1 800 255 4417
www.castrol.com/GPS

The Future of Oil Analysis Technology

For generations, used oil analysis has helped enhance the performance and extend the lifespan of critical machinery around the globe. Today, it's the most widely used form of proactive maintenance technology in the world. In fact, monitoring lubricant conditions within the internal environment of machinery is the **single-most cost-effective method** for extending lubricant drain intervals, preventing catastrophic failure and increasing the lifespan of vital equipment.

Castrol® Labcheck Next Generation represents the future of oil analysis technology. At the heart of this new program is a cloud-based application that provides the tools and technology needed to get accurate test results and actionable data faster and easier than ever before.

Castrol's mission is to provide the most comprehensive, responsive and intuitive oil analysis service in the industry. This innovative program — and the service representatives behind it — embody a renewed commitment to each and every Castrol customer: Labcheck Next Generation is designed to help you streamline your workload … and simplify your job.

Features and Benefits

Virtually any piece of equipment that has a lubricating system is a candidate for oil analysis. In fact, all service and maintenance managers in construction and mining, as well as on-road and off-road fleet managers, will see substantial benefits from the tools and features engineered into Castrol's Labcheck Next Generation.

By offering clear, analytical data and professional recommendations, Castrol Labcheck Next Generation oil analysis program saves time and effort, enabling users to:

- Identify and measure lubricant contamination
- Assess equipment conditions
- Prevent breakdowns and minimize downtime
- Maximize component lifespan
- Reduce fuel and oil consumption and decrease operational costs
- Eliminate unnecessary overhauls, in-service failures and field repairs
- Establish optimal service schedules

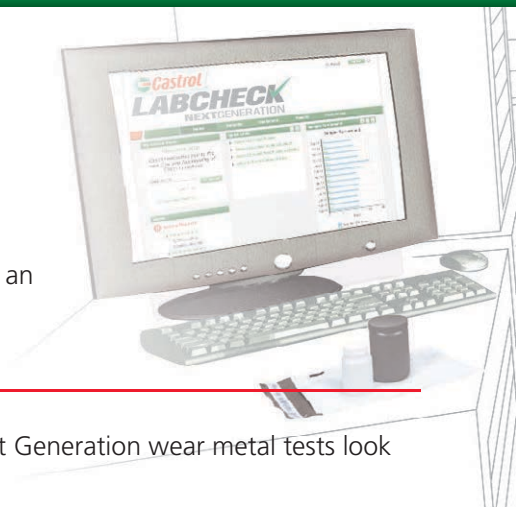
Redesigned with easy-to-use features and helpful shortcuts, Labcheck Next Generation is the most advanced, intuitive used oil analysis program in the industry. It performs a variety of measurements, helping to save real dollars in maintenance, repairs and unscheduled downtime. Sample analysis is completed within 24-48 hours of sample receipt at the laboratory, and critical fleet information is available online 24 hours a day.

Convenient Online Functionality

Directly from the Castrol Labcheck Next Generation home page, you can:

- Locate sample information using simple "search" functions
- Spot items that require immediate attention
- Chart samples by severity
- Track the samples from each worksite
- Review turnaround times
- Monitor first signs of critical wear

A Closer Look at Tests



Core Tests

Along with identifying fluid properties and detecting contaminants, our core tests provide an overall picture of the health of your equipment. The seven core tests include:

1. Wear Metals

Wear metals are tested to help locate premature wear and component risk. Labcheck Next Generation wear metal tests look for an abnormally high presence of:

- Silver (Ag)
- Aluminum (Al)
- Chromium (Cr)
- Copper (Cu)
- Iron (Fe)
- Molybdenum (Mo)
- Nickel (Ni)
- Lead (Pb)
- Tin (Sn)
- Other metallic elements, monitoring a total of 21 distinct metals

2. Contaminant Metals

Contaminant metals are monitored in each sample to detect contamination of the fluid in specific compartments. Fluid contamination can cause components to lose efficiency.

3. Viscosity

Viscosity is tested to detect a change in the oil's fluid properties. High viscosity promotes overheating in equipment, restricted oil flow, accelerated wear, impeded low temperature operation and increased friction. Low viscosity promotes overheating, metal-to-metal contact, accelerated wear and increased lubricant leakage. Changes in viscosity can be the result of other problems in the sampled compartment.

4. Fuel Dilution

Used oil is tested for the presence of unburned fuel. Using oil diluted by fuel can lead to rapid and catastrophic component failure due to reduced viscosity and film strength, as well as increased wear/ and the possibility of a fire hazard.

5. Soot

Soot can cause a host of problems, including:

- poor engine performance
- decreased fuel economy
- increased wear
- shortened fluid life
- deposit and sludge formation
- clogged filters
- increased operating costs

This test measures the soot content of used engine oils and flags every sample containing 5% soot or higher.

6. Glycol (Antifreeze)

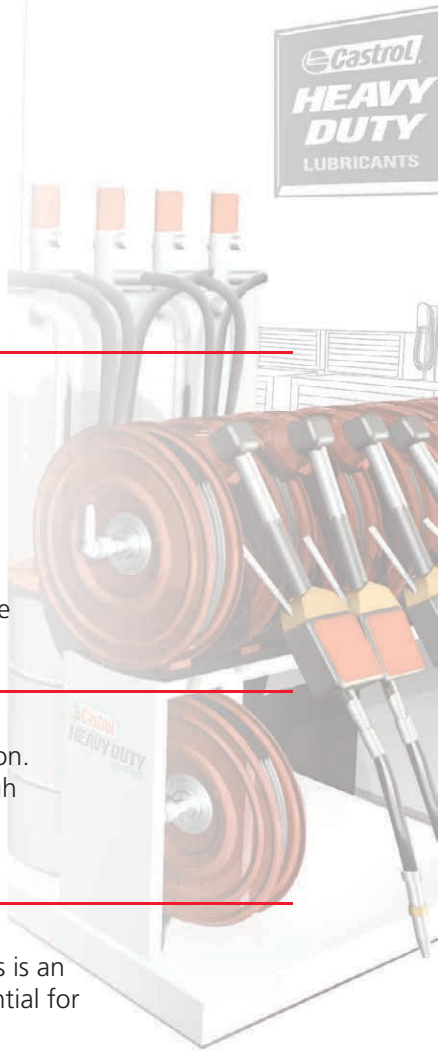
Antifreeze in any compartment other than the cooling system is a critical problem and can lead to rapid and catastrophic component failure. This test looks for and reports the presence of glycol in components.

7. Water

This test looks for the presence of water, performing moisture checks for coolant leaks or condensation formation. Water contamination can promote acid formation, which can cause components to lose efficiency.

Castrol LABCHECK NEXTGENERATION

A Closer Look at Tests



Optional Tests

When specific problems are detected, more detailed information may be required. Labcheck Next Generation "Optional" tests provide these details. These tests include:

1. Oxidation & Nitration

Excessive oxidation can cause increased wear, decreased engine performance, shortened equipment life, deposits, oil-filter plugging, increased oil viscosity, corrosion of metal parts, increased acidity in oil and restricted oil flow. Heat and oxygen in oil can cause it to break down. Low crankcase oil temperatures accelerate the rate of nitration. By-products cause accelerated oil thickening, formation of acidic by-products, increased cylinder and valve train wear, combustion-area deposits, increased acidity in oil and accelerated sludge formation. Our oxidation & nitration test looks for evidence of all these elements, including the presence of nitrogen by-products, which can accelerate oil breakdown.

2. Acid Number

Increases in the acid number of a fluid may be caused by oxidation, nitration or contamination. The acid number can determine the serviceability of a lubricant in specific applications. A high acid number may indicate corrosion of metallic components, oxidation, oil degradation and additive depletion.

3. Base Number

Engine oil usually begins with a relatively high base number that decreases during use — this is an important factor in establishing oil drain intervals. By monitoring the base number, the potential for oil degradation, increased wear and corrosion of metal parts can be detected.

4. Particle Counting (hydraulic, turbine, and transmission fluids)

This test measures the cleanliness of an oil by determining the level of contaminants. Utilizing two extremely accurate methods, particles over two microns in size can be detected. By closely monitoring the particle counts in a fluid, maintenance professionals can detect wear-causing abrasion at the onset and correct conditions that can cause the level of particulate matter to increase.

5. Ferrography

This test quantifies larger particles that cannot be seen by standard used oil analysis equipment and can correlate them to a problem in the system. Ferrography is typically run for forensic investigative measures to identify the origin and nature of wear or failure mode.

1 800 255 4417
www.castrol.com/GPS

Castrol LABCHECK NEXTGENERATION Test Packages

Labcheck Next Generation also offers standardized "packages" or combinations of routinely performed tests. These consist of tests that the lab can perform in volume, so significant savings are realized when a test "package" is selected. Your Castrol sales rep can assist you in selecting the appropriate combination of tests when you begin your program. The following chart outlines Labcheck Next Generation test packages.

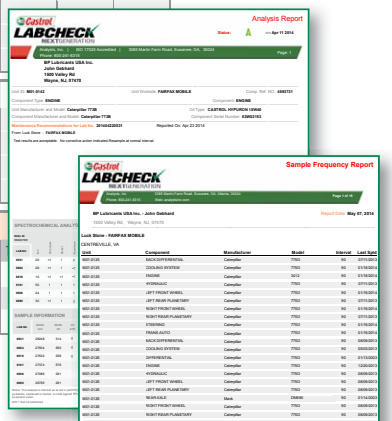
ENGINE		TESTS										
PACKAGE	DESCRIPTION	METALS	FD	SOOT	OX	NTR	V100	V GRADE	W%	GLY	TBN 4739	LEMS
9904EB	Engine Basic	•	•	•	•	•	•	•	•	•		
9904ES	Engine Standard	•	•	•	•	•	•	•	•	•	•	
9904EP	Engine Premium	•	•		•	•	•	•	•	•	•	•

NON-ENGINE		TESTS							
PACKAGE	DESCRIPTION	METALS	V100	V40	V GRADE	W%	GLY	TAN	PQI
9904NEB	Non-Engine Basic	•	•*	•*	•	•	•		
9904NES	Non-Engine Standard	•	•*	•*	•	•	•	•	
9904NEP	Non-Engine Premium	•	•*	•*	•	•	•	•	•

HYDRAULIC		TESTS							
PACKAGE	DESCRIPTION	METALS	V100	V40	V GRADE	W%	TAN	PC	KF
9904HYB	Hydraulic Basic	•	•*	•*	•	•			
9904HYS	Hydraulic Standard	•	•*	•*	•	•	•		
9904HYP	Hydraulic Premium	•	•*	•*	•		•	•	•

NATURAL GAS ENGINE		TESTS							
PACKAGE	DESCRIPTION	METALS	OX	NTR	V100	V GRADE	W%	GLY	TAN
9904NGB	NGE Basic	•	•	•	•	•	•	•	
9904NGS	NGE Standard	•	•	•	•	•	•	•	•
9904NGP	NGE Premium	•	•	•	•	•	•	•	•

Labcheck Next Generation Test Packages



Sample UOA Report

Sample Management Report

Reduce your costs and maximize your equipment life with Castrol Labcheck Next Generation.

Make Labcheck Next Generation part of your long-term maintenance program. If you manage a maintenance operation or a fleet of heavy-duty equipment, large or small, the Labcheck Next Generation used oil analysis program can save you time, energy and money — lots of money. If you're ready to unleash the power of Labcheck Next Generation, give us a call and we'll help you get started.

Getting Started Is Easy

Reach one of our knowledgeable sales representatives by contacting Castrol toll-free at **1-888-CASTROL (1-888-227-8765)**.

For Technical Support

The Castrol Labcheck Support Desk provides industry-leading program and technical support. The support desk can be reached toll-free at **1-866-LABCHECK (1-866-522-2432)** from 7:00 am - 6:30 pm CST.