Risk Based Strategies for Inspection & Maintenance (RBI & RBM)

15 - 19 Sep 2019, Dubai
Introduction

Risk Based Inspection (RBI) methodology enables the assessment of the likelihood and potential consequences of pressure equipment failures. RBI provides companies the opportunity to prioritize their equipment for inspection; optimize inspection methods, frequencies and resources; develop specific equipment inspection plans; and enable the implementation of Reliability Centered Maintenance. This results in improved safety, lower failure risks, fewer forced shutdowns, and reduced operational costs.

The risk-based approach needs:

- To be multi-disciplined
- To be realistically applicable to plant integrity
- Design with future scenarios in mind
- Consideration of all potential degradation mechanisms
- Understanding of the risks involved
- Awareness of Fitness for Service assessment techniques

Objectives

- To provide clear understanding of the key aspects of Risk Based Inspection, its advantages and limitations
- To provide a clear understanding of how it is linked to reliability-centered maintenance
- Understand how fitness-for-service assessment affects the Risk
- To show you how to develop a successful RBI program at your facility
- Provide you with the practical and effective methods you need to perform practical likelihood and consequence analysis
- Show you how to develop optimum inspection intervals for individual equipment based on the assessment of the active degradation mechanisms

Training Methodology

This GLOMACS Risk Based Strategies for Inspection & Maintenance (RBI & RBM) training course combines presentation of the key principles, methods, and best practices and enforces the learnings with case studies and Question & Answer workshops to maximize the benefits to the participants. The comprehensive course notes and presentation material will provide valuable reference.

Organisational Impact

- Identification and assessment of active degradation mechanisms
- Implementation of a Risk Based Inspection program would result in significant measurable improvements improved plant integrity
- Fewer failures
- Optimization of inspection and maintenance plans and resources
- Reduction in operating costs

Personal Impact

- Delegates will acquire the knowledge necessary to apply the risk-based methodology
- Delegates will acquire the skills necessary to apply the risk-based methodology
- Enhance competence in RBI
- Enhance performance level
- Contribute additional value to the organization

Who Should Attend?

- Operations Engineers
- Maintenance Engineers
- Engineering Managers and Supervisors
- Technical Staff with responsibilities for inspection, maintenance, assessment and mitigation of plant equipment degradation, and who want to use RBI effectively in their plants
DAY 1

Course Objectives and Overview

- Significance of Inspection in Plant Integrity and Maintenance Costs
  - The Real Function of Inspection
  - Inspection Key Performance Indicators
- Common Inspection Strategies and Their Limitations
- Risk-Based Decision-Making Fundamentals and Tools
  - Risk Assessment - Probability of failure, consequences of failure
  - Risk Management – Avoidance, Mitigation
  - Risk Communication
- Understanding and Managing Risk
  - Principles Risk Assessment
  - Risk Assessment Elements
  - Qualitative, Semi-quantitative, and Quantitative Assessment
- Workshop 1 - Illustrative Example of Risk Assessment

DAY 2

Risk Based Inspection (RBI)

- Definitions
- Evolution
- Key Elements of RBI
- Reasons for implementing RBI
  - Benefits and Limitations of using RBI
  - RBI as a part of plant integrity management
  - Economic Benefits
- API Risk-Based Inspection Methodology
  - API RP 580
  - API BRD 581 – Various levels of RBI Analyses
- Impact of RBI on Related API Codes, Standards, and Recommended Practices
  - API 510, 570 and 650
  - API 579 Fitness-For-Purpose
  - API Risk Based Inspection Software
  - Workshop 2 - Q&A on API RBI Methodology

DAY 3

Overview of API 571 - Recognition of Conditions Causing Deterioration of Failure

- Overview of over 60 damage mechanisms found in refineries
- Detailed discussion of some common damage mechanisms: Internal and external corrosion, brittle fracture, fatigue, SCC, HIC, internal and external corrosion

DAY 4

Development of Inspection Plan (Based on RBI Risk Ranking)

- Inspection Planning Guidance
- Need for Some Speculative / Exploratory Inspection
- RBI Implementation
  - Essentials for Establishing a Successful RBI Program
  - The RBI Team - Recommended Structure and Mandate
- Developing Equipment and Piping Systems / Circuits Inventory
- Inspection History, Interpretation
  - Equipment Criticality Rating
  - Equipment Database
  - Shared Database by RBI and RCM
  - Importance of Data Quality
  - Computerized Maintenance Management Systems
  - Workshop 4 - Case Study: Risk-based categorization of equipment and failure modes

DAY 5

- Inspection Interval Optimization Based on Assessed Risk
- Evaluation of Inspection Results
  - Data Quality
  - Corrosion Rate calculations
  - Remaining Life Calculations
- Fitness-For-Service Assessments
- Estimation of Consequences of Failures
- Workshop 5 - Case Study - Assessment of defects in critical equipment
Risk Based Strategies for Inspection & Maintenance (RBI & RBM)

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<td>Dubai</td>
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REGISTRATION DETAILS

LAST NAME:________________________________________
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PAYMENT DETAILS

☐ Please invoice my company
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CERTIFICATION

Successful participants will receive GLOMACS’ Certificate of Completion

4 WAYS TO REGISTER

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TERMS AND CONDITIONS

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• Mode of Payment – The delegate has the option to pay the course fee directly or request to send an invoice to his/her company/ sponsor. Credit card and cheque payments are both acceptable.
• Cancellation / Substitution – Request for seminar cancellation must be made in writing & received three (3) weeks prior to the seminar date. A US$ 250.00 processing fee will be charged per delegate for each cancellation. Thereafter, we regret that we are unable to refund any fees due, although in such cases we would be happy to welcome a colleague who would substitute for you.
• Hotel Accommodation – is not included in the course fee. A reduced corporate rate and a limited number of rooms may be available for attendees wishing to stay at the hotel venue. Requests for hotel reservations should be made at least three (3) weeks prior to the commencement of the seminar. All hotel accommodation is strictly subject to availability and terms and conditions imposed by the hotel will apply.
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