



**COURSE OVERVIEW FE0710**  
**API Tank Design, Fabrication and Inspection**  
*(API Exam Preparation Training)*

**Course Title**

API Tank Design, Fabrication and Inspection  
*(API Exam Preparation Training)*



**Course Date/Venue**

Session 1: June 05-09, 2026/Pierre Lotti Meeting Room, Movenpick Hotel Istanbul Golden Horn, Istanbul, Turkey

Session 2: October 11-15, 2026/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

**Exam Window/Venue**

TBA/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

**Course Reference**

FE0710



**Course Duration/Credits**

Five days (40 hours)/4.0 CEUs/40 PDHs

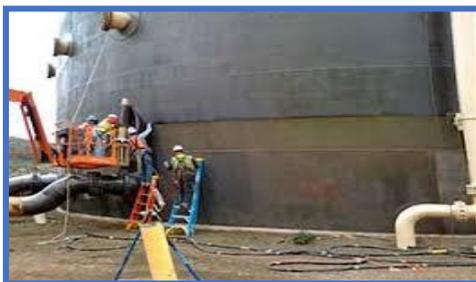
**Course Description**



***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

**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 <u>must</u> 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 <u>must</u> 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 <u>must</u> be in supervision or performance of inspection activities as described in API 653

**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**.





**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.

**Training Fee**

Dubai	<b>US\$ 5,500</b> per Delegate + <b>VAT</b> . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Istanbul	<b>US\$ 6,000</b> per Delegate + <b>VAT</b> . This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

**Exam Fee**

**US\$ 1,500** per Delegate + **VAT**.

**Required Codes and Standards**

Listed below are the effective editions of the publications required for the next API-563, Aboveground Storage Tank Inspector Examination:-

- ◆ **API Recommended Practice 571, *Damage Mechanisms Affecting Fixed Equipment in the Refining Industry* 3<sup>rd</sup> 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)
- 3.19 – Concentration Cell Corrosion
- 3.22 – Corrosion Under Insulation (CUI)
- 3.28 – Ethanol Stress Corrosion Cracking
- 3.45 – Microbiologically Influenced Corrosion (MIC)
- 3.57 – Soil Corrosion
- 3.62 – Sulfuric Acid Corrosion

- ◆ **API Recommended Practice 575, *Inspection Practices for Atmospheric and Low-Pressure Storage Tanks*, 5<sup>th</sup> Edition, September 2024**
- ◆ **API Recommended Practice 576, *Inspection of Pressure-Relieving Devices*, 5<sup>th</sup> Edition, September 2024 (Sections 4.3.2 and 6.7 only)**





- ◆ **API Recommended Practice 577 – Welding Processes, Inspection and Metallurgy, 3<sup>rd</sup> Edition, October 2020**
- ◆ **API Standard 650, Welded Tanks for Oil Storage, 13<sup>th</sup> Edition, March 2020 with Errata 1 (January 2021)**
- ◆ **API Recommended Practice 651, Cathodic Protection of Aboveground Petroleum Storage Tanks, 5<sup>th</sup> Edition, August 2024**
- ◆ **API Recommended Practice 652, Lining of Aboveground Petroleum Storage Tank Bottoms, 5<sup>th</sup> Edition, May 2020**
- ◆ **API Standard 653, Tank Inspection, Repair, Alteration, and Reconstruction, 5<sup>th</sup> Edition, November 2014, Addendum 1 (April 2018), Addendum 2 (May 2020), Addendum 3 (November 2023), Errata 1 (March 2020) and Errata 2 (February 2025)**
- ◆ **American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, 2023 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)*

**API Certificate(s)**

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

\* Haward Technology \* CEUs \* Haward Technology \* CEUs \* Haward Technology \* CEUs \* Haward Technology \*



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



## CEU Official Transcript of Records

**TOR Issuance Date:** 14-Nov-22  
**HTME No.** 74852  
**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**

**TRUE COPY**



**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 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.

-  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.

**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. Danny Gul (PE)**, is a **Professional Mechanical Engineer (NCEES, PE)**, **Welding Engineer (IWE)**, **Authorized Inspector API 510 & API 570 & API 571, API 580, API 653, NDT RT/UT Level II EN ISO 9712 with Pressure Equipment Directive (PED) 2014/68/EU Authorized Inspector/Consultant/Trainer** with extensive years of experience within the **API 653** (Tank Inspection, Repair, Alteration, and Reconstruction), **API 650** (Welded Tanks for Oil Storage), **API RP 575** (Inspection Practices for Atmospheric and Low Pressure), **API 580** (Risk Based Inspection), **API 581** RBI Methodology, **API 571** (Corrosion and Materials), **API 579** (FFS, Fitness for Service), **(API 510)**, Pressure Vessel Inspection Code: In-Service Inspection, Rating, Repair, and Alteration **(API 570)** Piping Inspection Code: In-service Inspection, Rating, Repair, and Alteration of Piping, **(API 574)** Inspection Practices for Piping System Components **(API 576)** Inspection of Pressure-relieving Devices, **API RP 572** - Inspection of Pressure Vessels, **(API 577)** Welding Processes, Inspection, and Metallurgy **(ASME)**, Boiler and Pressure Vessel Code; **Section V**, Nondestructive Examination **Section IX**, Welding, Brazing and Fusing, **ASME Section VIII**, Rules for Construction of Pressure Vessels, **Division 1 and Division 2, Section II** Materials, **(ASME) PCC-2**, Repair of Pressure Equipment and Piping, API Recommended Practice, Design and Construction of Large, Welded, Low-Pressure Storage Tanks **(API 620)**, Std **1104** Welding of Pipelines and Related Facilities, **RP 1169** Pipeline Construction Inspection, **ASME PCC-1** Pressure Boundary Bolted Flange Joint Assembly, **ASME PCC-3** Inspection Planning Using Risk-Based Methods, **ASME B31.3**, Process Piping, **ASME B31.4** Pipeline Transportation Systems for Liquids and Slurries, **ASME B31.8** Gas Transmission and Distribution Piping Systems.

During his career Life, Mr. Gul has gained his practical and field experience through his various significant positions and dedication as the **Professional Mechanical Engineer, International Welding Engineer (IWE), Inspection Specialist, API 653 Project Control Coordinator, Technical Instructor/Trainer (API ASME), Nuclear Material & Equipment Inspector, QA/QC Head and Expert, API 510 & API 570 & API 571, API 580, API 653, EN ISO 9712 UT Level II and RT Level II** complies with **Pressure Equipment Directive (PED) 2014/68/EU, Authorized Inspector, Consultant/Trainer** for numerous international companies like the Schlumberger, Assystem and TUV Nord.

Mr. Gul has a **Bachelor's degree in Mechanical Engineering** from the **Istanbul Technical University, Turkey**. Further, he is a **Certified PE** from NCEES, a Welding Engineer from **International Welding Engineer (IWE)**, a **Certified Instructor/Trainer**, a Certified Aboveground Storage Tank Inspector **(API 653)**, a Certified Risk Based Inspector **(API 580)**, a Certified Corrosion & Materials Inspector **(API 571)**, a **Certified Pressure Vessel Inspector (API 510)**, a Certified Piping Inspector **(API 570)**, and holds a **Level 2 Certificate in Radiographic Testing (RT) and Ultrasonic Testing (UT)** and a **Certified Internal Verifier/Trainer/Assessor** by the **Institute of Leadership & Management (ILM)**. He has further delivered numerous trainings, courses, seminars, conferences & 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**

0730 – 0800	<i>Registration &amp; Coffee</i>
0800 – 0815	<i>Welcome &amp; Introduction</i>
0815 – 0830	<b>PRE-TEST</b>
0830 – 0900	<b>Introduction</b>
0900 – 0930	<b>Students Take Initial Math Quiz</b>
0930 – 1000	<b>Review Math Quiz Answers</b>
1000 – 1015	<i>Break</i>
1015 – 1045	<b>Overview of Course Outline</b>
1045 – 1230	<b>Review of API 653 Body of Knowledge</b>
1230 – 1330	<i>Lunch</i>
1330 – 1445	<b>API 653 - Section 1 – Scope:</b> <i>Introduction, Compliance with this Standard, Jurisdiction, Safe Working Practices</i> <b>API 653 - Section 2 – Referenced Publications</b> <b>API 653 - Section 3 – Definitions</b>
1445 – 1500	<i>Break</i>
1500 – 1600	<b>API 653 - Section 4 - Suitability for Service:</b> <i>General, Tank Roof Evaluation, Tank Shell Evaluation, Tank Bottom Evaluation, Tank Foundation Evaluation</i>
1600 – 1645	<b>API 653 - Section 5 - Brittle Fracture Considerations:</b> <i>General, Basic Considerations, Assessment Procedure</i>
1645 – 1700	<b>Distribute Homework &amp; Recap</b>
1700	<i>End of Day One</i>

**Day 2**

0730 – 0830	<b>Review of Day 1 &amp; Homework Answers</b>
0830 – 1000	<b>API 653 - Section 6 - Inspection</b> <i>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</i> <b>API 653 - Section 7 - Materials</b> <i>General, New Materials, Original Materials for Reconstructed Tanks, Welding Consumables</i> <b>API 653 - Section 8 - Design Considerations for Reconstructed Tanks</b> <i>General, New Weld Joints, Existing Weld Joints, Shell Design, Shell Penetrations, Wind Girders and Shell Stability, Roofs, Seismic Design</i>
1000 – 1015	<i>Break</i>
1015 – 1130	<b>API 653 - Section 9 - Tank Repair &amp; Alteration</b> <i>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</i>



1130 - 1230	<p><b>API 653 - Section 10 - Dismantling and Reconstruction</b>  <i>General, Cleaning and Gas Freeing, Dismantling Methods, Reconstructions, Dimensional Tolerances</i></p> <p><b>API 653 - Section 11 - Welding</b>  <i>Welding Qualifications, Identification and Records</i></p> <p><b>API 653 - Section 12 - Examination and Testing</b>  <i>Nondestructive Examination, Radiographs, Hydrostatic Testing, Leak Tests, Measured Settlement During Hydrostatic Testing</i></p> <p><b>API 653 - Section 13 - Marking and Recordkeeping</b>  <i>Nameplates, Recordkeeping, Certification</i></p> <p><b>API 653 - Appendices A - G</b></p>
1230 - 1330	Lunch
1330 - 1400	Administer API 653 Section Quiz
1400 - 1500	<p><b>API 650 - Section 1 - Scope</b>  <i>General, Limitations, Compliance, Referenced Publications</i></p> <p><b>API 650 - Section 2 - Materials</b>  <i>General, Plates, Welding Electrodes</i></p>
1500 - 1515	Break
1515 - 1645	<p><b>API 650 - Section 3 - Design</b>  <i>Joints, Bottom Plates, Annular Bottom Plates, Shell Design, Shell Openings, Shell Attachments and Tank Appurtenances, Roofs, Wind Load on Tanks (Overturning Stability)</i></p> <p><b>API 650 - Section 4 - Fabrication</b></p> <p><b>API 650 - Section 5 - Erection</b>  <i>General, Details of Welding, Inspection, Testing and Repairs, Repairs to Welds, Dimensional Tolerances</i></p>
1645 - 1700	<b>Distribute Homework &amp; Recap</b>
1700	End of Day Two

**Day 3**

0730 - 0800	<b>Review of Day 2 &amp; Homework Answers</b>
0800 - 0945	<p><b>API 650 - Section 6 - Methods of Inspecting Joints</b>  <i>Radiographic Method, Magnetic Particle Examination, Ultrasonic Examination, Liquid Penetrant Examination, Visual Examination</i></p> <p><b>API 650 - Section 7 - Welding Procedure &amp; Welder Qualifications</b>  <i>Definitions, Qualification of Welders</i></p> <p><b>API 650 - Section 8 - Marking</b>  <i>Nameplates, Division of Responsibility, Certification</i></p>
0945 - 1000	Break
1000 - 1130	<b>API 650 - Appendices B - S</b>
1130 - 1200	Administer API 650 Section Quiz
1200 - 1230	<b>Slide Show - "Don't Let this Happen to your Tank"</b>
1230 - 1330	Lunch
1330 - 1445	<p><b>Complete Slide Show - "Don't Let this Happen to your Tank"</b></p> <p><b>API RP 575 - Section 1 - Scope</b></p> <p><b>API RP 575 - Section 3 - Selected Nondestructive Examination (NDE) Methods</b>  <i>Ultrasonic-Thickness Measurement, Magnetic Flux Testing</i></p> <p><b>API RP 575 - Section 4 - Types of Storage Tanks</b>  <i>General, Storage Tanks with Linings and/or Cathodic Protection, Storage Tanks with Leak Detection Systems, Low-Pressure Storage Tanks</i></p>
1445 - 1500	Break





1500 – 1645	<p><b>API RP 575 - Section 5 - Reasons for Inspection and Causes of Deterioration</b> Reasons for Inspection, Corrosion of Steel Tanks</p> <p><b>API RP 575 - Section 6 - Frequency of Inspection</b></p> <p><b>API RP 575 - Section 7 - Methods of Inspection and Inspection Scheduling</b> External Inspection of In-Service Tanks, Foundation Inspection, Anchor Bolt Inspection, Grounding Connection Inspection, Thickness Measurements, Caustic Cracking, Tank Bottoms, Inspection Scheduling, Inspection Checklists</p> <p><b>API RP 651 - Section 1 - Scope</b></p> <p><b>API RP 651 - Section 3 - Definitions</b></p> <p><b>API RP 651 - Section 4 - Corrosion of Aboveground Steel Storage Tanks</b> Introduction, Corrosion Mechanisms</p> <p><b>API RP 651 - Section 5 - Determination of Need for Cathodic Protection</b></p>
1645 – 1700	<b>Distribute Homework &amp; Recap</b>
1700	End of Day Three

**Day 4**

0730 – 0800	<b>Review of Day 3 &amp; Homework Answers</b>
0800 – 0945	<p><b>API RP 651 - Section 6 - Methods of Cathodic Protection for Corrosion Control</b> Introduction, Galvanic Systems, Impressed Current Systems, Cathodic Protection Rectifiers</p> <p><b>API RP 651 - Section 7 - Design of Cathodic Protection Systems</b> Barriers to Cathodic Protection, Tank Bottom Replacement, Impervious Membrane Lining, Effects of Impermeable Membrane Secondary Containment Systems</p> <p><b>API RP 651 - Section 8 - Criteria for Cathodic Protection</b></p> <p><b>API RP 651 - Section 9 - Installation of Cathodic Protection Systems</b> Introduction, Galvanic Anode Systems, Impressed Current Systems</p> <p><b>API RP 651 - Section 10 - Interference Currents</b></p> <p><b>API RP 651 - Section 11 - Operation and Maintenance of Cathodic Protection Systems</b></p>
0945 – 1000	Break
1000 – 1230	<p><b>API RP 652 - Section 1 - Introduction</b></p> <p><b>API RP 652 - Section 3 - Definitions</b></p> <p><b>API RP 652 - Section 4 - Corrosion Mechanisms</b> Chemical Corrosion, Concentration Cell Corrosion, Corrosion Caused by Sulfate-Reducing Bacteria, Erosion-Corrosion in Water Treatment</p> <p><b>API RP 652 - Section 5 - Determination of the Need for Tank Bottom Lining</b> General, Design Considerations and Tank Internals, Tank History, Environmental Considerations, Flexibility for Service Change</p>
1230 - 1330	Lunch
1330 - 1500	<p><b>API RP 652 - Section 6 - Tank Bottomlining Selection</b> General, Thin-Film Tank Bottom Linings, Thick-Film Tank Bottom Linings</p> <p><b>API RP 652 - Section 7 - Surface Preparation</b> General, Precleaning</p> <p><b>API RP 652 - Section 9 - Inspection</b></p> <p><b>API RP 652 - Section 10 - Repair of Tank Bottom Linings</b> General, Types of Repairs</p> <p><b>API RP 652 - Section 11 - Safety</b> Tank Entry, Manufacturer's Material Safety Data Sheets</p>
1500 – 1515	Break





1515 - 1645	<b>API RP 571 - Section 1 - Scope</b> <b>API RP 571 - Section 4 - General Damage Mechanisms</b> <i>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)</i> <b>API RP 571 - Section 5 - Refining Industry Damage Mechanisms</b>
1645 - 1700	<b>Distribute Homework &amp; Recap</b>
1700	<i>End of Day Three</i>

**Day 5**

0730 - 0800	<b>Review of Day 4 &amp; Homework Answers</b>
0800 - 1000	<b>API RP 576 - Section 4.3.2 - Weight-loaded Pressure/Vacuum-relief Valve</b> <b>API RP 576 - Section 6.6 - Inspection, Testing, Maintenance &amp; Setting of Weight-loaded Pressure and/or Vacuum Vents on Tanks</b> <b>API RP 577 - Section 1 - Scope</b> <b>API RP 577 - Section 3 - Definitions</b> <b>API RP 577 - Section 4 - Welding Inspection</b> <i>Tasks Prior to, During and Upon Completion of Welding Operations; Non-conformances and Defects; NDE Examiner Certification; Safety Precautions</i> <b>API RP 577 - Section 5 - Welding Processes</b> <i>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)</i>
1000 - 1015	<i>Break</i>
1015 - 1230	<b>API RP 577 - Section 11 - Refinery and Petrochemical Plant Welding Issues</b> <b>API RP 577 - Appendix A - Terminology and Symbols</b> <i>Weld Joint Types, Weld Symbols, Weld Joint Nomenclature, Electrode Identification</i> <b>ASME Section V - Nondestructive Test Methods</b> <i>Ultrasonic Thickness Testing, Liquid Penetrant Testing, Magnetic Particle Testing, Radiographic Film Interpretation</i>
1230 - 1330	<i>Lunch</i>
1330 - 1530	<b>ASME Section IX - WPS and PQR Requirements</b> <b>Review Procedure Exercise</b>
1530 - 1545	<i>Break</i>
1545 - 1615	<b>ASME Section IX - Welder Certification</b>
1615 - 1630	<b>Course Conclusion</b>
1630 - 1645	<b>POST-TEST</b>
1645 - 1700	<i>Presentation of Course Certificates</i>
1700	<i>End of Course</i>

**MOCK Exam**

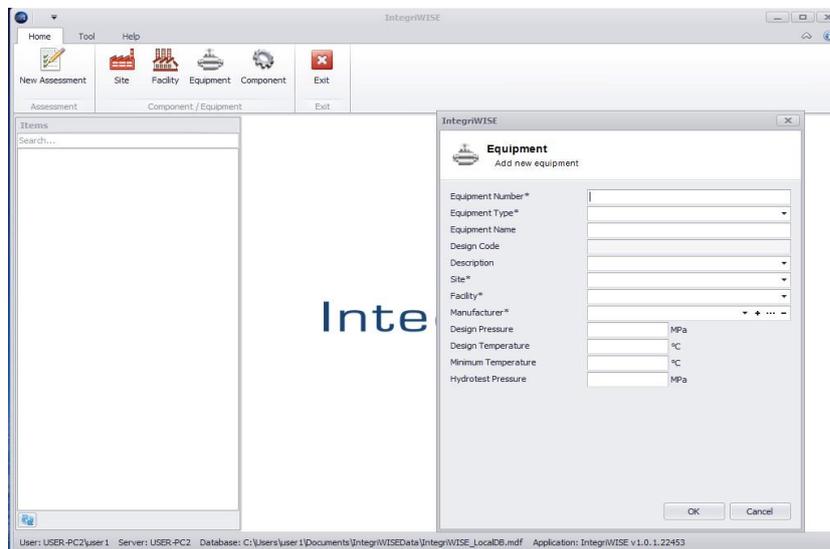
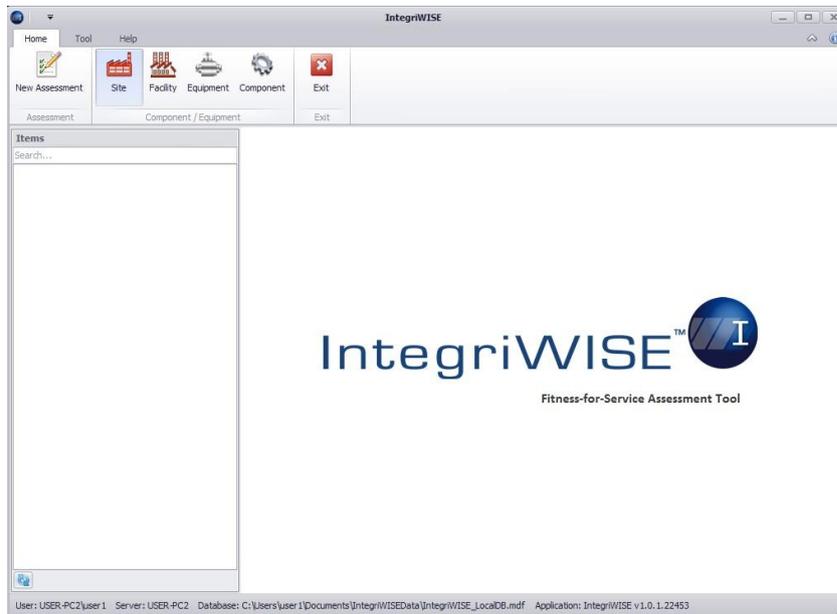
Upon the completion of the course, participants have to sit for a MOCK Examination similar to the exam of the Certification Body through Haward's Portal. Each participant will be given a username and password to log in Haward's Portal for the MOCK Exam during the 60 days following the course completion. Each participant has only one trial for the MOCK exam within this 60-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™**



**Course Coordinator**

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