Natural gas engine analysis

This service monitors natural gas engine oil for premature wear, contamination and oil condition

Description

This service is applicable to engines running clean natural gas or dual fuel applications. In addition to monitoring oil condition, this analysis helps you detect premature engine wear, coolant leaks and lubricant contamination.

Potential benefits

- Improved equipment reliability by identifying potential failures before they occur
- Increased productivity through reduction of unscheduled downtime
- Reduced parts replacement and labor costs
- Minimized lubricant consumption and disposal with optimized drain interval

Analysis options — Natural gas engines

	Essential ◆	Enhanced ◆◆	Elite ◆◆◆
Coolant Indicator	✓	✓	✓
Metals	✓	✓	✓
Nitration	✓	✓	✓
Oxidation	✓★	✓★	✓★
Particle Quantifier (PQ) Index			✓
Soot	✓	✓	✓
Total Acid Number (TAN)	★	✓●	✓●
Total Base Number (TBN)		✓	✓
Viscosity* at 40°C or 100°C	✓	✓●	
Viscosity at 40°C and 100°C			✓●
Viscosity Index			✓
Water Vol % Fourier transform infrared spectroscopy (FTIR)	✓	✓●	
Water Vol % Karl Fischer			✓●

Key: ✓ Included test
★ TAN in lieu of oxidation for select synthetic products
● Required by RICE NESHAP

*Viscosity reported at 40°C or 100°C, based on oil type or service level. Analysis may vary by laboratory, product supplied or oil condition.

Sample frequency
Sample at OEM recommended frequency or, for general guidance, begin with: **500 hours.** Adjust frequency based on asset's economic impact, operating environment, machine age, oil age or sample results trend.

Mobil℠ Lubricant Analysis –

Natural gas engine analysis

Test	Purpose	Importance of test
Coolant Indicator	To determine the level of sodium, potassium and boron in the engine oil	Indicative of a coolant leak into the engine via a worn head gasket, cracked block or head
Metals	To determine the presence and levels of metallic content in the oil, including contaminants and wear particles	The level of wear metals helps determine if equipment components are wearing or if harmful contamination has entered the oil. The level of metals that are part of the additive chemistry is also reported
Nitration	To measure the amount of nitrogen by-products in the oil	Indicative of air-fuel ratio used (rich, stoichiometric, lean burn) in the combustion chamber. As a result, if unchecked, nitrogen and oxidation precursors form corrosive acid, deposit and varnishes, which may lead to reduction of the oil and engine life.
Oxidation	To determine the level of lubricant oxidation and deterioration	Oxidation can mean: • Increased wear and corrosion • Shorter equipment life • Increased viscosity • Excessive deposits and plugging
Particle Quantifier (PQ) Index	To determine ferrous metal fatigue failures and metal-to-metal contact not usually detectable with some spectrographic analysis	PQ Index can detect at an early stage: • Anti-friction bearing wear • Plain bearing wear • Early indications of piston scuffing • Gear wear
Soot	To determine the soot content in an oil by percentage weight	Excessive soot contamination may mean: • Decreased engine performance • Excessive deposits and sludge • Shorter oil life • High blow-by
Total Acid Number (TAN)	To measure acidic oil oxidation by-products	An elevated Total Acid Number may indicate increased oil acidity resulting from increased oil oxidation.
Total Base Number (TBN)	To determine the reserve alkalinity of the oil used to neutralize the formation of acids	A decrease in Total Base Number may be indicative of: • Oil degradation caused by rapid acid formation due to changing fuel characteristics or a high rate of oil oxidation • Decreased acid-neutralizing reserve
Viscosity	To determine the oil's resistance to flow	• An increase in viscosity may be due to high insoluble content, water contamination, or admixture with higher viscosity fuel or lubricant • A decrease in viscosity may be due to water contamination, or admixture with lower viscosity fuel or lubricant • Both high or low viscosity may result in premature equipment wear
Viscosity Index	To measure the change of viscosity with temperature	Higher VI demonstrates wider operating range. Monitor for cross contamination. Monitor for viscosity shear.
Water	To detect presence of water contamination	Water contamination may cause severe corrosion and subsequent wear, poor oil film thickness or hydrogen embrittlement

Mobil℠ Lubricant Analysis

When your sample is processed, the laboratory handles each bottle as a unique and important item. Each sample is coded, labeled and tracked through the entire process. By the time test results are available, your equipment sample has directly benefitted from our knowledge of Mobil™ lubricants, decades of OEM relationships and a strong heritage of hands-on application expertise. Sample comments are provided, as required, to help identify potential problems, list possible causes and recommend actions for follow-up.

Industrial Lubricants | Advancing Productivity™

By helping you enhance equipment life and reliability – which minimizes maintenance costs and downtime – our expert services can help you achieve your safety, environmental care and productivity goals.