



# Where Testing





# INDEX

Page

Where Testing -----	3
Power Generation -----	4/5
Marine -----	6/7
Industrial -----	8/9
Oil & Gas -----	10/11
Off high way -----	12/13
Mining -----	14/15
Transportation -----	16/17
Partnership -----	18



## Where Testing

Standard and special fluid testings are provided for a diversity of markets. Our customer base is diverse; if using oil, tests can be made. Training can be organized to educate on the importance of fluid analysis. A lot of money can be saved each year in lost production and equipment replacement costs.

## Power Generation



The money you can save and the downtime you can avoid by routinely sampling power plant equipment easily justifies the expense of oil and coolant analysis. Effective condition monitoring through oil analysis allows you to perform oil changes and necessary maintenance based on test results – what is actually happening within the unit – rather than on the basis of hours of operation or days elapsed on a calendar.

4

Coolant analysis takes the guess work out of properly maintaining a cooling system and can identify maintenance problems before catastrophic engine failure occurs. Regular coolant testing and routine maintenance can help you achieve maximum system efficiency and save you time and money in less downtime, fewer repairs and determining proper drain intervals.

Give your maintenance program the power to predict failure – it costs so little to protect so much.

- Minimize component wear and extend equipment life
- Ensure lubricant suitability for continued use
- Monitor viscosity levels for optimum performance
- Reduce unscheduled downtime
- Increase reliability
- Boost company profits

Turbines, generator and back-up generator diesel engines, compressors, gearboxes and hydraulic systems are the units most critical to uninterrupted, trouble-free power generation. Fluid testing for power generation equipment can be separated into two regimes. Monitoring the condition of the unit and some fluid properties requires regular, monthly sampling to determine wear and contamination levels. Monitoring fluid quality requires sampling only once



or twice a year from systems reservoirs, bulk storage tanks or new lube totes to determine its suitability for use.

See also the Power Generation solution sheet to learn how you can dramatically reduce unscheduled shutdowns.

## Marine



Routine fluid analysis is critical to managing asset reliability in any marine application. High performance expectations, a variety of operating environments and the constant presence of water make marine equipment very different from land-based equipment. Routine testing and analysis can extend fluid and equipment life and identify small problems before they become costly failures.

6

### **Main Propulsion Engines**

Detecting moisture and abrasive contamination before damage occurs is a major benefit of engine oil analysis, but fuel used in off-shore applications can affect the lubrication as well. Marine diesel engines often use high-sulfur “bunker fuel” or “heavy fuel oil”, which can form acids that attack the engine. Oil analysis will see if the lubrication can protect the engine from acids, has the right viscosity and is free from soot.

### **Cooling Systems**

There are a variety of cooling system applications used in marine vessels, and the proper coolant mixture varies depending on the application and operating conditions of the vessel. Our coolant experts will adjust their analysis based on the application, monitor for chemical reactions taking place and contamination. They will advise when coolant treatment is needed and determine when action needs to be taken to prevent failure.

### **Gear Systems**

The biggest concern for gear systems is the type of wear occurring in the system, which is often caused by dirt and water. Regular testing designed specifically for gear systems will help our analysts determine if metal particles in the lubricant are from normal wear or if they are warning signs of a catastrophic failure.

For more info.: please contact Enluse B.V. – tel. +31(0)765781280 – email [info@enluse.com](mailto:info@enluse.com)



### **Hydraulic Systems**

Marine hydraulic systems operate under demanding conditions. For the system to function properly over its expected lifecycle, hydraulic fluid must be free of contamination – and there are a lot of potential contaminants in open water. Water, particles and even air can contaminate hydraulic systems. Testing hydraulic fluids will check viscosity, fluid cleanliness (particle contamination) and water content.

### **Stern Tube Bearings**

A broken seal by the propeller can contaminate lubricating fluids in stern tube bearings with water. Testing can identify small leaks before catastrophic failure occurs.

### **Auxiliary Engines**

Powered by light distillate fuel and operating under difficult conditions, auxiliary engines face different challenges compared to the main propulsion engines. Detecting moisture and abrasive contamination before damage occurs is still important, but extreme temperatures in off-shore conditions can affect the lubrication as well. Testing examines viscosity and soot to see if the lubrication can protect the engine, if fresh lubricant needs to be added or if the sump needs to be drained.

## Industrial



Oil Analysis can put you a step ahead in the fast-paced arena of industrial plant production. If a “run to fail” philosophy often dictates your maintenance plan, give yourself the power to prevent small problems from becoming catastrophic failures. Quit making up for lost production time and start planning equipment downtime. Boost profits and your company’s bottom line...it costs so little to protect so much.

8

- Maximize Product Production
- Increase Equipment Uptime
- Maintain Fluid Quality
- Improve Asset Reliability
- Extend Equipment Life
- Increase Profitability

### Compressors

Compressors may not be the most expensive equipment to replace, but are often the most critical to production. Replacement parts may be difficult to obtain and unscheduled downtime wastes valuable time and money. Adding Particle Count to routine preventative maintenance can predict component failure and reduce downtime.

### Gear Systems

Gearboxes should be closely monitored for dirt and water contamination. Particle Quantifier provides an index number of ferrous particles. PQ reports a quantitative value which indicated the amount of ferrous wear occurring.





### **Hydraulics**

Hydraulic Systems operate under extremely close tolerances, demanding regular monitoring for fluid cleanliness. Testing Particle Count can detect potential wear-causing dirt and contaminants. Testing Water by Karl Fischer provided a precise measurement of how much water is present, which is a big concern since water accelerates acid formation, increases oxidation and reduces lubricity.

### **Turbines**

Turbine reliability is always critical and oil changes or failures are always expensive. Routine trend analysis is crucial to predictive turbine maintenance. Adding Analytical Ferrography with routine monthly testing qualifies the type of wear as well as the source.

See also the Construction solution sheet to learn how you can reduce the risks of your equipment failing unexpectedly by better protecting your equipment.

## Oil & Gas



Downtime is the oil and gas industry's number one enemy. In an environment where equipment is expected to run 24 hours a day, 7 days a week under extreme conditions, downtime caused by equipment failure can quickly put a company out of business. Oil analysis can predict equipment failure before it happens and eliminate downtime – saving you time and money.

10

- Predict Equipment Failure
- Eliminate Downtime
- Increase Asset Reliability
- Reduce Costs

See also the Oil & Gas solution sheet to better understand why it costs so little to protect so much.

Oil Analysis can not only detect equipment failures in progress but point you straight to the root cause of a problem as well, enabling you to prevent catastrophic failures and costly losses in production. No matter what the application – on or off-shore drilling, field services or oil & gas production – if equipment is down, it's costing you money. Highly contaminated operating environments, extreme operating conditions and the economics of equipment replacement only increase the value of oil analysis as a necessary part of managing asset reliability.

### Coolant Analysis

Coolant Analysis takes the guess work out of properly maintaining a cooling system and can identify maintenance problems before catastrophic engine failure occurs. Regular coolant testing and routine maintenance can help you achieve maximum system efficiency and save you time and money in less downtime, fewer repairs and determining proper drain intervals.

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### **Engines**

Diesel and natural gas engine oils should be tested routinely for contamination and wear.

### **Compressor Systems**

Replacement units/parts may be difficult to obtain – valuable time and money are lost in downtime.

### **Hydraulic Systems**

Biggest concern is water contamination, which accelerates acid formation, increases oxidation and reduces lubricity – all leading to system failure.

### **Gear Systems**

Direct Read Ferrography provides a ratio of large to small ferrous particles. DR reports a quantitative value that indicates amount of ferrous wear occurring – provides tremendously helpful trending information.

### **Turbines**

Turbine reliability is always critical and oil changes or failures are always expensive. Routine trend analysis is crucial to predictive turbine maintenance.

## Off high way



Off-highway equipment is operated and stored in the open, meaning expensive equipment is exposed to moisture, abrasives and temperature variants every day. Yet the equipment is still expected to perform at high levels. Breakdowns usually occur far from any mechanics shop, meaning repairs are slow, expensive and they put projects behind schedule.

In addition to identifying which components are about to fail, routine fluid testing will discover contamination and wear patterns so long-term equipment damage can be prevented. By maximizing asset reliability and planning maintenance downtime, you can regain control of your production schedule through an effective fluid analysis program .

See also the Construction solution sheet to learn how you can reduce the risks of your equipment failing unexpectedly by better protecting your equipment.

### **Diesel Engine**

Detecting moisture and abrasive contamination before damage occurs is a major benefit of engine oil analysis, but extreme temperatures in off-highway conditions can affect the lubrication as well. Testing examines viscosity and soot to see if the lubrication can protect the engine, if additives need to be added or if the sump needs to be drained.

### **Coolant Analysis**

Analyzing coolant takes the guesswork out of maintaining cooling systems. Test results can identify corrosion, contamination, improperly mixed additives and even stray electrical currents. Together, coolant and oil analysis offer the maximum protection for engines in off-highway equipment.



### **Gear Systems**

The biggest concern for gear systems is the type of wear occurring in the system, which is often caused by dirt and water. Regular testing designed specifically for gear systems will arm our analysts with the information they need to determine if metal particles in the lubricant are from normal wear or if they are warning signs of a catastrophic failure.

### **Hydraulic Systems**

Off-highway hydraulic systems operate under demanding conditions. For the system to function properly over its expected lifecycle, hydraulic fluid must be free of contamination – and off-highway environments are full of potential contaminants. Water, particles and even air can contaminate hydraulic systems. Testing hydraulic fluids will check viscosity, fluid cleanliness (particle contamination) and water content.

## Mining



Harsh operating conditions, extreme load variations and the high-euro costs involved in equipment replacement make fluid analysis a necessary part of doing business in the mining industry. Routine testing identifies small problems before they become major failures. Maximize asset reliability and regain control of your production schedules with an effective fluid analysis program

14

### **Diesel Engines**

Routinely monitoring a diesel engine oil's viscosity, as well as its ability to neutralize acids and disperse and suspend soot particles produced during combustion, can indicate whether or not anti-wear additive and dispersant/detergent levels are providing sufficient engine protection.

### **Gear Systems**

The primary objective of a gear oil is to provide a film between moving metal surfaces sufficient enough to prevent wear and the damaging affects of pitting and scuffing. Low levels of sulfur, boron and phosphorous could indicate that wear-reducing additives have been depleted.

### **Hydraulics**

A hydraulic fluid's viscosity should be low enough to minimize friction loss, yet high enough to prevent fluid leakage and provide satisfactory protection against wear. It should have good oxidation stability to prevent sludge from forming, sufficient water separability and air release properties and resistance to foaming.



### Coolant Analysis

Coolant Analysis takes the guess work out of properly maintaining a cooling system and can identify maintenance problems before catastrophic engine failure occurs. Regular coolant testing and routine maintenance can help you achieve maximum system efficiency and save you time and money in less downtime, fewer repairs and determining proper drain intervals.

## Transportation



Routine fluid analysis can give a commercial fleet the competitive edge today's transportation industry demands. Don't find yourself on the road to failure when early detection costs so little and protects so much. In many cases, the process is complete within 24-48 hours. The highly qualified data analysts and team of technical sales professionals are only a phone call away with the support you need to make your information work for you.

16

- Achieve Peak Efficiency
- Increase On Time Delivery
- Extend Oil Drain Intervals
- Increase Equipment Life
- Increase Resale Value

### **Fuel Analysis**

Fuel Analysis can solve several performance problems, such as filter plugging, power loss or poor injector performance. Testing bulk fuel storage tanks can verify compliance with required supplier specifications and determine the fluid's suitability for use.

### **Coolant Analysis**

Coolant Analysis takes the guess work out of properly maintaining a cooling system and can identify maintenance problems before catastrophic engine failure occurs. Regular coolant testing and routine maintenance can help you achieve maximum system efficiency and save you time and money in less downtime, fewer repairs and determining proper drain intervals.





### **Diesel Engine**

Routinely monitoring a diesel engine oil's viscosity, as well as its ability to neutralize acids and disperse and suspend soot particles produced during combustion, can indicate whether or not anti-wear additive and dispersant/detergent levels are providing sufficient engine protection.

### **Gear Systems**

Although contamination by dirt and water should be closely monitored, the biggest concern for these systems is the type of wear occurring. Direct Read Ferrography detects the amount of ferrous wear occurring by providing a ratio of large to small ferrous particles, which is extremely helpful in trend analysis.

See also the Transportation solution sheet to learn how the road to failure can be easily avoided.