



**COURSE OVERVIEW FE0020**

**Maintain Pressure Vessels and Process Equipment**

**Course Title**

Maintain Pressure Vessels and Process Equipment

**Course Date/Venue**

February 25-29, 2024/The Mouna Meeting Room, The H Dubai Hotel, Sheikh Zayed Rd - Trade Centre, Dubai, UAE

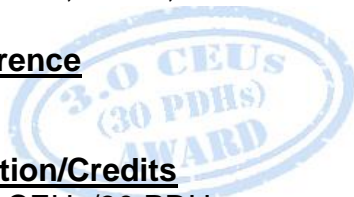
**Course Reference**

FE0020

**Course Duration/Credits**

Five days/3.0 CEUs/30 PDHs

**Course Description**



***This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.***



This course is designed to provide participants with a detailed and up-to-date overview of pressure vessel inspection, maintenance, repair, flaw evaluation and FFS. It covers the ASME code, post construction documents and national board inspection code (NBIC); the administrative requirements, inspection requirements, repair/alteration requirements and repair procedures of NBIC and API-510 inspection code; the ASME code, section VIII and design formulas; and the API-579 fitness-for-service and procedures for various evaluation levels.



During this interactive course, participants will learn the general and local corroded areas, pitting, blisters, laminations, misalignment and other deformations; the proper evaluation of cracks, bulges, dents, fire damage and material toughness; the calculation of remaining strength factors and remaining life; the stress analysis methods, categorization and evaluation of stresses; the ASME post construction standards including assembly of bolted flanges and standard procedure for insertion of patch plates; and the inspection planning, RBI and various repair procedures for piping.

### **Course Highlights**

- How to obtain a National Board stamp
- Requirements of the NBIC and API-510
- Differences between the NBIC and API-510
- Examples of repairs and alterations and the documentation requirements for each
- Introduction to API-579
- Evaluation of corroded areas
- Evaluation of pitted areas
- Evaluation of misalignments and other geometric flaws
- Evaluation of laminations and blisters
- Evaluation of bulges and dents
- Evaluation of fire damage
- Evaluation of crack like flaws
- Brittle fracture and toughness requirements
- Various methods of calculating required thickness
- Explanation of modes of failure and related flaws
- Overview of level 3 analyses
- Classification of stresses and related allowables
- Introduction to fatigue analysis
- Evaluation for remaining life and required inspection period
- An introduction to the ASME Post Construction Committee documents
- Introduction to ASME PCC-1 document, related to bolted flanges
- Introduction to ASME post-construction standards
- Overview of work being performed by API, ASME, and NBI related to post construction issues

### **Course Objectives**

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

- Apply and gain an in-depth knowledge on pressure vessel inspection, maintenance, repair, flaw evaluation and FFS
- Discuss ASME code, post construction documents and national board inspection code (NBIC)
- Identify the administrative requirements, inspection requirements, repair/alteration requirements and repair procedures of NBIC
- Recognize the inspection requirements, repair/alteration requirements and documentation requirements of API-510 Inspection code
- Explain the ASME code, section VIII and design formulas as well as the API-579 fitness-for-service and procedures for various evaluation levels
- Evaluate general and local corroded areas, pitting, blisters, laminations, misalignment and other deformations
- Apply proper evaluation of cracks, bulges, dents, fire damage and material toughness



- Calculate remaining strength factors and remaining life
- Carryout stress analysis methods, categorization and evaluation of stresses
- Discuss ASME post construction standards including assembly of bolted flanges and standard procedure for insertion of patch plates
- Carryout inspection planning, RBI and various repair procedures for piping

### **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 a wide understanding and deeper appreciation of pressure vessel inspection, repair, flaw evaluation and fitness-for-service in accordance with the international standards for integrity assessment engineers, operations engineers, maintenance engineers, maintenance supervisors, facility integrity supervisors, site inspection engineers, inspectors, piping engineers, mechanical engineers, plant managers, plant engineers, project engineers, engineers and other technical staff.

### **Accommodation**

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

### **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.

### **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 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 **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.

- 

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. Mohamed Kader (FE)**, BSc, PgDip, PMI-PMP, NDT, CSWIP, API is a **Senior 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 **Tank Repairs, Design, Fabrication, Construction, Installation, Commissioning, Inspection & Maintenance of Process Equipment, Aboveground Storage Tank Inspection, Tank Repair, Alteration & Reconstruction, Tank & Vessels Inspection, Repair & Modification, Pressure Vessels Inspection, 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, 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: Sunday, 25<sup>th</sup> of February 2024**

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	<b>PRE-TEST</b>
0830 – 0900	<b>Introduction to the ASME Code</b>
0900 – 0915	Break
0915 – 1100	<b>The Construction Documents</b>
1100 – 1230	<b>National Board Inspection Code - NBIC</b> Administrative Requirements • Inspection Requirements
1230 – 1245	Break
1245 – 1420	<b>National Board Inspection Code - NBIC (cont'd)</b> Repair/Alteration Requirements • Repair Procedures
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day One

**Day 2: Monday, 26<sup>th</sup> of February 2024**

0730 – 0900	<b>API-510 Inspection Code</b> Inspection Requirements
0900 – 0915	Break
0915 – 1100	<b>API-510 Inspection Code (cont'd)</b> Repair/alteration Requirements • Documentation Requirements
1100 – 1215	<b>API-510 Inspection Code (cont'd)</b> Example Problems
1215 – 1230	Break
1230 – 1420	<b>ASME Code, Section VIII &amp; Design Formulas</b>
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Two

**Day 3: Tuesday, 27<sup>th</sup> of February 2024**

0730 – 0900	<b>API-579 Fitness-for-Service</b> Introduction & Background • Procedures for Various Evaluation Levels
0900 – 0915	Break
0915 – 1100	<b>API-579 Fitness-for-Service (cont'd)</b> Evaluation of General & Local Corroded Areas • Evaluation of pitting
1100 – 1230	<b>API-579 Fitness-for-Service (cont'd)</b> Evaluation of Blisters & Laminations • Evaluation of Misalignment & Other Deformations
1230 – 1245	Break
1245 – 1420	<b>API-579 Fitness-for-Service (cont'd)</b> Evaluation of Cracks • Evaluation of Bulges & Dents
1420 – 1430	<b>Recap</b>
1430	Lunch & End of Day Three





**Day 4: Wednesday, 28<sup>th</sup> of February 2024**

0730 – 0900	<b>API-579 Fitness-for-Service</b> <i>Evaluation of Fire Damage • Evaluation of Material Toughness</i>
0900 – 0915	<i>Break</i>
0915 – 1100	<b>API-579 Fitness-for-Service (cont'd)</b> <i>Example Problems &amp; Application of Rules • Calculation of Remaining Strength Factors</i>
1100 – 1230	<b>API-579 Fitness-for-Service (cont'd)</b> <i>Calculation of Remaining Life</i>
1230 – 1245	<i>Break</i>
1245 – 1420	<b>API-579 Fitness-for-Service (cont'd)</b> <i>Overview of Stress Analysis Methods • Categorization &amp; Evaluation of Stresses</i>
1420 – 1430	<b>Recap</b>
1430	<i>Lunch &amp; End of Day Four</i>

**Day 5: Thursday, 29<sup>th</sup> of February 2024**

0730 – 0900	<b>ASME Post Construction Standards</b> <i>Assembly of Bolted Flanges • Standard Procedure for Insertion of Patch Plates</i>
0900 – 0915	<i>Break</i>
0915 – 1045	<b>ASME Post Construction Standards (cont'd)</b> <i>Introduction to Inspection Planning &amp; RBI</i>
1045 – 1215	<b>ASME Post Construction Standards (cont'd)</b> <i>Various Repair Procedures for Piping</i>
1215 – 1230	<i>Break</i>
1230 – 1345	<b>Research Work Going on Related to Post-Construction Issues</b>
1345 – 1400	<b>Course Conclusion</b>
1400 – 1415	<b>POST-TEST</b>
1415 – 1430	<i>Presentation of Course Certificates</i>
1430	<i>Lunch &amp; End of Course</i>

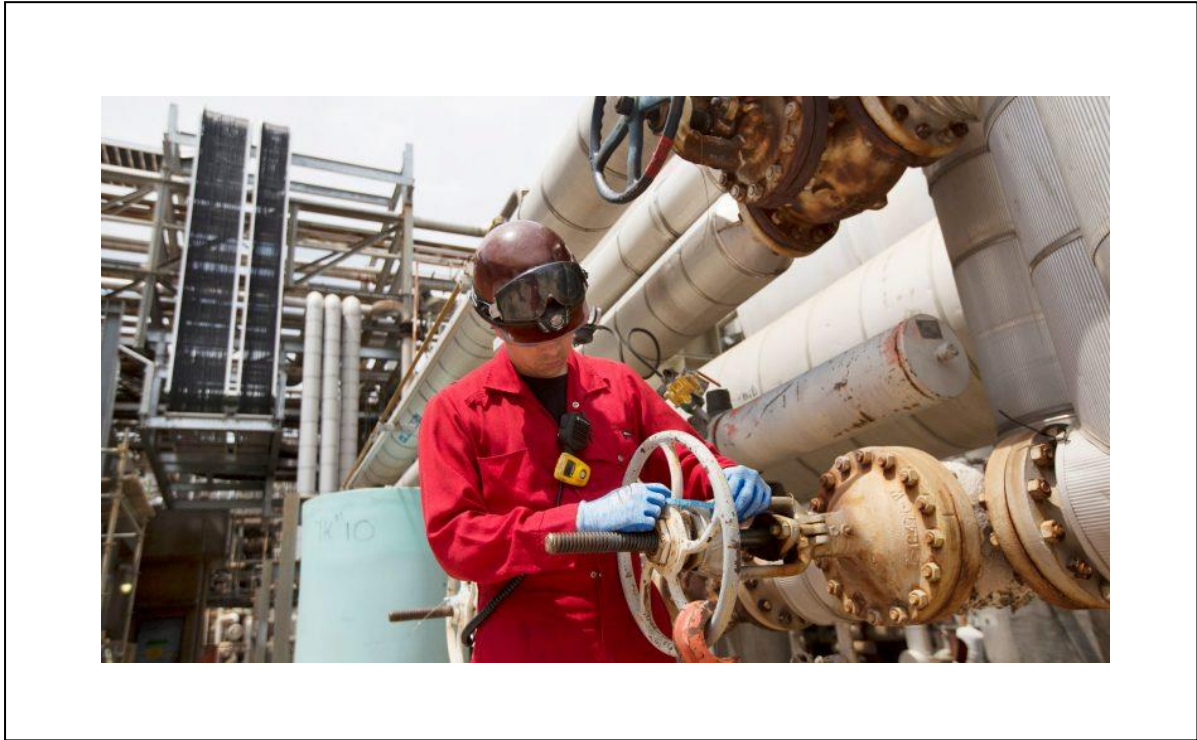






**Practical Sessions**

This practical and highly-interactive course includes real-life case studies and exercises:-



**Course Coordinator**

Kamel Ghanem, Tel: +971 2 30 91 714, Email: [kamel@haward.org](mailto:kamel@haward.org)