

Machine Condition Monitoring

Course Objectives:

This course gives an introduction to the Plant Condition Monitoring techniques and procedures. MCM course gives basic understanding of the common practices involved in machine health management. MCM course is a combination of theoretical condition monitoring strategies backed up by experimental support. It discusses in detail about the common maintenance issues in process industries, failure mechanisms and modes, along with fault-specific corrective technique. It also provides clear understanding of common MCM techniques used in fault detection e.g. Electric Motor Analysis, Oil Analysis/Tribology, Infrared Thermography, Visual and Optical Testing, Ultrasonic Testing etc. In addition to this, MCM course gives basic concepts of VA techniques used in plant condition monitoring. This three-day course would be conducted by the qualified & experienced engineers. The value of MCM training course extends beyond the classroom and focusses on professional development related to solving real world problems in machine maintenance. The course provides unique opportunities of understanding MCM principles, theories and techniques. In addition, the training course offers practical knowledge in the complex field of machine condition monitoring

Detailed topic list:

Overview of maintenance techniques

- ✚ Breakdown maintenance
- ✚ Preventive (calendar based) maintenance
- ✚ Predictive (condition based) maintenance
- ✚ Proactive (reliability centered) maintenance

Vibration Analysis

- ✚ What is Vibration?
- ✚ Displacement, Velocity & Acceleration
- ✚ Essential Vibration Characteristics
- ✚ What is a "Spectrum"?
- ✚ Selecting Frequency Spans & LOR
- ✚ Frequency Content Analysis
- ✚ Effects on Frequency Accuracy

Electric Motor Analysis

- ✚ Introduction of Electric Motors
- ✚ Types of Electric Motors
- ✚ Description of Induction Motor
- ✚ Failures in Induction Motors
- ✚ Motor Current Signature Analysis

Oil Analysis /Tribology

- ✚ Introduction to oil analysis
- ✚ Oil analysis and fault condition
- ✚ Viscosity, cleanliness, particle count tests
- ✚ Applications of oil analysis in industry
- ✚ Parameters for oil analysis

Infrared Thermography

- ✚ Introduction and Applications
- ✚ What are the key qualities of IR cameras?
- ✚ Flash simulations
- ✚ Effect of emissivity
- ✚ Environmental conditions

- ✚ Working principle of infrared camera
- ✚ Applications of IRT in MCM

Visual and Optical Testing

- ✚ Overview of Visual Testing
- ✚ Principles and Applications of Lighting
- ✚ Factors that Affect Visual Testing
- ✚ Principles and Theory
- ✚ Visual Testing Equipment
- ✚ Visual Testing of Discontinuities

Ultrasonic Testing

- ✚ Introduction to NDE
- ✚ UT Applications
- ✚ Usage of Ultrasonic Thickness Gauge
- ✚ Corrosion Mapping by Using UTG

Course Duration

- The course consists of Two full days of training & 1-hour exam

Hours

- 9.00 am to 4.00 pm (Days 1-2)
- Exam: 1 hour - end of Day 2

Who should attend

- ✚ Maintenance Professionals
- ✚ Plant/Rigs Supervisors
- ✚ R & D Personnel
- ✚ QA/QC Supervisors
- ✚ Equipment designers
- ✚ HVAC Engineers
- ✚ Plant Technicians
- ✚ Vibration Engineer
- ✚ Inst. Technicians
- ✚ Maintenance Technicians



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- ☞ Equipment Operators
- ☞ Reliability Engineers
- ☞ Industrial Engineers
- ☞ Operations Managers

Practical Applications of Training Course

This machine condition Monitoring course (MCM) provides unique opportunities to study MCM principles in a way that goes beyond the textbook and provides real-world applications.



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