

Workshop on

"Machine Lubrication Analysis (MLA) - I"

3-Days Program

About Us

We are the training providers and deals in Technical, HSEQ, Management and Soft Skills Training.

We have highly knowledgeable and experienced local & foreign subject matter experts. Our team is highly focused and provides the best support as per your requirements and needs.

We provide a platform from where you can add value in you teams. We are highly fascinated on the development of your Technical and Management Teams.

We can provide on-site and classroom training.

About MLA I

The Level I MLA Body of Knowledge is an outline of concepts that a candidate shall have in order to pass the exam, in accordance with ISO 18436-4, Category I.

Course Outline:

I. Maintenance Strategies (10%)

- A. Why machines fail
- B. The impact of poor maintenance on company profits
- C. The role of effective lubrication in failure avoidance
- D. Lube routes and scheduling
- E. Oil analysis and technologies to assure lubrication effectiveness.
- F. Equipment tagging and identification.

II. Lubrication Theory/Fundamentals (18%)

- A. Fundamentals of tribology
- B. Functions of a lubricant
- C. Hydrodynamic lubrication (sliding friction)
- D. Elasto-hydrodynamic lubrication (rolling friction)
- E. Mixed-film lubrication
- F. Base-oils
- G. Additives and their functions
- H. Oil lubricant physical, chemical and performance properties and classifications.

I. Grease lubrication

1. How grease is made
2. Thickener types
3. Thickener compatibility
4. Grease lubricant physical, chemical and performance properties and classifications.

III. Lubricant Selection (10%)

- A. Viscosity selection
- B. Base-oil type selection
- C. Additive system selection
- D. Machine specific lubricant requirements
 1. Hydraulic systems
 2. Rolling element bearings
 3. Journal bearings
 4. Reciprocating engines
 5. Gearing and gearboxes
- E. Application and environment related adjustments.

IV. Lubricant Application (18%)

- A. Basic calculations for determining required lubricant volume.
- B. Basic calculations to determine re-lube and change frequencies.
- C. When to select oil; when to select grease.
- D. Effective use of manual delivery techniques.
- E. Automatic delivery systems.
 1. Automated deliver options.
 - a) Automated grease systems
 - b) Oil mist systems
 - c) Drip and wick lubricators
 2. Deciding when to employ automated lubricators.
 3. Maintenance of automated lubrication systems.

V. Lube Storage and Management (10%)

- A. Lubricant receiving procedures.
- B. Proper storage and inventory management.
- C. Lube storage containers
- D. Proper storage of grease-guns and other lube application devices.
- E. Maintenance of automatic grease systems.
- F. Health and safety assurance.

VI. Lube Condition Control (10%)

- A. Filtration and separation technologies.
- B. Filter rating.
- C. Filtration system design and filter selection.

VII. Oil Sampling (10%)

- A. Objectives for lube oil sampling
- B. Sampling methods
- C. Managing interference
 - 1. Bottle cleanliness and management
 - 2. Flushing
 - 3. Machine conditions appropriate for sampling

VIII. Lubricant health monitoring (10%)

- A. Lubricant failure mechanisms
 - 1. Oxidative degradation
 - a) The oxidation process
 - b) Causes of oxidation
 - c) Effects of oxidative degradation
 - 2. Thermal degradation
 - a) The thermal failure process
 - b) Causes of thermal failure
 - c) Effects of thermal degradation
 - 3. Additive depletion/degradation
 - a) Additive depletion mechanisms
 - b) Additives at risk for depletion/degradation by the various mechanisms.
- B. Testing for wrong or mixed lubricants
 - 1. Baseline physical and chemical properties tests
 - 2. Additive discrepancies

C. Fluid properties test methods and measurement units - applications and limitations.

- 1. Kinematic Viscosity (ASTM D445)
- 2. Absolute (Dynamic) Viscosity (ASTM D2893)
- 3. Viscosity Index (ASTM D2270)
- 4. Acid Number (ASTM D974 et al)
- 5. Base Number (ASTM D974 et al)
- 6. Fourier Transform Infrared (FTIR) analysis
- 7. Rotating Pressure Vessel Oxidation Test (ASTMD2272)
- 8. Atomic Emission Spectroscopy

IX. Wear Debris Monitoring and Analysis (4%)

- A. Common machine wear mechanisms

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The
HIPPOCAMPUS
Industrial Training & Consulting

Contact Us

Phone: +92 310 265 8003

Email: training@hippocampusgroup.com

Web: www.hippocampusgroup.com