



CII Online Session On Proactive Maintenance Achieving Zero Breakdown & Reducing Maintenance Costs

21 – 23 June 2023, 2:00 p.m. to 5:00 p.m. (Wed, Thu, Fri)



Proactive maintenance (PrM) is a maintenance strategy that works to correct the root causes of failure and avoid breakdowns caused by underlying equipment conditions. The purpose of proactive maintenance is to see machine failures as something that can be anticipated and eliminated before they develop. Creating a proactive maintenance program helps organizations find hidden inefficiencies.

The proactive maintenance approach makes it possible to perform maintenance only when necessary based on gathered maintenance data. Proactive Maintenance combines good principles from Maintenance Prevention, Maintainability Improvement, Reliability Centred Maintenance & Preventive Maintenance Optimization. All are subsets of Proactive Maintenance. The goal of the maintenance effort is to get out there and fix the problems permanently. Solving problems permanently is one of the most rewarding aspects of proactive maintenance.

The advantages of proactive maintenance (PrM) are many. A well-orchestrated proactive maintenance program will all but eliminate catastrophic equipment failures. In fact, independent surveys indicate the following industrial average savings resultant from initiation of a functional proactive maintenance program.

Considering their unquestionable utility, new Automotive standard IAF 16949 : 2016 Section 8.5.1.5, Total Productive Maintenance, shall include documented maintenance objectives, for example: OEE, MTBF, MTTR, and Preventive Maintenance compliance metrics. (includes the need of plan & actions) which strengthen the requirement for equipment maintenance and overall proactive management of the Total Productive Maintenance (TPM). Also, it implies at least the inclusions like Planned Maintenance activities & use of Predictive Maintenance methods to continually improve effectiveness & efficiency of the production equipment.

BENEFITS

- Increased component operational life/availability
- Allows for preemptive corrective actions
- Decrease in equipment or process downtime
- Better product quality
- Improved worker and environmental safety
- Improved worker morale
- Energy savings.
- Estimated 8% to 12% cost savings over preventive maintenance program.

WORKSHOP OBJECTIVES

- To understand the concepts & methods of Proactive Maintenance components
- To understand how to Implement Proactive Maintenance.
- To understand how to gradually replace TBM activities by CBM activities
- To appreciate use of modern technologies in equipment maintenance

- Return on investment: 10 times
- Reduction in maintenance costs: up to 30%
- Elimination of breakdowns: up to 70%
- Reduction in downtime: up to 40%
- Increase in production: up to 25%.

Faculty: Mr Shekhar Deshpande, Lean Transformation Consultant, 34+yrs of experience

- He is an MBA in Operations Management + Industrial + Electrical Engineer with more than **34 years experience** in reputed industries like L & T, ABB, Crompton Greaves, Associated Capsules Group & EIPL. He is Green belt in Lean Six Sigma, Certified Energy Auditor & Certified ZED Assessor.
- He has conducted more than **400 days of result-oriented programmes on Tools of Lean i.e. 5'S', Kaizen, TPM, SMED, VSM, Poka Yoke, and Quality Management tools** such as SPC, FMEA, MSA, GDT, for organizations like Bajaj Auto, Titan Time Products, Hindustan Coca Cola, LG Electronics, Asian Paints, Hindustan Lever, Siemens, Kirloskar Brothers, Videocon International, Fairfield Atlas, Tata Motors, etc.



Who Should Attend?

Senior & Mid Level
Managers & Engineers

Engineers, Supervisors,
Process Specialists

Senior Technicians
involved in Maintenance,
Process Control

Plant Heads /
Factory Heads

Shop Floor Officials /
Crews, Instruments
\Engineers

Engineering, Maintenance,
Production, Electrical,
Automation, Officials

Planning / Purchase /
Supply Chain / Quality /
Maintenance

Total Quality Management
(TQM), Fatigue Lab

Modules (3 Modules to be covered)

Introduction to Proactive Maintenance & Analysis of Failures & Root Cause Analysis

Module 1

- What is proactive maintenance & its components
- **Why-why analysis & errors** in it. Physical roots, Human roots, Latent roots.
- **Examples of Failure Mechanisms** - Fatigue, Stress, Erosion &
- Corrosion & their interactions & ill effects. Basic loads & identifying their effects.
- Corrosion types & **preventive measures**.
- **Bearing Failure Modes & detailed Rolling Element Bearing** Failure Analysis Procedure

Preventive Maintenance & Total Lubrication Management

Module2

- **Basics of Preventive Maintenance (PM)**, Definition & misconceptions of PM. Calculation of Maintenance Load & Manpower, Load Levelling, Preparing & Monitoring of TBM Schedules.
- **Best practices in** preventive maintenance.
- **Case study** of Developing Preventive Maintenance.
- **Lubrication oil Basics**: characteristics, selection of Lubricant, Synthetic lubricant oils, Color coding and specialty lubricants. Oil Tests.
- **Lubrication Chart**, Visual indicators, Handling of Lubricant, Filtering or Cleaning of Lubricant.

Condition Based - Predictive Maintenance

Module 3

Substitute Characters, Static & Dynamic Equipment, P-F Curve, Components of Predictive Maintenance Condition Monitoring Matrix.

- **Vibration Analysis**

Theory of Vibration analysis & sensors used primarily with rotating equipment to find problems such as misalignment, out-of-balance conditions, and bearing defects.

Analyzing the vibration spectrum based on amplitude and frequency to identify various reasons like Bearing fault, Un-balance, Lubrication, Looseness etc. ISO standard & limits.

- **Ultrasound**

Ultrasound functions primarily for leak detection, particularly for steam and air leaks.

Ultrasonic flaw detection, Magnetic particle testing, Welding inspection and testing.

- **Thermography**

Thermography principles & instruments. Finding electrical components that are hotter than normal caused by wear or looseness. Thermography allows technicians to perform maintenance on specific electrical as well as mechanical components needing attention e.g. bearings, motors, belts, couplings without requiring that all components get the same level of attention.

- **Oil and Wear-Particle Analysis**

Wear-particle analysis determines the condition of equipment based on the concentration of wear particles in the lubricant. Types of wear & wear particles sizes & conclusions.

- **Electrical Maintenance**

Some simple but important tips for Electrical Maintenance.



PARTICIPATION FEES

- CII Members (Large & Medium) : Rs 10,000/- + 18% GST
- CII SSI Members : Rs 8,500/- + 18% GST
- Non Member Companies : Rs 11000/- + 18% GST

Special Discount

- 5% on 2 or more nominations from an organization
- 10% on 3 or more nominations from an organization

Payment of fees is to be drawn in favour of "Confederation of Indian Industry". Alternatively, it can also be made by NEFT / RTGS.

Please note that:-

- Prior registration for participation by the companies is necessary
- Nominations will be purely enrolled on first come first serve basis.
- Change in nomination(s) is/ are accepted
- There will be no refund of fees or adjustment against any other program
- Soft copy of the presentation will be shared with the participants post Session
- The Session will not be recorded

For Nominations & Enquiries, please contact:

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