

#### <u>COURSE OVERVIEW FE0710</u> <u>API 653: Aboveground Storage Tank Inspector</u> (API Exam Preparation Training)

### Course Title

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

#### Course Date/Venue

Session 1: February 16-20, 2025/Al Khobar Meeting Room, Hilton Garden Inn, Al Khobar, KSA

Session 2: October 12-16, 2025/Al Khobar Meeting Room, Hilton Garden Inn, Al Khobar, KSA

#### Exam Window/Venue

Session 1: July 11 – August 01, 2025 Session 2: TBA 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

# Exam Registration Closing Date

Session 1: May 02, 2025 Session 2: TBA

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

Course Reference

#### 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 dismantling reconstruction, alteration. and welding. examination and testing, marking and recordkeeping; and the scope, materials, design, fabrication, erection, methods of inspecting joints, welding procedure, welder qualifications and marking.



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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



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### **Exclusive Smart Training Kit - H-STK®**



Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK**<sup>®</sup>). The **H-STK**<sup>®</sup> 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		Supervision or performance of inspection
3+ years of military service in a technical role	1 year	activities as described in API 653
(Dishonorable discharge disqualifies credit)		
2-year degree or certificate in engineering or technology		
or		Design, construction, repair, operation, or inspection of aboveground storage tanks, of
2 years of military service in a technical role	2 years	which one year <u>must</u> be in supervision or performance of inspection activities as described in API 653
(Dishonorable discharge disqualifies credit)		
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
		Design, construction, repair, operation, or inspection of aboveground storage tanks, of
No formal education	5 or more years	which one year <u>must</u> be in supervision or performance of inspection activities as described in API 653



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#### **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 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)
- 3.17 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, 4<sup>th</sup> Edition, July 2020
- API Recommended Practice 576, Inspection of Pressure-Relieving Devices, 4<sup>th</sup> Edition, April 2017 (Sections 4.3.2 and 6.6 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, 4<sup>th</sup> Edition, September 2014
- 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), 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.



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## API Certificate(s)

BAC

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

A	API INDIVIDUAL ERTIFICATION
C	ERTIFICATION
P	ROGRAMS 🗇
	ifies that
S	ALEM GHANEM
HAS	S MET THE ESTABLISHED AND PUBLISHED REQUIREMENTS FOR API CERTIFICATION AS AN
API	1 653 ABOVEGROUND STORAGE TANK INSPECTOR
IN A	ACCORDANCE WITH THE KNOWLEDGE DEFINED IN THE API Recommended Practice 653
	TIFICATION NUMBER 112567890
CERT	IFTCATION NOMBER 11230/870
CU	NIGHAL CERTIFICATION DATE February 28, 2021 URRENT CERTIFICATION DATE February 28, 2021 February 28, 2024
	Director, Individual Contification Programs
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(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)	CEI	Program Titlo	API 653. Aboveground Storage Tank Inspector (API Exam Preparation Training)	Total No. of CEU's Earned as of TOR Issuance Date		ben approval as an Australia Provide 1 1011 States on Home and Australia Just In easi 1011 States of Home and Australia Just In easi 1011 States of Home and Australia Just International and 1011 Annual Technology is authorized to define 1011 Annual Technology is authorized to define the states of the states of the states of the states authory that is statistic to the states authorized to a state of continue advance of the authorized to a state of continue advance of the advance of the state of continue advance of the advance of the state of continue advance of the advance of the state of the state of the state of the advance of the state of the state of the state of the advance of the state of the state of the state of the state of the advance of the state of the state of the state of the state of the advance of the state of the state of the state of the state of the advance of the state of the	Haward Technology is accredited by BAC We want of the first of the fi
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#### **Certificate Accreditations**

Certificates are accredited by the following international accreditation organizations: -

• **BAC** 

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-ofthe-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.



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#### 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** is a **Senior Inspection Engineer** with extensive years of experience within the **Oil & Gas**, **Petrochemical**, **Process** and **Power Industries**. His wide expertise lies extensively in the areas of **Risk Based** Inspection, **RBI** Methodology, **RBI** Assessment, Fitness-for-Service (**FFS**), **Tank** Inspection & Repair, **Tank** Calibration & Testing, Welded Tanks for Oil Storage (**API 650**), Atmospheric & Low Pressure Inspection (**API RP 575**), **Pressure Vessel** Inspection & Repair, Inspection & Repair, Inspection & Repair of Erection Activities, **Corrosion & Materials** 

Inspection, **Corrosion** Prevention, **Corrosion** Technology & Inspection, **Materials & Corrosion** Control, **Metallurgy & Corrosion** Engineering, **Material** Selection & Properties, **Welding** Inspection Technology, **Welding & Machining**, **Welding** Procedure Specifications & Qualifications, **Welding** Safety, **Fabrication & Site** Inspection, **Site Erection Quality Control**, **Welding & Non-Destructive Testing** (NDE), **Hydro & Pneumatic** Testing, Degradation Mechanism & Consequence Analysis, **Risk** Management & Reduction, **Risk** Analysis, **Risk** Determination & Assessment, **Equipment** Integrity & Reliability, Failure Mode & Effect Analysis (**FMEA**), **Reliability & Asset** Management, **Piping** System, Process Hazard Analysis (**PHA**), **Human Factor** Analysis, Hazard & Operability (**HAZOP**), Layer of Protection Analysis (**LOPA**), **QRA**, **SIL** Evaluation, **FTA**, **ETA** and **Safety & Environmental** Assessment.

During his Career Life, Mr. Gul has gained his practical and field experience through his various significant positions and dedication as the Chief QA QC, Incoming Material & Equipment Inspector, Equipment Control & Quality Control Specialist, Equipment Integrity Expert, Process Safety & Equipment Integrity Technical Expert, Acting Equipment Qualification Specialist and API 653/580/571 Authorized inspector/Consultant/Traner for numerous international companies like the Silverteknik, Assystem, American Petroleum Inspector, Alltechmep, TUV Nord and Szutest

Mr. Gul has a **Bachelor's** degree in **Mechanical Engineering** from the **Istanbul Technical University**, **Turkey**. Further, he is a **Certified Instructor/Trainer**, a **Certified API 653 Aboveground Storage Tank Inspector**, a **Certified API 580 Risk Based Inspector** and a **Certified API 571 Corrosion & Materials Inspector**. He has further delivered numerous trainings, courses, seminars, conferences & workshops 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\$ 7,000** per Delegate. This rate includes H-STK<sup>®</sup> (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day

#### <u>Exam Fee</u>

US\$ 1,410 per Delegate + VAT.



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<u>Course Program</u> 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	<b>API 653 - Section 4 - Suitability for Service:</b> General, Tank Roof Evaluation, Tank Shell Evaluation, Tank Bottom Evaluation, Tank Foundation Evaluation
1600 - 1645	<b>API 653 - Section 5 - Brittle Fracture Considerations:</b> 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
	API 653 - Section 6 - Inspection
0820 1000	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
0830 - 1000	
	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



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	API 653 - Section 10 - Dismantling and Reconstruction
1130 - 1230	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
	API 650 - Section 1 - Scope
1400 1500	General, Limitations, Compliance, Referenced Publications
1400 – 1500	API 650 - Section 2 - Materials
	General, Plates, Welding Electrodes
1500 - 1515	Break
	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
1515 – 1645	Stability)
1515 - 1645	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
	API 650 - Section 6 - Methods of Inspecting Joints
0800 - 0945	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
	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)
1330 - 1445	Methods
1550 - 1445	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



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	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			
1500 - 1645	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

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



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	API RP 571 - Section 1 - Scope
	API RP 571 - Section 4 - General Damage Mechanisms
	Brittle Fracture, Mechanical Fatigue, Atmospheric Corrosion, Corrosion Under
1515 - 1645	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
0000 1000	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
1000 1015	Welding (SAW), Stud Arc Welding (SW)
1000 - 1015	Break
	API RP 577 - Section 11 – Refinery and Petrochemical Plant Welding Issues
	API RP 577 – Appendix A – Terminology and Symbols
1015 1000	Weld Joint Types, Weld Symbols, Weld Joint Nomenclature, Electrode
1015 – 1230	Identification
	ASME Section V - Nondestructive Test Methods
	Ultrasonic Thickness Testing, Liquid Penetrant Testing, Magnetic Particle Testing,
1000 1000	Radiographic Film Interpretation
1230 - 1330	Lunch
1330 - 1530	ASME Section IX - WPS and PQR Requirements
1520 1545	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.



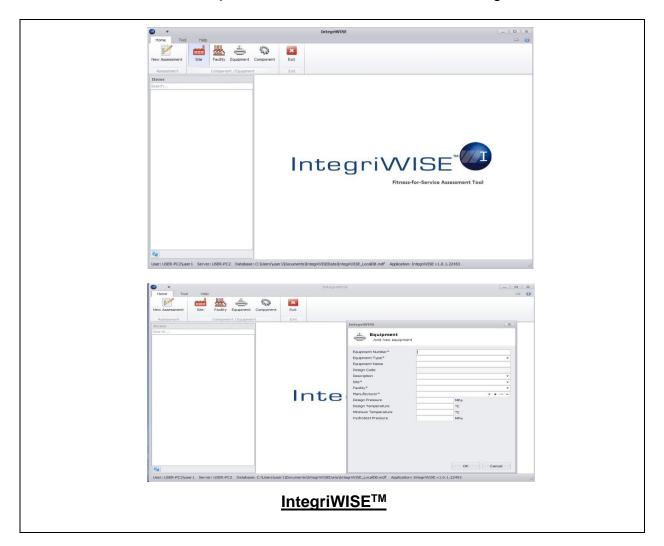
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#### Practical Sessions

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<sup>TM</sup>" simulator, "American Welding Society (AWS) Tool Kit" and "Structural Weld Replica Kit", suitable for classroom training.

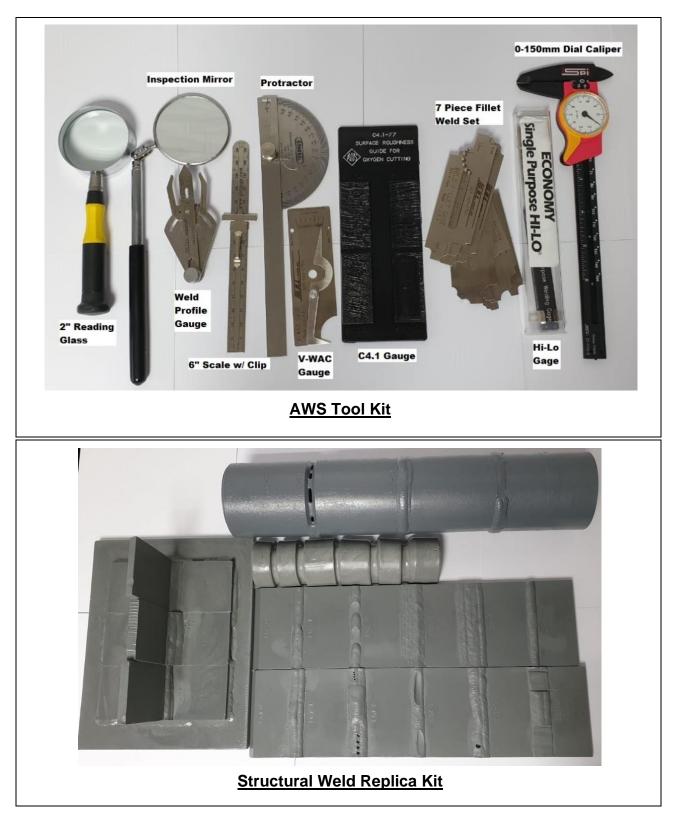




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