

Gas and steam turbine analysis



Energy lives here

► This service monitors turbine and lubricant conditions to detect premature wear and contamination

Description

This service is designed to help you detect premature wear and lubricant contamination before they result in costly downtime or expensive repairs. Turbine analysis is applicable for gas and steam turbines operating in continuous or intermittent service. It includes testing to help improve turbine reliability by monitoring system cleanliness and lubricant performance.

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



Reduced lubricant consumption and disposal with optimized drain interval

Analysis options – Gas and steam turbine

	Essential ◆	Enhanced ◆◆	Elite ◆◆◆
Metals	✓	✓	✓
Nitration			✓
Oxidation	✓ ★	✓ ★	✓ ★
Particle Count		✓	✓
Particle Quantifier (PQ) Index		✓	✓
Total Acid Number (TAN)	✓	✓	✓
Ultracentrifuge			✓
Viscosity* at 40°C or 100°C	✓	✓	
Viscosity at 40°C and 100°C			✓
Viscosity Index			✓
Water (Pass/Fail)	G		
Water Vol % Karl Fischer	S	✓	✓

Key

- ✓ Included test
- ★ TAN in lieu of oxidation for select synthetic products
- G Gas turbine only
- S Steam turbine only

*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: **Monthly**. Adjust frequency based on asset's economic impact, operating environment, machine age, oil age or sample results trend.

Mobil ServSM Lubricant Analysis – Gas and steam turbine analysis

Test	Purpose	Importance of test
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	Nitration results from the rapid compression of entrained air. As a result, if unchecked, nitrogen and oxidation precursors might form sticky varnishes.
Oxidation	To determine the level of lubricant oxidation and deterioration	Oxidation can mean: <ul style="list-style-type: none"> ▪ Increased wear and corrosion ▪ Shorter equipment life ▪ Increased viscosity ▪ Excessive deposits and plugging
Particle Count Analysis	To measure the level of particulate contaminants in the oil	<ul style="list-style-type: none"> ▪ Cleanliness is a critical factor in the running of turbine oil systems ▪ Debris can interfere in the fine tolerances of the systems, pumps and valves or cause premature wear
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: <ul style="list-style-type: none"> ▪ Anti-friction bearing wear ▪ Plain bearing wear ▪ Gear wear
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
Ultracentrifuge	To measure level of insoluble deposit formation in oil	Elevated deposit formation can signify increased potential for varnish formation or represent debris, dirt or dust contamination
Viscosity	To determine the oil's resistance to flow	<ul style="list-style-type: none"> ▪ An increase in viscosity may be due to high insoluble content, water contamination, or admixture with higher viscosity lubricant ▪ A decrease in viscosity may be due to water contamination, or admixture with lower viscosity 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 ServSM 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 MobilTM 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.