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Press Release

## Oil analysis is core business at Techenomics

*Apologies for being a little quiet on the news front for a few weeks but things have been far from quiet within the business. These are exciting times for Techenomics and we have been flat chat developing digital data capture capabilities and setting up trials of WS2 additives around the world.*

Oil analysis is the heart of what we do at Techenomics – it enables us to predict maintenance issues before they raise their ugly head and impact upon productivity and costs.

Oil analysis is the laboratory analysis of a lubricant’s properties, suspended contaminants and wear debris. The presence of these deleterious elements prevent oil from working effectively and can cause equipment breakdown.

All additional work, services and technology implemented is aimed at enhancing this process and giving clients better performance from the lubricants, according to Techenomics CEO Chris Adsett. Analysis of oil is performed during routine predictive maintenance of engines and operating equipment to provide meaningful and accurate information on lubricant and machine condition. The study of wear in machinery is called tribology.

Techenomics Technology and Product Development manager Eka Karmila says there are four tests carried out in a standard oil analysis procedure – spectral exam, viscosity test, flash point test and acid number/base number.

**Spectral exam** – The spectrometer analyses the oil and indicates the levels of various metals and additives present, thus providing a gauge of how much an engine is wearing.

Techenomics can detect 15 elements that can impact on the oil and on engines or components - iron, lead, nickel, aluminium, copper, chromium, tin, sodium, silicon, zinc, molybdenum, phosphorus, magnesium, calcium and boron.

**Viscosity test** – Viscosity refers to the grade, or thickness, of the oil. It is the most important physical property of a lubricating oil. Measuring viscosity is therefore, one of the more important tests for oil in a mechanical system.

In condition monitoring practices kinematic viscosity, which is defined as the resistance to flow under gravity, is the established method.

**Flash Point test** - This measures the temperature at which vapors from the oil ignite.

Eka Karmila says that for any specific grade of oil, we know what temperature the oil should flash at. “If it



Chris Adsett, CEO of  
Techenomics International



Techenomics technology and  
product development manager  
Eka Karmila

flashes at or above that level, the oil is not contaminated. If oil flashes lower than it should, it has probably been contaminated with something and fuel is the most common contaminant in oil.”



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**Acid Number/Base Number** - Acid number and base number tests are similar but are used to interpret different lubricant and contaminant-related matters.

In an oil analysis test, the acid number is the concentration of acid in the oil while the base number is the reserve of alkalinity in the oil. Results are expressed in terms of the volume of potassium hydroxide in milligrams required to neutralise the acids in one gram of oil.

Acid number testing is primarily performed on non-crankcase oils while base number testing is mainly for over-based crankcase oils.

“An acid number that is too high or too low may be the result of oil oxidation, the presence of an incorrect lubricant or additive depletion,” Eka Karmila says.

“A base number that is too low can indicate high engine blow-by conditions (fuel, soot, etc.), the presence of an incorrect lubricant, internal leakage contamination (glycol) or oil oxidation from extended oil drain intervals and/or extreme heat,” she adds.

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