MECHANICAL & ROTATING EQUIPMENT TROUBLESHOOTING & MAINTENANCE

MAESTRO CONSULTANTS

CONTACT US ON:

T: +9717 2042072 | Email: training@maestrouae.net

Website: www.maestrouae.net

TRAINING TITLE

MECHANICAL & ROTATING EQUIPMENT TROUBLESHOOTING & MAINTENANCE

VENUE

Dubai, UAE

DURATION

5 Days

DATES

08 - 12 December 2019

PRICE

US$4,000 per attendee including training material/handouts, morning/afternoon coffee breaks and Lunch buffet.

TRAINING INTRODUCTION

This course provides a detailed examination of the detection, location and diagnosis of faults in rotating and reciprocating machinery using vibration analysis. The basics and underlying physics of vibration signals are first examined.

The acquisition and processing of signals is then reviewed followed by a discussion of machinery fault diagnosis using vibration analysis. Hereafter the important issue of rectifying faults that have been identified using vibration analysis is covered.

The course is concluded by a review of the other techniques of predictive maintenance such as oil and particle analysis, ultrasound and infrared thermography. The latest approaches and equipment used together with current research techniques in vibration analysis are also highlighted in the course.

TRAINING OBJECTIVES

Understand the fundamental technology of rotating and reciprocating machines, in terms of how they work and how they fail Recognize wear and fatigue related failure mechanisms and the role of lubrication Demonstrate the interaction of the machine with the process and the need for maintenance and condition monitoring personnel to work more closely together Inspect and maintain machinery and to make informed decisions about the condition of plant Explain an introduction to condition based

maintenance and condition monitoring and dispel rumors and demonstrate capabilities Extensive use is made of case study material to underline the key aspects of the course and to give delegates exposure to current best practice.

Also upon completing this course, the delegates will be able to:

· Understand the basics of vibration measurement

· Demonstrate the basics of signal analysis

· Understand measurement and the characteristics of vibration signals

· Use Data Acquisition Equipment for vibration signals

· Apply vibration analysis for different machinery faults

· Apply specific techniques for pumps, compressors, engines, turbines and motors

· Apply vibration based fault detection and diagnostic techniques

· Diagnose machinery related problems with vibration analysis techniques

· Apply advanced signal processing techniques and tools to Vibration analysis

· Detect, locate and diagnose faults in rotating and reciprocating machinery using vibration analysis techniques

· Identify conditions of resonance and be able to rectify these problems

· Apply allied predictive techniques such as oil analysis, Thermography, ultrasonic and performance evaluation

TRAINING AUDIENCE

This course is intended for maintenance engineers, supervisory and technical staffs working in maintenance related roles, which need either a greater awareness of, or to get more involved in, preventive maintenance activities and the troubleshooting of rotating and reciprocating machines. Because the methods and examples are generic, personnel from all industries will benefit.

TRAINING OUTLINE

Day 1:

The Technology of Machines

- Parts of the machine: casing, rotor, bearing, coupling.
- Machinery mounting
- The role of foundations

Machinery Maintenance Requirements

- Strip-down
- Assembly
- Inspection
- Clearances
- Adjustment

Typical Trouble

- Imbalance
- Looseness
- Misalignment
- Gear problems
- Bearing problems.
- Operating issues.
- Provocative maintenance.

Day 2:

Lubrication

- The role of lubrication
- Selection of lubricant

Bearings

- Anti-friction bearings: types, lifetime, mounting, applications, related problems
- Plain and pad bearings, thrust bearings: operation, maintenance, incidents

Day 3:

Couplings & Alignment

- Different types of couplings, related problems
- Different methods of alignment
- Performing and alignment

Sealing Devices

- Mechanical pump seals, types, operation, related problems
- Other seals for positive displacement pumps and reciprocating compressors

Day 4:

Rotors and Shafts

- Types of imbalance
- Balancing procedures
- Performing a balance

Wear Induced Failures

- Typical damage to machines
- Origin of problems
- Causes of failures
- Fatigue

Day 5:

The Role of Vibration Monitoring

- What to monitor and where.
- Measurement devices
- Overall and spectral measurements.
- Vibration limits
- Introduction to spectrum analysis.

The Role of Lubricant Monitoring

- What to monitor and where.

- Shape, size, amount, chemical composition of debris.
- Debris limits.
- Analytical techniques

TRAINING CERTIFICATE

MAESTRO CONSULTANTS Certificate of Completion for delegates who attend and complete the training course

METHODOLOGY

Our courses are highly interactive, typically taking a case study approach that we have found to be an effective method of fostering discussions and transferring knowledge. Participants will learn by active participation during the program through the use of individual exercises, questionnaires, team exercises, training videos and discussions of "real life" issues in their organizations.
The material has been designed to enable delegates to apply all of the material with immediate effect back in the workplace.