

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

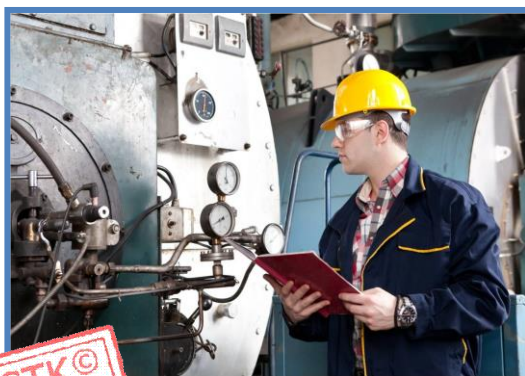
March 01-05, 2025/TBA Meeting Room,
Fairmont Nile City Hotel, Cairo, Egypt

Course Reference

ME0045

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs



Course Description p



This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

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

Certificates are accredited by the following international accreditation organizations:-

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British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. 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.

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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. Mohamed Kader (FE), BSc, PgDip, PMI-PMP, NDT, CSWIP, API is a **Senior Mechanical & Inspection Engineer** with over **20 years** of practical experience within the **Oil & Gas, Petrochemical and Refinery industries**. His expertise widely covers in the areas of **Pressure Vessel Design & Analysis, Tank & Vessels Inspection, Repair & Modification, Pressure Vessels Inspection, Steam & Gas Turbine, High Pressure Boiler Operation, Compressors Operation & Maintenance, Pipe Maintenance & Repair, Centrifugal & Positive Displacement Pump, Rotating**

Machinery, Tank Repairs, Design, Fabrication, Construction, Installation, Commissioning, Inspection & Maintenance of Process Equipment, Aboveground Storage Tank Inspection, Tank Repair, Alteration & Reconstruction, Steam Generator Repair, Boilers, Piping Systems, Pipeline Operation & Maintenance, Pipeline Systems, Pipeline Design & Construction, Pipeline Inspection & Rehabilitation, Corrosion, Fitness for Service (FFS), Risk Based Inspection (RBI), Integrity Management, Pipeline Rehabilitation & Repair, Pipeline Design & Maintenance, Pipeline Integrity Assessment, Corrosion Monitoring & Cathodic Protection, Pressure & Leak Testing, Piping Inspection, Pipe Lines, Piping Fabrication, Pipe Flow, Gas Pipe Line, Non-Destructive Testing & Engineering Materials, NDT Methods & Application, Magnetic Particle Inspection & Testing, Radiographic Inspection & Testing, Visual Inspection, Leak Testing, Cathodic Protection, Welding Inspection, Welding Technology, Welding & Fabrication, Welding Defects Analysis, Welding Engineering, Welding Procedure Specification, Welding Quality & Control, Damage Mechanisms, Pressure Vessels, Tanks, Heat Exchangers, RT Films Interpretation, Fire Heaters Revamping, Waste Water Heater, Distillation Towers, Crude Oil Tank, Steam Power Plant, Spherical Tanks and Asset Integrity Management. Further, he is also well-versed in **Contract Management & Administration, Project Management, Project Scheduling & Cost Control, Project Supervision, Project Reporting, Project Investment & Risk Analysis, Project Delivery & Governance Framework, Project Risk Management, Risk Identification Tools & Techniques, Project Life Cycle, Project Stakeholder & Governance, Project Time Management, Project Cost Management, Project Quality Management and Quality Assurance.** He is currently the **Project Manager** of SOPCO wherein he is managing the project team, evaluating projects and ensuring that the projects meet the quality standards.

During his career life, Mr. Mohamed occupied several significant positions and dedication as the **Projects Engineer, Mechanical Engineer, Piping & QC Leader, Piping Engineer, QA/QC Engineer and Senior Trainer/Instructor** for various international companies like the Gulf of Suez Petroleum Company (GUPCO), Khalda Petroleum Company (KPC), ADMA-OPCO, Kahalda Petroleum Company, East Gas and MASSA Inspection and Consultation Company.

Mr. Mohamed has a **Bachelor's degree in Mechanical Power Engineering** and a **Postgraduate Diploma in Welding Science & Technology**. Further, he is a **Certified Instructor/Trainer, a Certified Project Management Professional (PMI-PMP), a Certified Senior Welding Inspector (CSWIP 3.1), a Certified API 510 Pressure Vessel Inspector, a Certified API 570 Piping Inspector, a Certified API 653 Tank Inspector and a Certified NDT Level II Inspector** in Radiographic Testing (RT), Ultrasonic Testing (UT), Magnetic Particle Testing (MT) and liquid Penetrant Testing (PT). He has further delivered numerous trainings, courses, seminars, conferences and workshops internationally.

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: Saturday, 01st of March 2025

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

Day 2: Sunday, 02nd of March 2025

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



Day 3: Monday, 03rd of March 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: Tuesday, 04th of March 2025

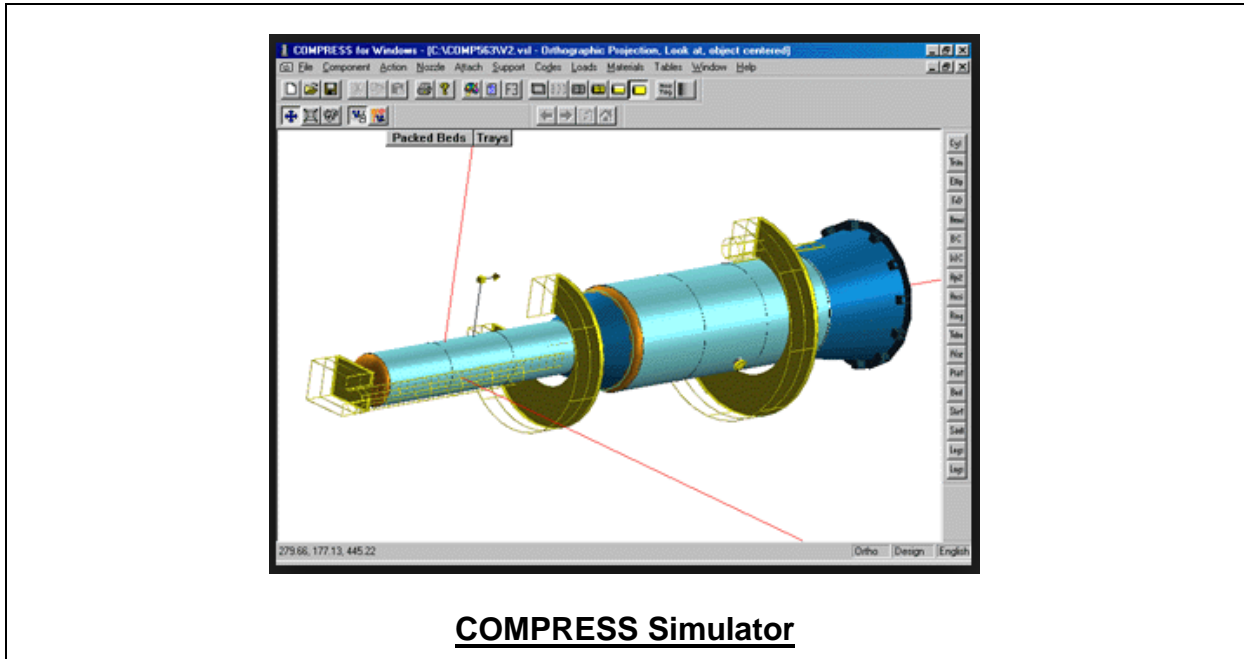
0730 – 0830	Special Service Requirements <i>Considerations for Vessels in Cyclic or Hazardous Services</i>
0830 – 0930	Considerations for External Loads <i>Effects of Wind, Seismic Activity & Other External Forces</i>
0930 – 0945	Break
0945 – 1100	Use of Appendices in Division 1 <i>Importance, Interpretations & 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: Wednesday, 05th of March 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	<i>Presentation of Course Certificates</i>
1430	Lunch & End of Course

Simulator (Hands-on Practical Sessions)

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the state-of-the-art “COMPRESS” simulator.



Course Coordinator

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