10 October 2018
Press Release

Analysing wear metals and providing preventative solutions

Techenomics adds value to the vital oil analysis procedure

The presence of wear metals in oil indicates issues that impact on the performance of engines and equipment and if left untreated will lead to component failure and equipment breakdown.

Chris Adsett, CEO of Techenomics International

A significant goal of oil analysis is to detect these deleterious metals and determine what is causing the problem and treat it before it leads to unnecessary cost and downtime, the data collected from analysis needs to be effectively trended, interpreted and relayed to users.

As an independent total fluid management provider, Techenomics specialises in carrying out health checks on oil and lubricants and diagnosing issues before they arise.

CEO Chris Adsett says, “Frictional wear occurs during the relative motion between lubricated surfaces, despite the fact that these surfaces are usually coated with an oil film.”

Metals commonly identified in engines, transmissions, hydraulic systems and gear systems are:
Lead – Usually a soft metal, most commonly related to bushings and rod bearings. Engine oil which is highly oxidised can attack the bearing material, leading to increased lead readings.
Iron – Mostly comes from cylinder liners, rings, crankshaft, camshaft, rods, valve train, oil pump gear, wrist pins, cast iron components and gears. It is usually found as fine particles due to abrasion or wear.
Aluminium – Generally comes from pistons, turbo bearings, main and rod bearings, pumps, thrust bearings and washers, plates and aluminium castings. Aluminium associated with silica is an indicator of dirt. Aluminium found in hydraulic systems is generally due to dirt ingestion and in final drives can be associated with dirt or sand.
Copper – It is usually a soft metal present in main and rod bearings, oil cooler core, clutch plates, brass and bronze bushings and the roller bearing outer cage. In engines it is generally due to a water pump leak or coolant core. If it is found along with potassium, sodium and glycol, it will be coming from the oil cooler. If it is found along with lead and tin, it will be coming from bearings or bushings.

Chromium – Generally a hard metal generated from piston rings, liners, exhaust valves, shaft plating, roller bearings, needle bearings, shafts, rods, gears, stainless steel alloys. It indicates that something harder is present, usually silica and alumina. Chromium found in hydraulic systems is from cylinder rods and valve spools.
Tin – This is usually found in bearings, brass or bronze bushings and flashing from pistons. Tin associated with lead and copper in engines indicates bearing wear.
Nickel – It is generally found in alloy valves, crankshafts, camshafts, bearings and shafts.

Chris Adsett says that spectroscopy identifies the amount and type of wear metals, additives and contamination in both new and used lubricating oil.

"By determining the metal content, we are able to alert operators of the severity and type of problems occurring in the equipment compartment.
"Spectrometric analysis can detect metals up to a maximum of 8 microns in size with all measurements made in parts per million (ppm).
"Based on our extensive knowledge of lubricants and equipment, the serviceability of the oil can be analysed by interpreting the source of each metal," he adds.

For more information about Techenomics contact: Chris Adsett, c.adsett@techenomics.com*; in Indonesia Teguh,* teguh@techenomics.com*; in Singapore Siti,* siti@techenomics.com*, in Mongolia Tumee,* tumee@techenomics.com*, or in Australia Steven Adamthwaite,* steven@techenomics.com *and Michael Noncic,* michael@techenomics.com