Inspection and Mechanical Integrity Essentials

Potential PDH: 24

Description:

Course Description: This comprehensive 3-day course, "Inspection and Mechanical Integrity for Inspectors and Engineers," offers 24 CPDs and is designed for inspectors and engineers working in refineries, petrochemical plants, renewable fuel facilities, or any site governed by OSHA 1910.119 PSM requirements. Geared towards teaching the skill sets required in owner/operator mechanical integrity departments, participants will gain expertise in inspection planning, NDE Methods, inspection data management and turnaround planning, ensuring they can effectively contribute to their facility's mechanical integrity success. The course also covers prioritizing inspection recommendations, special emphasis programs, and understanding codes, standards, and typical mechanical integrity program documents, providing a robust foundation of critical skills for the refining and petrochemical industry.

Outline:

- Inspection Planning
  - Analyzing NDE data
  - Selecting Inspection Locations based on damage mechanisms
  - Determining corrosion rates
  - Risk-Based Inspection
  - Equipment specific inspection plans
  - Contents of a quality inspection plan (and report)
- Important interactions with other departments at the refinery (Ops, Eng, Maint)
- Turnaround planning
  - Scope Definition
  - Pre-turnaround inspections to minimize discovery work
  - Recommending repairs (methods and extent)
  - Scheduling (and optimization of the schedule)
- Prioritizing inspection recommendations (and fitting them into the business plan)
- Data Management
  - IDMS systems
  - Analyzing and managing incoming NDE data
  - Helpful metrics/queries for your unit
- NDE Methods
- Special emphasis programs (CUI, deadleg, sulfidation, retro-PMI, HF Alky residual element, etc.)
- Codes, standards, and specifications

- MI program structure and typical procedures
- Career planning and training maps

Who Should Attend:

Owner/User Inspectors, fixed equipment engineers, or mechanical engineers who work at Refineries, petrochemical plants, renewable fuels facilities, or any facility subject to OSHA 1910.119 PSM requirements.

Subject Matter Expert (SME):

Mark Carte is a seasoned Non-Destructive Examination (NDE) practitioner with 45 years of experience in the petroleum, petrochemical, aerospace, military, and power generation industries. His expertise covers the entire spectrum of NDE, from design and fabrication to testing and procedure development. Mark has played a pivotal role in creating multidiscipline NDE approaches for detecting and quantifying damage mechanisms such as Wet H2S Damage, High-Temperature Hydrogen Attack, and Chloride Stress Corrosion Cracking. His specialized skills include developing unique NDE applications, such as inspecting Tube to Tube Sheet Welds, phased array UT scanner operations, and complex vessel weld inspections.

In addition to his consultancy work, Mark is a dedicated NDE trainer with ASNT Level II certifications in multiple disciplines, including UT, PT, MT, WFMT, and VT. He provides hands-on training to operating company employees and NDE service providers, emphasizing the practical capabilities of NDE techniques. Mark is also actively involved in industry organizations, serving as Vice Chair of the API Inspection and Mechanical Integrity Summit and contributing to various committees, including the API Subcommittee for Inspection and Mechanical Integrity and the Materials Technology Institute. Based in Houston, TX, Mark continues to influence the field through his training, industry involvement, and ongoing consultancy work.

Terry McLane is a seasoned professional with extensive expertise in inspection, mechanical integrity, and safety management, underscored by a range of industry-recognized certifications, including API-510 Pressure Vessel Inspector, API-570 Piping Inspector, API-580 Risk-Based Inspection Professional, and American Welding Society-Certified Welding Inspector. With a foundation built on a four-year apprenticeship through the Plumbers/Pipefitters Local 192 and advanced technical training in areas such as UOP Inspection and ASME Section IX Welding, Terry combines deep technical knowledge with practical, hands-on experience. His career includes key roles such as Chief Inspector at Phillips 66 and Inspection Superintendent at HollyFrontier Refining, where he managed complex inspection activities, developed inspection and welding procedures, critical safety protocols, and oversaw major turnaround projects.

Terry's contributions to the industry extend beyond his professional roles, having served as a voting

member of the API Subcommittee on Inspection, served as past Chair and current Vice Chair of API-578, Materials Verification, current Vice Chair of API-588 Source Inspection, and continues to participate in the API Individual Certification Program, where he help in developing industry standards and testing protocols. His dedication to education and safety is evident in his role as a course instructor at various industry summits, where he has taught on topics including welding metallurgy, positive material identification, and industrial firefighting. With a strong commitment to sharing his knowledge and experience, Terry's courses are designed to provide students with a comprehensive understanding of the technical and safety aspects of inspection and mechanical integrity, preparing them for real-world challenges in the field.