Lubricants Testing Services

AGAT Laboratories

Pump

Equipment Reliability and Lubricants Testing Services

Industrial pumps come in all designs; positive displacement pumps may be reciprocating (piston, plunger, or diaphragm), or rotary (gear, screw, lobed or vane design). Centrifugal pumps are either axial or radial in design and the latter may be mounted vertically or horizontally.

All pumps require lubrication, usually with mineral based rust and oxidation (R+O) inhibited oils in a viscosity range of 32 to 150 centistokes, depending upon speed, shaft diameter and application, although some pump manufacturers recommend PAO (polyalphaolefin) synthetic oil.

Depending upon design and application, pumps are fitted with high speed antifriction or journal (sleeve type) bearings. The lubrication systems used may be pressurized types using an oil pump, self contained oil in a bearing housing utilizing oil rings or flinger discs, or dry sump systems using oil mist lubrication. In all cases, depending upon their use and application, pumps are subjected to contaminants, wear metals, direct water or condensation, temperature variations (both ambient and operational) and vibration (caused by coupling misalignment, piping strain, foundation or base plate settling or cavitation due to reduced net positive suction head available (NPSHa).

Centrifugal pumps in particular have a specified performance curve “window” in which they perform satisfactorily and any serious operational issues such as those described above will affect the pump’s efficiency.

In addition to using vibration analysis and ultrasonic sound measurement to monitor pump operation, a lubricant testing program that should be part of a regularly scheduled condition based program should include the following oil analysis:

- Kinematic viscosity
- Spectrographic analysis (wear metals, additives and contaminants)
- ISO particle count
- Acid number
- Physical properties
- Oxidation by FTIR
- Recommended Lubricant Testing Package 30-403