



أكاديمية الزمالة العربية البريطانية
Arab British Academy Fellowship
A.B.A.F





Certificate in Preventive and Predictive Maintenance



Why Attend

The military initially pioneered preventive maintenance as a means to increase the reliability of their naval vessels. By simply expending the necessary resources to conduct maintenance activities intended by the equipment designer, equipment life is extended and its reliability is increased. In addition to an increase in reliability, more money is saved in comparison to the cost of a program just using reactive maintenance. Studies indicate that this savings can amount to as much as 12% to 18% on the average. Depending on a facility's current maintenance practices, present equipment reliability, and facility downtime, there is little doubt that many facilities are purely reliant on reactive maintenance. By implementing a proper preventative maintenance program, they could save much more than 18%.

This course will give participants an in-depth understanding of preventive and predictive maintenance practices; it will also cover a number of best practice techniques such as Total Productive Maintenance, Reliability Centered Maintenance, Condition Based Monitoring, Failure Modes and Effects Analysis, and Root Cause Failure Analysis.

Course Methodology

The course is interactive and is comprised of lectures, case studies, technical process learning and supplemental discussions related to various industries and the challenges of implementation.

Course Objectives

By the end of the course, participants will be able to:

- Develop, implement and supervise the preventive and predictive maintenance program
- Implement the latest techniques and management styles of leading facilities and maintenance management practices



- Optimize the effectiveness of maintenance, by using sophisticated techniques and methods, to economize time, money and resources
- Prevent and limit equipment failures, and rework to improve the equipment's overall effectiveness and reliability
- Decrease downtime and increase profit for their organization

Target Audience

This course is designed for all Maintenance Managers/Engineers, Supervisors and Planning Engineers. It is also suitable for those who are in operations, engineering and purchasing/materials divisions and who would like to acquire an understanding of how the quality of the maintenance function affects their department, and their organization's bottom-line.

Target Competencies

- Develop Maintenance Programs
- Implement Maintenance Programs
- Optimize Maintenance Resources
- Implement Best Practice Maintenance Techniques



- **Maintenance overview**
 - What is maintenance?
 - Building a best in class asset register
 - Formulating the maintenance policy
 - Defining maintenance standards and allocation of resources
 - Applying maintenance strategies
- **Common issues in an organization**



- Lack of accountability
- Resource level issues
- Work requests with insufficient information or duplicated
- Importance of time writing daily
- Technical history retention
- KPI reviews - how often and why

- **Introduction to asset management**

- ISO55000 asset management definitions
- Assets and asset systems
- Different stages of life cycle
- Asset management decisions and optimization
- Understanding objectives, cost, critical factors and risk

- **Computerized Maintenance Management System (CMMS) set-up**

- CMMS set-up
- Criticality assignment SCE
- Production critical
- Non-critical
- Class and classification assessment and allocation
- Defining asset register systems
- Packages
- Equipment assignment
- Allocation of main work centers
- Cost center assignment(s)
- Bills of Material (BOMs) advantages

- **Work identification and requesting**

- Work preparation: what is required and why
- Equipment assignment to the correct level
- Assigning prioritization - the benefits in using prioritization
- Best-in-class information required through Corrective Maintenance - Predictive Maintenance (CM-PM) work order(s)
- Roles and responsibilities for work preparation

- **Work planning and estimating**

- Reviewing past history and the benefits to work planning
- Allocation of correct resources and hours
- Identifying materials using Bills of Material (BOMs)
- Allocation of external resources with or without Service Level Agreements (SLA)
- Consider building relationships between activities within work order operations
- Pre-scheduling through criticality – prioritization

- **Work scheduling and execution**



- Preparing a rolling schedule - What needs to be considered
 - Aligning activities including input from other departments and any pre or post work
 - Leveling/smoothing of resources through resource center availability
 - Dates and priorities how they impact scheduling
 - Creating and agreeing the schedule for the next 7 to 14 days meetings
 - Importance of publishing the 7-day scheduled activities
 - 30, 60 and 90-day schedule look-ahead meetings
 - Time-writing daily and why it improves scheduling control
 - Handling emergent work and the impact to the schedule
 - Considering Extra Ordinary Maintenance (EOM) to control corrective maintenance high expenditure
 - Standard routine procedure instruction(s)
 - Tool box talk
 - Importance of auditing work execution
- **Quality feedback reporting**
- Benefits of feedback forms and technical history retention
 - Technical history review and sign off
 - Retention of technical history - The importance to future work preparation
 - Meeting reviews - What went well and where improvements can be made
- **Completion and work control**
- Updating the future maintenance plans(s) and asset register through technical history feedback
 - Review of estimated versus planned versus actual costs
 - Review of man-hours expended versus estimated
 - Material usage - Question were any materials not used returned to stock?
 - Correctly signing off work order/work request through the CMMS system
- **Data analysis techniques**
- Forecasting man hours, material allocation and Service Level Agreements (SLA)
 - Identification of bad actors through the CMMS system
 - Expenditure reporting
 - PM compliance reporting
 - Schedule compliance reporting
 - CM backlog reporting
 - Reporting generic materials ordered
 - Unscheduled fill-in work
 - Mean Time to Repair (MTTR)
- **Maintenance replacement decisions**
- Component replacement procedures
 - Age-based replacement policy
 - Analysis of component failure data
 - Using Weibull parameters
 - Life-cycle costing



- **Downtime reduction**
 - Tracking downtime
 - Personnel training
 - Importance of feedback from employees
 - Outsourcing considerations
 - Considering using Overall Equipment Effectiveness (OEE)
- **Performance reporting**
 - Primary reporting Key Performance Indicators (KPIs)
 - Secondary reporting KPIs
 - Leading and lagging KPIs
- **Root Cause Analysis**
 - Apollo Root Cause Analysis (RCA)
 - Combining Reliability Centered Maintenance (RCM) and RCA together
 - Gathering data and evidence using class and characteristics
 - 5 Why Process
 - Cause and effect chart
 - Fishbone analysis
 - Line of sight
 - Failure Mode, Effects and Criticality Analysis (FMECA)
- **Action plan**
 - Management of Change (MOC) process
 - Continuous Improvement (CI) techniques



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