TRIBOLOGIK®

NEWSLETTER

ISO 17025:2005 **www.tribologik.com**

MAY 2014

In this Issue :

Ester based Lubricants

As seen in our previous issue, synthetic esters are considered nontoxic and biodegradable. They offer an environmental friendly alternative to conventional mineral-based oils due to improved energy effectiveness, reduced part wear and biodegradability rate.

Being fire resistant and having high flash and fire points as well as high auto ignition temperatures and low heats of combustion they have performance and/or safety advantages over just mineral oil based fluids. Their only inconvenience is their incompatibility with mineral oils.

There are three types of ester based oils : diesters, polyolesters (POEs) and phosphate esters.

Diesters

Synthetic Diester Compressor Oils are primarily intended for the lubrication of severe duty reciprocating air compressors but are not recommended for air compressors used in breathing air applications. These lubricants reduce the potential for fires and explosions, compared to mineral oil-based products.

Synthetic Diester Compressor Oils exhibit a virtual absence of deposit formation and higher autogenous ignition temperatures improving both performance and safety. Their exceptional water separating characteristics reduce problems with emulsion formation and carryover into downstream piping and equipment. However, they have a low hydrolitic stability and limited compatibility with mineral oils.

Polyolesters (POEs)

POEs are used in refrigeration compressors using R-134a, R410A and R-12 refrigerants, which are compatible with the ozone layer. They replace both the CFCs which deplete the ozone layer, and the HFC, which unlike the CFCs, do not harm the ozone layer, but contribute to global warming. They are also the only lubricants used in aviation turbines.

POEs offer a longer lifetime, a wide range of viscosity indexes and oxidation stability. They can be used in most field applications but are specifically effective in compressors (refrigerant systems and air conditioning), high-temperature gas turbines, bearings, gears, oil mist, aircraft engines, hydraulics and heat exchange systems.

Phosphate esters

Phosphate esters are the most fire resistant amongst ester oils. The use of phosphate ester-based products in hydraulic applications is still principally dictated by fire-risk considerations.

Although they possess excellent oxidation stability and good anti-wear properties under critical loading conditions, phosphate esters suffer from lower hydrolytic stability, low viscosity index and extreme chemical aggressiveness toward many conventional seal and coating materials.

These weaknesses limit the use of phosphate esters to specialized applications where a high degree of fire resistance is required.

In Conclusion

Allthough their cost is 5-7 times higher, synthetic lubricants have many advantages over petroleum-based products:

- **Extended Oil Drains** due to their thermal and oxidative stability
- **Energy Savings**: Viscosity index, friction properties, and heat transfer characteristics result in less horsepower to drive equipment.
- **Fire Resistance** may result in lower insurance premiums.
- **Fewer Deposits** means decrease in equipment wear, fewer repairs and down time.
- **Higher Operating Speeds** resulting in more output.

No matter what size the plant, there are several applications for which synthetic lubricants are highly recommended:

- **Air Compressors**: Oil drain after 8,000 hours, as opposed to 1,000 hours with a petroleum-based lubricant and excellent oxidation resistance.
- **Extreme Temperature Duty**: especially suitable for use in refrigerators, ovens, or plants in hot or cold climates.
- **To replace under performing mineral oils.**
- **Continuous and long-term Operations**, e.g. assembly lines where shutdowns for oil changes must be minimized.

In counterpart, synthetic oils are not recommended when :

- Mineral oils can do the job properly.
- The requested volume of oil is very high.
- Where contamination is common and detrimental to prolonged usage.

For more information and details, contact your account manager.

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WEBINAR – Manage your Oil Analysis Program using the Tribologik® web site

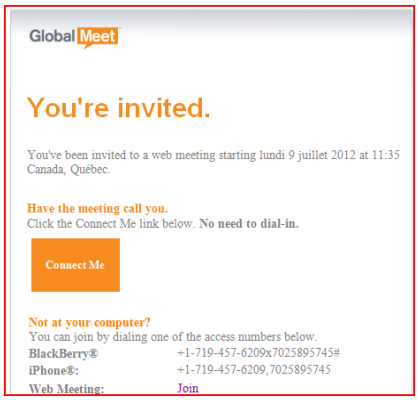
By **Nicholas Reich**

Date : Friday May 30, 2014
Time :

- **Ontario, Manitoba : 12:00 PM, Toronto time**
- **Saskatchewan, Alberta : 10:00 AM, Calgary time**

Duration : 30 minutes

Reserve now with Nicholas : nreich@tribologik.com



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