

€ TRAINING

Certified in Preventive and Predictive
Maintenance





Certified in Preventive and Predictive Maintenance

Introduction:

This program is designed to prepare participants for the certification exam only.

This comprehensive training program equips participants with the knowledge and skills to implement and manage effective preventive and predictive maintenance PPM programs. It will introduce participants to the best practices to optimize equipment reliability, minimize downtime, and reduce maintenance costs.

Program Objectives:

At the end of this program, participants will be able to:

- Explain the core principles of preventive and predictive maintenance and their role in achieving operational excellence.
- Identify different types of maintenance strategies preventive, corrective, predictive and their appropriate applications.
- Perform root cause analysis RCA to identify the underlying causes of equipment failures.
- Utilize various condition monitoring techniques vibration analysis, oil analysis, thermography to assess equipment health.
- Develop and implement preventive maintenance schedules based on equipment risk and criticality.
- Interpret data from condition monitoring tools to identify potential equipment problems early on.
- Develop and implement a predictive maintenance program to optimize maintenance activities.
- Evaluate the cost-effectiveness of PPM strategies and calculate return on investment ROI.
- Utilize Computerized Maintenance Management Systems CMMS to manage maintenance tasks and work orders.

Targeted Audience:

- Maintenance technicians and engineers.
- Reliability engineers.
- Plant operations personnel.
- Asset managers.
- Quality control specialists.

- Anyone involved in optimizing equipment performance and maintenance efficiency.

Program Outline:

Unit 1:

Fundamentals of Preventive and Predictive Maintenance:

- Defining preventive and predictive maintenance PPM: Concepts, benefits, and comparison to corrective maintenance.
- The impact of PPM on operational excellence: Improved reliability, reduced downtime, and cost savings.
- The role of maintenance in asset life cycle management: Extending equipment lifespan and optimizing performance.
- Breakdown maintenance vs. proactive maintenance: Shifting focus from reactive repairs to preventive and predictive strategies.
- Developing a comprehensive PPM strategy: Aligning with organizational goals and equipment criticality.

Unit 2:

Condition Monitoring Techniques:

- Introduction to condition monitoring CM principles: Monitoring equipment condition to predict potential failures.
- Vibration analysis: Detecting imbalances, misalignment, and bearing faults through vibration measurements.
- Oil analysis: Identifying wear and tear, contamination, and lubricant degradation through oil sample analysis.
- Thermography: Utilizing infrared cameras to detect temperature anomalies and potential equipment overheating.
- Other CM techniques: Ultrasonic testing, eddy current testing, and visual inspection methods.

Unit 3:

Developing Preventive Maintenance Programs:

- Identifying critical equipment and performing risk assessments: Prioritizing maintenance efforts based on equipment importance and potential failure consequences.
- Developing preventive maintenance schedules and tasks: Lubrication, adjustments, filter replacements, and other routine maintenance activities.

- Work order creation and management: Utilizing CMMS to ensure timely execution of preventive maintenance tasks.
- Spare parts inventory management: Ensuring availability of necessary parts for preventive maintenance activities.
- Continuous improvement of preventive maintenance programs: Monitoring effectiveness and adapting schedules based on data and experience.

Unit 4:

Predictive Maintenance and Data Analysis:

- Principles of predictive maintenance: Utilizing condition monitoring data to predict equipment failures before they occur.
- Data analysis techniques for predictive maintenance: Trend analysis, statistical methods, and machine learning algorithms.
- Implementing predictive maintenance programs: Integrating CM data analysis into maintenance decision-making.
- Proactive maintenance planning based on predictive insights: Scheduling repairs and replacements to avoid unexpected downtime.
- Benefits of predictive maintenance: Reduced maintenance costs, improved equipment reliability, and optimized production planning.

Unit 5:

Program Implementation and Certification:

- Developing a PPM implementation plan: Overcoming challenges and ensuring successful program adoption.
- Utilizing computerized maintenance management systems CMMS: Streamlining work order management, data collection, and reporting.
- The role of maintenance personnel in PPM programs: Training technicians on condition monitoring techniques and data interpretation.
- Performance measurement and program evaluation: Tracking key performance indicators KPIs to demonstrate the value of PPM.
- Preparing for the Certified in Preventive and Predictive Maintenance CPPM exam: Understanding exam content.

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