Predictive Maintenance, Vibration, and Machinery Failure

A Predictive Maintenance Approach

Introduction

We should anticipate a certain level of performance decline and overall machine degeneration as machines age. We can determine which metrics most accurately reflect the machine's degradation if we comprehend the existing failure mechanisms.

In order to maximize production while optimizing maintenance engineering effort, failure analysis and predictive maintenance techniques—including vibration analysis—are covered in the training course. In addition, tribology, passive ultrasonic, infrared thermography, and performance monitoring will be covered.

Objectives

Upon completion of this Course N Carry training program, attendees will possess:

- An awareness of the methods used in machine failure analysis
- Knowledge of various Predictive Maintenance Technologies
- Understanding how each of these technologies could improve the effectiveness of maintenance
- Guidelines outlining the ways in which various technologies might cooperate and assist one another
- Advice and recommendations on using these technologies practically to get the greatest outcomes
- A hands-on method for creating an action plan to use these technologies in their respective spheres of responsibility, integrating them into the broader maintenance plan, and calculating the advantages.

Training Methodology

Using formal lectures, case studies, and interactive working examples, this training session on Course N Carry Predictive Maintenance, Vibration, and Machinery Failure will be delivered in accordance with workshop principles. We'll present pertinent case

studies to show how each tool is used in an operational setting. There will be hands-on activities to reinforce each learning point. There will be lots of chances to talk and exchange experiences.

Organizational impacts

Predictive maintenance of rotating equipment and analysis of machine breakdowns are essential to the operations organization's financial performance. After attending this training session on Course N Carry Predictive Maintenance, Vibration, and Machinery Failure, the delegate will be equipped to evaluate the organization's methods critically and implement changes as needed.

Personal Imapct

Within any maintenance organization, technical knowledge is essential for maintaining effective control and earning respect from peers. When these goals are met, personal pleasure follows. The delegate will leave this Course N Carry Predictive Maintenance, Vibration, and Machinery Failure training course with the necessary degree of technical knowledge and proficiency to meet their own goals.

Who should attend?

- Supervisors
- Head of the Team
- Experts in engineering, production, and maintenance
- Anyone who wants to stay current on Failure Analysis techniques and Predictive Maintenance technologies, as well as those who must assess whether these technologies are appropriate for their needs and learn how to apply them for the good of their organizations, will find this Course N Carry Predictive Maintenance, Vibration, and Machinery Failure training seminar to be beneficial.

Course Outline

Day 1

Recognizing Errors

- Analysis of Machine Failure
- Utilization and Tribology
- Mechanisms of Fatigue

- Bearing and Seal Failures: Plain, Tilt-pad, and Anti-friction Types

Day 2

Principles of Reliability and Strategies for Preventing Failures

- Foundations of Machinery Reliability
- Methods for Determining and Evaluating Reliability
- A Statistical Study of Equipment Failures
- Case Study and Workshop

Day 3

Comprehending Predictive Maintenance

- Concepts of Predictive Maintenance
- Overview
- Strategies for Maintenance
- Predictive Maintenance: An Overview of Its Past
- An Overview of Predictive Maintenance Technologies
- Analysing Potential Failures and Selecting Which Technologies to Use
- Analysis of Vibrations
- Overview of Vibration Analysis
- Analysis of Frequency and the Fast Fourier Transform
- Transducers of Vibration
- Simple Failure Mechanisms Illustrated

Day 4

Making Use of Predictive Maintenance

- Standards for Vibration and Levels of Alarm
- Diagnostic Vibrations
- Amplitude Demodulation, also known as Peak-Vue, SSE, HFD, and Enveloping
- Rolling Element Bearing Vibration
- Resonance: Recognition and Treatment
- Additional Methods of Predictive Maintenance
- Infrared Thermal Imaging
- Applications of Thermography
- Contact and Non-contact Passive Ultra sonics
- Applications of Ultrasonic
- Tribology: Examination of Oil

Day 5

Mechanisms of Control

- Handling Predictive Maintenance
- Monitoring of Performance and Efficiency
- Taking Charge of the Predictive Maintenance Project
- Analysing Costs
- Reporting Methods
- Predictive Maintenance Including in the Maintenance Schedule

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