



Lubricant Technology Course: Base Oils, Additives, Greases and Lubricant Selection



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Introduction:

Lubricant technology course on base oils, additives, greases and lubricant selection is a five-day course for lubricant technical service, sales, blending plant quality and maintenance reliability staff, ending with a lubricant selection and consolidation plan for a case plant. Plants carry overlapping grades and suffer wear, deposits and grease failures when oils are chosen by habit rather than by base stock, additive chemistry and viscosity. Nominees already specify, blend, test or apply oils and greases, and the course is taught through case studies on product data sheets and machine requirements. CoreConcept Training Center delivers this course on lubricant technology.

Course Objectives:

- Explain how friction, wear mechanisms and lubrication regimes set the film a lubricant must form in bearings, gears and cylinders
- Compare mineral and synthetic base oil groups and the additive functions that turn them into finished lubricants
- Specify viscosity grade and viscosity index needs with ISO VG and SAE grade systems for a given speed, load and temperature
- Distinguish engine, gear, hydraulic, turbine and compressor oils and choose greases by thickener, NLGI consistency and dropping point
- Apply formulation principles and new oil release testing within blending plant quality control
- Produce a lubricant selection and consolidation plan with storage, handling and used oil arrangements for a case plant

Target Audience:

- Lubricant technical service staff responsible for product recommendations and customer equipment surveys
 - Lubricant sales staff responsible for matching product ranges to industrial and fleet customer needs
 - Blending plant quality staff responsible for batch release testing and retained samples
 - Blending plant operators responsible for charging base stocks and additive packages into batches
 - Maintenance reliability staff responsible for choosing lubricants and approving product substitutions
 - Stores and lubrication crew leads responsible for receiving, storing and dispensing oils and greases
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Course Outline:

Day 1: Tribology, Lubrication Regimes and Lubricant Composition

- Stribeck Curve Mapping of Boundary, Mixed and Hydrodynamic Regimes
- Elastohydrodynamic Film Formation in Rolling Bearings and Gear Teeth
- Adhesive, Abrasive, Fatigue and Corrosive Wear Mechanism Identification
- Finished Lubricant Anatomy Showing Base Stock and Additive Share
- Lubricant Duties of Cooling, Sealing, Cleaning and Power Transfer

Day 2: Base Oil Groups, Additive Chemistry and Viscosity Grade Systems

- API Base Oil Groups I to V Refining Routes Compared
- Polyalphaolefin, Ester and Alkylated Naphthalene Synthetic Stock Properties
- Antiwear, Extreme Pressure and Friction Modifier Additive Chemistry
- Dispersant, Detergent, Antioxidant and Pour Point Depressant Functions
- ISO VG, SAE Grades and Viscosity Index Improver Behaviour

Day 3: Lubricant Families, Greases and Performance Specifications

- Engine Oil Performance Categories and Equipment Builder Approvals
- Industrial Gear Oil and Hydraulic Fluid Specification Requirements
- Turbine and Compressor Oil Oxidation and Demulsibility Expectations
- Grease Thickener Types from Lithium Complex to Polyurea
- NLGI Consistency, Dropping Point and Grease Compatibility Selection

Day 4: Formulation, Blending Plant Quality Control and Contamination Risks

- Additive Package Treat Rate and Formulation Trade-Off Decisions
- Batch Kettle and In-Line Blending Plant Operations
- New Oil Release Testing for Viscosity, Flash Point and Foam
- Drum, Bulk Tank and Dispensing Contamination Control Practices
- Used Oil Collection, Re-Refining and Environmental Handling Duties

Day 5: Case Study Lubricant Selection and Consolidation Plan

- Case Plant Lubricant Survey and Machine Requirement Register
 - Application Matching of Viscosity Grade and Additive Type
 - Grade Rationalisation Matrix to Retire Duplicate Lubricant Stocks
 - Storage, Labelling and Colour Coding Scheme for Consolidated Grades
 - Lubricant Selection and Consolidation Plan Completion and Review
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Skills You Will Gain:

- Tribology Fundamentals
- Base Oil Group Classification
- Additive Function Analysis
- Viscosity Grade Specification
- Grease Selection
- Lubricant Formulation
- Blend Quality Release
- Lubricant Rationalisation

Why Attend This Course:

- Deliver a lubricant selection and consolidation plan for a case plant to the maintenance manager or technical service lead for adoption
- Decide whether a proposed substitute oil or grease meets the viscosity, base oil and performance specification of the machine
- Avoid premature wear, grease incompatibility failures and mixed-grade errors caused by excess grades and unclear labelling
- Brief colleagues in stores, sales and maintenance on base oil groups, additive roles and grade systems using shared selection templates

Conclusion:

Back at work, the participant hands the maintenance manager, technical service lead or blending plant supervisor a lubricant selection and consolidation plan that lists each machine, its required grade and the approved product family. Maintenance planners use it to approve substitutions and cut duplicate stock, sales and technical staff use it to frame recommendations, and stores use its labelling scheme to prevent mixed grades. After its first use, the unit should review which grades were retired, whether any machine showed wear or grease incompatibility, and how stock holdings changed.

Frequently Asked Questions FAQ:

What should participants know before a lubricant technology course on base oils, additives and greases?

Participants should already handle oils or greases at work, whether recommending, blending, testing or applying them. Basic chemistry and mechanical awareness help; no advanced calculation is needed. Bringing a product data sheet or plant lubrication list lets the case work reflect their own equipment.

How does a lubricant technology course differ from an oil analysis or lubrication management course?

It concentrates on what a new lubricant is made of and how to choose it: base oils, additives, viscosity grades, greases, specifications and blending quality. Oil analysis courses focus on sampling used oil and interpreting laboratory reports to judge machine and lubricant condition.

Why does lubricant technology treat the base oil group and the additive package separately?

The base oil sets viscosity index, oxidation stability and low-temperature behaviour, while the additive package adds antiwear, extreme pressure, detergent and other functions. Two oils of the same viscosity grade can therefore perform very differently, so both must be checked before approving a substitute.

What do participants take back from a lubricant technology course on base oils, additives and greases?

Participants take back a lubricant selection and consolidation plan for a case plant, listing machine requirements, chosen grades, retired duplicates, storage and labelling rules and used oil arrangements. It can be adapted to their own site or customer accounts.
