

MARINE

Take regular samples representative of normal operating conditions. Send them to POLARIS Laboratories® for testing and analysis.



POLARIS Laboratories® processes the sample. Testing is completed, results are analyzed, recommendations are made and a report is generated.



POLARIS Laboratories® emails the results to the customer. The customer evaluates the recommended course of action.



Customer takes action and performs the necessary maintenance.



The diesel engines, gear systems and hydraulics required to power today's marine industry are expected to operate for long periods of time at a full load capacity under extreme, often uncontrollable, conditions. These units are constantly exposed to the damaging effects of either fresh water or saltwater, which are also used by some to cool the very systems that keep them up and running. Where contamination and wear are eminent, maximizing asset reliability becomes priority. Monitoring the condition of both the unit and the fluid through analysis identifies wear-causing contaminants and their effect on performance. It costs so little to protect so much.

PROVEN IMPACT
PROVEN UPTIME
PROVEN SAVINGS

Routine fluid analysis is critical to managing asset reliability in any marine application. High performance expectations and harsh environmental operating conditions present constant obstacles. Continual exposure to salt water creates unique problems. Fresh water-cooled engines are susceptible to condensation and rust. Diesel engines typically operate at very high temperatures, promoting oxidation and acid formation. Gear systems and hydraulics are vulnerable to contamination and wear. Fluid changes can be difficult and are not always convenient. Routine testing and analysis can extend drain intervals and identify small problems before they become costly failures.

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.

TEST PACKAGES - OIL

BASIC - Monitors both the unit and the fluid for wear and contamination

- 24 Metals by ICP
- Viscosity @ 100°C
- % Fuel Dilution
- % Soot
- % Water

ADVANCED - Safely extend oil drain intervals by determining the fluid's suitability for continued use

- All Basic Package Tests
- Base Number
- Oxidation/Nitration

TEST PACKAGES - DIESEL FUEL

BASIC - Detects problems causing fuel filter plugging and determines the fuel's impact on fuel filter life

- 24 Metals by ICP
- Pour Point
- Water and Sediment
- Bacteria, Fungi and Mold
- Thermal Stability

ADVANCED - Determines if the product in bulk storage tanks complies with required supplier specifications

- All Basic Package Tests
- Viscosity
- PPM Sulfur
- API Gravity
- Flash Point
- Cetane Index
- Cloud Point
- Distillation
- * Additional testing available

TEST PACKAGES - COOLANT

ADVANCED - Advanced testing monitors the corrosive attributes of the coolant itself – acidic or alkaline – chemical or mechanical attack on metal – additive or inhibitor present. Advanced testing also identifies possible sources of problems such as seawater contamination, combustion gas leaks, air contamination, electrical ground problems, localized overheating or chemical breakdown or other contamination sources inside or outside the system.

- Visual (color, oil and/or fuel contamination, foam magnetic/non-magnetic precipitation and odor)
- pH
- Glycol
- Freeze Point
- Boil Point
- Nitrite
- TDS (Total Dissolved Solids)
- Specific Conductance
- Carboxylic Acid Pass/Fail (Shell, Chevron or Cat ELC only)
- SCA Number
- Total Hardness
- Corrosion, Contaminant and Inhibitor Metals (Iron, Copper, Aluminum, Lead, Tin, Zinc, Silver, Calcium, Magnesium, Silicon, Phosphate, Boron, Molybdenum, Sodium, Potassium)
- Contaminants (Chloride and Sulfate)
- Inhibitors (Nitrite and Nitrate)
- Degradation Acids (Glycolate, Formate, Acetate and Oxalate)
- ELC Basic Coolant Analysis Additive (Benzoate, 2-Ethylhexanoic acid, Sebacic acid, Octanoic acid, p-Toluic, MBT, TT Z, BZT)

GEAR SYSTEMS

TEST PACKAGES

Although contamination by dirt and water should be closely monitored in manual transmissions, differentials, final drives and planetaries, the biggest concern for these systems is the type of wear occurring.

BASIC

- 24 Metals by ICP
- % Water by Crackle
- Viscosity @ 40°C

ADVANCED

- 24 Metals by ICP
- % Water by Crackle
- Viscosity @ 40°C
- Total Acid Number
- Particle Quantifier (PQ) – ferrous density

HYDRAULICS

TEST PACKAGES

Hydraulic systems, including automatic powershift transmissions, require the fluid's viscosity to 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.

BASIC

- 24 Metals by ICP
- % Water by Crackle
- Viscosity @ 40°C

ADVANCED

- 24 Metals by ICP
- % Water by Crackle
- Viscosity @ 40°C
- Total Acid Number
- Water by Karl Fischer
- ISO Particle Count