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TECHNICAL BULLETIN

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SUBJECT: OIL ANALYSIS

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IMPORTANT INFORMATION ON OIL ANALYSIS

INTRODUCTION

Used oil analysis is the cornerstone of predictive maintenance. Unfortunately, there are not industry-wide standard for what test results suggest a change in oil, filter, or change of the service interval. Background on tests, the composition of oils, and the machine that is being lubricated are critical in determining the correct used oil analysis practices for your business.

IMPORTANT TESTS

Some of the most important tests in the oil analysis spectrum are viscosity, wear metal concentration, coolant and water contamination, fuel contamination, soot level and other abrasive contaminants, particle counts, acid or base numbers, etc. This is, however, not an exhaustive list of tests available. Below are a very generic set of test parameters and limits that you may use to start a program:

VISCOSITY – A change in grade would typically constitute and oil change

WEAR METAL – A baseline should be set for each machine. Any significant increase in wear metals over an interval would constitute investigation into operating conditions and service intervals.

COOLANT and WATER – Any coolant contamination is typically cause for concern and should be investigated. Fixing leaks now may prevent costly catastrophic failure later and may decrease downtime and increase productivity.

FUEL DILUTION – Typically accompanied by decreases in additive concentrations and viscosity. Fuel dilution is a problem with IC engines, and should be limited to 2-4%. For engines with a history of corrosion problems or running on high concentrations of biodiesel, this limit may need to be set lower. Any change in viscosity grade due to dilution should be condemning.

SOOT and ABRASIVES – Soot is a serious issue for HD engines with exhaust gas recirculation (EGR). Soot is abrasive and should generally be limited to 2-4% by volume. However, the structure and properties of soot can vary from engine to engine with differing fuels, operating conditions, air-to-fuel ratio, and other factors. A soot concentration above 2% accompanied by a viscosity increase out of grade or an increase in wear metals may constitute a shortening of wear metals or investigation of filtration equipment. Silicon (dirt, sand, and sealant) material also fits here and should be monitored with reference to filtration and wear.

SUMMARY

Oil analysis is a critical part of an effective predictive maintenance program and can be used to increase productivity, maximize service intervals, and premature equipment failure. Using the tools of oil analysis, the expertise of oil analysis experts, OEMs, and lubricant suppliers can improve the reliability of your equipment and may the total cost of labor and lubrication.