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Benefits of S.O.S.T. Program

Lube oil is the blood stream of an engine. Scheduled Oil Sampling and Testing produces useful clues for **preventive maintenance**. It helps to predict the conditions of critical components in engine before a catastrophic failure.

"A blood test report contains clues for doctors. Similarly an oil analysis report contains hints for engineers to take accurate operational and maintenance decisions quickly."

What is T.S.O.S.T Program?

It's an on site, cost effective & reliable oil analysis program that enables you to monitor your engine's health more closely and helps you to take correct operational and maintenance decisions quickly.



Severely damaged bearing shell (left) and crank-pin (right) because of lubrication failure

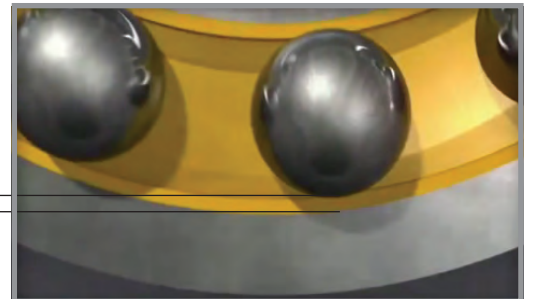
Early detection is the key !

Almost all critical engine components under lubrication are covered and beyond our visual range. We cannot see their conditions without dismantling the system, but oil analysis enables us to predict their health and take corrective actions before a catastrophic failure.

Key Parameters for Diesel & Gas Engines

- Viscosity
 - Water
 - Insolubles
 - TBN*
 - TAN**

Oil films keep two moving surfaces apart from each other in contact zone



Viscosity

This is the most critical parameter of lube oil.

- Higher the viscosity, thicker the oil, larger the film thickness and higher the flow resistance
- Lower the viscosity, thinner the oil, smaller the film thickness and lower the flow resistance

Why to monitor?

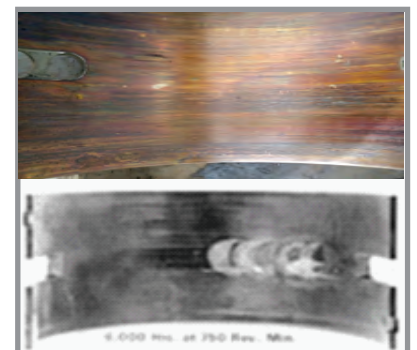
- To detect fuel dilution (for distillate fuel) that reduces oil viscosity
- To detect heavy fuel oil contamination that increase the oil viscosity
- To identify other causes like soot loading, inefficient filters or centrifuge

Water in Oil

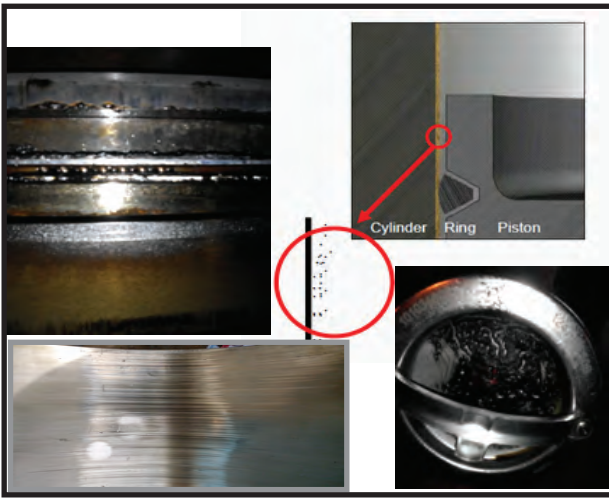
- Corrode unprotected metal surfaces
- Destabilize chemical additives in the lubricants
- Catalyze the degradation of oil
- Reacts with acid forming gases and produce corrosive acids

Why to monitor?

OEM recommended water in engine oil is typically 0.2 to 0.3% V/V. Water in oil test will assist you to know whether you are running the engine crossing the OEM specified limit or not.



Water caused corrosion on shell bearing surfaces



Insolubles

It indicates the cleanliness of lubrication system

Insolubles are responsible for:

- Increased oil viscosity
- Wear of bearings and running surfaces
- Blockage of oil ways and filters
- Fouling around ring packs, ring lands etc

By insolubles test we can determine the quantity of abrasive solids which may cause premature component failures.

TBN:- why need close monitoring on TBN depletion rate?

TBN is the acid neutralizing capability of an oil. Engines running on HFO are exposed to a more corrosive combustion regime.

Low TBN problems:

- Insufficient neutralization capacity leading corrosion to engine components
- Poor detergency affects engine cleanliness and causes fouling around ring packs, under piston cooling ways.

Without monitoring the TBN we will never know how much strong the oil is to fight against acidic attack.



Acidic attack on lubricated surfaces



Piston Scuffing

Problems associated with Low TBN and High TAN

TAN:- why need close monitoring on TAN?

This is the most critical parameter for gas engine oils where low ash forming oil (low TBN) is used.

In gas engines the oil TBN is low, combustion temperature is high, TBN may fall rapidly below the required level and TAN may exceed the safe limits without detection.

Hence, TAN must be **monitored** and **trended** very closely to protect engines from acidic corrosion.

High TAN problems:

- Formation of gums and lacquers on metal surfaces
- A gradual speed up in the rate of TAN increase corrosion in lube oil system particularly if water is present

Tēkasa'i Portable Oil Analysis Lab

- We analyze
- We track changes
- We keep you informed