COURSE OVERVIEW FE0674

API 572: Inspection Practices for Pressure Vessels

Course Title

API 572: Inspection Practices for Pressure Vessels

Course Reference

FE0674

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Date/Venue

Session(s)	Date	Venue
1	January 21-25, 2024	Al Aziziya Hall, The Proud Hotel Al Khobar, Al Khobar, KSA
2	April 21-25, 2024	Club B Meeting Room, Ramada Plaza by Wyndham Istanbul City Center, Istanbul, Turkey
3	July 07-11, 2024	Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE
4	October 04-18, 2024	Ajman Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE

Course Description

This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

This recommended practice (RP) supplements API 510 by providing pressure vessel inspectors with information that can improve skills and increase basic knowledge of inspection practices. This RP describes inspection practices for the various types of pressure vessels (e.g. drums, heat exchangers, columns, reactors, air coolers, spheres) used in petroleum refineries and chemical plants. It also addresses vessel components, inspection planning processes, inspection intervals, methods of inspection and assessment, methods of repair, records and reports. API 510 has requirements and expectations for inspection of pressure vessels.

The course is designed to provide participants with a detailed and up-to-date overview of pressure vessels inspection practices in accordance with API 572. It covers the standard inspection terminology based on API RP 572 and API 510; the common methods of construction and materials, internal components and equipment, uses of pressure vessels, design and construction standards; the reasons for inspection; the inspection plans for specific types of damage; and reviewing and updating of inspection plans.

During this interactive course, participants will learn the frequency and extent of inspection; the safety precautions and preparatory work; the precautions regarding the use of breathing air; the inspection methods and limitations; the thickness measurements, external and internal inspection and special methods of detecting mechanical damage; the metallurgical changes and in-situ analysis of metals; the pressure and vacuum testing; the condition assessment and repair, derating and fitness-for-service, visual inspection, methods of repair and repair of supporting vessel equipment; and the inspection practices for towers.

Course Objectives

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

- Apply and gain an in-depth knowledge on pressure vessels inspection practices in accordance with API 572
- Define the standard inspection terminology based on API RP 572 and API 510
- Discuss the common methods of construction and materials, internal components and equipment, uses of pressure vessels and design and construction standards
- Explain the reasons for inspection and apply inspection plans for specific types of damage
- Review and update inspection plans and discuss risk-based inspection
- Identify the frequency and extent of inspection as well as carryout safety precautions and preparatory work
- Recognize precautions regarding the use of breathing air including inspection methods and limitations
- Apply thickness measurements, external and internal inspection and special methods of detecting mechanical damage
- Identify metallurgical changes and in-situ analysis of metals and perform pressure and vacuum testing
- Employ condition assessment and repair, derating and fitness-for-service, visual inspection, methods of repair and repair of supporting vessel equipment
- Carryout inspecting practices for towers

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 provides a wide understanding and deeper appreciation of pressure vessels inspection practices in accordance with API 572 for inspectors, QA/QC personnel, engineers, tradespeople and those who are working for plant owners, pressure equipment manufactures and repair organizations, engineering procurement and construction companies in oil and gas industries (oilfield, upgraders, refineries, etc.), chemical plants, petroleum refining, petrochemical plants, power plants, pulp and paper plants, fertilizer plants and others.

Course Fee

Al Khobar	**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.
Istanbul	**US$ 6,000** per Delegate + **VAT**. This rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Dubai	**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.
Abu Dhabi	**US$ 5,500** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Accommodation

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

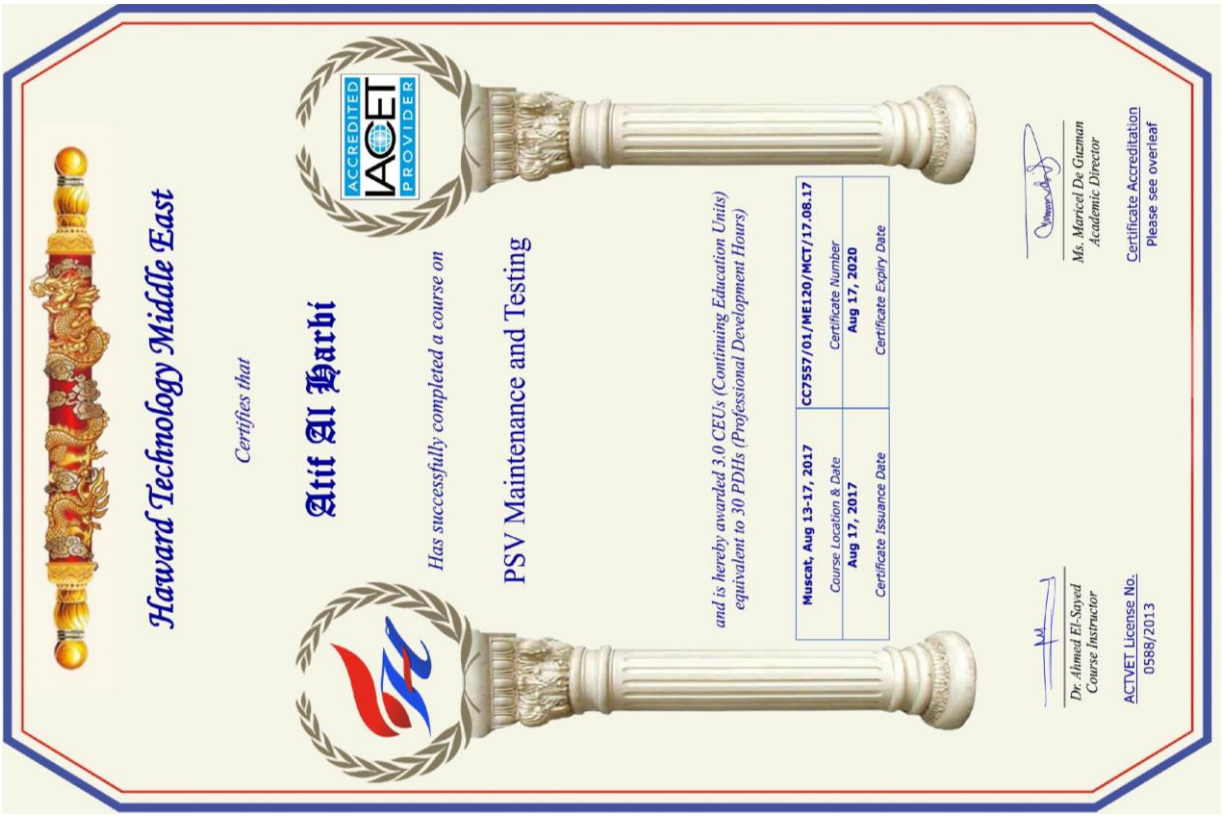
Course Certificate(s)

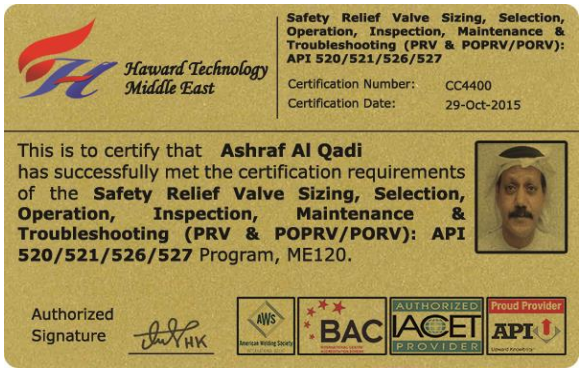
(1) Internationally recognized Wall Competency Certificates and Plastic Wallet Card Certificates will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Certificates are valid for 5 years.

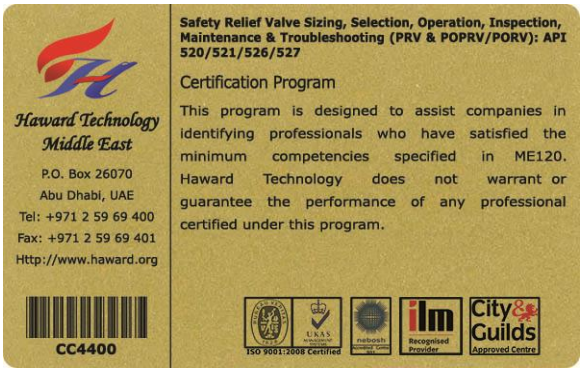
Recertification is FOC for a Lifetime.

Sample of Certificates

The following are samples of certificates that will be awarded to course participants:-







(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-Sep-17

HTME No. PAR213250

Participant Name: Taher Al Mazrouei

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
ME120	Safety Relief Valve Sizing, Selection, Operation, Inspection, Maintenance & Troubleshooting (PRV & POPRV/PORV): API 520/521/526/527	September 24-28, 2017	30	3.0

Total No. of CEU's Earned as of TOR Issuance Date **3.0**

TRUE COPY

Maricel De Guzman
Academic Director

Haward Technology is an Authorized Training Provider by the International Association for Continuing Education and Training (IACET), 11130 Sunrise Valley Drive, Suite 350 Reston, VA 20191, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2013 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 1-2013 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

Certificates are accredited by the following international accreditation organizations: -

- The International Accreditors for Continuing Education and Training (IACET - USA)

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

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

- British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Dr. Tony Dimitry, PhD, MSc, BSc, is a **Senior Corrosion & Metallurgical Engineer** with over **30 years** of industrial experience. His expertise covers **Corrosion** Prevention, **Cathodic Protection** Systems, **Corrosion Control**, **Corrosion Inhibition**, **Corrosion** Management in Process Operations, **Corrosion** Engineering, **Metallurgical** Failure Analysis & Prevention, **Fabrication & Repair**, **Corrosion** & Prevention of Failures, **Material** Selection, **Welding** Technology, **Welding Defects** Analysis, **Brazing/Soldering**, **Steel Manufacturing**, **Facility Integrity**, **Ladle Furnace Treatment**, **Ferro-Alloys Production**, **Tank Farm & Tank Terminal Safety**, Integrity Management, Fitness-for-Service (**FFS**), Process Plant Equipment, **Pressure Vessels**, **Piping & Storage Facilities**, Piping **Vibration** Analysis & Practical Engineering Solutions, Remaining Life Assessment & Repair of **Pressure Equipment & Piping**, **Pipeline** Operations & Maintenance, Gas Transportation Piping Code, **Maintenance** Management, **Reliability** Management, **Rotating Equipment**, **Static Equipment**, **Failure Analysis**, **FMEA** and **Preventive & Predictive** Maintenance. Currently, he is in charge of the **metallurgical failure analysis** and the usage of fracture mechanics for determining crack propagation in impellers of turbines.

During his career life, Dr. Dimitry held a significant positions such as the **Operations Engineers**, **Technical Trainer**, **HSE Contracts Engineer**, **Boilers Section Engineer**, **Senior Engineer**, **Trainee Mechanical Engineer**, **Engineer**, **Turbines Section Head**, **Professor**, **Lecturer/Instructor** and **Teaching Assistant** from various multinational companies like **Chloride Silent Power Ltd.**, **Technical University of Crete**, **National Nuclear Corporation**, **UMIST Aliveri Power Station** and **HFO Fired Power Station**.

Dr. Dimitry has a **PhD**, **Master's** and **Bachelor's** degree in **Mechanical Engineering** from the **Victory University of Manchester** and the **University of Newcastle**, **UK** respectively. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and an associate member of the American Society of Mechanical Engineers (**ASME**) and Institution of Mechanical Engineers (**IMechE**). He has further delivered various trainings, seminars, courses, workshops and conferences 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	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0900	***Introduction to Pressure Vessels*** *Introduction to Standard Inspection Terminology Based on API RP 572 & API 510 ● Common Methods of Construction & Materials ● Internal Components & Equipment ● Uses of Pressure Vessels ● Design & Construction Standards*
0900 – 0915	*Break*
0915 – 1100	***Reasons for Inspection*** *Safety*
1100 – 1230	***Reasons for Inspection (cont'd)*** *Reliability & Efficient Operation*
1230 – 1245	*Break*
1245 – 1420	***Reasons for Inspection (cont'd)*** *Regulatory Requirements*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day One*

Day 2

0730 – 0900	***Inspection Plans*** *Inspection for Specific Types of Damage ● Developing Inspection Plans*
0900 – 0915	*Break*
0915 – 1100	***Inspection Plans (cont'd)*** *Reviewing and Updating Inspection Plans*
1100 – 1215	***Inspection Plans (cont'd)*** *Brief Introduction to Risk-Based Inspection*
1215 – 1230	*Break*
1230 – 1420	***Frequency & Extent of Inspection*** *Opportunities for Inspection*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0900	***Safety Precautions & Preparatory Work*** *Safety Precautions ● Precautions Regarding the Use of Breathing Air ● Preparatory Work for Safety*
0900 – 0915	*Break*
0915 – 1100	***Inspection Methods & Limitations*** *Thickness Measurements ● External Inspection*
1100 – 1230	***Inspection Methods & Limitations (cont'd)*** *Internal Inspection ● Special Methods of Detecting Mechanical Damage*
1230 – 1245	*Break*
1245 – 1420	***Inspection Methods & Limitations (cont'd)*** *Metallurgical Changes and In-situ Analysis of Metals ● Pressure and Vacuum Testing*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0900	***Condition Assessment & Repair*** *Derating & Fitness-For-Service ● Visual Inspection*
0900 – 0915	*Break*
0915 – 1100	***Condition Assessment & Repair (cont'd)*** *Thickness Measurements ● Remaining Life*
1100 – 1230	***Condition Assessment & Repair (cont'd)*** *Methods of Repair ● Repair of Supporting Vessel Equipment*
1230 – 1245	*Break*
1245 – 1420	***Records & Reports Repair*** *Permanent Records, Field Notes, File Data*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1430	*Lunch & End of Day Four*

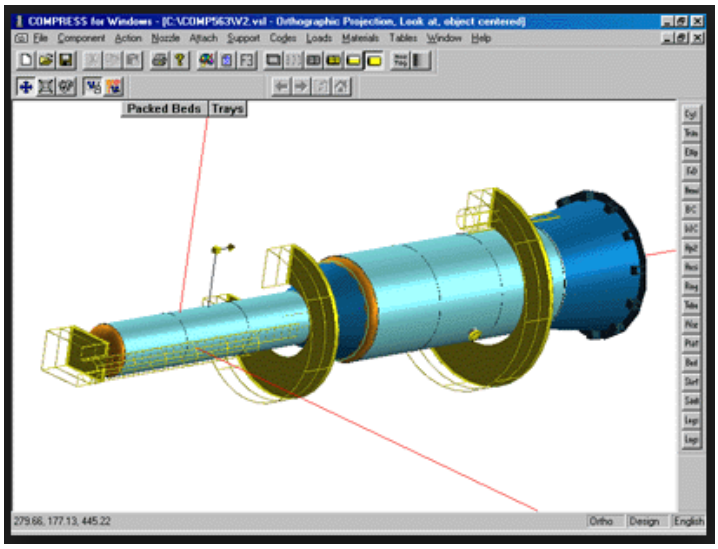
Day 5

0730 – 0900	***Inspecting Practices for Towers*** *Trayed & Packed Towers ● Safety ● External Inspection, Anchor Bolts, Skirt Fireproofing*
0900 – 0915	*Break*
0915 – 1045	***Inspecting Practices for Towers (cont'd)*** *Internal Inspection of Packed Towers ● Packing in Place and Removed ● Strip Lining and Cladding*
1045 – 1215	***Inspecting Practices for Towers (cont'd)*** *Internal Manways Installed and Removed ● Tray Valves: Fixed Trays Valves and Bubble Cap Trays ● Tray Decks and Hardware*

1215 – 1230	*Break*
1230 – 1300	***Inspecting Practices for Towers (cont'd)*** *Tower Attachments: Tray Support Rings, Support Clips, Downcomer Bars, Etc.* ● *Detecting Surface Corrosion in Towers*
1300 – 1315	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1315 – 1415	***COMPETENCY EXAM***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulator (Hands-on 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 various exercises using the state-of-the-art "COMPRESS" simulator.



COMPRESS Simulator

Course Coordinator

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