



MUE112

Machinery Bearing, Lubrication & Reliability (Tribology)

Course Introduction:

To improve reliability of plant, many companies implement predictive maintenance program that using various technology to monitor machine health and eliminate at least reduce unplanned breakdown and extend MTBF of machine.

As vibration, oil analysis is important technology in monitoring critical machine. Gearbox and turbine are examples machines that more powerful if monitored using oil analysis technology.

Common problem that occurred are method and procedure of sampling oil, interpretation of oil analysis report and non-integration of oil analysis report with other technology like vibration. This course explain how to good sample method, how to analyze data, interpret report and how to integrate oil analysis data with vibration to build comprehensive report.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- Determine the proper usage of oil for machinery bearing lubrication
- Squeeze maximum life out lubrication
- Set optimum oil analysis limit
- Capable to take oil sampling with correct method and procedure
- Have capability to analyze and building report

Who Should Attend?

This course is intended to all maintenance professionals, lubrication technicians, machine and equipment predictive maintenance technicians, reliability and lubrication engineers, superintends, supervisors and technicians, maintenance managers, supervisors and foremen, rotating equipment engineers, plant engineers, PMV engineers, machinery engineers & laboratory analyst.

Course Outline:

Day 1:

INTRODUCTION

- The case for condition-monitoring

LUBRICANT FUNDAMENTALS

- The History of oil
- Functions of Lubricating Oil
- Lubrication films
- Mineral oil refining
- Properties of Base Oil
- viscosity and Classification
- Oil Additives
- Synthetic oils
- Classification of oils
- Performance Tests

Day 2:

LUBRICANT PERFORMANCE TESTS

- Acid & Base Numbers
- Pour & Flash Points
- Specific & API Gravity
- Seal compatibility
- Color
- Foaming, Dispersancy, Demulsibility
- Filterability
- Rust & Corrosion
- Oxidation & Thermal Stability
- Tribological Testing

Day 3:

LUBRICANT ANALYSIS *This module provides a detailed analysis of the methods utilized to detect Contamination, Fluid Degradation and Wear & Fatigue in lubricants.*

- Dirt
- Rust & Corrosion
- Glycol, Soot, Fuel
- Nitration, Sulfate
- Process Contaminants
- Viscosity
- Acid & Base Numbers
- Fourier-Transform Infra-Red
- Karl Fischer
- Gas Chromatography

- Particle Count
- Elemental Analysis (ICP, AA, XRF)

Day 4:

GREASE FUNDAMENTALS

- Functions of Grease
- Base oils, Additives and Soaps
- Properties of Grease
- Analysis of Grease for Predictive Maintenance

Day 5:

PROGRAM MANAGEMENT

- Maintenance Strategies
- The role of Oil Analysis
- Setting Program Goals
- Oil Sampling
- Completing Sample Information
- Reading Oil Analysis Sample Reports

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

Course Fees:

To be advised as per the course location. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee/Tea
08:20 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Coffee/Tea/Snacks)
13:30 - 15:00	Last Session

