TRIBOLOGIK®
NEWSLETTER

Your Equipment's Best Friend! www.tribologik.com

November 2012

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Recommended Tests for Compressors and Bearings

Rotary Screw Compressor

Compressors and bearings have very little in common from an operating and manufacturing standpoint. However, when it comes to oil testing , the same test packages are recommended for both.

The purpose of compressors is to increase the pressure of a gas by reducing its volume. There are many types of compressors : rotary, reciprocating, axial-flow, centrifugal, screw compressors, etc.

Bearings are made of two coaxial races separated by a row of lightlly lubrified rolling elements.

These rolling elements are either ball, tapered, spherical or cylindrical rollers, sometimes also called needles.

Wear and Contamination of Compressor Oils

In order to do their job, i.e. : to compress, the constituting parts of compressors must be in contact with one another, which makes them subject to mechanical wear.

In addition, compressors breathe in large volumes of air. If they are not in a sterile and humidity-free environment, they swallow all kinds of minuscule dirt particles and water droplets which are in suspension in the atmosphere. Unfiltered because too small, these particles and droplets are causes of contamination.

Because compressors are exposed to air (i.e. : oxygen), oxidation is also a potential threat to compressor oil. Oxidation being a major cause of oil acidity, detecting them is of utmost importance in order to prevent corrosion of the equipment.

Wear and Contamination of Bearing Oils

Lubrication is essential to bearings. Its main function : to avoid gripping of its various elements. As bearings are being used in all kinds of situations and conditions, it is not always possible to keep them clean. For instance, bearings operating in a stone quarry will be constantly exposed to

dirt and stone dust. It is therefore essential to test their lubricants on a regular basis in order to ensure proper lubrication of the equipment and thus prevent failure. Together with fatigue, binding, spalling, cracks, flaws, breaks and oxidation are the most common failure modes of bearings.

There are four basic tests are prescribed for bearings and compressors : **Spectrometric analysis** for the detection of small wear metal particles (< 6 micron), **infrared analysis** (FTIR) for **contamination,** and **viscosity at 40 °C.** The fourth test, **Direct reading (DR),** examines the amount of ferrous and non-ferrous large particles in the range of 4 to 100 microns and includes other contaminants. DR results give the amount of particulate from metal, non-metal and unclassified particles, as well as the percentage of metal particles.

Advanced Testing

TAN (Total Acid Number) test can also be prescribed to detect the quantity of acidic material present in the lubricant and thus prevent corrosion.

Since water is the worst enemy of oil, a **Karl Fischer water titration** test can also be required if the test of FTIR indicated an early warning of water contamination. FTIR is effective in detecting water particles in excess of 1 000 ppm. However, Karl Fischer test method is much more precise and reports water as a percentage or in ppm.

For additional information, contact your rep.

Friday November 16 WEBINAR : Why test your Equipment with Tribologik®?

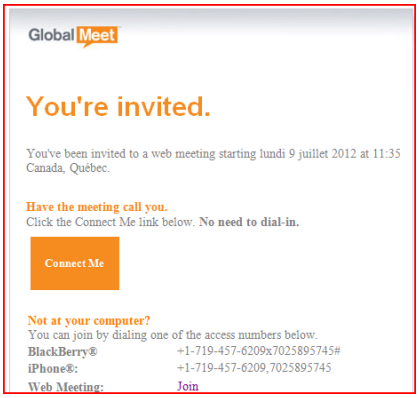
Learn why by attending this webinar by **Jeremie Verdene**

When: Friday November 16, 2012

Time :

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

Duration : 30 minutes



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