

# Preventative and Predictive Maintenance Training Course

Preventative Maintenance (PM) 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 process involves systematic inspection, detection, and correction of embryonic failures either before they occur or before they develop into major problems.

Predictive Maintenance (PdM), or Condition Monitoring (CM) is the process of monitoring the trend in a measured condition of a machine by using specialist equipment to gauge the condition under observation. Vibration, noise, thickness and temperature measurements are often used as key indicators of the state of a machine and technologies such as vibration analysis, tribology and thermography are examples of Condition Monitoring techniques.

## Course Details

### **1 Introduction to Maintenance**

- *Life Cycle Equipment Management*
- *Equipment Criticality*
- *Defect and Failure True Costs*
- *Maintenance Types – Preventative, Corrective, Predictive*
- *Understanding Equipment Design*
- *Plant Wellness*

- *Failure Modes*
- *Evidence of Failure Modes*
- *Equipment Condition Monitoring*
- *Selecting PdM Frequency*
- *Non-Destructive Testing*
- *Vibration Analysis, Tribology, Thermography*
- *Process Performance Monitoring*
- *Failure Prediction – Weibull - Crow/AMSAA*
- *Developing a PdM Program*

### **2 Preventative Maintenance**

- *Design Limitations*
- *Selecting PM Frequency*
- *Precision Maintenance*
- *Creative Disassembly*
- *Accuracy Controlled Procedures*
- *Developing a PM Program*

### **4 Supporting Methodologies**

- *Equipment Reliability*
- *Visual Management*
- *Operator Watch Keeping*
- *Failure Mode and Effects Analysis*
- *Profit Contribution Mapping*
- *Continuous Improvement*
- *Root Cause Failure Analysis*
- *Maintenance Quality Systems*
- *Determine Component-Based Preventive Maintenance Plans by Statistical Analysis*

### **3 Predictive Maintenance**

- *Equipment Degradation Cycle*
- *Functional Loss*

The course is over two days. It takes attendees through the key concepts of PM-PdM and provides opportunity to understand them in short laboratories presented throughout the course. The course can be presented at two levels of interest, as required. First is for those people responsible to introduce, promote and sustain PM-PdM in an organisation. Typically these are managers, superintendents and supervisors in Maintenance and Reliability groups as well as those in manufacturing, operations and production in those organisations using TPM. The second is at the user level and includes maintenance leading hands, maintainers and operators in companies that apply TPM.