



## COURSE OVERVIEW ME0045-4D ASME VIII Pressure Vessel Design, Fabrication & Testing

### Course Title

ASME VIII Pressure Vessel Design, Fabrication & Testing

### Course Reference

ME0045-4D

### Course Duration/Credits

Four days/2.4 CEUs/24 PDHs

### Course Date/Venue



Session(s)	Date	Venue
1	January 22-25, 2024	Ajman Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
2	April 22-25, 2024	Jubail Hall, Signature Al Khobar Hotel, Al Khobar, KSA
3	July 15-18, 2024	Business Center, Concorde Hotel Doha, Doha Qatar
4	October 28-31, 2024	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, 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.***

The course is designed to provide delegates with a detailed and up-to-date overview of ASME VIII pressure vessel design, fabrication and testing. The course will help the participants to use the fabrication rules for various materials and fabrication methods including forging, casting and welding and distinguish material properties and requirements for low temperature and high temperature applications.



Participants will determine how pressure vessels are fabricated, mainly with regard to welding. Further, they will be able to employ the post weld heat treatment requirements of UCS 56 and practice the concept of temper bead welding as an in-service alternative to post weld heat treatment.



The course will further discuss the concept of the “The ASME Stamp”, where the national board fits into the ASME Scheme and where other standards such as API 510 are used. Participants will gain knowledge on the non-destructive methods and will be able to implement the proper procedures of hydrostatic and pneumatic tests and distinguish what it is designed to achieve. The course also covers the proper management of pressure vessel nameplates, stamping, documentation requirements, manufacturer’s data report and data book compilation.



## Course Objectives

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

- Apply the design rules of ASME VIII including rules governing shell thickness, head thickness, nozzles loadings, MAWP and NDT/NDE
- Use the fabrication rules for various materials and fabrication methods including forging, casting and welding
- Distinguish material properties and requirements for low temperature and high temperature applications
- Determine how pressure vessels are fabricated, mainly with regard to welding
- Employ the post weld heat treatment requirements of UCS 56 and practice the concept of Temper Bead Welding as an in-service alternative to post weld heat treatment
- Identify the concept of “The ASME Stamp” and discuss how to become an accredited fabricator; what it means to the Fabricator and what it means to the Purchaser
- Discuss where the National Board fits into the ASME Scheme and where other standards such as API 510 are used
- Gain an in-depth knowledge on the Non-Destructive Testing methods, what each method can detect and what it cannot detect and how to apply “Acceptance Criteria” from various Codes
- Implement the proper procedures of Hydrostatic and Pneumatic tests and distinguish what it is designed to achieve
- Manage Pressure Vessel nameplates, stamping, documentation requirements, Manufacturer’s Data Report and Data Book compilation

## 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, sample video clips of the instructor’s actual lectures & practical sessions during the course 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

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Workshops & Work Presentations
- 30% Case Studies & Practical Exercises
- 20% Software, Simulators & Videos

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

### Course Fee

Abu Dhabi	<b>US\$ 4,500</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
Al Khobar	<b>US\$ 4,500</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.
Doha	<b>US\$ 4,500</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\$ 4,500</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 **2.4 CEUs** (Continuing Education Units) or **24 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. Luis Manuel, PE, MSc, BSc**, is a **Senior Mechanical Engineer** with over **25 years** of extensive and practical experience in the **Petroleum, Petrochemical** and **Power** industries. His expertise includes **Flanges, Hydraulic, Boilers, Pressure Vessels, Tanks, Pipelines** and **Piping System (ASME B31, API 579 & API 580)**. Further, his wide experience covers **Rotating & Static Equipment** such as **pumps, valves, compressors, turbines, blowers, fans, pipes, piping, pressure vessels** and **heat exchangers, Maintenance & Reliability Management**, Offshore Structure Engineering, Risk-Based Inspection (RBI), Integrity Assessment, Forensic Analysis, Structural Analysis, Design & Engineering, Naval Architecture, Regulatory Compliance Inspections, **Stress & Fatigue** Analysis using SACS or StruCad and Finite Element Analysis. He was the **Chief Engineer** of a leading international engineering firm where he led all **Piping Engineering** and **Pipeline** Projects for **Total-ELF, Shell** and **Mobil**.

During his career life, Mr. Manuel had gained his thorough practical experience in multiple engineering disciplines that includes **pipeline/piping** engineering, **mechanical maintenance**, naval engineering and offshore structural engineering through several challenging positions such as a **Senior Pipelines Engineer, Senior Piping Engineer, Senior Structural Engineer, Staff Engineer, Naval Architect** and **Applications Engineer** for various international companies including **Chevron, ExxonMobil, Addax Petroleum, DWC, Point Engineering, US ARMY, W.S. & Atkins, Atlas Engineering, Heerema Offshore, Barnett & Casbarian, Textron Marine, Ingalls Shipbuilding** and **Peck & Hale**. Further, was heavily involved in the development of instruction materials as authorized by EDI (Engineering Dynamic Incorporated) for the training of engineers on the Structural Analysis Computer System (SACS) software.

Mr. Manuel has a **Bachelor** degree in **Mechanical Engineering** from the **State University of New York**. Further, he is a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management (ILM)**, a **Certified Instructor/Trainer** and the **author** of the book "**Offshore Platforms Design**" and the "**SACS Software Training Module**".

### 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	Introduction & Welcome
0815 - 0830	<b>PRE-TEST</b>
0830 - 0930	<b>Introduction to the ASME Boiler &amp; Pressure Vessel Code</b>
0930 - 0945	Break
0945 - 1015	<b>Introduction to Section VIII, Division 1</b>



1015 - 1100	<b>General &amp; Material Requirements</b>
1100 - 1200	<b>Methods of Fabrication</b>
1200 - 1215	Break
1215 - 1420	<b>Design for Internal Pressure &amp; External Pressure</b>
1420 -1430	<b>Recap</b>
1430	Lunch & End of Day One

**Day 2**

0730 - 0930	<b>Alternative Buckling Rules of ASME Code Case 2286</b>
0930 - 0945	Break
0945 - 1100	<b>Design of Openings</b>
1100 - 1130	<b>Alternative Opening Design Method of Code Case 2168</b>
1130 - 1200	<b>Design of Formed Heads</b>
1200 - 1215	Break
1215 - 1420	<b>Introduction to Materials &amp; the requirements</b>
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day Two

**Day 3**

0730 - 0930	<b>Materials for Low Temperature Service</b>
0930 - 0945	Break
0945 - 1100	<b>Brittle Fracture Considerations</b> Material Toughness Requirements & Charpy Impact Testing
1100 - 1130	<b>Materials for High Temperature Service</b> Creep Testing
1130 - 1200	<b>Introduction to Fatigue</b>
1200 - 1215	Break
1215 - 1420	<b>Fabrication Rules</b>
1420 - 1430	<b>Recap</b>
1430	Lunch & End of Day Three

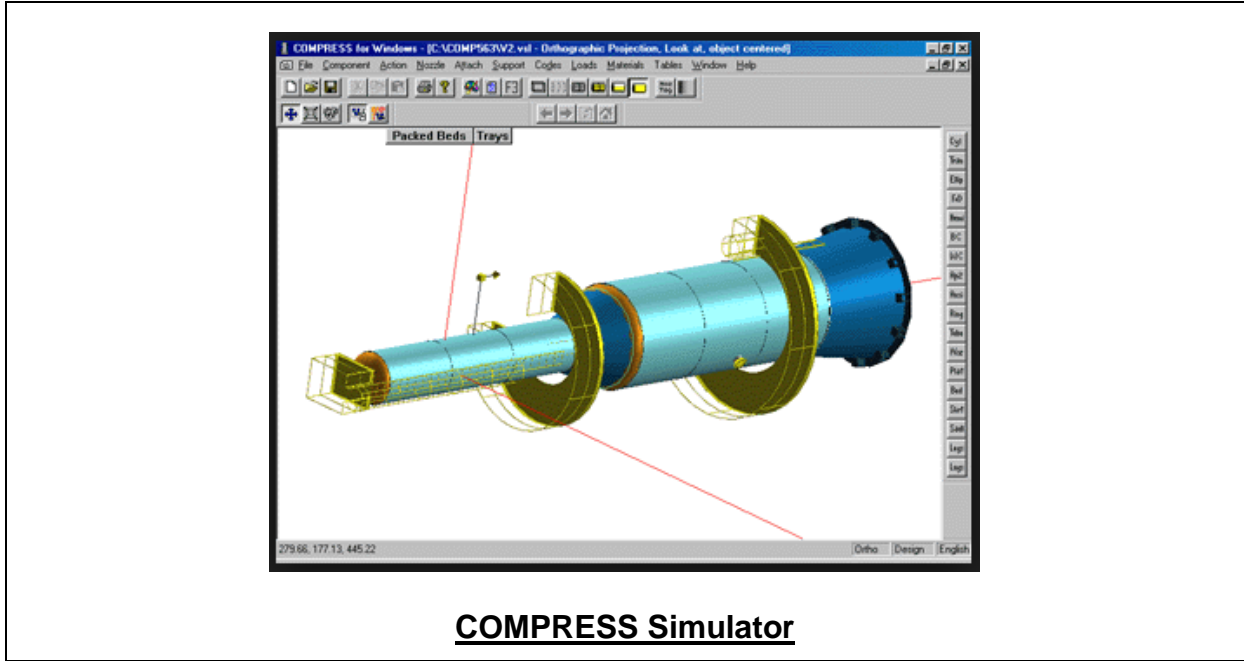
**Day 4**

0730 - 0800	<b>Fabrication</b> General • Cutting Plates & Other Stock • Material Identification • Material Certification
0800 - 0830	<b>Welding</b> Introduction to Welding • Basic Welding Processes • Welding Procedures–The WPS & the PQR • Welder Qualifications • Welding Variables–What Are Essential, Non-Essential & Supplementary Variables? • Post Weld Heat Treatment
0830 - 0930	<b>NDE Requirements</b> Methods Used • Advantages & Limitations of Each
0930 - 0945	Break
0945 - 1100	<b>Hydrostatic &amp; Pneumatic Testing</b>
1100 - 1200	<b>Data Report &amp; Stamping</b>
1200 - 1215	Break
1215 - 1345	<b>Example Problems &amp; Discussion</b>
1345 - 1400	<b>Course Conclusion</b>
1400 - 1415	<b>POST-TEST</b>
1415 - 1430	Presentation of Course Certificates
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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