AGAT Laboratories

Gearbox, Differentials, Transmissions and Final Drives

Equipment Reliability and Lubricants Testing Services

Gear drives of all types are critical to the operational success of industry, unfortunately almost 75% of all gear drive failures are service related and could be prevented in their entirety. For example, overloading, contamination, improper lubrication practices and premature bearing failure account for over 50% of gear drive failure, all of which could be avoided.

Initial lubricant selection is of particular importance, because different gear designs and differing materials used in gear manufacture require different lubricant types; an example is that of worm gear drives. The heavy sliding loads and the phosphor-bronze worm wheel make it necessary to use compounded or polyglycol synthetic lubricants in order to avoid corrosion of the worm wheel and reduce operating temperatures.

Contamination by wear metals, condensation caused by dramatic changes in both ambient and operating temperatures and oxidation of oil caused by operating temperatures can cause serious damage to gear drives and these conditions must be carefully monitored.

A lubricant testing program that should be part of a regularly scheduled condition based monitoring program should include the following oil analysis:

- Kinematic Viscosity
- Spectrographic Analysis (including wear metals, additives and contaminants)
- ISO Particle Count (where oil is too dark, a patch test with photo is necessary)
- Acid Number
- Physical Properties
- Oxidation by FTIR
- Recommended Lubricant Testing package 30-403