

# PLANNED MAINTENANCE OPTIMIZATION – PM CHALLENGING THE TEAM TO ZERO UNPLANNED MACHINE BREAKDOWN

## Course **Overview:**

### INTRODUCTION TO PLANNED MAINTENANCE – PM CHALLENGING THE TEAM TO ZERO UNPLANNED MACHINE BREAKDOWN

Planned Maintenance is defined as maintenance activities performed on a pre-determined schedule of activities. The basic responsibility of maintenance is not to repair breakdowns but to analyze what had caused the failure by taking measures to prevent the recurrence of the problem. Through the Planned Maintenance activities, we can improve the reliability of the equipment by letting the team take up the challenge to zero machine breakdown and also to improve maintenance efficiency. Build the maintenance system and cost reduction strategies by improving the machine's life cycle by understanding the concept of Planned Maintenance, so can achieve reliable equipment and maintenance skills to carry out the PM activities.

## Learning **Objectives:**

- **What** are the basics of planned maintenance?
- **Identify** time based maintenance ineffectiveness
- **Define** why equipments deteriorate.
- **What** changes to make to improve reliability
- **How** to gain productivity through small changes in thinking.
- **Developing** task lists for different equipments.
- **Prevent** and extending equipment components useful life.
- **Using** the P-F curve to choose inspection frequencies.
- **Drive** towards zero unplanned equipment failures.

## COURSE CONTENT

### Module 1

#### Planned Maintenance from a Business perspective

- Introduction to maintenance
- Maintenance objectives.
- Impact of maintenance
- Eight Pillars of Planned Maintenance
- Four Phases of Planned Maintenance

## **Module 2**

### **Type of Maintenance Strategies**

- Preventive Maintenance
- Predictive maintenance (PdM)
  - Vibration Monitoring
  - Thermography
  - Tribology Analysis
- Breakdown Maintenance
- Corrective Maintenance

## **Module 3**

### **Failure Mode Analysis Improve Lengthening Equipment Lifetime**

- What We Include as Breakdown
- Understand Functional failures.
- Analysis Failure Mode.
- What causes Failure Mode
- Evaluate Failure Effect

## **Module 4**

### **Planned Maintenance Roadmap Reliability**

- Step-1 Analysis of the difference between the basic and use condition
  - Understand the issues (Pareto Analysis, 5W-1H, 5 why Analysis,)
- Step-2 Improvement of the difference between the basic and use condition
  - Maintain basic equipment condition (Clean, Replace panels, mounting hardware)
- Step-3 Preparation of standards for basic and use condition
  - Maintenance schedules, Inspection Checklist, Trouble shooting guides
- Step-4 Extension of service life
  - Execute corrective maintenance (Improve, Redesign, Use higher technologies)
- Step-5 Improvement of inspection and maintenance efficiency
  - Research of deterioration, Detection of internal deterioration, Activities to reduce breakdown maintenance
- Step-6 Overall equipment diagnosis
  - Revise maintenance standards and enhance maintenance skills and technologies
- Step-7 Use of equipment to its limits
  - Develop diagnostic techniques (Predictive maintenance)

## **Module 6**

### **Measuring the Effectiveness of Maintenance Activities**

- Measuring maintenance performance
- Overall Equipment Effectiveness
  - Availability
  - Performance
  - Quality
- Equipment Reliability analysis
  - MTBF
  - MTTR