

**COURSE OVERVIEW ME0045J1**  
**Design, Fabrication & Testing of ASME VIII Pressure Vessels**

**Course Title**

Design, Fabrication & Testing of ASME VIII Pressure Vessels

**Course Reference**

ME0045J1

**Course Duration/Credits**

Five days/3.0 CEUs/30 PDHs



**Course Date/Venue**

Session(s)	Date	Venue
1	July 07-11, 2024	Kizkulesi, Crown Plaza Istanbul Asia Hotels & Convention Center, Istanbul, Turkey
2	October 06-10, 2024	Oryx Meeting Room, Doubletree By Hilton Doha-AI Sadd, Doha, Qatar
3	February 02-06, 2025	The Kooh Al Noor Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE

**Course Description**



***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 1
- 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

**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**

Istanbul	<b>US\$ 6,000</b> per Delegate + <b>VAT</b> . This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Doha	<b>US\$ 6,000</b> per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Dubai	<b>US\$ 5,500</b> per Delegate + <b>VAT</b> . 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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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.

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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.



### 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. Steve Magalios**, CEng, PGDip (on-going), MSc, BSc, is a **Senior Mechanical & Maintenance Engineer** with almost **40 years** of extensive **On-shore/Offshore** experience in the **Oil & Gas, Construction, Refinery** and **Petrochemical** industries. His expertise widely covers in the areas of **Preventive & Predictive Maintenance, Reliability Centered Maintenance, Applied Maintenance Management, Reliability Modelling, Reliability Techniques, Reliability Design Techniques, Advanced Root Causes Analysis & Techniques, Reliability Management, Pipeline Hot Tapping, Hot Tapping**

**Equipment, Hot Tapping Operation, Boiler Inspection & Maintenance, Boiler Systems, Boiler instrumentation & Controls, Boiler Start-up & Shutdown, Boiler Operation & Steam System Management, Pipe Cuttings, Flange Bolt Tightening Sequence, Hydro Testing, Pump Technology, Fundamentals of Pumps, Pump Selection & Installation, Centrifugal Pumps & Troubleshooting, Reciprocating & Centrifugal Compressors, Screw Compressor, Compressor Control & Protection, Gas & Steam Turbines, Turbine Operations, Gas Turbine Technology, Valves, Process Control Valves, Bearings & Lubrication, Advanced Machinery Dynamics, Rubber Compounding, Elastomers, Thermoplastic, Industrial Rubber Products, Rubber Manufacturing Systems, Heat Transfer, Vulcanization Methods, Welding Engineering, Fabrication & Inspection, Welding Techniques, Practical Welding Technology, Welding Inspection, Welding & Machine Shop, Welding & Machining, Welding Types & Applications, Welding Safety, Welding Defects Analysis, TIG & Arc Welding, Shielded Metal Arc Welding, Gas Tungsten & Gas Metal Arc Welding, Welding Procedure Specifications & Qualifications (WPS & WPQ), Aluminium Welding, Safe Welding, International Welding Codes, Welding Procedure Specifications, Welding & Brazing, Welder Performance Qualification, Pipeline Operation & Maintenance, Pipeline Systems, Pipeline Design & Construction, Pipeline Repair Methods, Pipeline Engineering, Pipeline Integrity Management System (PIMS).** Currently, he is the **Chartered Professional Surveyor Engineer & Urban-Regional Planner** wherein he is deeply involved in providing exact data, measurements and determining properly boundaries. He is also responsible in preparing and maintaining sketches, maps, reports and legal description of surveys.

During his career, Mr. Magalios has gained his expertise and thorough practical experience through challenging positions such as a **Project Site Construction Manager, Supervision Head/Construction Manager, Construction Site Manager, Project Manager, Deputy PMS Manager, Head of the Public Project Inspection Field Team, Technical Consultant, Senior Consultant, Consultant/Lecturer, Construction Team Leader, Lead Pipeline Engineer, Project Construction Lead Supervising Engineer, Lead Site Engineer, Senior Site Engineer Lead Engineer, Senior Site Engineer, Mechanical Engineer, R.O.W. Coordinator, Site Representative, Supervision Head, Contractor, Client Site Representative and Acting Client Site Representative** for international Companies such as the **Public Gas Corporation, Penspen International Limited, Eptista Servicios de Ingenieria S.I., J/V ILF Pantec TH. Papaioannou & Co. – Emenergy Engineering, J/V Karaylannis S.A. – Intracom Constructions S.A., Ergaz Ltd., Alkyonis 7, Palaeo Faliro, Piraeus, Elpet Valkaniki S.A., Asprofos S.A., J/V Depa S.A.** just to name a few.

Mr. Magalios is a **Registered Chartered Engineer** and has **Master** and **Bachelor** degrees in **Surveying Engineering** from the **University of New Brunswick, Canada** and the **National Technical University of Athens, Greece**, respectively. Further, he is currently enrolled for **Post-graduate** in **Quality Assurance** from the **Hellenic Open University, Greece**. He has further obtained a **Level 4B Certificates** in **Project Management** from the **National & Kapodistrian University of Athens, Greece** and **Environmental Auditing** from the **Environmental Auditors Registration Association (EARA)**. Moreover, he is a **Certified Instructor/Trainer, a Chartered Engineer** of **Technical Chamber of Greece** and has delivered numerous trainings, workshops, seminars, courses and conferences 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**

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

**Day 2**

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





**Day 3**

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

**Day 4**

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

**Day 5**

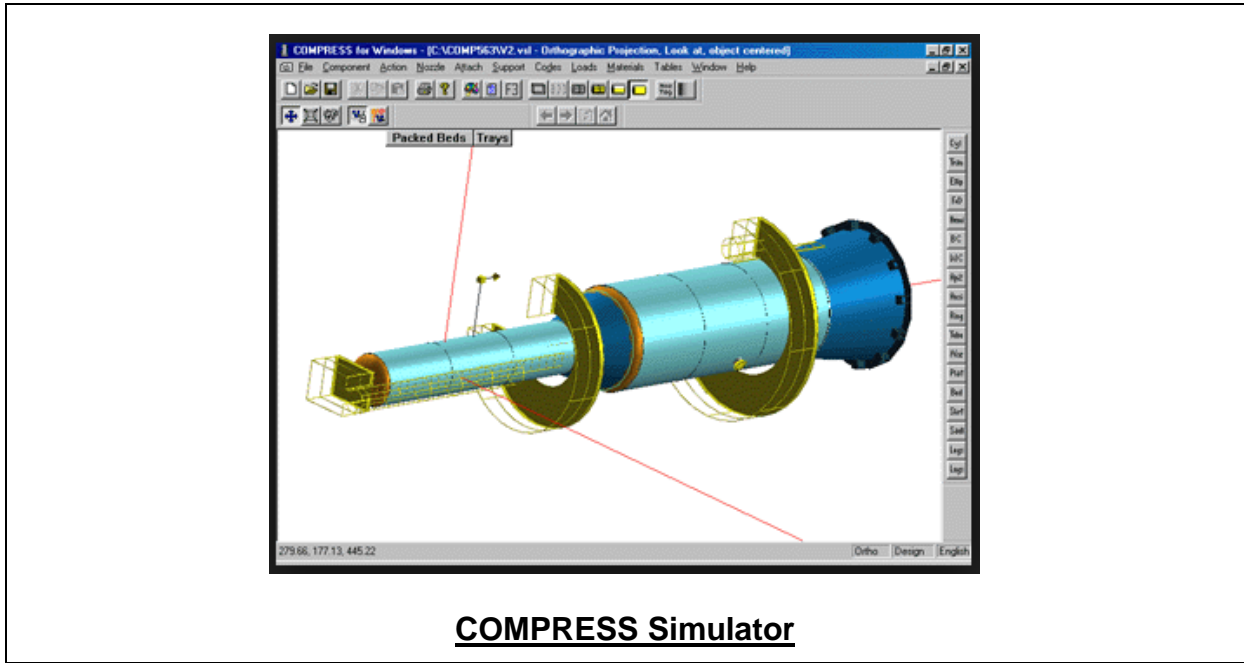
0830 - 0930	<b>Comparison with Division 2 &amp; 3</b> <i>Differences in Design Rules, Materials &amp; Inspection Requirements</i>
0930 – 0945	<i>Break</i>
0945 – 1130	<b>Recent Updates &amp; Amendments</b> <i>Staying Updated with the Latest Code Revisions</i>
1130 – 1230	<b>Pressure Vessel Repairs &amp;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





**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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