COURSE OVERVIEW ME0046-4D
Design, Analysis, & Fabrication of Pressure Vessels (ASME Code Section VIII, Division 2)

Course Title
Design, Analysis, & Fabrication of Pressure Vessels (ASME Code Section VIII, Division 2)

Course Date/Venue
September 30-Octoeber 03, 2024/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Reference
ME0046-4D

Course Duration/Credits
Four days/2.4 CEUs/24 PDHs

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 introduces participants to the design, analysis, and fabrication of pressure vessels fabricated as per the ASME Section VIII, Division 2 Code. It concentrates on those topics which are relevant to proper operation and maintenance of vessels after they have been placed in service. The course will emphasize on the design, inspection, examination and testing, as well as the proper assessment of inspection results for efficient and effective repairs; inspection rules of ASME Section VIII, Division 2 Code; example calculations used to depict the use of ASME Code in design; and assessment of repairs and modifications.

The course will also differentiate Division 1 and Division 2 of ASME Section VIII and discuss the theories of failure and design margins of various codes; the general requirements of ASME VIII, Division 2 and the responsibilities of various parties; the material requirements as well as material toughness and impact testing requirements; the design rules for internal pressure, buckling, formed and flat head and new method for design of openings and external loadings.

At the completion of the course, participants will be able to employ stress analysis methods and acceptance criteria for design analysis; classify stress and linearization as well as fatigue analysis and its exemption rules; simplify elastic-plastic analysis and list the various requirements for fabrication, PWHT, tolerances and NDE requirements; perform pressure testing, documentation and stamping; and identify the pressure requirements and example problems.

Course Objectives

Upon the successful completion of this course, participants will be able to:

- Apply and gain a comprehensive knowledge on pressure vessels design, analysis and fabrication based on the ASME Code, Section VIII, Division 2
- Differentiate Division 1 and Division 2 of ASME Section VIII and discuss the theories of failure and design margins of various codes
- Identify the general requirements of ASME VIII, Division 2 and the responsibilities of various parties
- List the material requirements as well as material toughness and impact testing requirements
- Illustrate the design rules for internal pressure, buckling, formed and flat head and new method for design of openings and external loadings
- Employ stress analysis methods and acceptance criteria for design analysis
- Differentiate stress classifications and linearization as well as fatigue analysis and its exemption rules
- Simplify elastic-plastic analysis and list the various requirements for fabrication, PWHT, tolerances and NDE requirements
- Perform pressure testing, documentation and stamping
- Identify the pressure requirements and example problems

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 design, analysis, and fabrication of pressure vessels (ASME Code Section VIII, Division 2) for engineers with some background in structural design. However, experience with ASME Code is not mandatory as the course will cover the basics. The course could be attended by designers, fabricators, inspectors, and purchasers of vessels. Both the beginners and experienced personnel involved with pressure vessels will benefit from this course.

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: -

- 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.

- 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.

Accommodation

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

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. Rod Larmour, PEng, MSc, BSc, is a **Senior Mechanical Engineer** with over **40 years** of **Onshore & Offshore** practical experience within the **Power**, **Petrochemical**, **Oil & Gas** industries. His expertise greatly covers the application of **Rotating Machinery**, **Mechanical Alignment**, **Stress Analysis**, **Thermodynamics**, **Fluid Mechanics**, **Heat & Mass Transfer Engineering**, **Air Conditioning & Refrigeration Technology**, Cooling Towers, **Gas & Steam Turbines**, **Centrifugal Compressor & Pumps** and the **design**, **failure investigation**, and **maintenance** of **Atmospheric Storage Tanks & Tank Farms** and **Bolted Flanges & Joints**.

Currently, Mr. Larmour is working with Transnet overseeing the performance and safety of several **fuel pipelines** including **pumping stations** and **inland tank farms** locally. He also takes lead in the **planning** of detailed design of a **fuel gas supply system** from a site to the **proposed new power station**, the **management** of an **EPC booster gas compressor station** including an **overland piping**, and **spearheads** the **commercial & contractual management** within the **Ilitha Process Group**.

Throughout Mr. Larmour's lengthy career, he has worked with **several international companies** like **Mobil**, **Mossgas**, **Stewarts & Lloyds** and **Ilitha** with prime positions such as **Operations Manager**, **Principal Project Manager**, **Senior Mechanical Engineer**, **Offshore Projects Manager**, **Design Manager**, **Quality Assurance Manager** and **Project Engineer**.

Mr. Larmour's experience was not only confined to the industry alone. He was also able to largely contribute his expertise and impart his knowledge in the academe. He has engaged himself with **researches** and **lectures** in for several **universities** and **companies** and has held numerous **training courses** on **Thermomechanics** & **Fluid mechanics**, **Engineering Design**, **Refrigeration & Air Conditioning** and **Heat Transfer**.

Mr. Larmour is **Registered Professional Engineer** and has **Master** & **Bachelor** degrees in **Mechanical Engineering** and has a **Diploma** in **Nuclear Science**. Further, he is a **Certified Instructor/Trainer**.

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$ 4,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Program

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

Day 1: ***Monday, 30th of September 2024***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Introduction to the ASME Boiler & Pressure Vessel Code***
0930 – 0945	*Break*
0945 – 1100	***Comparison of Divisions 1 & 2 of Section VIII***
1100 – 1130	***Theories of Failure & Design Margins of Various Codes***
1130 – 1215	***General Requirements of the New Division 2***
1215 – 1230	*Break*
1230 – 1330	***Responsibilities of Various Parties***
1330 – 1420	***Materials Requirements***
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2: ***Tuesday, 01st of October 2024***

0730 – 0830	***Material Toughness & Impact Testing Requirements***
0830 – 0930	***Design Rules for Internal Pressure***
0930 – 0945	*Break*
0945 – 1100	***Design for Buckling***
1100 – 1130	***Design of Formed & Flat Head***
1130 – 1215	***New Method for Design of Openings***
1215 – 1230	*Break*
1230 – 1330	***Design for External Loading***
1330 – 1420	***Stress Analysis Methods***
1420 - 1430	***Recap***
1430	*Lunch & End of Day Two*

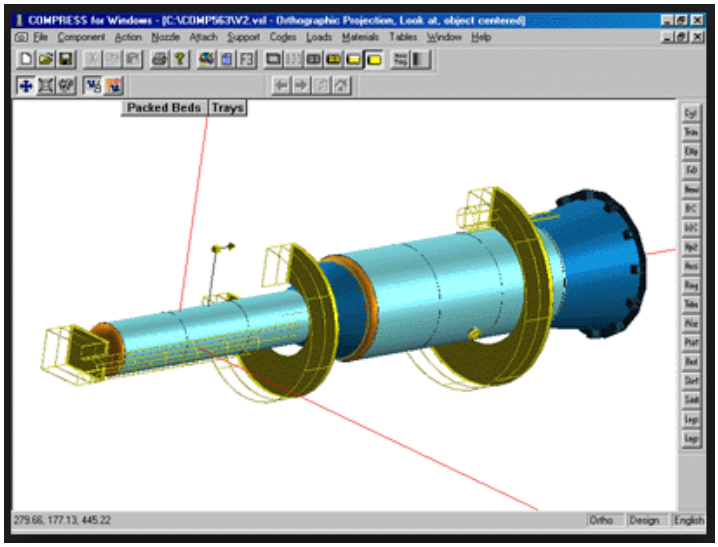
Day 3: ***Wednesday, 02nd of October 2024***

0730 – 0830	***Acceptance Criteria for Design by Analysis***
0830 – 0930	***Stress Classification & Stress Linearization***
0930 – 0945	*Break*
0945 – 1100	***Fatigue Analysis Exemption Rules***
1100 – 1130	***Fatigue Analysis***
1130 – 1215	***Simplified Elastic—Plastic Analysis***
1215 – 1230	*Break*
1230 – 1330	***Fabrication Requirements***
1330 – 1420	***PWHT Requirements***
1420 - 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4:	***Thursday, 03rd of October 2024***
0730 – 0830	***Tolerances***
0830 – 0930	***NDE Requirements***
0930 – 0945	*Break*
0945 – 1100	***Pressure Testing***
1100 – 1130	***Documentation & Stamping***
1130 – 1215	***Pressure Relief Requirements***
1215 – 1230	*Break*
1230 – 1300	***Example Problems***
1300 – 1345	***Discussion***
1345 – 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
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.



COMPRESS Simulator

Course Coordinator

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