

TRIBOLOGIK®

NEWSLETTER

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October 2012

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Testing Pump and Hydraulic Lubricants

Clean oil is fundamental to hydraulic systems. Pollution generated by solid wear particles, water or gas is the main cause of the deterioration of these systems.

Testing hydraulic oil is essential in preventing failure of your systems. The consequences may be unfortunate, if not catastrophic on the security of the operators and users, depending on the critical status of the equipment, whether it is a dump bucket or worse, a landing gear.

It is well known that the majority of hydraulic breakdowns are due to solid or aqueous fluid contamination.

Solid particles are detected by two complementary oil tests :

- **Small wear metal particles** (smaller than 6 microns) are detected by **Spectrometric analysis**, whereas
- **Larger particles** are detected by **Particle counting**. This test counts particle sizes greater than 4, 6, 14, 25, 50, and 100 microns in size and are reported through the ISO Cleanliness Code, ISO 4406. The majority of solid pollutants being between 2 and 25 microns in size. The combination of these two complementary tests provide an accurate diagnosis of the condition of the equipment. However, if water is present at levels greater than 300 ppm, particle counting is unachievable.

Early detection of **water** and **oxidation** is achieved through **infrared analysis (FTIR)**. Oil exposed to oxygen from the air at elevated temperature will oxidize to a variety of compounds, including carboxylic acids. These substances, including water, contribute to the acidity of the oil, depleting the basic additives present in the oil and contributing to **corrosion**.

Finally, **the viscosity at 40 °C test**, which measures the capability of the oil to lubricate the equipment, concludes the list of basic tests for hydraulics and pumps.



Spectroscopy, infrared and viscosity are the three basic tests prescribed on all types of equipment. Particle counting is specific to hydraulic systems (and turbines).



Advanced Testing

Two other tests may also be recommended when more accurate results are needed on water contamination and oxidation in order to prevent corrosion :

- **Total Acid Number (TAN):** This test measures the total amount of acidic material present in a lubricant. A TAN increase above that of the new product indicates a degradation of oil by oxidation or contamination. Acid oil causes corrosion on the metallic parts of the equipment.
- **Karl Fischer Water Test :** The Karl Fischer Water Test is used for components and applications where water contamination can cause severe lubricant breakdown and must be kept extremely low. The Karl Fischer titration method measures and reports water content as a percentage (e.g. 0.005% = 50 ppm).

Contact your rep for additional information.

Friday October 19 WEBINAR : Why test your Equipment with Tribologik®?

Learn why by attending this webinar by **Jeremie Verdene**

When: Friday October 19, 2012

Time :

- **Ontario-Manitoba : 11:00 AM, Toronto time**
- **Saskatchewan-Alberta : 10:00 AM, Calgary time**

Duration : 30 minutes

Reserve now with Jeremie : jeremie@tribologik.com

info@tribologik.com

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GlobalMeet

You're invited.

You've been invited to a web meeting starting lundi 9 juillet 2012 at 11:35 Canada, Quebec.

Have the meeting call you.
Click the Connect Me link below. No need to dial-in.

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