



MU232: ASME VIII Pressure Vessel Design, Fabrication & Testing



Training Description:

This intensive course covers a complete 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.

Training Objectives:

By the end of the training, participants 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

Training Designed for:

This course is intended 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 Program:

FIVE DAYS:

- ❖ PRE-TEST
- ❖ Introduction to the ASME Boiler and Pressure Vessel Code
- ❖ Introduction to Section VIII, Division 1
- ❖ General and Material Requirements
- ❖ Methods of Fabrication
- ❖ Design for Internal Pressure and External Pressure
- ❖ Alternative Buckling Rules of ASME Code Case 2286
- ❖ Design of Openings
- ❖ Alternative Opening Design Method of Code Case 2168
- ❖ Design of Formed Heads
- ❖ Introduction to Materials and The Requirements
- ❖ Materials for Low Temperature Service
- ❖ Brittle Fracture Considerations
 - Material Toughness Requirements and Charpy Impact Testing
- ❖ Materials for High Temperature Service
 - Creep Testing
- ❖ Introduction to Fatigue
- ❖ **Simulator (Hands-on Practical Sessions)**
 - Practical sessions will be organized during the course for participants to practice the theory learnt. Participants will be provided with an opportunity to carry out various exercises using the state-of-the-art "COMPRESS" simulator
- ❖ Fabrication Rules
- ❖ Fabrication
 - General, Cutting Plates and Other Stock, Material Identification, Material Certification
- ❖ Welding
 - Introduction to Welding, Basic Welding Processes, Welding Procedures – The WPS and the PQR, Welder Qualifications, Welding Variables – What Are Essential, Non-Essential and Supplementary Variables?, Post Weld Heat Treatment
- ❖ NDE Requirements
 - Methods Used, Advantages and Limitations of Each
- ❖ Hydrostatic and Pneumatic Testing
- ❖ Data Report and Stamping
- ❖ Course Conclusion
- ❖ POST-TEST and EVALUATION

Training Requirement:

"Hands-on practical sessions, equipment and software will be applied during the course if required and as per the client's request."



Practical sessions will be organized during the course for participants to practice the theory learnt. Participants will be provided with an opportunity to carry out various exercises using the state-of-the-art "COMPRESS" simulator.

Please note that the above topics can be amended as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Methodology:

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

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

As per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session

For training registrations or in-house enquiries, please contact:

Aisha Relativo: aisha@cmc-me.com

Tel.: +971 2 665 3945 or +971 2 643 6653 | Mob.: +971 52 2954615

Training & Career Development Department

