

LUBE

TECHNI-GRAM



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WHY A LUBRICANT MAY FAIL TO LUBRICATE

By regularly determining the condition of oil and equipment, SWEPCO's Laboratory Oil Analysis (LOA) program can help accomplish the following important objectives:

- **REDUCE UNSCHEDULED EQUIPMENT DOWNTIME**
- **EXTEND OIL CHANGE INTERVALS** (tells if the oil is suitable for continued service)
- **INCREASE EQUIPMENT LIFE**
- **ALERT MANAGERS OF POTENTIAL EQUIPMENT PROBLEMS**
- **DETECT CORROSIVE ACIDS**
- **BE A PART OF FAILURE ANALYSIS**
- **REDUCE WASTE OIL DISPOSAL**

Oil analysis as a means of determining the condition of an internal combustion engine, industrial gearbox, hydraulic system, compressor, etc., has moved out of the area of theory and into that of sound, practical preventative maintenance procedure.

All contaminants are significant to the laboratory analyst. Liquids, such as fuel, water or glycol, point to certain definite conditions that must receive attention. Solid contaminants of which there are many, are indicative of specific leaks, malfunctions, wear or deficiencies in maintenance. Studied individually and collectively, they expose a complete picture of a components operation.

Southwestern Petroleum has the scientific methods and equipment, which allow early detection of potential problems and a more accurate diagnosis of their cause. We utilize the most advanced testing equipment including a Fourier Transform Infrared (FTIR) spectrophotometer and an Inductively Coupled Plasma (ICP) machine, which provides a quantitative analysis of the oil for wear metals and other elements.



... to keep it running

SWEPCO’s Laboratory Oil Analysis (LOA) also utilizes advanced computer systems to store and retrieve historic analyses data on each individual engine, gear case, hydraulic system or transmission. This history can be especially revealing when compared to published wear level averages. Results of a specific analysis may be within allowable average ranges, but when compared to that unit’s past history, they may indicate a sudden increase in wear, thus alerting the operator of an impending premature failure. The following table is a simplistic summary of a few of the reasons an oil may fail to lubricate:

LUBRICANT PROBLEM	WHY?	WHAT HAPPENS?
LOSES PROPERTY OF		
Oxidation Control	Inhibitors used up, can’t stop attack on oil and additives.	Oil viscosity increases; deposits form. Acids corrode metals.
Rust Inhibition	Inhibitors protecting iron surfaces are used up.	Oil fails to protect against further rusting.
Load Carrying	Additives consumed by reaction with metal surfaces, or removed by water.	Oil can’t continue to protect against scuffing.
Dispersancy	Dispersant becomes overloaded with liquid and solid contaminants.	Solids (varnish, sludge) form.
BECOMES CONTAMINATED BY		
Solids		
Dirt	Dirt comes from everywhere!	Promotes wear; taxes lubricant properties.
Wear Metals	A sign of unhealthy machine.	Shortened machine life unless corrected.
Rust	Oxygen, water, and iron have interacted.	Contributes to wear.
Carbonaceous Matter	The oil has been overheated.	Deposits clog oil passageways.
Sludge and Varnish	Oxidation products have become insoluble.	Deposits form on machine parts and control valves.
Liquids		
Water and Process Fluids	A sign of leaky seals and condensation.	Affects lubricant efficiency; promotes oil deterioration.
Oxidation Products	Excessive system temperatures; drain interval too long.	Forerunner of more solid debris.
Other Lubricating Oils	Misapplication of oils on hand.	Can alter desirable properties of system lubricant.
Lubricant Supplements or “after market” additives	Usually added by well-meaning servicemen.	Can alter desirable properties of system lubricant.