

INDUSTRIAL LUBRICATION Fundamentals

Syllabus



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Table of Contents

Course Overview.....	3
Instructional Methodology.....	4
Learning Objectives.....	4
Course Topic Outline.....	7

Course Overview

Course Description

An introduction to optimal lubrication practices, which covers the common activities of a lubrication technician. This training is considered to be a key component to support a lubrication excellence program. This interactive course uses a variety of activities and media to provide the lube technician with the technical knowledge and methodologies of lubrication excellence, which enhance their competencies to execute qualified lubrication duties.

Topics covered are:

- Role of a Lube Technician
- Lubrication Fundamentals
- Lubricant Failure
- Contamination
- Contamination Control
- Best Sampling Procedures
- Equipment Modifications for Reliability
- Lube Room
- Inventory Management
- Lubrication Routes
- Safety, leaks and Spill Control

Target Audience

Lube Technician, Operator, Mechanic, Maintenance Technician, Electricians, Millwrights, PdM Technicians and, Craftsman and operations support personnel

Instructional Methodology

Designed to impact performance

This course has been developed following a systematic approach which identified the learning needs for lubrication professionals. We met with industry experts and plant reliability professionals to determine the specific skills needed to perform lubrication tasks. These needs were analyzed to guide the development of the instructional materials and methodologies used during this course. This course has been designed to create a learning environment which supports adult learning principles to maximize the transfer of the course knowledge to the student. Specific features include interactive exercises, case studies, and hands on examples as well as class discussions conducted through a facilitative approach.

Learning Objectives

- **Receive and inspect new lubricants**
 - Explain the best practice to receive a new lubricants
 - Describe the proper steps to transport and store lubricants in the warehouse

- **Label lubricant containers/packages, machines, lubricant storage areas**
 - Explain the importance of identification labeling for products, machines, tools and locations.
 - Differentiate the three types of labels and know when to apply.

- **Maintain inventory of lube room**
 - Explain the FIFO inventory principle and why it is important
 - Describe the best practices to transport and store lubricants in the lube room

- **Remove contaminants from new oils (solid, moisture) using filter carts or installed systems**
 - Explain the importance of controlling contamination in lubricants
 - Describe how contamination levels are measured with field testing equipment
 - Compare field testing equipment results with established cleanliness targets
 - Calculate flow rate and filter run times
 - List the sources of contaminants
 - Explain the typical procedure for removing contaminants from lubricants
 - Explain the tools and processes for filtering lubricants.

- **Protect lubricant integrity - Keep the contaminants out of the lubricants while storing, handling or transferring in the lube room.**
 - Describe the importance of contamination exclusion objectives and the tools necessary to reach this goal.
 - Explain how contamination exclusion and removal tools function. (Breathers, filters, sight glasses, quick connects and other dedicated hardware)
 - Describe the importance of maintaining lubrication and contamination tools

- **Transport and apply lubricants and products**
 - Define work planning and describe its importance to being an effective technician
 - Describe typical application methods and how they function
 - Identify best practices for lubricant application

- **Conduct field inspections on machines**
 - List the types of field inspections
 - Describe the importance of field inspections

- **Exclude and remove contaminants from machines**
 - Explain the typical contaminants and their impact on machines
 - List the sources of contaminants in machines
 - Describe how contaminants are identified and measured in the field (Inspections and test equipment)
 - Compare field testing equipment results with established cleanliness targets
 - Explain the typical procedures for removing contaminants
 - Calculate filter cart run times
 - Explain the tools and processes for filtering lubricants.
 - Explain how contamination exclusion and removal tools function. (Breathers, filters, sight glasses, quick connects and other dedicated hardware)
 - Describe the importance of keeping your tools clean and in proper working order

- **Sample lubricants: new, in use, reconditioned (Assumptions: Taking samples for field tests, running field tests, interpretation of field test for compliance to targets)**
 - Explaining the importance of proper sampling and oil analysis to reliability goals
 - Describe the proper procedures for taking a sample of new and in-service lubricants

- **Safety, Leak and Spill Response and Disposal of Hazardous Materials**
 - Explain the importance of safety procedures when working with lubricants
 - Describe actions to prevent and control spills
 - Describe actions control leaks
 - Explain the risks of handling hazardous materials (lubricants and consumables) and proper ways of disposal

- **Modify Machinery Configurations – Install hardware; to improve contamination control, increase safety of lubrication and sampling tasks and improve machinery reliability.**
 - Explaining the purpose of equipment modification
 - Identify the various types of hardware and their purpose
 - Describe the basic steps and best practices of hardware installation

- **Administrative tasks, Communications and Competencies of a Lube Technician.**
 - Describe the administrative tasks necessary to support the corporate reliability goals
 - Define a Key Performance Indicator(s) (KPIs) and their connection to his activities.
 - Describe the qualities of high performing lube technician
 - Write a detailed effective observation statements

Course Topic Outline

List the major topics and overall structure of the course, according to the purpose of the course.

1. What are skilled lubrication tasks

- Your role and how it impacts lubrication
- How this training will help your daily activities

2. Machine types and the work they perform

- Electric motors
- Gear boxes
- Compressors
- Hydraulics
- Turbines
- Engines
- Bearings

3. Introduction to Lubrication

- What is lubricated
- Results of poor or incorrect lubrication
- Lubricant fundamentals
- Properties of lubricants
- Types of lubricants
- Applied mathematics and measurements for the Lubrication Professional

4. Lubricant Failure

- Why do we change lubricants?
- Oxidation, additive depletion and contamination

5. Contamination

- Types
- Impact machines
- Clean, cool and dry

6. Contamination Measurement

- Oil field tests and inspections
- Oil analysis program

7. Best sampling procedures

8. Contamination Control

9. Machinery Modification for Lubrication Excellence

10. Lube Room, Storage and Handling

11. Inventory Management (Process/Administrative)

- Reception
- Labeling

12. Routes

- Planning the Route
- Application of Lubricants
- Field Inspections
- Oil Sampling
- Consumable Replacements

13. Safety, Leak and Spill Response and Disposal of Hazardous Materials

- Safety: overall OSHA requirements
- Leak detection, identification and proactive control
- Spills: prevention and control, spill kits
- Disposal of hazardous materials: lubricants, filters, desiccants, other consumables.

14. Administration and Communication

- CMMS overview
- Importance of good reporting
- How to write a good observation statement
- Introduction to lubrication KPIs

15. Program conclusions

- Pre/post assessment