

COURSE OVERVIEW FE0935

**API 571 Damage Mechanisms Effecting Fixed Equip
in Refining and Petrochemical Industry**

Course Title

API 571 Damage Mechanisms Effecting Fixed Equip in Refining and Petrochemical Industry

Course Date/Venue

December 06-10, 2020/Dukhan Hall 2,
Concorde Hotel Doha, Doha, Qatar

Exam Window/Venue

As per API schedule/Abu Dhabi, Dubai,
Doha, Al-Khobar, Kuwait and Cairo.
Participant has the option to attend
at any of the above cities.



Exam Registration Closing Date

As per API schedule

Course Reference

FE0935

Course Duration/Credits

Five days/4.0 CEUs/40 PDHs



Course Description



This hands-on, highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.



A key first step in safely and reliably managing equipment is identifying and understanding the relevant damage mechanisms. Proper identification of damage mechanisms is important when implementing the API Inspection Codes (API 510, API 570, API 653) and in conducting risk based inspection per API 580 and API 581. When performing a fitness-for-service assessment using API 579, the damage mechanisms need to be understood and need to be considered when evaluating the remaining life.



This API 571 Supplemental Inspection Certification program is designed to train inspectors on damage mechanisms affecting fixed equipment in the refining and petrochemical industries. The objective of this program is to provide documented evidence of advanced (above the basic core API 510, 570 & 653 examinations) knowledge and expertise in the area of Corrosion and Materials based on the information contained in API RP 571.

An API Supplemental Inspection Certification is defined as “Documentation that indicates that minimum requirements have been met for additional qualification in the designated area of expertise”. This would include an **API issued letter, certificate, and a wallet card**. This certificate will add significant value to your professional credentials. It will show your employers and clients that you have obtained a high level of proficiency and understanding in this important field.

This supplemental inspection certification program is open to anyone who is currently certified to either API 510, 570 or 653. Included with the course is a pre-study guide and student classroom workbook. The student receives instruction regarding how to take the test, as well as insight into the intricacies of "real world" situations. Daily tests are designed to gauge students' proficiency and understanding of the material.

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 571 exam and have enough knowledge and skills to pass such exam in order to get the API 571 Inspector certificate
- Explain the scope, organization and use of API 571 and review the standards & other references related to it
- Recognize the general damage mechanisms applicable in all industries and identify their features & functions
- Review the damage mechanisms, corrosion basics and non-destructive examinations
- Determine the various mechanical and metallurgical failure mechanisms such as brittle fracture, stress rupture, steam blanketing, cracking, thermal shock, corrosion and fatigue
- Identify general damage mechanisms on uniform or localized loss thickness and explain the various types corrosion related to it
- Describe damage mechanisms on high temperature corrosion including oxidation, sulfidation, carburization, metal dusting and nitriding
- Familiarize the damage mechanisms on environment-assisted cracking
- Recognize the refining industry damage mechanisms used in uniform or localized loss in thickness phenomena
- Describe refining industry damage mechanisms for environment-assisted cracking and be able to identify the other types of mechanisms

Who Should Attend

Any inspector who is currently certified as API 510, 570 or 653 Inspector. Valid certificate (or certification number) in one of the above three programs shall be submitted to Haward Technology prior to registration in this course. Otherwise, you must have one of the combinations of education and experience listed in the grid below:

- The minimum years of experience required is based upon your level of education and must have been acquired within the last 10 years.

Education	Minimum Experience Required
BS or higher in engineering or technology	1 year of experience in the petrochemical industry
2-year degree or certificate in engineering or technology	2 year of experience in the petrochemical industry
High school diploma or equivalent	3 year of experience in the petrochemical industry
No Formal Education	5 or more years of experience in the petrochemical industry

Required Codes & Standards

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

- Exam questions for the API 571 Corrosion and Materials certification are derived from API RP 571 Damage Mechanisms Affecting Fixed Equipment in the Refining Industry.
- The body of knowledge for the API 571 exam consists of the entire **API RP 571**, 2nd edition (2011), with the exception of the following sections: 1.1, 3.1, 4.1 and 5.2.

API and ASME publications may be ordered through **Haward Publications** at +971-2-309-1714. Orders may also be faxed to +971-2-309-1716, or e-mail info@haward.cc. More information is available at www.haward.cc. When calling to order, please identify yourself as an exam candidate and/or API member.

Note: API and ASME publications are copyrighted material. Photocopies of API and ASME publications are not permitted. CD-ROM versions of the API documents are issued quarterly by Information Handling Services and are allowed. Be sure to check your CD-ROM against the editions noted on this sheet.

Training Methodology

This interactive training course includes the following training methodologies as a percentage of the total tuition hours: -

- 30% Lectures
- 20% Workshops & Work Presentations
- 20% Case Studies & Practical Exercises
- 30% Videos, Software & Simulators


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

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course.

Certificate Accreditations


Certificates are accredited by the following international accreditation organizations:-

-  USA International Association for Continuing Education and Training (IACET)

Haward Technology is an Authorized Training Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, Virginia 20171, USA. In obtaining this authority, 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 our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its 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 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.

-  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 Fee

US\$ 4,500 per Delegate. This fee is already discounted with **50% special discount** on the original course fees of US\$ 9,000 per Delegate. The rate includes Participants Pack (Folder, Manual, Hand-outs, etc.), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

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. Brett Heuchert is a **Certified API/AWS/ASNT Inspector & Senior Inspection Engineer** with extensive industrial experience in the **Oil & Gas, Refineries, Petrochemical** and **Power** industries. His expertise lies extensively in the areas of construction, installation fabrication, erection, inspection, maintenance, operation, rating, repair, alteration, reconstruction, pigging, integrity assessment, flaw evaluation, fitness-for-service (FFS) of **Piping, Piping Inspection, Pipelines, Damage Mechanisms, Mechanical & Metallurgical Failure Mechanisms, Pressure Vessels, Pressure & Leak Testing, Storage Tank, Welding Technology, Metallurgy, Corrosion, Mechanical Integrity Assessment, Vibration Analysis, Positive Material Identification (PMI), Hydro-Testing, Non Destructive Testing (NDT), Refractory Inspection**. He is an **international expert** in several **codes and standards** relating to pipelines, piping, pressure vessel, tanks, welding and corrosion such as **API, ASME, ASNT, AWS, CWB, CGSB, ABSA** and **NACE**. He is currently the **Senior Inspector** of CNRL Horizon Crude Facility wherein he is responsible for the inspection of all exchanger related components and supervise repairs as per API 510, CNRL specs and relevant codes.

Throughout his career life, Mr. Heuchert has provided significant contributions to the industries by acquiring **key positions** such as being the **Senior Inspector, Quality Control Manager, Engineering Manager, QA Supervisor, Plant Inspector, Technical Mentor, Quality Control Inspector, Quality Assurance Supervisor, Lead QC Inspector, QA Inspector, QA Integrity Inspector, QC Inspector, Foreman, Pipe Fitter, Welder, Technician** and **Apprentice** for international companies such as **CNRL Horizon Crude Facility, Capital Power Corporation, ADNOC Technical Institute, Nexen, Edmonton Exchanger, Conpac Construction Ltd., Shell Canada Ltd., Acuren Group Inc.-Irving Oil Refinery, Gas Inspection Inc., Stinger Welding Inc.-Husky Oil Refinery, PML Inspection Services Inc., Carber Testing Inc.** and **UA Local 488 PipeFitter & Welder Union**.

Mr. Heuchert is a **Certified Instructor/Trainer, Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management (ILM)**, **Certified Welding Inspector (AWS)**, **Certified Corrosion & Materials Professional (API 571)**, **Certified Pressure Vessel Inspector (API 510)**, **Certified Piping Inspector (API 570)**, **Certified Aboveground Storage Tank Inspector (API 653)**, **Certified Welding Inspection & Metallurgy Professional (API 577)**, **Certified Refractory Installation Quality Control (API 936)**, **Certified Level II Inspector** by the **Canadian Welding Bureau (CWB)** as well as a **Certified Level II Technician** in **Magnetic Particle, Liquid Penetrant** and **X-Ray Florescence** by the **Canadian General Standards Board (CGSB)**.

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: Sunday, 06th of December 2020

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	PRE-TEST
0830 – 0900	Introduction
0900 – 0930	Course Overview
0930 – 1000	Introduction to API 571
1000 – 1015	Break
1015 – 1045	Introduction to Damage Mechanisms
1045 – 1200	Corrosion Basics
1200 – 1300	Lunch
1300 – 1500	Non-Destructive Examination
1500 – 1515	Break
1515 – 1530	Scope
1530 – 1615	Definition of Terms & Abbreviations
1615 – 1630	Video Presentation
1630 – 1700	Distribute Homework & Recap
1700	End of Day One

Day 2: Monday, 07th of December 2020

0730 – 0830	Review of Day 1 & Homework Answers
0830 – 0900	General Damage Mechanisms – All Industries Mechanical & Metallurgical Failure Mechanisms
0900 – 0930	General Damage Mechanisms – All Industries (cont'd) Mechanical & Metallurgical Failure Mechanisms (cont'd)
0930 – 0945	Break
0945 – 1230	General Damage Mechanisms – All Industries (cont'd) Mechanical & Metallurgical Failure Mechanisms (cont'd)
1230 – 1330	Lunch
1330 – 1515	General Damage Mechanisms – All Industries (cont'd) Uniform or Localized Loss of Thickness
1515 – 1530	Break
1530 – 1630	General Damage Mechanisms – All Industries (cont'd) Uniform or Localized Loss of Thickness (cont'd)
1630 – 1700	Distribute Homework & Recap
1700	End of Day Two

Day 3: Tuesday, 08th of December 2020

0730 – 0830	Review of Day 2 & Homework Answers
0830 – 0930	General Damage Mechanisms – All Industries (cont'd) High Temperature Corrosion [400°F (204°C)]
0930 – 0945	Break
0945 – 1230	General Damage Mechanisms – All Industries (cont'd) High Temperature Corrosion [400°F (204°C)] (cont'd)
1230 – 1330	Lunch



1330 – 1515	General Damage Mechanisms – All Industries (cont'd) Environment – Assisted Cracking
1515 – 1530	Break
1530 – 1615	General Damage Mechanisms – All Industries (cont'd) Environment – Assisted Cracking (cont'd)
1615– 1630	Administer Quiz
1630 – 1700	Distribute Homework & Recap
1700	End of Day Three

Day 4: Wednesday, 09th of December 2020

0730 – 0830	Review of Day 3 & Homework Answers
0830 – 0930	Refining Industry Damage Mechanisms General
0930 – 0945	Break
0945 – 1230	Refining Industry Damage Mechanisms (cont'd) General (cont'd)
1230 – 1330	Lunch
1330 – 1515	Refining Industry Damage Mechanisms (cont'd) General (cont'd)
1515 – 1530	Break
1530 – 1630	Refining Industry Damage Mechanisms (cont'd) General (cont'd)
1630 – 1700	Distribute Homework & Recap
1700	End of Day Four

Day 5: Thursday, 10th of December 2020

0730 – 0830	Review of Day 4 & Homework Answers
0830 – 1000	Refining Industry Damage Mechanisms (cont'd) General (cont'd)
1000 – 1015	Break
1015 – 1200	Refining Industry Damage Mechanisms (cont'd) General (cont'd)
1200 – 1300	Lunch
1300 – 1415	Refining Industry Damage Mechanisms (cont'd) General (cont'd)
1415 – 1515	Practice Exam
1515 – 1530	Break
1530 – 1630	Practice Exam (cont'd)
1630 – 1645	Course Conclusion
1645 – 1700	Presentation of Course Certificates
1700	End of Course

Practical Sessions

This hands-on, highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

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