MERCURY

Inspection, Evaluation, & Repair of Process Plant Equipment & Connected Piping Conference

30 Sep - 11 Oct 2024
Madrid (Spain)

Istanbul - Turkey: +90 539 599 12 06
Amman - Jordan: +962 785 666 966
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Ref.: 8195_257518 **Date:** 30 Sep - 11 Oct 2024 **Location:** Madrid (Spain) **Fees:** 8500 **Euro**

Introduction:

Petroleum refineries, petrochemicals, and process plants feature extensively interconnected arrays of equipment and piping. These process plant equipment and piping inspection techniques are often exposed to hazardous and corrosive fluids and operate under varying temperatures and pressures.

To ensure plant integrity and reliable operation, the equipment and associated piping must be soundly designed and remain fit for purpose throughout their life spans. This process plant equipment and piping inspection techniques seminar explores the critical role that inspection, evaluation, and repair play in achieving these objectives.

Process plant equipment and connected piping systems are subjected to rigorous standards during the design and fabrication phases, often guided by stringent industry codes. Any deficiencies identified during fabrication or welding are rectified to comply with the acceptance criteria outlined in relevant codes.

Nevertheless, once commissioned, these equipment and piping systems degrade over time due to exposure to process fluids. Understanding the current condition of these assets and their rates of deterioration is crucial. Timely maintenance and repairs can mitigate failure risks. Central to this understanding is implementing effective inspection techniques in the oil and gas industry and thoroughly evaluating the gathered inspection data.

Nondestructive Testing NDT techniques are essential for these inspection activities. They facilitate the detection of flaws that could precipitate future failures, thereby offering insights into the pipeline's integrity and current safety margins. A comprehensive grasp of standard and advanced NDT tools amplifies the effectiveness of scheduled inspection activities.

Moreover, in a competitive landscape where plant operators strive for efficiency, reducing maintenance costs through minimized downtime is paramount. Practical inspection is instrumental in achieving such cost reductions while enhancing safety and productivity.

Targeted Groups:

- Process, Mechanical, and Chemical Engineers.
- Operation and Maintenance Engineers.
- Project Engineers.
- Supervisors and Managers.
- Technical Personnel are involved in plant inspection training.

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Conference Objectives:

Participants of this process plant equipment and piping inspection techniques conference will:

- Understand the damage and degradation mechanisms that affect process equipment and piping and progressively adversely affect their condition and fitness for continued service.
- Understand that practical inspection is the backbone of plant integrity and has a significant impact on EHS and the company's financial performance.
- Increase the awareness of industry codes and best practices related to inspection, repair, and alteration of process equipment and piping, including ASME BPVC and various API codes, standards, and recommended practices.
- Provide sound and concise coverage of fitness-for-service assessment methodologies and API/ASME FFS standards to enable decisions about running/repairing/replacing damaged equipment or piping.
- Cover the principal industry codes and practices for repairs and alterations to achieve business-focused repairs and lower maintenance costs.
- Provide methodologies for performing fitness-for-service assessments of damaged equipment/piping to make run/repair/replace decisions.

Targeted Competencies:

Target competencies of this process plant equipment and piping inspection techniques conference will:

- Essential and integrated knowledge about the in-service degradation and damage mechanisms that affect process equipment and piping systems
- Understand the significance of practical inspection in defining the condition of the equipment/piping.
- Understand the fundamentals and benefits of risk-based inspection and how to apply this methodology effectively.
- Better understand and apply the methods of fitness-for-service assessments to significantly reduce the probabilities of failure and downtime and help improve plant performance.
- Awareness of industry codes, standards, and best industry practices in plant integrity management through planning and conducting practical inspection, maintenance, and repairs to process equipment/piping

Flexible Piping Connections:

Flexible piping connections are crucial in the dynamic operational environment of oil and gas production facilities. This process plant equipment and piping inspection techniques conference segment covers selecting, inspecting, and maintaining flexible piping connections. It emphasizes understanding their characteristics, identifying potential failure modes, and employing oil and gas production optimization techniques to ensure their longevity and reliable performance.

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Conference Content:

Unit 1: Inspection of the Backbone of Plant Integrity:

- Significance of Inspection throughout the Life Cycle.
- Inspection - Why? What? Where? How? When?
- The objective function of inspection.
- Regulatory requirements.
- Impact on plant integrity, safety, reliability, and business performance.
- Inspection and the Construction Codes.
- Manufacturing, Fabrication, and Repair/Alteration Deficiencies.
- QA/QC requirements in fabrication and welding.
- ASME BPVC requirements - Examination vs. inspection.
- ASME Code Case 2235-3 for the use of Ultrasonic Examination instead of Radiography.
- Fraudulent/Substandard Materials in Code Construction.
- Degradation and Damage Mechanisms Affecting Pressure Equipment and Piping.
- Overview of API 571- Damage Mechanisms Affecting Fixed Equipment in the Refining Industry.
- Areas of Vulnerability in Petroleum Refineries.
- Injection points.
- Corrosion Under Insulation CUI.
- Soil-to-air interface.
- Integrity of structures and supports.
- In-service inspection - the big picture.
- Non-Intrusive Inspections.
- Shutdown inspections.
- Inspector qualification and competence.
- API inspector certification.
- API Body of Knowledge.

Unit 2: Inspection Strategies, Plans, Methods, and Techniques:

- Inspection Strategies and Systems.
- External and Internal Inspections - Limitations, Costs, and Benefits.
- Inspection plans and procedures.
- Statutory requirements.
- Risk-Based Inspection RBI.
- Fundamentals and benefits.
- Overview of API RP 580 - Risk-Based Inspection.
- Overview of API RP 581 - Risk-Based Inspection Technology.
- Nondestructive testing NDT.
- Highlights of Main NDT Methods and Their Application.
- Overview of ASME BPVC Section V - Nondestructive Examination.
- Advanced Inspection Techniques and Best Practices.
- Guided Wave Ultrasonic Long Range Inspection.
- Advanced Phased Array for Weld Inspection.
- On-line monitoring - Sensors typically used are strain gauges, thermocouples, displacement transducers, and pressure transducers.

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Unit 3: Inspection Codes Standards and Best Practices:

- Pressure vessel inspection - API 572, API 510.
- Fired Boilers and Heaters Inspection.
- API 573 - Inspection of Fired Boilers and Heaters.
- ABSA AB 507 - Guidelines for the Inspection of Installed Fired Heaters.
- FTIS -Furnace tube inspection system Quest TruTec.
- Inspection of Heat Exchanger, Condenser & Fin Fan Coolers Tubes
- Aboveground storage tank inspection.
- ANSI/API RP 575 - Guidelines and Methods for Inspection of Existing Atmospheric and Low-pressure Storage Tanks, Second Edition.
- STI SP001- Standard for Inspection of Aboveground Storage Tanks.
- API 653 - Tanks Inspection, Repair, Alteration, and Reconstruction.
- API 12R1, Setting, Maintenance, Inspection, Operation, and Repair of Tanks in Production Service.
- Piping and components inspection.
- API 574 - Inspection Practices for Piping System Components.
- API 570 - Piping Inspection Code: In-service Inspection, Repair, and Alteration of Piping Systems.
- Pressure-Relieving Devices - Code and Regulatory Requirements and Best Practices.
- API RP 576 - Inspection of Pressure-Relieving Devices.
- Pressure testing - Code requirements and best practices.
- Hydrostatic testing.
- Pneumatic testing.
- API Standard 936 - Refractory Installation Quality Control Guidelines - Inspection and Testing Monolithic Refractory Linings and Materials.
- API Inspector Certification.

Unit 4: Evaluation and Analysis of Inspection Data:

- Inspection data verification and evaluation.
- Data Completeness.
- Data quality.
- Data Management and Risk Assessment.
- Inspection Data Management System IDMS.
- Software System for Managing and Assessing Inspection Data.
- Reliable assessment of damages.
- Corrosion Rate Calculations.
- Remaining Life Calculations.
- Fitness-for-Service FFS Assessment and Remaining Life Determination.
- Fundamentals and Industry Practices.
- Overview of API Std 579-1/ASME FFS-1.
- Inspection, Maintenance and Repair IMR Plan.
- Appropriate mitigation activities.

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Unit 5: Repair and Alteration of Process Equipment and Piping:

- Repair codes, standards, and best practices - API 510, 570, and 653.
- API 578 Positive material identification PMI.
- Post-Construction Codes - Overview of ASME PCC-2.
- Repairs and Modifications.
- Temporary and Permanent Repairs.
- Welded Repairs - ASME BPVC IX.
- Mechanical Repairs.
- Specialized Repair Methods - Composites.
- Hot Tapping and Line Stop - Key Considerations, Practices, and Procedures.
- API 2201 - Safe Hot Tapping Practices in the Petroleum and Petrochemical Industries.
- Rerating.
- Assessing the Need for Rerating.
- Minimum Required Thickness Determination.
- MAWP Determination.
- Authorization and Registration.

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Registration form on the :
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