



COURSE OVERVIEW FE0670-10D
API 510: Pressure Vessel Inspector
(API Exam Preparation Training)

Course Title

API 510: Pressure Vessel Inspector (API Exam Preparation Training)

Course Date/Venue

Session 3: July 14-25, 2025/Boardroom Meeting Room, VOGO Abu Dhabi Golf Resort & Spa (Formerly Westin Abu Dhabi Golf Resort & Spa), Abu Dhabi, UAE
Session 4: August 04-15, 2025/Boardroom Meeting Room, VOGO Abu Dhabi Golf Resort & Spa (Formerly Westin Abu Dhabi Golf Resort & Spa), Abu Dhabi, UAE



Exam Window/Venue

TBA, 2026/Abu Dhabi, Dubai, Al-Khobar, Jeddah, Kuwait, Amman, Beirut, Cairo, Manama and Muscat. Participant has the option to attend at any of the above cities

Exam Registration Closing Date

TBA, 2026

Course Duration/Credits

Ten days (80 hours)/8.0 CEUs/80 PDHs



Course Reference

FE0670-10D

Course Description



This practical and highly-interactive course includes practical sessions and exercises where participants carryout welding inspection. Theory learnt in the class will be applied using our state-of-the-art simulators.



This course is designed to train individuals who are interested in obtaining the API 510 Pressure Vessel Inspector Certification, as well as those who are seeking a better understanding of ASME Section VIII and IX code requirements. Included with the course is a pre-study guide and student classroom workbook. The student receives instruction regarding how to take the test, as well as insight into the intricacies of "real world" situations. Daily tests are designed to gauge students' proficiency and understanding of the material.



The course covers head and shell calculations, hydrostatic test pressure calculations, reinforcement calculations, shell external pressure calculations, impact test requirements and determination, development and review of welding documentation and NDE requirement.

Haward Technology is proud of its **90% pass rate** on all our API sponsored courses.



Course Objectives

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

- Get prepared for the next API 510 exam and have enough knowledge and skills to pass such exam in order to get the API 510 certification
- Apply and gain an in-depth knowledge on API 510 pressure vessel code: maintenance, inspection, rating, repair and alteration (API exam preparation training)
- Identify the service restrictions, joint efficiencies and radiography and discuss vessels under internal pressures like shell and head calculations
- Recognize maximum allowable working pressure and define hydrostatic head pressure and hydrostatic, pneumatic tests and test gauges
- Employ postweld heat treatment and identify UW-16 minimum requirements for attachment welds at openings
- Describe and identify the UCS66_UG84 charpy impact
- Carryout material name plates data reports and apply corrosion calculations
- Discuss ASME section IX overview and write a welding procedure specification and welders qualification
- Review the section VIII, division 1, rules for constructing pressure vessels covering sections A, B, and C
- Review WPS's and PQR's, API 510 and define ASME section-V: NDE articles 1,2,6,7 and 23 (section SE-797 only)
- Analyze API 577 welding inspection and metallurgy, implement how part 0 works and damage mechanisms part 1 and 2
- Discuss API 572 pressure vessel inspection and API 576 pressure relieving devices
- Describe API 578 material verification program for new and existing alloy piping systems API recommended practice
- Apply repair of pressure equipment and piping in accordance with ASME PCC-2 standard
- Discuss the applicability and limitations of repair methods covered by ASME PCC-2 and choose the correct repair technique for given defects
- Employ cost-effective repairs and detailed repair methods and inspection techniques
- Inspect pressure vessels, rating, repair and alteration and apply remaining life calculation of pressure vessels
- Identify butt-welded insert plates in pressure components, weld overlay to repair internal thinning, welded leak box repair and full encirclement steel reinforcing sleeves for piping
- Recognize fillet welded patches, alternatives to post-weld heat treatment, in-service welding onto carbon steel pressure components or pipelines and weld build-up, weld overlay and clad restorationx
- Carryout flange repair, mechanical clamp repair, inspection and repair of shell and tube heat exchangers and examination and testing
- Apply pressure and tightness testing of piping and equipment, pneumatic testing and non-destructive examination in lieu of pressure testing for repairs and alterations
- Discuss the relevance of ASME PCC-2 standard with API 510 and API 570 codes as well as implement proper documentation and records of repairs

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 conveniently saved in a **Tablet PC**.

Who Should Attend

This course prepares participants for the API 510 exam. It is designed for those involved in the maintenance, inspection, rating, repair and alteration of pressure vessel such as inspectors and inspection engineers. Other engineers, managers and technical staff who are dealing with pressure vessel will also benefit from this course.

Exam Eligibility & Structure

Exam Candidates shall have the following minimum pre-requisites:-

Education	Years of Experience	Experience Required
BS or higher in engineering or technology or 3+ years of military service in a technical role (Dishonorable discharge disqualifies credit)	1 year	Supervision or performance of inspection activities as described in API 510
2-year Associate's degree or certificate in engineering or technology or 2 years of military service in a technical role (Dishonorable discharge disqualifies credit)	2 years	Design, fabrication, repair, operation, or inspection of pressure vessels, of which one year <u>must</u> be in supervision or performance of inspection activities as described in API 510
High school diploma or equivalent	3 years	Design, fabrication, repair, operation, or inspection of pressure vessels, of which one year <u>must</u> be in supervision or performance of inspection activities as described in API 510
No formal education	5 or more years	Design, fabrication, repair, operation, or inspection of pressure vessels, of which one year <u>must</u> be in supervision or performance of inspection activities as described in API 510

Required Codes & Standards

Listed below are the effective editions of the publications required for this exam for the date(s) shown above. **Each participant must purchase these documents separately and have them available for use during the class as their cost is not included in the course fees:-**

- **API Standard 510, Pressure Vessel Inspection Code: In-service Inspection, Rating, Repair, and Alteration, 11th Edition, October 2022, with Errata 1 (March 2023)**
- **API Recommended Practice 571, Damage Mechanisms Affecting Fixed Equipment in the Refining Industry, 3rd Edition, March 2020**



ATTENTION: Only the following sections / mechanism from RP 571 are included on the exam:

Section	2	Terms and Definitions
Par.	3.3	Amine Stress Corrosion Cracking
	3.8	Atmospheric Corrosion
	3.9	Boiler Water and Steam Condensate Corrosion
	3.11	Brittle Fracture
	3.14	Caustic Corrosion
	3.15	Caustic Stress Corrosion Cracking
	3.17	Chloride Stress Corrosion Cracking
	3.22	Corrosion Under Insulation (CUI)
	3.27	Erosion/Erosion-Corrosion
	3.35	High-temperature H ₂ /H ₂ S Corrosion
	3.36	High-temperature Hydrogen Attack
	3.37	Hydrochloric Acid Corrosion
	3.46	Naphthenic Acid Corrosion
	3.61	Sulfidation
	3.67	Wet H ₂ S Damage (Blistering/HIC/SOHIC/SCC)

- **API Recommended Practice 572**, *Inspection Practices for Pressure Vessels*, 5th Edition, **November 2023**
- **API Recommended Practice 576**, *Inspection of Pressure-Relieving Devices*, 5th Edition, **September 2024**
- **API Recommended Practice 577**, *Welding Processes, Inspection and Metallurgy*, 3rd Edition, **October 2020**
- **API Recommended Practice 578**, *Material Verification Program for New and Existing Assets*, 4th edition, **February 2023**
- **American Society of Mechanical Engineers (ASME)**, *Boiler and Pressure Vessel Code*, **2023 Edition**
 - i. **Section V**, *Nondestructive Examination, Articles 1, 2, 6, 7 and 23 (Section SE-797 only)*
 - ii. **Section VIII**, *Rules for Construction of Pressure Vessels, Division 1; Introduction (U), UG, UW, UCS, Appendices 1-4, 6, 8 and 12*
 - iii. **Section IX**, *Qualification Standard for Welding, Brazing and Fusing Procedures; Welders; Brazers; and Welding, Brazing and Fusing Operators, (Welding only)*
- **American Society of Mechanical Engineers (ASME) PCC-2**, *Repair of Pressure Equipment and Piping*, **2022**

ATTENTION: The Examination will cover each referenced Article and its Appendices

Article 101: Scope, Organization, and Intent
Article 201: Butt-Welded Insert Plates in Pressure Components
Article 202: External Weld Buildup to Repair Internal Thinning
Article 209: Alternatives to Postweld Heat Treatment
Article 210: In-Service Welding Onto Carbon Steel Pressure Components or Pipelines
Article 211: Weld Buildup, Weld Overlay, and Clad Restoration
Article 212: Fillet Welded Patches
Article 215: Repair Welding Considerations for Cr-Mo Steel Pressure Vessels
Article 216: Welded Hot Taps in Pressure Equipment or Pipelines
Article 304: Flaw Excavation and Weld Repair
Article 305: Flange Repair and Conversion
Article 312: Inspection and Repair of Shell and Tube Heat Exchangers



Article 501: Pressure and Tightness of Piping and Equipment

Article 502: Nondestructive Examination in Lieu of Pressure Testing for Repairs and Alternations

Note: API and ASME publications are copyrighted material. Photocopies of API and ASME publications are not permitted.

Training Fee

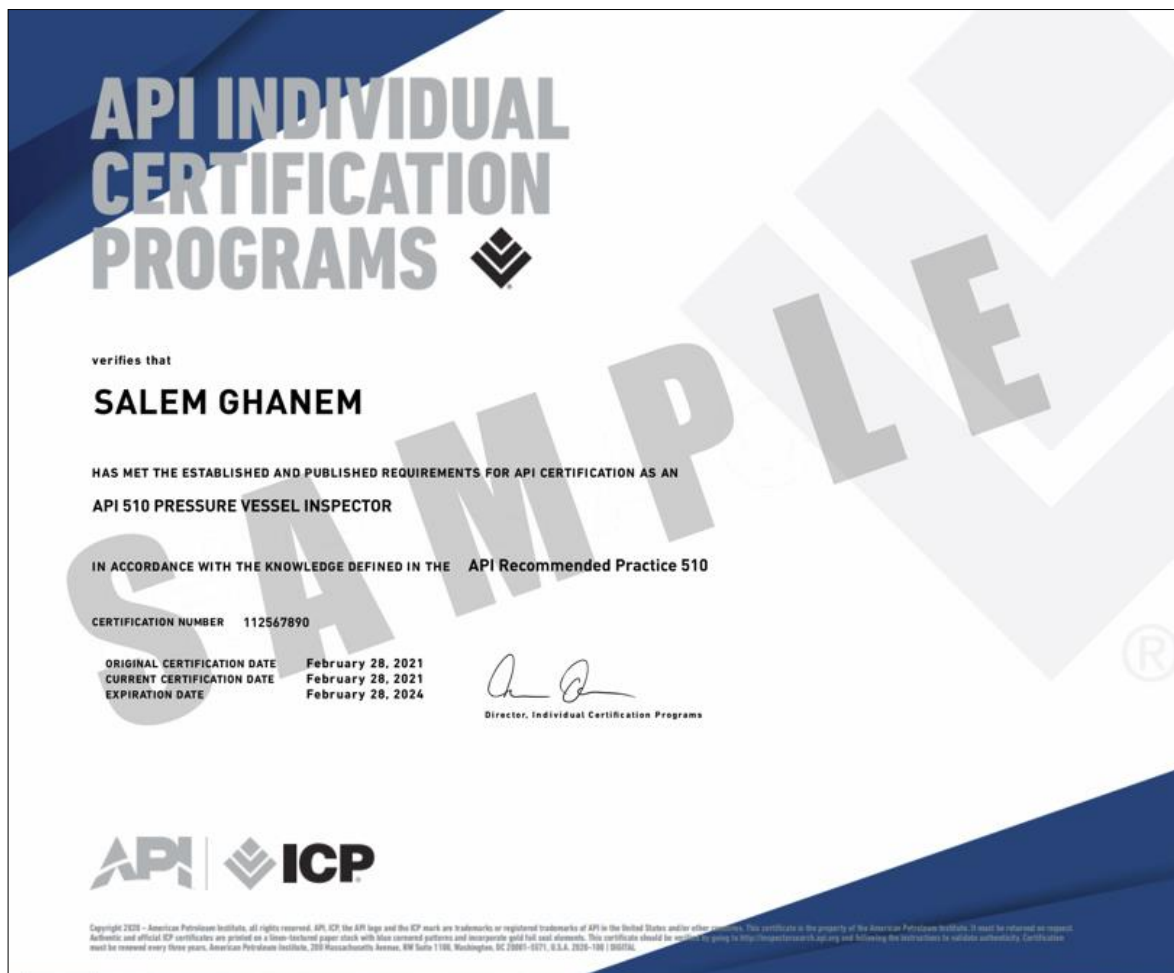
US\$ 8,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Exam Fees

US\$ 1,170 per Delegate + **VAT**.

API Certificate(s)

API-510 certificate will be issued to participants who have successfully passed the API-510 examination.





- (2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.

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 **Haward Technology Middle East**
Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 28-Feb-21
HTME No. 74852
Participant Name: Salem Ghanem

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
FE0670-10D	API 510: Pressure Vessel Inspector (API Exam Preparation Training)	February 15-28, 2022	80	8.0

Total No. of CEU's Earned as of TOR Issuance Date **8.0**

TRUE COPY

Jeryl Castillo
Academic Director

Haward Technology has been approved as an Accredited Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2018 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2018 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 Association 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 is accredited by



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Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations: -

- 
British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council for Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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.

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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 **8.0 CEUs** (Continuing Education Units) or **80 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.

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. 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 **Pressure Vessel Inspection, 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.



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 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 – 0810	Welcome & Introduction
0810 – 0825	PRE-TEST
0825 – 0900	Course Overview – API 510 Body of Knowledge Requirements Exam Portal Overview
0900 – 1000	Service Restrictions - Joint Efficiencies - Radiography UW-3 Weld Categories • UW-51 RT Examination of Welded Joints • UW-52 Spot Examination of Welded Joints
1000 – 1015	Break
1015 – 1230	Service Restrictions - Joint Efficiencies - Radiography (cont'd) UW-11 RT & UT Examinations • UW-12 Maximum Allowable Joint Efficiencies • Exercises UW 3, 11 & 12
1230 – 1330	Lunch
1330 – 1515	Vessels Under Internal Pressure – Shell & Head Calculations UG-27 Thickness of Shells under Internal Pressure
1515 – 1530	Break
1530 – 1650	Vessels Under Internal Pressure – Shell & Head Calculations (cont'd) UG-32 Formulas & Rules for Using Formed Heads
1650 – 1700	Recap
1700	Lunch & End of Day One

Day 2

0730 – 0830	Review of Day 1
0830 – 1000	Exercise with Review
1000 – 1015	Break
1015 – 1230	Maximum Allowable Working Pressure UG-98 Maximum Allowable Working Pressure
1230 – 1330	Lunch
1330 – 1515	Hydrostatic Head Pressure Hydrostatic Head Calculations
1515 – 1530	Break



1530 – 1620	Hydrostatic – Pneumatic Tests UG-99 Hydrostatic Test Pressure & Procedure • UG-100 Pneumatic Test Pressure & Procedure • UG-102 Test Gages
1620 – 1650	Quiz 1
1650 – 1700	Recap
1700	Lunch & End of Day Two

Day 3

0730 – 0830	Review of Day 2
0830 – 1000	Exercise with Review
1000 – 1015	Break
1015 – 1230	Postweld Heat Treatment
1230 – 1330	Lunch
1330 – 1515	Cylinder under External Pressure UG-28 Thickness of Shells & Tubes (External Pressure)
1515 – 1530	Break
1530 – 1650	Charpy Impact Testing UCS-66 Materials • UCS-67 Impact Testing of Welding Procedures • UCS-68 Design • UG-84 Charpy Impact Test Requirements
1650 – 1700	Recap
1700	Lunch & End of Day Three

Day 4

0730 – 0830	Review of Day 3
0830 – 1000	Exercise with Review
1000 – 1015	Break
1015 – 1230	Fillet Welds & Reinforcement UW-16 Weld Size Determination • UG-36 Openings in Vessels • UG-37 Reinforcement of Openings • UG-40 Limits of Reinforcement
1230 – 1330	Lunch
1330 – 1515	Materials Name Plates Data Reports UG-77 Material Identification • UG-93 Inspection of Materials • UG-116 Name Plate Markings
1515 – 1530	Break
1530 – 1620	Materials Name Plates Data Reports (cont'd) UG-119 Name Plates • UG-120 Data Reports
1620 – 1650	Quiz 2
1650 – 1700	Recap
1700	Lunch & End of Day Four

Day 5

0730 – 0830	Review of Day 4
0830 – 1000	Exercise with Review
1000 – 1015	Break
1015 – 1230	Corrosion Calculations Inspection Interval • Corrosion Rate & Remaining Life • Long & Short Term Corrosion Rates
1230 – 1330	Lunch
1330 – 1515	ASME Section-IX Overview Article I General Requirements • Article II Welding Procedure Qualifications
1515 – 1530	Break



1530 – 1650	ASME Section-IX Overview (cont'd) Article III Welding Performance Qualifications • Article IV Welding Data
1650 – 1700	Recap
1700	Lunch & End of Day Five

Day 6

0730 – 0830	Review of Day 5
0830 – 1000	Exercise with Review
1000 – 1015	Break
1015 – 1230	Writing a Welding Procedure Specification Welding Procedures by Essential Variables
1230 – 1330	Lunch
1330 – 1515	Welder's Qualification Welder Testing & Qualification
1515 – 1530	Break
1530 – 1620	Welder's Qualification (cont'd)
1620 – 1650	Quiz 3
1650 – 1700	Recap
1700	Lunch & End of Day Six

Day 7

0730 – 0830	Review of Day 6
0830 – 1000	Exercise with Review
1000 – 1015	Break
1015 – 1130	Review of WPS's & PQR's Practice WPS/PQR reviews
1130 - 1230	Section VIII, Division 1, Rules for Constructing Pressure Vessels Section A: General Requirements • Section B: Requirements Pertaining to Methods of Fabrication of Pressure Vessels • Section C: Requirements Pertaining to Classes of Materials
1230 – 1330	Lunch
1330 – 1515	ASME Section-V: NDE Article 1 General Requirements • Article 2 Radiographic Testing Appendix 4 - Section VIII Rounded Indications • Article 23 SE-797 Standard Practice for Measuring Thickness by the Pulse-Echo Contact Method • Appendix 12 - Section VIII Ultrasonic Acceptance Criteria
1515 – 1530	Break
1530 – 1650	ASME Section-V: NDE (cont'd) Article 6 - Penetrant Testing • Appendix 8 - Section VIII Methods for Liquid Penetrant Exam • Article 7 - Magnetic Particle Examination • Appendix 6 - Section Magnetic Particle Examination
1650 – 1700	Recap
1700	Lunch & End of Day Seven

Day 8

0730 – 0830	Review of Day 7
0830 – 1000	Exercise with Review
1000 – 1015	Break
1015 – 1130	API RP 577 Welding Inspection & Metallurgy Definitions • Welding Inspection • Welding Processes • Welding Procedure • Welding Materials



1130 - 1230	API RP 577 Welding inspection & Metallurgy (cont'd) Welder Qualification • Non-Destructive Examination • Metallurgy • Refinery & Petrochemical Welding Issues • Terminology & Symbols
1230 - 1330	Lunch
1330 - 1430	API RP 577 Welding inspection & Metallurgy (cont'd) Actions to Address Improperly Made Production Welds • Welding Procedure Review • Guide to Common Filler Metals • Example Report of RT Results
1430 - 1515	Part 0 How does it Work?
1515 - 1530	Break
1530 - 1620	API 571: Damage Mechanisms Part 1 Temper Embrittlement • Brittle Fracture • Thermal Fatigue • Erosion/Erosion-Corrosion • Mechanical Failure • Atmospheric Corrosion • Corrosion Under Insulation (CUI) • Cooling Water Corrosion • Boiler Water Condensate Corrosion • Sulfidation
1620 - 1650	Quiz 4
1650 - 1700	Recap
1700	Lunch & End of Day Eight

Day 9

0730 - 0830	Review of Day 8
0830 - 1000	Exercise with Review
1000 - 1015	Break
1015 - 1100	API 571: Damage Mechanisms Part 1 (cont'd) Chloride Stress Corrosion Cracking (Cl-SCC) • Corrosion Fatigue • Caustic Stress Corrosion Cracking (Caustic Embrittlement) • Wet H ₂ S Damage (Blistering/HIC/SOHIC/SCC) • High Temperature Hydrogen Attack (HTHA)
1100 - 1145	API 571: Damage Mechanisms Part 2 Temper Embrittlement • Brittle Fracture • Thermal Fatigue • Erosion/Erosion-Corrosion • Mechanical Failure • Atmospheric Corrosion • Corrosion Under Insulation (CUI) • Cooling Water Corrosion
1145 - 1230	API 571: Damage Mechanisms Part 2 (cont'd) Boiler Water Condensate Corrosion • Sulfidation • Chloride Stress Corrosion Cracking (Cl-SCC) • Corrosion Fatigue • Caustic Stress Corrosion Cracking (Caustic Embrittlement) • Wet H ₂ S Damage (Blistering/HIC/SOHIC/SCC) • High Temperature Hydrogen Attack (HTHA)
1230 - 1330	Lunch
1330 - 1430	Overview - API 510 Inspections of Pressure Vessels Scope • Organization • Types & Definitions of Maintenance Inspections • Welding on Pressure Vessels • Repairs & Alterations Overview - API 576 Pressure Relieving Devices • Scope • Types of Pressure Relieving Devices • Applications • Limitations
1430 - 1515	Overview - API 572 Inspection of Pressure Vessels Scope • Reasons for Inspection • Causes of Deterioration • Methods of Repairs • Inspection Records & Report
1515 - 1530	Break
1530 - 1620	API 578: Material Verification Program for New & Existing Alloy Piping Systems API Recommended Practice
1620 - 1650	Quiz 5
1650 - 1700	Recap
1700	Lunch & End of Day Nine



Day 10

0730 – 0830	Review of Day 9
0830 – 1000	ASME PCC-2: Repair of Pressure Equipment & Piping Scope, Organization & Intent • Applicability & Limitations of Repair Methods Covered by ASME PCC-2 • Choosing Correct Repair Technique for Given Defects • Cost-effective Repairs
1000 – 1015	Break
1015 – 1130	ASME PCC-2: Repair of Pressure Equipment & Piping (cont'd) Detailed Repair Methods & Inspection Techniques • Inspection of Pressure Vessels, Rating, Repair & Alteration • Remaining Life Calculation of Pressure Vessels
1130 - 1230	ASME PCC-2: Welded Repairs Butt-Welded Insert Plates in Pressure Components • Weld Overlay to Repair Internal Thinning • Welded Leak Box Repair • Full Encirclement Steel Reinforcing Sleeves for Piping • Fillet Welded Patches • Alternatives to Post-Weld Heat Treatment • In-Service Welding onto Carbon Steel Pressure Components or Pipelines • Weld Build-up, Weld Overlay & Clad Restoration
1230 – 1300	Lunch
1300 - 1330	ASME PCC-2: Mechanical Repairs (Non-Welding Repairs) Flange Repair • Mechanical Clamp Repair • Inspection & Repair of Shell & Tube Heat Exchangers • Examination & Testing
1330 - 1515	ASME PCC-2: Mechanical Repairs (Non-Welding Repairs) (cont'd) Pressure & Tightness Testing of Piping & Equipment • Pneumatic Testing-Do's & Don'ts • Non-destructive Examination in Lieu of Pressure Testing for Repairs & Alterations • Relevance of ASME PCC-2 Standard with API 510 & API 570 Codes • Documentation & Records of Repairs
1515 – 1530	Break
1530 - 1615	General Course Material Review & Discussion
1615 - 1630	POST-TEST
1630 – 1645	Course Conclusion
1645 – 1700	Presentation of Course Certificates
1700	Lunch & End of Course

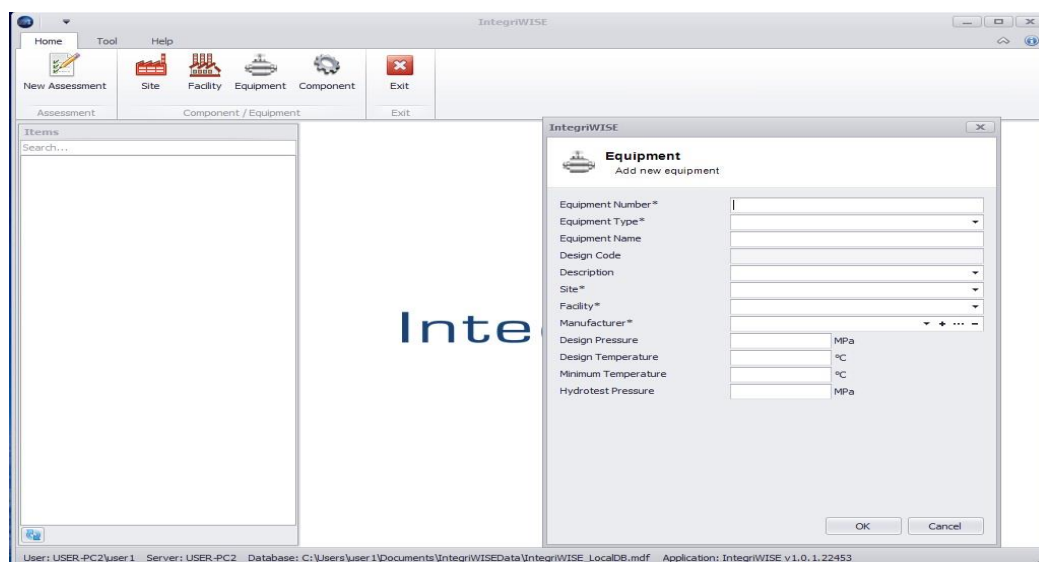
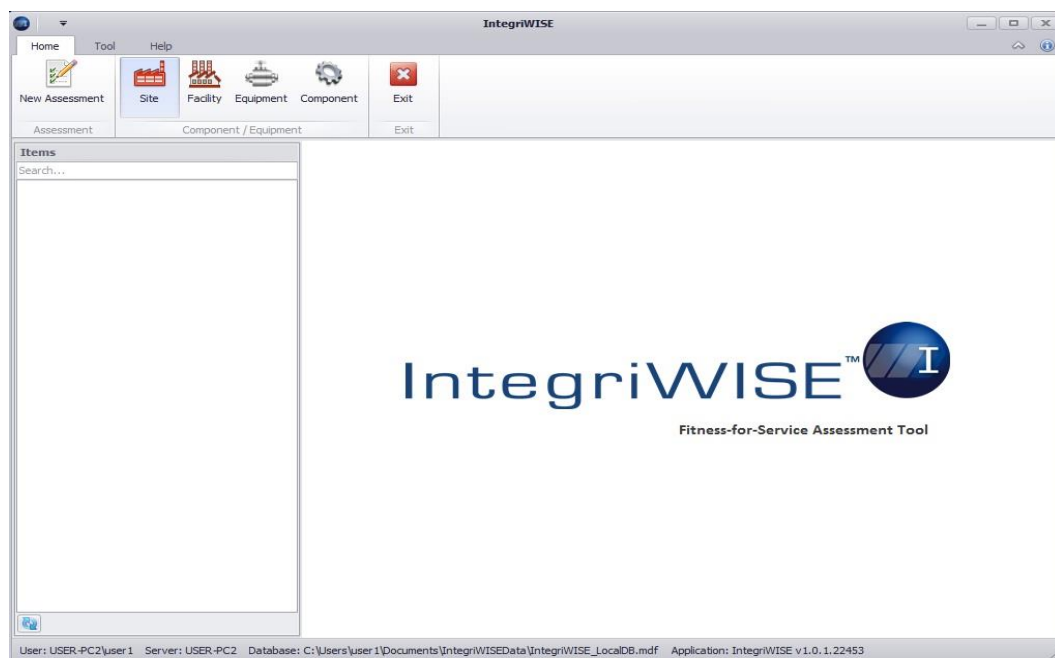
MOCK Exam

Upon the completion of the course, participants have to sit for a MOCK Examination similar to the exam of the Certification Body through Haward's Portal. Each Participant will be given a username and password to log in Haward's Portal for the Mock exam during the 30 days following the course completion. Each participant has only one trial for the MOCK exam within this 30-day examination window. Hence, you have to prepare yourself very well before starting your MOCK exam as this exam is a simulation to the one of the Certification Body.



Practical Sessions

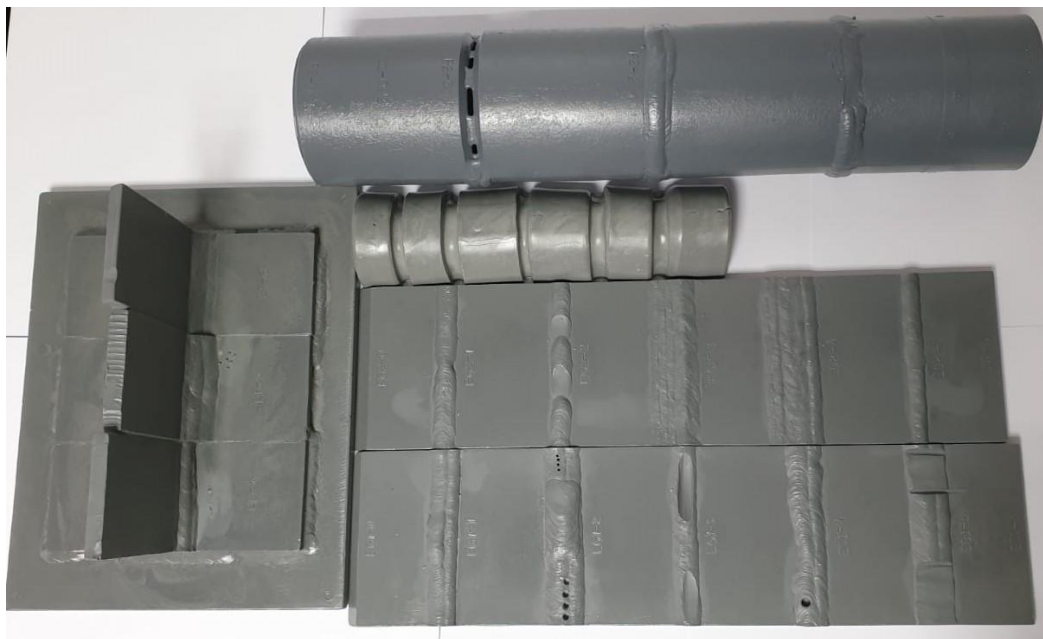
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout welding inspection using the “IntegriWISE™” simulator, “American Welding Society (AWS) Tool Kit” and “Structural Weld Replica Kit”, suitable for classroom training.



IntegriWISE™



AWS Tool Kit



Structural Weld Replica Kit

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org