



The following optional training courses are being offered on Monday, January 28, 2019 at an additional charge:

8 Hour Courses

RBI – The details of API’s recommended practices (API 580 Third Edition and API 581 Third Edition) will be presented by recognized industry experts and leaders in the development and use of RBI methodology. API RP 580 introduces the principles and presents minimum general guidelines for developing a RBI program for fixed equipment and piping. API 581 provides quantitative RBI methods to establish an inspection program. Together, these two documents comprise a widely-recognized standard for industry-accepted RBI practices. Both of these recommended practices were updated, and new editions released in 2015. The course helps attendees understand and use RBI technology, develop a program, and learn which RBI procedures and working processes comply with industry standards. Additionally, changes between the Second and Third Editions will be highlighted and discussed. Instructor: Lynne Kaley, P.E., Principal, Trinity Bridge, LLC - Convention Center Ballroom A

FFS - This one-day course provides the inspector or engineer with an in-depth overview of the Fitness-For-Service (FFS) Assessment Methods in API 579-1/ASME FFS-1, 2016 Edition. The course includes a segment describing how the document is organized, insights on how to navigate through the document to apply FFS technology (i.e. either reactive or proactive), and a review of the three FFS assessment levels and what constitutes a “best-buy,” how do decide on which level to use based on the damage mechanism and NDE information provided. An overview of the Life Cycle Management process for fixed equipment is also provided explaining the interactions between the AMSE and API construction codes, API Inspection codes, and API 579-1/ASME FFS-1. All FFS assessment methods will be discussed with an emphasis on the volumetric damage assessment methods for general and local metal loss and pitting, HIC./SOHIC and hydrogen blisters, crack-like flaw assessment methods and remaining life estimation for high temperature components including an overview of MPC Project Omega. Attendees are encouraged to bring current problems to the class for discussion. The notes provided for the course will cover all Parts of API 579-1/ASME FFS-1, 2016 Edition, and are provided to the students for general information. Instructor: David Osage, ASME Fellow, PE, The Equity Engineering Group – Convention Center Galleon I

Design, Inspection and Assessment of Aboveground Storage Tanks

This session will cover: API 620, 650 and Series 12 Storage Tank Designs – What’s required in the main standards; Other Best Practices. In-Service Inspection of Storage Tanks – API 653 Inspections; Tank RBI



in API 653; Other Best Practices. Assessment of Existing Storage Tanks – API 653 Assessments; API 579 Techniques applicable to Tanks; Settlement/Foundation Assessments; Other Tank Mechanical Integrity Best Practices.

Instructor: Joel Andreani, P.E., Principal Engineer, The Equity Engineering Group, Inc. – Hilton Hotel Crystal Ballroom C (directly across from the Convention Center)

Recent Modifications to the API Standards for Design, Installation and Inspection of Pressure Relief Devices

This class will cover: API Pressure Relief Document Overview – API 520 Overview – Basic Terminology; PRV Design and Operation; Sizing and Selection; Installation Requirements. API 521 Overview – Design Philosophy; Overpressure Scenarios. API 576 Inspection of Pressure Relief Devices – RBI for PRDs per API 521; Inlet Pressure Drop-3% rule; Tube Rupture Scenario; What’s coming in API PRS Standards.

Instructor: Phil Henry, Principal Engineer, Equity Engineering – Convention Center Leeward Ballroom

Fired Heater Integrity Optimization Management

This course is designed for engineers, operators, maintenance, inspectors, safety, and training personnel working with or responsible for integrity issues associated with fired heaters. Fired Heater Integrity Optimization Management helps attendees learn the science of optimizing reliability and performance factors that affect tube integrity management of fired heaters and reformers. This course applies the essential theories, such as IOW, RBI, etc., provided in API Standards and Recommended Practices and practical approaches to fired heater monitoring to evaluate operating risk, damage mechanisms, failure analysis, safety, fitness-for-service and remaining life of critical components. Learn the necessary elements to inspect and maintain fired heaters using best practices that minimize risk, minimize the amount of shutdown work and maximize performance.

Instructor: Tim Hill, Process Engineering Optimization Manager, Quest Integrity USA, LLC – Convention Center Harbor Room

Guided Wave Testing of Pipeline, Pressure Vessel, and Tanks

API RP 583 included guided wave testing (GWT) as a screening method to identify potential areas of CUI damage on piping in 2014. After that, this guided wave testing (GWT) method has been much improved in spatial resolution and sensitivity. GWT method can examine accumulated pitting corrosion of less than 1 % of the pipe cross sectional area and detect 0.3 inch by 0.3inch and half-wall localized defect at 10-ft distance in any diameter of pipe, pressure vessels, and tanks. This course will present basic knowledge of guided wave testing, sensitivity of guided wave testing, spatial resolution, selection of



operating center frequency, inspection range, inspection report, high-temperature pipeline testing, CUI and PMI application, and field testing examples of piping, pressure vessels, and tanks. Reports generated with many field testings are presented for showing capabilities and limitations of GWT method. During the course, the GWT method will be demonstrated with sample pipe and plate structure having defects. It is designed for API inspectors, maintenance management personnel, operators responsible for piping, pressure vessels, and tank in oil or gas companies, refinery, chemical, and petrochemical plants. Participants will gain an understanding of ultrasonic guided wave testing method for inspecting piping, pressure vessel, and tank.

Instructor: Sang Kim, Ph.D., CEO, Guided Wave Analysis, LLC – Convention Center Clipper Room

Damage Mechanisms Affecting Equipment In the Refining and Petrochemical Industries -

This class will provide a general background on the material contained in API 571 (Damage Mechanisms Affecting Fixed Equipment in the Refining and Petrochemical Industries). Everyone in the refining industry today, including the refinery owner, refinery operator, mechanical engineer, metallurgist, and process engineer, is looking for ways to prevent or minimize the effects of corrosion. Corrosion control is paramount to the safe and productive operation of a facility. As we all know, a key first step in safety and reliability of our mechanical equipment is the identification and understanding of the relevant damage mechanisms. Proper identification of damage mechanisms is important when: Implementing the API Inspection Codes (510, 570 & 653), conducting risk-based inspection per API 580, and performing a fitness-for-service assessment using API 579. Damage mechanisms need to be understood and considered to determine corrosion rate, location (general or local) and opportunities for mitigation. We will start the day with basics of corrosion and work our way into the most common details of causing corrosion. Audience participation will be greatly encouraged. Those attending are welcome to bring Power Point slides of opportunities and have the class comment on them.

Instructors: Marc McConnell, Metallurgy & Fixed Equipment Engineering Coordinator, Pro-Surve Technical Services, LLC, Isaac Pabon, Materials Engineer, ExxonMobil, Deric Masten, Welding Engineer, Motiva, Tom Pickthall, Jr., Pipeline Specialist, EnhanceCo, Carlos Palacios, Ph.D., Upstream Specialist, CIMA-TQ, - Convention Center Galleon III Room

Hydroprocessing Inspector Training

The Hydroprocessing Inspector Training is designed to provide a more in depth understanding on the operations, the basic corrosion / damage mechanisms and inspection considerations specifically found in hydroprocessing units (hydrocrackers and hydrodesulfurization units). This training approach, focusing on the process unit, differs from the typical API 571 (Damage Mechanism) course by providing a wholistic view of unit operation and targeting the specific problems areas for inspection and process



monitoring. A fundamental understanding on the operation basics and process control with the resulting damage mechanisms provides a better foundation for establishing a comprehensive mechanical integrity program. This 8 hour training course will cover three key aspects of hydroprocessing as follows; Unit Operation – taught by a Corporate Process Engineering Lead (Scott McArthur – P66) covering the background on unit operation, process variables and control, including basic reactions and potentially corrosive byproduct produced in typical hydrotreating and hydroprocessing units; Damage Mechanisms and Inspection – taught by a Corrosion / Materials Engineer (Brian Jack – former Chief Engineer at P66) covering the different key damage mechanisms that can occur in hydroprocessing, including the typical locations of concern, process variable monitoring (Integrity Operating Windows) and inspection techniques
Instructors: Scott McArthur, P66 and Brian Jack – Convention Center Spinnaker Room

4 Hour Courses - 8:00 AM – 12:00 PM

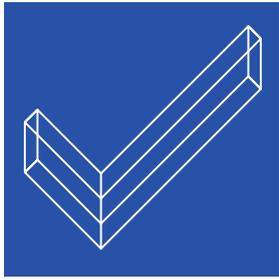
CCDs/API 970/API 584 - This training course will introduce the attendees to the concepts of Corrosion Control Documents (CCDs) and Integrity Operating Windows (IOWs). This course will review the recommendations and requirements within each API recommended practice for both topics, API 970 for CCDs and API 584 for IOWs, as well as the interaction between the two programs. Additionally, the course will cover how to implement a CCD/IOW program including: resources, team members, process information, inspection highlights, CML data, and among others. Finally, example CCDs and IOWs will be reviewed.

Instructors: Gerrit Buchheim, Refining Metallurgical and Corrosion Expert, Becht Engineering Co., Inc. and Matt Caserta, Mechanical Integrity and Inspection Expert, Becht Engineering Co., Inc. – Convention Center Yacht Room

Bolted Flange Joint Inspection Training

Hex Technology trains individuals on the design and importance of each individual part of the BFJA (academic training). This will cover: Introduction to ASME PCC-1; Introduction to “Appendix-O” of PCC-1 and Limiting Factors; Joint cleaning for inspection requirements; Inspection and mitigation for flange/nut contact region; Inspection for gasket seating surface finish; Inspection for gasket seating surface imperfections; Inspection for gasket seating surface flatness; For both raised face and RTJ; In-Service inspection criteria; Setting manual & “Powered Equipment” wrenches.

Instructor: Scott Hamilton, Founder and CEO, Hex Technology – Convention Center Schooner Room



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Characteristics of the High Performing Inspector

Most inspectors are on jobs that present significant challenges. Technical situations, relationships with other plant departments, and high workloads are just some of the common challenges facing today's inspectors. Sometimes, technically qualified inspectors, still underperform in their work assignments. Why? Often it is because of their limited abilities in important non-technical skills. This training session will help inspection personnel see a broad picture of the make-up of a High-Performing Inspector. Key focus in this training session will be the non-technical skills and character qualities that set apart the High Performing Inspectors. Throughout this session there will be plenty of "real-world" illustrations of individuals demonstrating the Key Points! Major points in the discussion include: Keep developing new talents – both technical and non-technical skills (writing, organizing, persuasive communication, directing others, etc.). Many inspectors run from important issues like corrosion mechanisms. The most successful will "run toward their fears"; Go the "Extra Mile" – do more than expected; Get excited about making others successful; Avoid organizational killers - no whining, no back stabbing, etc.

Instructor: Mark Smith, MST5-Training – Convention Center Galleon II Room

Introduction to Metallurgy for the Inspector or Reliability Equipment Engineer

This 4-hour course provides the inspector or fixed equipment/ reliability engineer with an introduction to basic concepts of metallurgy. The course will start with metal processing and forming, go through the various alloys of construction in refining and petrochemical plants, and touch on various aspects of through heat treating and welding. As certain metallurgical concepts are discussed, related damage mechanisms, inspection techniques, and reliability strategies will be covered.

Instructors: Jeremy Staats, P.E., Becht Engineering Co., Inc., Jeremy Nelson, P.E. Flint Hills Resources, Dave Moore, Becht Engineering Co., Inc. – Hilton Hotel Crystal Ballroom A – directly across from the Convention Center

4 Hour Courses – 1:00 PM – 5:00 PM

Bolted Flange Joint Assembly

The Bolted Flange Joint Assembly (BFJA) has several critical pieces that need to be inspected during assembly. Some of these items include: bolts, nuts, flange surfaces, gasket sealing surfaces, and setting of torque wrenches. In order to understand what to inspect, it is imperative to understand why those items are important to the overall BFJA.

Instructor: Scott Hamilton, Founder and CEO, Hex Technology – Convention Center Schooner Room



Overview of ASME PCC-2 through Case Studies

A four-hour overview of vessels, piping, and tank repair options addressed in PCC-2, through case studies. Each repair technique will include lessons learned, dos-and-don'ts, and similarities and differences in implementation among industries. The repair options are subdivided into welded repairs, mechanical repairs, and non-metallic wrap repairs. For each repair, the overview will provide a practical checklist of the design, implementation, NDE, and leak testing considerations.

Instructor: George Antaki, PE, Fellow ASME, Becht Engineering Company – Hilton Hotel Crystal Ballroom A Room – directly across from the Convention Center

The Inspector Writes – Technical Writing for Inspectors

This presentation will: Emphasize the importance of good writing skills for individuals in the pressure equipment discipline; Provide a brief overview of the importance and use of inspection narratives; Provide simple writing rules that are useful when performing technical writing, i.e. inspection narratives; Encourage listeners that technical writing skills are a learnable skill! It is not just for those with “natural abilities”!

Instructor: Mark Smith, MST5-Training – Hilton Hotel Crystal Ballroom B – directly across from the Convention Center