



The
Welding
Institute



**Technical
Excellence.**

**ASME's
Authorized Training
Provider
TWI India courses**



ASME SECTION IX (WELDING QUALIFICATIONS) FOR SHOP ENGINEERS

Course Objectives

The purpose of this course is to provide the delegates with an overview of ASME Section IX requirements, help understand some of the typical requirements of welding qualifications and how to apply the standard in a boiler and pressure vessel fabrication shop.

Delivery method

Classroom/Virtual tutor led

Duration

3 Days including examination

Suitable For

- Design Engineers
- Shop Engineers
- QA/QC Engineers
- Welding Engineers and supervisors
- Functional Heads and managers
- Third party inspectors

Assessment/Evaluation of candidates

- Yes

Certification

Successful completion certificate

Pre requisite Experience

Experience in boiler and pressure vessel manufacturing - Desirable

Course content

- Introduction to ASME BPVC
- ASME Construction codes and referenced standards
- Structure of ASME Sec IX : Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators
- General requirements of joining processes
- Welding supervision during qualification tests , duties and qualification of supervisors
- Properties of welded joints and various destructive and non-destructive testing methods used to determine the properties
- Understanding welding variables
- Welding Procedure Qualification, preparation and review of WPS, PQR
- Welder Performance Qualification, preparation and review of Welder Performance Qualification records

ESSENTIALS OF ASME BPVC SEC VIII DIV. 1

Course Objectives

The purpose of this course is to provide the delegates with basic understanding of ASME Section VIII Division requirements, help identify some of the typical requirements for fabrication, examination, testing

Delivery method

Classroom / Virtual tutor led

Duration

3 days including examination

Suitable For

- Design Engineers
- Shop Engineers
- QA/QC Engineers
- Welding Engineers
- Materials procurement and planning engineers
- Functional Heads and managers

Assessment/Evaluation of candidates

- Yes

Certification

Successful completion certificate

Pre requisite Experience

Experience in pressure vessel design or fabrication preferred

Course content

- Brief history of ASME
- ASME Boiler & Pressure Vessels Codes(BPVC) and Referenced Sections
- How does it work for pressure vessel manufacturers
 - ASME Certificate of Authorisation
 - ASME Certification Mark
 - Authorised Inspection
- Structure of ASME Sec VIII Div.1 Rules for Unfired pressure vessels
- Scope, Responsibilities of User, Responsibilities of Manufacturer, Responsibilities of Authorised
- Subsection A of ASME BPVC Section VIII Div.1 General requirements of materials, design, fabrication, examination, inspection, testing, stamping and certification.
 - Brief introduction to design loading, Maximum Allowable Working Pressure, Design temperature, Minimum Design Metal Temperature
 - Materials selection
 - Fabrication controls, rolling, forming
 - Impact testing of materials and welding
 - Inspection and Examination Pressure tests



ESSENTIALS OF ASME BPVC SEC VIII DIV. 1

- Subsection B of ASME BPVC Section VIII Div.1

Specific requirements of design, materials, fabrication, inspection and testing of pressure vessels based on method of construction like welded vessels

- Requirements for lethal service, low temperature vessels
- Category of weld joints
- Joint Efficiency and extent of radiography
- Welded connection
- General requirements of welded fabrication,
- Inspection and Non-Destructive Testing

- Subsection C of ASME BPVC Section VIII Div.1

Specific requirements of design, materials, fabrication, inspection and testing of pressure vessels based on type of materials used in construction

- Carbon steel, low alloy steel & high alloy steel,
- Heat treatment
- Impact testing and exemptions
- Heat Exchangers

- Mandatory Appendices and their applicability

- Supplementary design formula, flange design
- Jacketed vessels
- Non circular vessel
- Quality control system
- Design Engineers qualification
- Flexible bellows
- Establishing applicable code editions

ESSENTIALS OF ASME BPVC SEC I : POWER BOILERS

Course Objectives

The purpose of this course is to provide the delegates with basic understanding of ASME Section I requirements, help to identify some of the typical requirements for design, fabrication, examination, testing and how to apply those rules in construction of power boilers.

Delivery method

Classroom/Virtual tutor led

Duration

3 Days including examination

Suitable For

- Design Engineers
- Shop Engineers
- QA/QC Engineers
- Welding Engineers
- Materials procurement and planning engineers
- Functional
- Heads and managers

Assessment/Evaluation of candidates

- Yes

Certification

Successful completion certificate

Pre requisite Experience

Experience in boiler and pressure vessel design or fabrication preferred

Course content

- Brief history of ASME
- ASME Boiler & Pressure Vessels Codes(BPVC) and Referenced Sections
- How does it work for pressure vessel manufacturers?
 - ASME Certificate of Authorisation
 - ASME Certification Mark Authorised Inspection
- Structure of ASME Sec I Rules for Power
- Boilers Scope, Responsibilities and Authorised Inspection

- Part PG in Sec I: general requirements in boiler construction

General requirements of materials, design, fabrication, examination, inspection, testing, stamping and certification.

- Brief introduction to design loading, design principles of parts, tubing, heads, ligaments, boiler external piping Overpressure protection
- Materials selection
- Fabrication controls, rolling, forming
- Inspection and Examination
- Pressure tests
- Marking, Manufacturer's Data reports



The
Welding
Institute



**Technical
Excellence.**

ESSENTIALS OF ASME BPVC SEC I : POWER BOILERS

- Part PW of Sec I : boilers fabricated by welding
Specific requirements of design, materials, fabrication, inspection and testing of boilers fabricated by welding
 - Materials
 - Design of welded joints, attachments
 - Welding and qualifications
 - Fabrication and controls
 - Post weld heat treatment
 - Examination, Inspection and Non-Destructive examination
 - Other testing, production test plate
- Part PWT of Sec I : requirements of water tube boilers
 - Specific requirements of tubes and attachments, access opening in case of water tube boilers
- Part PFT of Sec I : requirements of fire tube boilers and their attachments
 - Specific requirements of fire tube boilers for tube sheet, furnace, access doors and other attachments
- Part PMB, PEB, PFB & PHRSG of Sec I: other type of boilers like miniature, electric, feedwater economisers, heat recovery steam generators
 - Brief introduction to requirements
- Mandatory and Non mandatory Appendices
 - Establishing applicable code editions
 - Methods of PT and MT examination
 - Recommended practice for heat treatment of weldments in P-15E materials by electric resistance heating
 - Quality system in manufacturer's works

TWI (India) Private Limited

Old No.130/1/2/3, New No.50/1/2/3, Velachery Main Road, Venkatapuram, Saidapet, Chennai - 600015, India
www.twiindia.com | Tel: +91 44-43189691-4 | E-mail: enquiries@twiindia.com



BASIC COURSE ON NON-DESTRUCTIVE TESTING

Dates/venues/fee

The up-to-date programme is available at
www.twitraining.com

Duration

4.5 days

Suitable for

Engineers, surveyors and inspectors requiring a general knowledge of NDT methods and requiring some hands-on experience.

Course content

This NDT training course covers: A basic appreciation of the main NDT methods (Visual Inspection, Magnetic Particle Testing, Penetrant Testing, Radiographic Testing, Ultrasonic Testing and Eddy Current Testing) Choice of method in relation to materials, defect type, position and weld geometry; materials sorting methods, proprietary instruments; surface methods; Visual Inspection, magnetic particle and penetrant inspection and eddy current testing; Methods for internal examination, X-and gamma-radiography, ultrasonic flaw detection.

70% of the course will involve practical demonstrations and hands-on experience.

Objectives

- To appreciate the available methods
- To explain the basic principles of these methods
- To identify the advantages and disadvantages of these, both in application and defect detection capability
- To carry out basic hands-on applications for familiarisation purposes

BASIC COURSE ON WELDING INSPECTION

Dates/venues/fee

The up-to-date programme is available at www.twitraining.com

Duration

2.5 days

Suitable for

Welders, operators, line inspectors and foremen who undertake visual examination of welded joints; quality control staff associated with welding; all staff who need basic training in welding inspection coupled with a qualification in this field.

Entry requirements

Although there is no specific experience required, it is recommended that candidates possess a minimum of six months' welding-related engineering experience and two years' industrial experience.

In addition, candidates must comply with Clause 1.3.4 of CSWIP document WI-6-92 available at www.cswip.com.

Certification/Awarding Body

CSWIP

Course content

This welding inspection course covers: visual inspection procedures; relevant codes of practice, terms and definitions; welding processes and typical welding defects; weld measurements; typical documentation and requirements; practical inspection and reporting. All CSWIP requirement documents are available at www.cswip.com

Objectives

- To identify various weld imperfections (defects)
- To understand the relevant welding technology related to visual inspection
- To understand the need for documentation in welding
- To be aware of codes and standards related to inspection requirements
- To carry out inspection of parent materials and consumables
- To carry out visual inspection of welds, report on them and assess their compliance with specified acceptance criteria
- To pass the CSWIP 3.0 Visual Welding Inspector qualification

BASIC COURSE ON WELDING INSPECTION

Additional information

Examination applicants must submit a detailed CV/résumé when booking this course.

Enrolment on this course does not constitute reservation of an examination. All courses may be followed by a CSWIP Welding Inspector examination for candidates with appropriate experience as specified in CSWIP document WI-6-92. All CSWIP requirement documents are available at www.cswip.com



The
Welding
Institute



TWI (India) Private Limited

Old No.130/1/2/3, New No.50/1/2/3, Velachery Main Road, Venkatapuram, Saidapet, Chennai - 600015, India

www.twiindia.com | Tel: +91 44-43189691-4 | E-mail: enquiries@twiindia.com