Lifetime Reliability • Solutions

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Advanced Maintenance Management Training Workshop

When done well your maintenance strategies deliver the six purposes of maintenance – equipment reliability, failure avoidance, defect elimination, least operating costs, risk reduction and maximum production. Fail to do achieve one of them and your maintenance efforts will not get the big pay-offs that they should. Maintenance that does not make you more production and profit is a poor sort of maintenance. Modern maintenance focuses on maximising operating profit by driving reliability growth at every stage of the business life-cycle. The training shows and explains how to select and use preventive, predictive and precision maintenance strategy and methods that means your operation has:

- zero breakdowns,
- steady production at maximum sustainable capacity,
- production equipment that makes first-pass quality product,
- excellent plant availability
- high equipment reliability,
- maximum energy efficiency from operating equipment,
- ever falling maintenance costs
- condition driven continual improvement.

Learn the modern understandings and methods you need to know and use to get world-class maintenance performance and results. Discover leading-edge and the best classic strategies that make equipment run stoppage-free for longer; produce at maximum sustainable capacity with first-pass quality throughput, and make industrial operations highly profitable. You learn to focus your maintenance methods and practices on defect removal and failure elimination in every phase of the life-cycle. Understanding how to intentionally make your business processes and production equipment more and more reliable turns average organisations into world-class organisations. This course is packed with new insights and techniques that you can use every day in your operation to make it better, faster, leaner, safer, waste-free and less costly.

"Maintenance is cheap – it is repairs that are expensive." Learn the Maintenance Management best practices and how to employ them to ensure you deliver maximum uptime and production benefits. Maintenance is a series of routines, procedures and steps taken, including tests, measurements, adjustments, and parts replacement, to identify and resolve potential equipment problems before they happen. The purpose is to ensure that machines last longer, that production quality is maintained and that delivery schedules are met. The best maintenance processes prevent failure but still use systematic inspection, detection, and correction of embryonic failures before they develop into problems. You will discover and learn to use the right principles and the appropriate practices for successful maintenance management systems by:

- Considering the total true cost impact of equipment failures.
- Reviewing basic equipment design to discover what is necessary for its proper operation.
- Looking at equipment in a production environment to understand the operating impact.
- Investigating expectations for the performance of plant and equipment.
- Determining maintenance requirements and the operating environment.

- Establishing frequencies and a program for PM/PdM.
- Identify processes, information, physical resources and job skills required for PM/PdM.
- Recognising other business processes and information which link to PM/PdM.
- Tracking and trending PM/PdM performance, outcomes and savings.
- Identifying necessary documentation, its content and its arrangement for PM/PdM.
- Initiating the continuous improvement of PM/PdM systems and processes.
- Imbedding best practice maintenance into your organisation.

DAY 1 Course Content

Key Design and Engineering Concepts for High Reliability

- Life-cycle Effect on Costs and Profits
  - Designing to minimise operating costs
  - Operating and maintenance requirements
- Defect and Failure True Costs
  - Business-wide impact of breakdowns
  - Cost surge from failure
- Variability and Defect Creation
  - Defect generation model
  - Defect elimination strategy
- Risk and Probability of Failure
  - Frequency reduction strategies
  - Consequence reduction strategies
- Physics of Failure
  - Materials of construction limitations
  - Design requirements and selection
- Degradation Curve – Degradation Causes
  - Rate of equipment failure
  - Condition monitoring frequency
- Reliability Growth Cause Analysis
  - Minimising deformation and stress in parts
  - Precision practices for reducing stress
- Reliability Engineering
  - Basic reliability concepts
  - Improving equipment reliability
- Series and Parallel Reliability
  - Series systems
  - Parallel systems
- Process Mapping for Reliability
  - Equipment
  - Work activities
- FMECA/FMEA/RCM

        - Methodologies explained
        - Requirements for successful application of the methodologies
    - Maintainability and Supportability
        - Business processes for minimising production downtime
        - Improving maintenance response
    - Failure Root Cause Analysis
        - RCFA explained
        - 5 Why explained
        - Creative Disassembly explained

- Open Discussion Forum with Attendees

DAY 2 Course Content

Installation, Operating and Maintenance Requirements

- Degradation and Degradation Management
    - Condition monitoring for degradation
    - Plant operation for maximum reliability
- Maintenance and Reliability Strategy
    - Component Failure Curves
    - Defect Elimination
    - System Reliability
    - Life Cycle Costs
- Condition Monitoring and Predictive Maintenance
    - Choosing suitable CM technologies
    - Selecting parts replacement
- Preventive Maintenance Strategy
    - Reliability through PM activities
    - Selecting PM frequency
- Maintenance Procedures for Work Quality Assurance
    - Accuracy controlled work quality
    - Writing accuracy controlled procedures
- Lubrication Standard
    - Lubrication cleanliness
    - Lubrication management
- Balancing Standard
    - Balance limits
    - Common errors causing out-of-balance
- Alignment Standard
    - Shaft alignment limits
    - Common errors causing misalignment
- Bearing Vibration Standard
    - Causes of bearing vibration
    - Control of bearing vibration

  - Precision Maintenance
    - 12 requirements for precision maintenance
    - Introducing precision maintenance to the workforce
  - Stores and Storage Practices
    - Storage for parts reliability
    - Parts management for PM activities

- Open Discussion Forum with Attendees

DAY 3 Course Content

Practice and Application Day

Examples and/or practical use of the following techniques and methods will be performed by Attendees:

  - Process Mapping
  - Reliability Calculations
  - Risk Rating
  - Equipment Criticality
  - Weibull Analysis
  - FMECA – Parts Hardware Level
  - Maintenance Strategy Selection
  - Reliability Growth Cause Analysis
  - Accuracy Controlled Procedures
  - 5-Why Root Cause Analysis

- Open Discussion Forum with Attendees