Optimizing Equipment Maintenance & Replacement Decisions

Energy Milestones Corporation

Advancing Professionals to the next level

Energy Milestones is proud to be accredited, partner and associated with the following association bodies:

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Overview

This training course is designed to introduce participants to the process of making informed decisions regarding equipment maintenance optimisation, including equipment replacement. Various optimisation techniques will be presented, and the optimisation criteria explained. This course will also include several workshops with case studies and real-world problems to be solved.

Course Objectives

At the end of this course, the participants will be able to:

- Identify equipment failures and the impact on plant reliability
- Understand the cost-effectiveness of the preventive/Predictive Maintenance program
- Apply techniques of optimisation of various maintenance activities
- Define criteria for work-crew size, spare parts and equipment replacement
- Make the critical decision obased on the cost and benefit analysis
- Incorporate safety objectives into the equipment repair or replacement optimisation

Course Content

1. Physical Asset Management & Failure Analysis
   - Physical Asset Management
   - Maintenance Management: Preventive / Predictive Approach
   - Nature and Modes of Equipment Failure
   - Failure Modes & Effect Analysis (FMEA)

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Course Content

1. Physical Asset Management & Failure Analysis
   - Analysis of Component Failure Data Using the Weibull Distribution
   - Censored Data, the 3-Parameter Weibull, and the Kolmogorov-Smirnov Test

2. Preventive Maintenance & Spare Parts Replacements
   - Reliability and Availability Concept: MTBF & MTTR
   - Reliability Improvement through Reduction of Downtime
   - Maintenance Performance Quantification
   - Preventive Maintenance & Spare Part Handling
   - Spare Parts Provisioning: Prediction Models and Techniques
   - Management of Change: In-Kind Spare Part

3. Equipment Inspection & Fitness for Service
   - Condition Monitoring & Inspection
   - Risk-Based Inspection (RBI)
   - Risk Matrix: Management and Mitigation Measures
   - Reliability Improvement through Inspection
   - Inspection Scope & Frequency
   - Fitness for Service Analysis (FFS)

4. Economics of Maintenance, Repair & Replacement
   - Management of Maintenance Resources
   - Effective Use of CMMS
   - Maintenance Organisation Analysis: Crew size
   - Equipment Repair or Replacement Decision
   - Economic Aspect of Maintenance Outsourcing: Subcontract
   - Economic Aspect of Equipment Replacement

5. Total Productive Maintenance & Safety
   - Capital Investment in Equipment and Maintenance: ROI
   - Total Productive Maintenance
   - Safety in Maintenance Work
   - KPI and OEE: Leading and Lagging Indicators

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Targeted Audience

This training course is Suitable for a wide range of professionals, but will greatly benefit:

- Technical professionals are responsible for the maintenance and repair of equipment
- Operation, technical production & inspection professionals
- Technical professionals dealing with risk assessment and integrity analysis

Course Methodology

Facilitated by an experienced professional trainer, this training course will be conducted as a highly interactive workshop session. A variety of training methodologies and facilitation techniques will be employed before and during the course, as applicable. These methods are aimed at enhancing individual and group interaction while maximising learning. Some of these methods are:

- Online Pre-post Test
- Colourful Visual Aids
- Gamification
- Self-Assessment Instruments
- Simulations
- Case Studies
- Videos
- Group Exercises & Discussions
- Role plays
- Indoor & Outdoor games