COURSE OVERVIEW FE0710
API 653: Aboveground Storage Tank Inspector
(Exam Preparation Training)

Course Title
API 653: Aboveground Storage Tank Inspector
(Exam Preparation Training)

Course Reference
FE0710

Course Duration/Credits
Five days (40 hours)/4.0 CEUs/40 PDHs

Course Date/Venue

Sessions	Date	Venue	Exam Window	Exam Closing Date
1	May 25-29, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE	July 11- August 01, 2025	May 02, 2025
2	June 23-27, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE	July 11- August 01, 2025	May 02, 2025
3	July 07-11, 2025	Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE	November 07-28, 2025	August 29, 2025
4	November 02-06, 2025	Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE	TBA	TBA
Exam Venue	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.			

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 provide participants with a comprehensive overview of the latest API 653 certification program. It will prepare the inspectors to pass the API 653 examination in order for them to be certified as API 653 Inspectors. The course covers the inspection, repair, alteration and reconstruction of steel aboveground storage tanks used in the petrochemical industry; the API 653 body of knowledge, scope, reference publications, definitions, suitability for service and brittle fracture considerations; the several aspects involved in the inspection, materials, design considerations for reconstructed tanks, tank repair and alteration, dismantling and reconstruction, welding, examination and testing, marking and recordkeeping; and the scope, materials, design, fabrication, erection, methods of inspecting joints, welding procedure, welder qualifications and marking.

The course will also discuss the selected nondestructive examination (NDE) methods, types of storage tanks, reasons for inspection, causes of deterioration, frequency of inspection and methods of inspection and inspection scheduling; the corrosion of aboveground steel storage tanks, determination of need for cathodic protection, methods of cathodic protection for corrosion control, design of cathodic protection systems, interference currents and the operation and maintenance of cathodic protection systems; the various corrosion mechanisms, the need for tank bottom lining, tank bottomlining selection, surface preparation, inspection and repair of tank bottom linings and safety; the general damage mechanisms and refining industry damage mechanisms; and the welding inspection, welding processes, refinery and petrochemical plant welding issues, nondestructive test methods, WPS and PQR requirements.

This comprehensive 40-hour course consists of five 8-hour teaching days. It is designed to accomplish a two-fold training agenda: (1) To train those individuals who are interested in obtaining the API 653 Tank Inspection Certification; and (2) To train those who require a working knowledge of the intricacies encountered in the working environment.

Quizzes are given at the end of each section; homework is handed out at the end of each class day, which consists of 25 questions per day and is reviewed at the beginning of the following day, and a "practice" exam is administered at the end of the course. 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 653 exam and have enough knowledge and skills to pass such exam in order to get the API 653 certification
- Perform the inspection, repair, alteration and reconstruction of steel aboveground storage tanks used in the petrochemical industry
- Review API 653 body of knowledge, scope, reference publications, definitions, suitability for service and brittle fracture considerations
- Discuss the several aspects involved in the inspection, materials, design considerations for reconstructed tanks, tank repair and alteration, dismantling and reconstruction, welding, examination and testing, marking and recordkeeping
- Identify the scope and materials, and employ the design, fabrication, erection, and methods of inspecting joints, welding procedure as well as welder qualifications and marking
- Explain selected nondestructive examination (NDE) methods, types of storage tanks, reasons for inspection, causes of deterioration, frequency of inspection and methods of inspection and inspection scheduling
- Distinguish corrosion of aboveground steel storage tanks, determination of need for cathodic protection, methods of cathodic protection for corrosion control, design of cathodic protection systems, interference currents and carryout operation and maintenance of cathodic protection systems
- Enumerate the various corrosion mechanisms, determination of the need for tank bottom lining, tank bottom lining selection, and surface preparation as well as demonstrate inspection and repair of tank bottom linings and safety
- Illustrate and differentiate general damage mechanisms and refining industry damage mechanisms
- Carryout welding inspection, welding processes, refinery and petrochemical plant welding issues, nondestructive test methods, WPS and PQR requirements

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 653 exam. It is designed for those who are involved in the inspection, repair, alteration and reconstruction of tank. This mainly includes inspectors and inspection engineers who are seeking API-653 certification. Other engineers, managers or technical staffs who are dealing with tanks and tank farms will definitely 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 653
2-year degree or certificate in engineering or technology or 2 years of military service in a technical role (Dishonorable discharge disqualifies credit)	2 years	Design, construction, repair, operation, or inspection of aboveground storage tanks, of which one year must be in supervision or performance of inspection activities as described in API 653
High school diploma or equivalent	3 years	Design, construction, repair, operation, or inspection of aboveground storage tanks, of which one year must be in supervision or performance of inspection activities as described in API 653
No formal education	5 or more years	Design, construction, repair, operation, or inspection of aboveground storage tanks, of which one year must be in supervision or performance of inspection activities as described in API 653

Required Codes and Standards

Listed below are the effective editions of the publications required for this examination on 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 Recommended Practice 571,** *Damage Mechanisms Affecting Fixed Equipment in the Refining Industry* **3rd Edition, March 2020**

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

  Section 2 Terms and Definitions
  Par. 3.8 – Atmospheric Corrosion
  3.11 – Brittle Fracture
  3.14 – Caustic Corrosion
  3.15 – Caustic Stress Corrosion Cracking (Caustic Embrittlement)
  3.17 – Chloride Stress Corrosion Cracking
  3.22 – Corrosion Under Insulation (CUI)
  3.43 – Mechanical Fatigue (Including Vibration-induced Fatigue)
  3.45 – Microbiologically Influenced Corrosion (MIC)
  3.57 – Soil Corrosion
  3.58 – Sour Water Corrosion (Acidic)
  3.62 – Sulfuric Acid Corrosion

- **API Recommended Practice 575,** *Inspection Practices for Atmospheric and Low-Pressure Storage Tanks,* **4th Edition, July 2020**
- **API Recommended Practice 576,** *Inspection of Pressure-Relieving Devices,* **4th Edition, April 2017** (Sections 4.3.2 and 6.6 only)
- **API Recommended Practice 577 –** *Welding Processes, Inspection and Metallurgy,* **3rd Edition, October 2020**
- **API Standard 650,** *Welded Tanks for Oil Storage,* **13th Edition, March 2020 with Errata 1 (January 2021)**
- **API Recommended Practice 651,** *Cathodic Protection of Aboveground Petroleum Storage Tanks,* **4th Edition, September 2014**
- **API Recommended Practice 652,** *Lining of Aboveground Petroleum Storage Tank Bottoms,* **5th Edition, May 2020**
- **API Standard 653,** *Tank Inspection, Repair, Alteration, and Reconstruction,* **5th Edition, November 2014, Addendum 1 (April 2018), Addendum 2 (May 2020), Errata 1 (March 2020)**
- **American Society of Mechanical Engineers (ASME***),* *Boiler and Pressure Vessel Code*, **2021 Edition**
  i. ASME Section V, *Nondestructive Examination, Articles 1, 2, 6, 7 and 23 (section SE-797 only)*
  ii. Section IX, *Qualification Standard for Welding, Brazing and Fusing Procedures; Welders; Brazers; and Welding, Brazing and Fusing Operators, (Welding Only)*

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

API Certificate(s)

(1) API-653 certificate will be issued to participants who have successfully passed the API-653 examination.


API INDIVIDUAL CERTIFICATION PROGRAMS

verifies that

SALEM GHANEM

HAS MET THE ESTABLISHED AND PUBLISHED REQUIREMENTS FOR API CERTIFICATION AS AN

API 653 ABOVEGROUND STORAGE TANK INSPECTOR

IN ACCORDANCE WITH THE KNOWLEDGE DEFINED IN THE API Recommended Practice 653

CERTIFICATION NUMBER 112567890

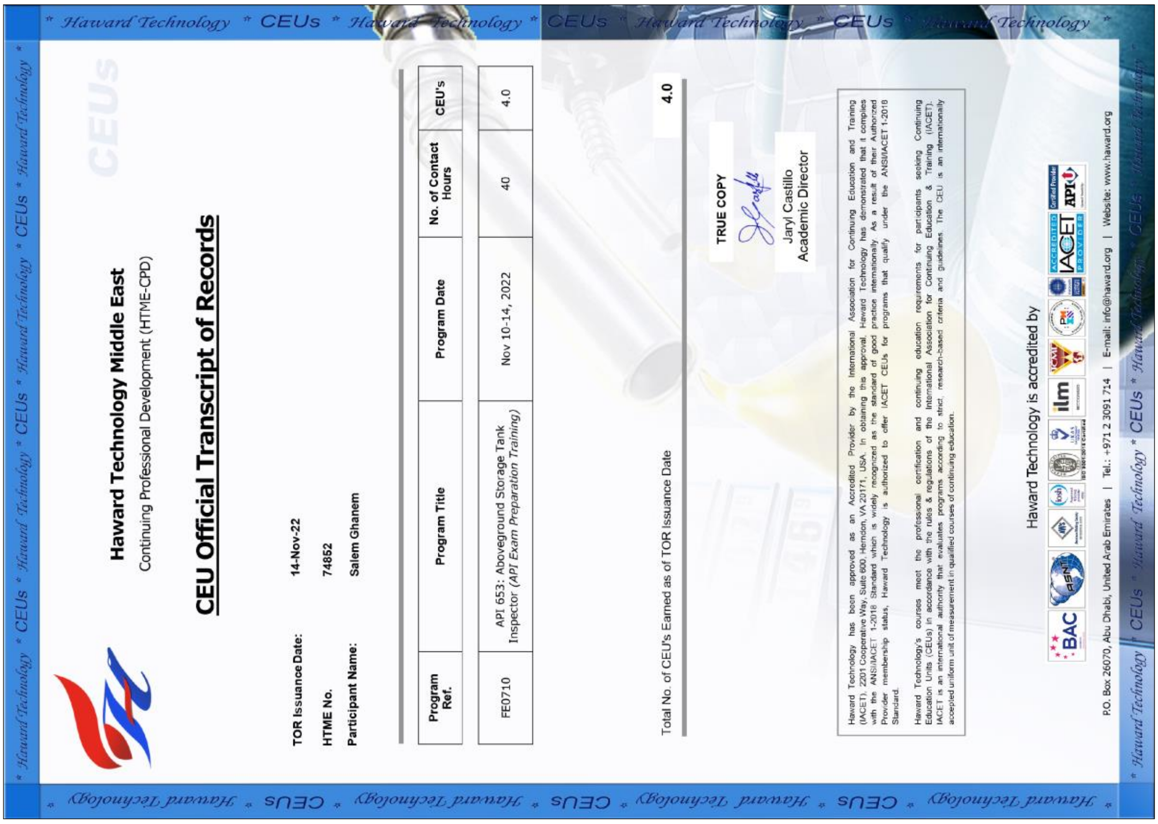
ORIGINAL CERTIFICATION DATE February 28, 2021
CURRENT CERTIFICATION DATE February 28, 2021
EXPIRATION DATE February 28, 2024

Director, Individual Certification Programs

SAMPLE

API | ICP

(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.


Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 14-Nov-22
HTME No. 74652
Participant Name: Salem Ghanem

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
FE0710	API 653: Aboveground Storage Tank Inspector (*API Exam Preparation Training*)	Nov 10-14, 2022	40	4.0

Total No. of CEU's Earned as of TOR Issuance Date: 4.0

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Jaryl 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 its 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

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | E-mail: info@haward.org | Website: www.haward.org

Certificate Accreditations

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**. 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.

- 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 **4.0 CEUs** (Continuing Education Units) or **40 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.

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 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:

Dr. Igor Martic PhD, MSc, BSc, is a **Senior Mechanical & Inspection Engineer** with extensive years of industrial experience within the **Oil & Gas**, **Refineries** and **Petrochemical** industries. His expertise lies in the areas of **Welding** Engineering, **Fabrication** & Inspection, **Welding** Techniques, Practical **Welding** Technology, **Welding** Inspection, **Welding & Machine Shop**, **Welding & Fabrication**, **Welding & Machining**, **Welding** Types & Applications, **Welding** Safety, **Welding** Defects Analysis, **TIG & Arc Welding**, **Shielded Metal Arc Welding**, **Gas Tungsten & Gas Metal Arc Welding**, **Welding** Procedure Specifications & Qualifications (WPS & WPQ), **Aluminium Welding**, Safe **Welding**, International **Welding Codes**, **Welding Procedure** Specifications, **Welding & Brazing**, **Welder** Performance Qualification, Inspection & Test Plans, Pipe Stress & Flexibility Analysis using **CAESAR II Software**, **NDT/NDE** Procedures, **Corrosion**, **Painting**, Underwater Inspection of **Rigs**, **Platforms & Jackets**, **Static Equipment**, **Piping**, **Pipelines & Valves**, **Liquid Penetrant** Testing, **Magnetic Particle** Testing, **Ultrasonic** Testing, **Radiographic** Testing, **Visual** Testing, **Eddy Current** Testing, External & Internal Auditing for **API Q1/Q2**, **API Monogram** Specifications, **ISO 9001**, **ISO 17020**, **ISO 17025** and **ISO 17024**. He is currently the **API Auditor** within Europe, Africa, Middle East and Asia wherein he performs audits worldwide at manufacturers and service company in Oil & Gas industry against the criteria of API Q1/Q2, API product specifications and ISO 9001.

Throughout his career life, Dr. Igor has provided significant contributions to the companies he has worked with, having filled key positions such as being the **Senior Inspector**, **Quality Inspector**, **Mechanical Static Engineer/Inspector**, **Inspector Coordinator**, **Auditor**, **Teaching Assistant** and **Researcher** for various international companies such as the Wafa Plant / Sabratha Platform-Libya, Zubair Oil Field-Iraq and University of Belgrade.

Dr. Martic is a **Chartered Engineer** and has **PhD**, **Master** and **Bachelor** degrees in **Mechanical Engineering** and **Industrial Management & Engineering** from the **University** of **Belgrade** and **Novi Sad University**, **UK** respectively and a **Graduate Engineer** of **Production Management**. Further, he is a **Certified Instructor/Trainer**, a **Certified Piping Inspector** (**API 570**), a **Certified Pressure Vessel Inspector** (**API-510**), a **Certified Welding Inspection & Metallurgy** (**API 577**), a **Certified NDT Level II Inspector** Liquid Penetrant Testing (**PT**), Magnetic Particle Testing (**MT**), Ultrasonic Testing (**UT**), Visual Testing (**VT**), Radiography Testing (**RT**) and Eddy Current Testing; a Recognized Quality Management Systems (**QMS**) **Auditor/Lead Auditor**, a Recognized **European Welding Engineer** and **International Welding Inspector**; a member of the **Institution of Mechanical Engineers** and holds certification in Underwater Inspection Controller Grade 3.4U in accordance with the **CSWIP** DIV-7-95 Part 2, 4th Edition and **API Auditor Summit** Certificate. He has further published numerous scientific paper and journals and has delivered numerous trainings, courses, workshops, seminars and conferences internationally.

Accommodation

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

Training 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

Exam Fee

US$ 1,430 per Delegate + **VAT**.

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	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Introduction***
0900 – 0930	***Students Take Initial Math Quiz***
0930 – 1000	***Review Math Quiz Answers***
1000 – 1015	*Break*
1015 – 1045	***Overview of Course Outline***
1045 – 1230	***Review of API 653 Body of Knowledge***
1230 – 1330	*Lunch*
1330 – 1445	***API 653 - Section 1 – Scope:*** *Introduction, Compliance with this Standard, Jurisdiction, Safe Working Practices* ***API 653 - Section 2 – Referenced Publications*** ***API 653 - Section 3 – Definitions***
1445 – 1500	*Break*
1500 – 1600	***API 653 - Section 4 - Suitability for Service:*** *General, Tank Roof Evaluation, Tank Shell Evaluation, Tank Bottom Evaluation, Tank Foundation Evaluation*
1600 – 1645	***API 653 - Section 5 - Brittle Fracture Considerations:*** *General, Basic Considerations, Assessment Procedure*
1645 – 1700	***Distribute Homework & Recap***
1700	*End of Day One*

Day 2

0730 – 0830	***Review of Day 1 & Homework Answers***
0830 – 1000	***API 653 - Section 6 - Inspection*** *General, Inspection Frequency Considerations, Inspections from the Outside of the Tank, Internal Inspection, Alternative to Internal Inspection to Determine Bottom Thickness, Preparatory Work for Internal Inspection, Inspection Checklists, Records, Reports, Non-Destructive Testing* ***API 653 - Section 7 - Materials*** *General, New Materials, Original Materials for Reconstructed Tanks, Welding*

	Consumables ***API 653 - Section 8 - Design Considerations for Reconstructed Tanks*** *General, New Weld Joints, Existing Weld Joints, Shell Design, Shell Penetrations, Wind Girders and Shell Stability, Roofs, Seismic Design*
1000 – 1015	*Break*
1015 – 1130	***API 653 - Section 9 - Tank Repair & Alteration*** *General, Removal and Replacement of Shell Plate Material, Shell Repairs Using Lap-Welded Patch Plates, Repair of Defects in Shell Plate Material, Alteration of Tank Shells to Change Shell Height, Repair of Defective Welds, Repair of Shell Penetrations, Addition or Replacement of Shell Penetrations, Alteration of Existing Shell Penetrations, Repair of Tank Bottoms, Repair of Fixed Roofs, Floating Roofs, Repair or Replacement of Floating Room Perimeter Seals, Hot Taps*
1130 - 1230	***API 653 - Section 10 - Dismantling and Reconstruction*** *General, Cleaning and Gas Freeing, Dismantling Methods, Reconstructions, Dimensional Tolerances* ***API 653 - Section 11 - Welding*** *Welding Qualifications, Identification and Records* ***API 653 - Section 12 - Examination and Testing*** *Nondestructive Examination, Radiographs, Hydrostatic Testing, Leak Tests, Measured Settlement During Hydrostatic Testing* ***API 653 - Section 13 - Marking and Recordkeeping*** *Nameplates, Recordkeeping, Certification* ***API 653 – Appendices A – G***
1230 – 1330	*Lunch*
1330 – 1400	*Administer API 653 Section Quiz*
1400 – 1500	***API 650 - Section 1 - Scope*** *General, Limitations, Compliance, Referenced Publications* ***API 650 - Section 2 - Materials*** *General, Plates, Welding Electrodes*
1500 – 1515	*Break*
1515 – 1645	***API 650 - Section 3 - Design*** *Joints, Bottom Plates, Annular Bottom Plates, Shell Design, Shell Openings, Shell Attachments and Tank Appurtenances, Roofs, Wind Load on Tanks (Overturning Stability)* ***API 650 - Section 4 - Fabrication*** ***API 650 - Section 5 - Erection*** *General, Details of Welding, Inspection, Testing and Repairs, Repairs to Welds, Dimensional Tolerances*
1645 – 1700	***Distribute Homework & Recap***
1700	*End of Day Two*

Day 3

0730 – 0800	***Review of Day 2 & Homework Answers***
0800 – 0945	***API 650 - Section 6 - Methods of Inspecting Joints*** *Radiographic Method, Magnetic Particle Examination, Ultrasonic Examination, Liquid Penetrant Examination, Visual Examination* ***API 650 - Section 7 - Welding Procedure & Welder Qualifications*** *Definitions, Qualification of Welders* ***API 650 - Section 8 - Marking*** *Nameplates, Division of Responsibility, Certification*
0945 – 1000	*Break*

1000 – 1130	***API 650 - Appendices B - S***
1130 – 1200	*Administer API 650 Section Quiz*
1200 – 1230	***Slide Show – "Don't Let this Happen to your Tank"***
1230 – 1330	*Lunch*
1330 – 1445	***Complete Slide Show -"Don't Let this Happen to your Tank"*** ***API RP 575 - Section 1 – Scope*** ***API RP 575 - Section 3 - Selected Nondestructive Examination (NDE) Methods*** *Ultrasonic-Thickness Measurement, Magnetic Floor Testing* ***API RP 575 - Section 4 - Types of Storage Tanks*** *General, Storage Tanks with Linings and/or Cathodic Protection, Storage Tanks with Leak Detection Systems, Low-Pressure Storage Tanks*
1445 – 1500	*Break*
1500 – 1645	***API RP 575 - Section 5 - Reasons for Inspection and Causes of Deterioration*** *Reasons for Inspection, Corrosion of Steel Tanks* ***API RP 575 - Section 6 - Frequency of Inspection*** ***API RP 575 - Section 7 - Methods of Inspection and Inspection Scheduling*** *External Inspection of In-Service Tanks, Foundation Inspection, Anchor Bolt Inspection, Grounding Connection Inspection, Thickness Measurements, Caustic Cracking, Tank Bottoms, Inspection Scheduling, Inspection Checklists* ***API RP 651 - Section 1 – Scope*** ***API RP 651 - Section 3 – Definitions*** ***API RP 651 - Section 4 - Corrosion of Aboveground Steel Storage Tanks*** *Introduction, Corrosion Mechanisms* ***API RP 651 - Section 5 - Determination of Need for Cathodic Protection***
1645 – 1700	***Distribute Homework & Recap***
1700	*End of Day Three*

Day 4

0730 – 0800	***Review of Day 3 & Homework Answers***
0800 – 0945	***API RP 651 - Section 6 - Methods of Cathodic Protection for Corrosion Control*** *Introduction, Galvanic Systems, Impressed Current Systems, Cathodic Protection Rectifiers* ***API RP 651 - Section 7 - Design of Cathodic Protection Systems*** *Barriers to Cathodic Protection, Tank Bottom Replacement, Impervious Membrane Lining, Effects of Impermeable Membrane Secondary Containment Systems* ***API RP 651 - Section 8 - Criteria for Cathodic Protection*** ***API RP 651 - Section 9 - Installation of Cathodic Protection Systems*** *Introduction, Galvanic Anode Systems, Impressed Current Systems* ***API RP 651 - Section 10 - Interference Currents*** ***API RP 651 - Section 11 - Operation and Maintenance of Cathodic Protection Systems***
0945 – 1000	*Break*

1000 – 1230	***API RP 652 - Section 1 – Introduction*** ***API RP 652 - Section 3 – Definitions*** ***API RP 652 - Section 4 - Corrosion Mechanisms*** *Chemical Corrosion, Concentration Cell Corrosion, Corrosion Caused by Sulfate-Reducing Bacteria, Erosion-Corrosion in Water Treatment* ***API RP 652 - Section 5 - Determination of the Need for Tank Bottom Lining*** *General, Design Considerations and Tank Internals, Tank History, Environmental Considerations, Flexibility for Service Change*
1230 - 1330	*Lunch*
1330 - 1500	***API RP 652 - Section 6 - Tank Bottomlining Selection*** *General, Thin-Film Tank Bottom Linings, Thick-Film Tank Bottom Linings* ***API RP 652 - Section 7 - Surface Preparation*** *General, Precleaning* ***API RP 652 - Section 9 – Inspection*** ***API RP 652 - Section 10 - Repair of Tank Bottom Linings*** *General, Types of Repairs* ***API RP 652 - Section 11 - Safety*** *Tank Entry, Manufacturer's Material Safety Data Sheets*
1500 – 1515	*Break*
1515 - 1645	***API RP 571 - Section 1 – Scope*** ***API RP 571 - Section 4 – General Damage Mechanisms*** *Brittle Fracture, Mechanical Fatigue, Atmospheric Corrosion, Corrosion Under Insulation (CUI), Microbiological Induced Corrosion (MIC), Soil Corrosion, Caustic Corrosion, Chloride Stress Corrosion Cracking (Cl SCC), Caustic Stress Corrosion Cracking (Caustic Embrittlement)* ***API RP 571 - Section 5 – Refining Industry Damage Mechanisms***
1645 – 1700	***Distribute Homework & Recap***
1700	*End of Day Three*

Day 5

0730 - 0800	***Review of Day 4 & Homework Answers***
0800 – 1000	***API RP 576 – Section 4.3.2 – Weight-loaded Pressure-/Vacuum-relief Valve*** ***API RP 576 – Section 6.6 – Inspection, Testing, Maintenance & Setting of Weight–loaded Pressure and/or Vacuum Vents on Tanks*** ***API RP 577 - Section 1 - Scope*** ***API RP 577 - Section 3 - Definitions*** ***API RP 577 - Section 4 – Welding Inspection*** *Tasks Prior to, During and Upon Completion of Welding Operations; Non-conformances and Defects; NDE Examiner Certification; Safety Precautions* ***API RP 577 - Section 5 – Welding Processes*** *Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), Gas Metal Arc Welding (GMAW), Flux Cored Arc Welding (FCAW), Submerged Arc Welding (SAW), Stud Arc Welding (SW)*
1000 – 1015	*Break*
1015 – 1230	***API RP 577 - Section 11 – Refinery and Petrochemical Plant Welding Issues*** ***API RP 577 – Appendix A – Terminology and Symbols*** *Weld Joint Types, Weld Symbols, Weld Joint Nomenclature, Electrode Identification* ***ASME Section V - Nondestructive Test Methods*** *Ultrasonic Thickness Testing, Liquid Penetrant Testing, Magnetic Particle Testing, Radiographic Film Interpretation*

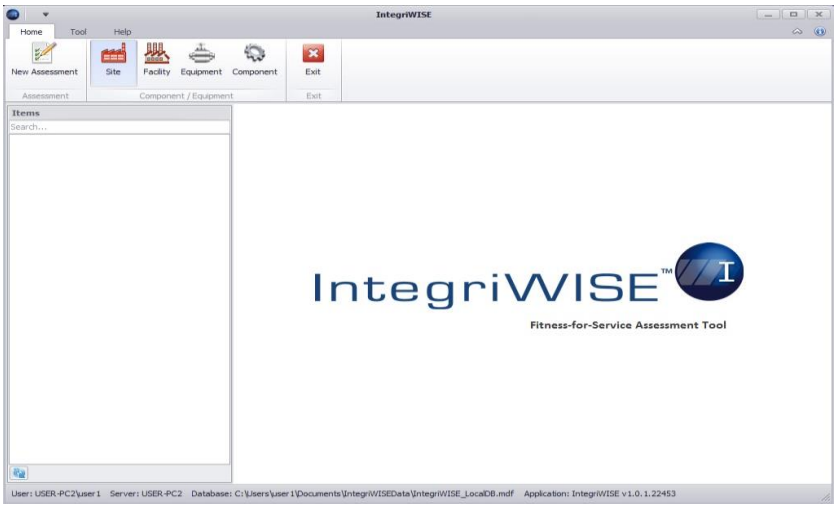
1230 – 1330	*Lunch*
1330 – 1530	***ASME Section IX - WPS and PQR Requirements Review Procedure Exercise***
1530 – 1545	*Break*
1545 – 1615	***ASME Section IX - Welder Certification***
1615 - 1630	***Course Conclusion***
1630 – 1645	***POST-TEST***
1645 – 1700	*Presentation of Course Certificates*
1700	*End of Course*

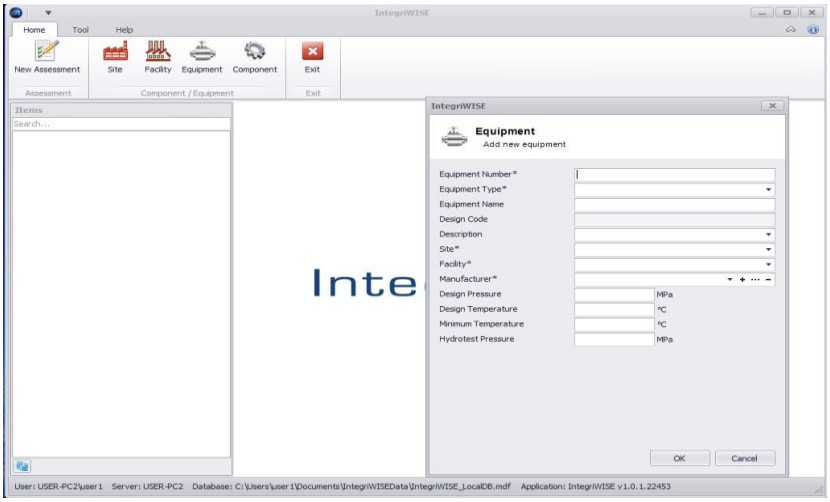
MOCK Exam

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
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