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Press Release

## **Oil health checks include particle count, viscosity and oxidation tests**

### ***Techenomics' tests keep engines and equipment running optimally***

As part of comprehensive 'health checks' on oil and lubricants, Techenomics has a number of tests carried out on samples to ensure that engines and equipment are running at optimal levels, reducing maintenance downtimes, improving productivity and decreasing costs.

These tests performed by trained staff using state-of-the-art equipment in ISO-accredited laboratories determine various aspects of the condition of oil and lubricants.



Chris Adsett, CEO of  
Techenomics International

Techenomics CEO Chris Adsett says that while spectroscopy identifies the amount and type of wear metals, additives, contamination in both new and used lubricating oil, other tests include particle counting, viscosity and oxidation.



Techenomics Australia laboratory supervisor Sahar Nazari

Commonly used to monitor hydraulic systems, transmissions and turbines, particle counting indicates the cleanliness of oil by determining the level of solid contaminant particles present.

This method is often done in conjunction with spectrometric analysis but is not used with engine oils owing to the dark opaque nature of these oils.

A particle count measures all particles that accumulate within a system, including metallic and non-metallic particles, fibres, dirt, water, bacteria and any other kind of debris.

“By using a light scattered principle, the particle size in micros can be analysed and results are presented utilising ISO 4406 level coding,” Chris Adsett says.

Viscosity measures a lubricant’s resistance to flow (fluid thickness) at temperature and is an oil’s most important physical property.

Two temperatures are routinely employed for most oil analysis - 40 degrees C for ISO oils and 100 degrees C for SAE oils.

Chris Adsett says in viscosity tests oil baths are heated to one of the two referenced temperatures.

“A small sample of oil is heated in a capillary tube until it reaches equilibrium with the bath temperature. The oil sample then flows downward via gravity through a measuring volume area within the tube and is timed as it flows through the area. The viscosity is based on the time spent in the measuring area.

“The Viscosity Index (VI) of lubricant is measured on the basis of viscosity values at 40 degrees C and 100 degrees C and can identify the lubricant grade as mono or multi,” he says.

Oxidation is the chemical degradation of a lubricant caused by a reaction with oxygen, primarily at high temperatures.

“While most lubricants contain special additives to inhibit oxidation, excessive oxidation can still occur under some operating conditions,” Chris Adsett says.

“When it does occur, a wide variety of harmful by-products are produced, which increase component wear, retard performance and shorten equipment life.”



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He says high oxidation levels indicate oil thickening and will result in equipment failure due to inadequate lubrication.

“Oxidation levels can be identified from the infrared signatures of the oil and any deviation from the virgin oil sample indicates its severity,” he adds.

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