



COURSE OVERVIEW ME0045
ASME VIII Pressure Vessel Design, Fabrication & Testing
(Division 1)

Course Title

ASME VIII Pressure Vessel Design, Fabrication & Testing (Division 1)

Course Date/Venue

December 22-26, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference

ME0045

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs



Course Description



This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date overview of ASME Boiler and Pressure Vessel Code Section 8.D.1. It covers the development and significance of ASME BPVC code; the ASME BPVC Section VIII Divisions 1, 2, and 3; the scope and applicability of Division 1; the basic design principles covering materials, design stress and factors of safety; the types of pressure vessels; the categories, configurations and their specific considerations; the material specifications, allowable stress values and sourcing of pressure vessel; and the shells under internal pressure, heads and formed sections and opening and reinforcements around nozzles, manways and other penetrations.

Further, the course will also discuss the welding considerations, processes, joint efficiencies and material compatibility; the effects of vacuum and external loads and their design implications; the post-weld heat treatment, stress relieving and other necessary procedures; the examination and inspection techniques covering radiography, ultrasonic testing and other non-destructive tests; the pressure testing procedures, certification and stamping, and the compilation of proper documentation and manufacturer's data reports.



During this interactive course, participants will learn the welding documentation and qualifications; the special service requirements, considerations of external loads and usage of appendices in Division 1; the bolting, gasket selection and design as per ASME standards; the popular software tools and their applicability; comparing Division 2 and 3 and their differences in design rules, materials and inspection requirements; keep updated with the latest code revisions; the pressure vessel repairs and alterations within the ASME standards; integrating with other ASME sections.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an in-depth knowledge on ASME boiler and pressure vessel code Section 8.D.1
- Discuss the development and significance of ASME BPVC code as well as the ASME BPVC Section VIII Divisions 1, 2, and 3
- Explain the scope and applicability of Division 1 including the basic design principles covering materials, design stress and factors of safety
- Identify the types of pressure vessels as well as the categories, configurations and their specific considerations
- Recognize the material specifications, allowable stress values and sourcing of pressure vessel
- Design shells under internal pressure, heads and formed sections and opening and reinforcements around nozzles, manways and other penetrations
- Apply welding considerations, processes, joint efficiencies and material compatibility
- Recognize the effects of vacuum and external loads and their design implications
- Employ post-weld heat treatment, stress relieving and other necessary procedures
- Implement examination and inspection techniques covering radiography, ultrasonic testing and other non-destructive tests
- Apply pressure testing procedures, certification and stamping and compilation of proper documentation and manufacturer's data reports
- Review welding documentation and qualifications and identify special service requirements, considerations of external loads and usage of appendices in Division
- Discuss bolting, gasket selection and design as per ASME standards and identify the popular software tools and their applicability
- Compare Division 2 and 3 and their differences in design rules, materials and inspection requirements
- Keep updated with the latest code revisions, carryout pressure vessel repairs and alterations within the ASME Standards and integrate with other ASME sections



Exclusive Smart Training Kit - H-STK®



Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.

Who Should Attend

This course provides an overview of all significant aspects and considerations of ASME VIII pressure vessel for those who are involved in the design, fabrication and testing of pressure vessels and for engineers who want to know more or move to this very interesting engineering area. Further, engineers involved in maintenance, repair and flaw evaluation of pressure vessels will also have a need for this course.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

US\$ 5,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.




Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations:

-  British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

-  The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.



Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



Mr. George Poulos, MBA, MSc, BSc, CEng, is a **Senior Mechanical & Maintenance Engineer** with over **30 years** of extensive experience within the **Pressure Vessel Design, Fabrication & Testing, Boiler, Pressure Vessel & Piping Systems, External Pressure Design & Considerations, ASME Boiler & Pressure Vessels Code, Pipe Stress Analysis, Pipeline System Design, Construction, Oil & Gas, Petrochemical, Refinery, Construction, Aircraft & Shipbuilding Industry**. His wide experience cover in the areas of **Reliability Engineering, Maintenance & Reliability Best Practices, Reliability, Availability & Maintainability (RAM), Root Cause Analysis, Maintenance Process, Reliability-Centered Maintenance (RCM), Reliability Engineering Analysis (RE), Root Cause Analysis (RCA), Asset Integrity Management (AIM), Reactive & Proactive Maintenance, Maintenance Management, Aluminium Oxides, Aluminium Smelting Process, Basic Steel Making Process, Hot Rolling Process, Hot Strip Mill, Mill Operations, Roll Mill, Steel Making Process, Steel Manufacturing, Electric Arc Furnace (EAF), Steel Forging, Steel Manufacturing & Process Troubleshooting, Slit Rolling, Carbon Steel Pipe Wall Thickness & Grade Selection, Ferro-Alloys, Steel Metallurgy, Steel Structure Welding, Steelmaking Slag, Steel Making Application, Heat Treatment & Prevention Techniques, Corrosion Fabrication & Inspection and Post Weld Heat Treatment**. Further, he is also well-versed in **Welding Inspection, Welding & Machine Techniques, TIG & Arc Welding, Shielded Metal Arc Welding, Gas Tungsten & Gas Metal Arc Welding, Welding Procedure Specifications & Qualifications, Aluminium Welding, Hot Work-Safety, SMAW, GTAW, Welding Techniques, Pipeline Welding Practices, Welding Engineering, Welding Fatigue & Fracture Mechanics, Welding Inspection Technology, Welding Safety, Welding Defects Analysis, Welding Technology, Welding Problems, Welding & Non Destructive Testing and Metallurgy Techniques**.

During his career life, Mr. Poulos has gained his practical and field experience through his various significant positions and dedication as the **Chief Executive, Head of Technical Studies, Manager, Senior Consultant, Lead Welding Engineer, Senior Welding Engineer, Design Engineer, Sales Engineer, Author, Welding Instructor, Visiting Lecturer and Technical Proposal Research Evaluator** from various international companies such as Greek Welding Institute, Hellenic Quality Forum and International Construction Companies such as Shipbuilding, Aircraft Industry and Oil and Gas Industry.

Mr. Poulos is a **Registered Chartered Engineer** and has a **Master's** degree in **Naval Architecture**, a **Bachelor's** degree in **Welding Engineering** and a Master of Business Administration (**MBA**) from the **Sunderland University, Aston University and Open University, UK**, respectively. Further, he is a **Certified Trainer/Instructor**, an active Member of Chartered Quality Institute (**CQI**), The British Welding Institute (**TWI**), The Royal Institution of Naval Architects (**RINA**) and American Welding Society (**AWS**), a Registered **EWI/IW** (European Welding Federation-International Welding Institute W/E) and an **IRCA** Accredited External Quality Systems Auditor through BVQI. He is an **Author** of Technical Book dealing with Protection/Health/Safety in the Welding/Cutting domain and delivered various trainings, seminars, conferences, workshops and courses globally.



Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: Monday, 22nd of December 2025

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0930	Course Introduction & Objectives Overview, Goals & Expected Outcomes
0930 – 0945	Break
0945 – 1030	History & Evolution of the ASME BPVC The Need, Development & Significance of The Code
1030 – 1130	Overview of ASME BPVC Section VIII Introduction to Divisions 1, 2 & 3
1130 – 1215	Scope & Applicability of Division 1 Defining the Boundaries of D.1 – which Vessels it Covers & Doesn't
1215 – 1230	Break
1230 – 1330	Basic Design Principles Materials, Design Stress & Factors of Safety
1330 – 1400	Types of Pressure Vessels Covered Categories, Configurations & their Specific Considerations
1420 – 1430	Recap
1430	Lunch & End of Day One

Day 2: Tuesday, 23rd of December 2025

0730 – 0830	Materials for Pressure Vessels Material Specifications, Allowable Stress Values & Sourcing
0830 – 0930	Design of Shells Under Internal Pressure Calculations, Thickness Determinations & Joint Efficiencies
0930 – 0945	Break
0945 – 1100	Design of Heads & Formed Sections Types of Heads, their Design Parameters & Considerations
1100 – 1215	Opening & Reinforcements Design around Nozzles, Manways & Other Penetrations
1215 – 1230	Break
1230 – 1300	Welding Considerations Welding Processes, Joint Efficiencies & Material Compatibility
1300 – 1420	External Pressure Design & Considerations Effects of Vacuum & External Loads & their Design Implications
1420 – 1430	Recap
1430	Lunch & End of Day Two



Day 3: Wednesday, 24th of December 2025

0730 – 0830	Heat Treatment Requirements <i>Post-Weld Heat Treatment, Stress Relieving & Other Necessary Procedures</i>
0830 – 0930	Examination & Inspection Techniques <i>Radiography, Ultrasonic Testing & Other Non-Destructive Tests</i>
0930 – 0945	Break
0945 – 1100	Pressure Testing Procedures <i>Hydrostatic & Pneumatic Tests, Their Safety Protocols & Execution</i>
1100 – 1215	Certification & Stamping <i>U-Stamp, R-Stamp & Other Applicable Certifications</i>
1215 – 1230	Break
1230 – 1300	Documentation & Manufacturer's Data Reports <i>Importance & Compilation of Proper Documentation</i>
1300 – 1420	Welding Documentation & Qualifications <i>WPS, PQR & Welder Qualifications as per ASME Standards</i>
1420 – 1430	Recap
1430	Lunch & End of Day Three

Day 4: Thursday, 25th of December 2025

0730 – 0830	Special Service Requirements <i>Considerations for Vessels in Cyclic or Hazardous Services</i>
0830 – 0930	Considerations for External Loads <i>Effects of Wind, Seismic Activity & Other External Forces</i>
0930 – 0945	Break
0945 – 1100	Use of Appendices in Division 1 <i>Importance, Interpretations & Specific Cases</i>
1100 – 1215	Flange & Gasket Design <i>Bolting, Gasket Selection & Design as per ASME Standards</i>
1215 – 1230	Break
1230 – 1300	Use of Software in Design & Analysis <i>Popular Software Tools & their Applicability</i>
1300 – 1420	Case Study: Pressure Vessel Failure Analysis <i>Real-World Failure Cases, Lessons Learned & the Role of ASME Standards</i>
1420 – 1430	Recap
1430	Lunch & End of Day Four

Day 5: Friday, 26th of December 2025

0830 – 0930	Comparison with Division 2 & 3 <i>Differences in Design Rules, Materials & Inspection Requirements</i>
0930 – 0945	Break
0945 – 1130	Recent Updates & Amendments <i>Staying Updated with the Latest Code Revisions</i>
1130 – 1230	Pressure Vessel Repairs & Alterations <i>How Repairs are Addressed within the ASME Standards</i>
1230 – 1245	Break
1245 – 1345	Integration with Other ASME Sections <i>Relation with other Sections Like Piping, B31 Codes, etc.</i>
1345 – 1400	Course Conclusion
1400 – 1415	POST-TEST
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course



Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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