

Oil Lab Analysis Services



LUBRICATION ANALYSIS - AN INTEGRAL PART OF THE PREDICTIVE MAINTENANCE PROGRAM

An effective lubrication program is both predictive and proactive: Predictive in that it gives early warning of unseen corrosion and wear, and Proactive because it eliminates the root causes of failure. Unseen corrosion, contaminants, improper lubrication, and machine wear are a primary root cause of equipment failure. Onsite instruments are valuable in providing timely and efficient analysis on a large volume of lubricant samples. But some of those samples will indicate the need for a closer look in a full-service laboratory environment. In a full-service lab, analysis goes beyond the mere detection of particulate matter to answer questions regarding oil applicability, viscosity, and contamination, as well as testing for the presence of water and other chemicals.

Emerson offers one of the most industrial oil analysis laboratories in the United States, designed to handle industrial oils used in gearboxes, pumps, hydraulic systems, compressors, and more. Since the lab results can be transferred directly into AMS Suite: Machinery Health™ Manager, oil analysis data can be integrated with your vibration, infrared thermography, laser alignment and balancing data for a complete look at your machinery health.

TEST CAPABILITIES AND ABBREVIATIONS

- **Emission Spectroscopy** - determination of metal contents (wear, contaminant, or additive type) using optical emission spectroscopy.
- **FTIR** - use of infrared spectroscopy to trend anti-wear additive (ZDDP), anti-oxidant additive (DBPC), and oxidation. This information is used to help in determining lube degradation.
- **40C and 100C viscosity along with VI (viscosity index)** - determination of kinematic viscosity at 40 and 100 degrees Celsius. Viscosity index is a calculated number indicating effect of temperature on the change in viscosity. These results indicate effects of friction (heat) on the specified lube and possible lube degradation.
- **Water Determination (Karl Fischer Water when appropriate)** - Karl Fisher is a titration method used to determine % water or PPM of water. Hot Plate (crackle test) is used to determine if there is free water (boils off instantly making a popping or crackle sound) and deems sample necessary to titrate by Karl Fischer.

Oil Lab Analysis Services



- **Particle Count and/or Ferrous Wear Index** - Ferrous Wear (FW) Index is an indication of presence of wear metals in a sample, particularly iron. If value is not extreme, then do particle count. Particle Count is the physical counting of particles in a sample and at various sizes. The lab's method reports size >2 microns, >5 microns, >15 microns, >25 microns, >50 microns, >100 microns, and the ISO distribution.
- **TAN or TBN** - TAN is Total Acid Neutralization and looks for the presence of acids which indicate lube breakdown. TBN is Total Base Neutralization, which indicates the basic constituents in petroleum products. As this number lowers from trend it indicates possible lube breakdown.
- **Wear Debris Analysis (WDA)** - when indicated by an increase in Particle Count or Wear Index. Extreme values for FW or PC indicate need for WDA. WDA is a filter patch of the sample that allows technician to look at the non oil components under a light microscope and make analytical statements about the lube condition.

©2010, Emerson Process Management.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.

All rights reserved. AMS is a mark of one of the Emerson Process Management group of companies. The Emerson logo is a trademark and service mark of Emerson Electric Co. All other marks are the property of their respective owners.

Emerson Process Management

835 Innovation Drive
Knoxville, TN 37932
T (865) 675-2400
F (865) 218-1401

www.assetweb.com/mhm

EMERSON
Process Management