Pressure relief requirements



SCAN FOR WEBSITE 

CONTACT US



expressengineeringsolutions.com 



+91 9921229232 / 7500507040



training@express-engg.com

PUNE

 Sargam Tower, 1st & 2nd Floor, Survey No - 43/1-9, Behind Girija Hotel, DP Road, Near Rajaram Bridge, Karvenagar, Pune - 411 052

SURAT

 348, Green Palladia, Opposite Raj World, Near Gaurav Path Road, Palanpore, Surat, Gujarat - 395009

