



FLUID LIFE

EQUIPMENT RELIABILITY SERVICES

Fluid analysis to
protect your equipment



IDENTIFY MINOR PROBLEMS BEFORE THEY BECOME MAJOR FAILURES

Fluid analysis is the proactive laboratory assessment of an oil sample and generally monitors for oil condition, contamination, and component wear. A well implemented routine fluid analysis program gives you a window inside your equipment without disassembly, from engines to gearboxes to hydraulic systems and more. You can identify and resolve problems at an early stage, reducing the possibility of unrecoverable downtime.

Benefits of Fluid Analysis

Improve planning & scheduling

- Identify problems at an early stage and guide planning for upcoming service work
- Reduce unplanned maintenance

Monitor improvement initiatives

- More effectively manage your contamination control program
- Identify and eliminate repetitive problems

Lower operating and capital costs

- Reduce maintenance and lubrication costs
- Get the maximum use of lubricants in service (extended oil drain intervals)

Maintain equipment reliability

- Extend equipment life and reduce replacement costs
- Increase resale value with sampling and maintenance histories

Just testing your oil won't actually change anything...

The value is in how you respond. Oil analysis lets you understand what's happening and gives you the insight to change something if needed. It's all about interpreting the results, reviewing the options, and responding accordingly.

Why Fluid Life?

FLUID LIFE HAS WHAT IT TAKES TO GET YOU THERE

1. Fluid Life provides an independent, OEM agnostic evaluation of your samples
2. Unbiased appraisal of your equipment condition with no vested interest in the results
3. Fluid Life can help you maximize the value you get from oil analysis
 - Dedicated Support Reps
 - Training, Training, Training
 - Advanced Software Algorithms, Big Data, AI
 - Easy to Use Tools
 - Accountability & Transparency

We are aligned with your goals!









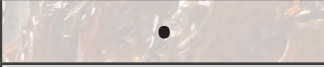





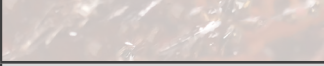

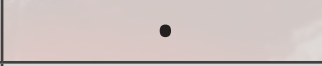

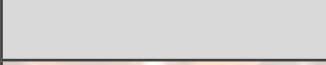



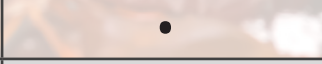
LAB TESTING SERVICES

Fluid Life offers a variety of individual tests and test packages for fluids and other lubricants.

Additionally, we offer specially designed industry specific oil analysis test packages to support your equipment reliability needs. Additional test packages for coolant, diesel fuel, grease, and wear debris are also listed. Prepaid oil and coolant test package kits are sold in cases of 10, prepaid diesel fuel test kits sold on individual basis.

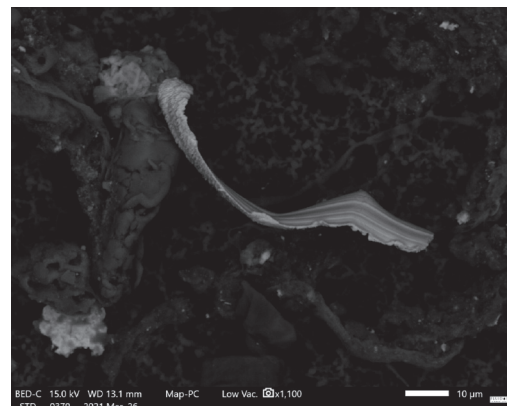
HEAVY DUTY MOBILE EQUIPMENT OIL ANALYSIS TEST PACKAGES	MOB1	MOB2	MOB3	MOB4
Applications	Failure Detection: identifies the most common lubricant failure modes, while satisfying all equipment OEM warranty requirements	Contamination Control (Limited): targeted focus on the lubricant condition of sensitive hydraulic components	Contamination Control: targeted focus on the lubricant condition of all drivetrain components	Lubricant & Component Life Extension: provides the information needed to safely extend or optimize drain intervals for ALL components
ICP Spectrometry 25 Elements	•	•	•	•
Viscosity @ 40°C or 100°C	•	•	•	•
Water Contamination Crackle Test	•	•	•	•
Oxidation / Nitration / Sulfation by FTIR Engines	•	•	•	•
% Soot by FTIR Diesel Engines	•	•	•	•
% Fuel, Triggered GC Engines	•	•	•	•
% Glycol, Triggered GC Engines / Transmissions	•	•	•	•
ISO Particle Count Hydraulics		•	•	•
OPC Particle Count Gears			•	•
Acid Number by FTIR Engine, Transmission, Hydraulics, and Air Compressors				•
Base Number by FTIR Engines				•
% Water Karl Fischer Method				TR.
Sample Volume	100ml	100ml	100ml	100ml

INDUSTRIAL PLANT OIL ANALYSIS TEST PACKAGES	PLANT1	PLANT2	PLANT3	PLANT4	PLANT5
Applications	Failure Finding: identifies any abnormal component wear, indicating the presence of potential failures in-progress	Contamination Control: in addition to PLANT1 tests, this package also measures total system contamination using ISO particle counts	Advanced: an advanced assessment of oil degradation, contamination and wear (typically for power generation and turbo-machinery (pipeline or refinery equipment))	Varnish Monitoring: for assets that are prone to varnish-related issues or failures (turbines, large hydraulics & hydraulic injection molding machines and large circulating lube oil systems)	Comprehensive: recommended test package for validating turbine oils during delivery and commissioning activities
ICP Spectrometry 25 Elements	•	•	•	•	•
Viscosity @ 40°C or 100°C	•	•	•	•	•
Oxidation Non-Gears	•	•	•	•	•
Water Contamination Crackle Test	•	•			
% Water Karl Fischer Method		Tr.	•	•	•
% Soot by FTIR Diesel Engines	•	•	•	•	
% Glycol, Triggered GC Engines	•	•	•	•	
% Fuel, Triggered GC Engines	•	•	•	•	
Acid Number by FTIR	•	•			
ISO Particle Count Non-Gears		•	•	•	•
OPC Particle Count Gears		•	•	•	
Acid Number by Titration			•	•	•
Initial pH			•	•	•
Varnish Potential				•	•
RPVOT (Oxidation Stability) – relates to oil service life					•
RULER (Antioxidant Levels) – relates to oil service life					•
Rust Test (ability of oil to prevent rust)					•
Demulsibility (oil separation from water)					•
Foam Tendency & Stability (Seq. 1)					•
Air Release (oil separation from entrained air)					•
Sample Volume	100ml	100ml	100ml	250ml	4L

GREASE ANALYSIS TEST PACKAGES		Grease Screening	Grease Standard	Grease Advanced
Applications *May require additional, triggered or custom tests. Contact Fluid Life for more information.	<ul style="list-style-type: none">• Small electric motors• Chain grease• Mobile joints• Wheel bearings	<ul style="list-style-type: none">• Large electric motors• Automatic greasing systems• Robot arms	<ul style="list-style-type: none">• Large diameter bearings• Troubleshooting bearing failures*• Confirmation of grease quality, stability, compatibility*	
Total Magnetic Iron PQ Equivalent	 •	 •	 •	
Oxidation by FTIR	 •	 •	 •	
Color	 •	 •	 •	
ICP Spectrometry 25 Elements		 •	 •	
Penetration Test Unworked		 •	 •	
RULER Remaining Useful Life			 •	
Analytical Ferrography			 •	
Sample Volume	10ml	10ml	10ml	

SEM-EDS Wear Debris Analysis

- Scanning Electron Microscopy – Energy Dispersive Spectroscopy (SEM-EDS) wear debris and large particle analysis to determine the size and composition of hundreds of particles per sample in lubricating oil, grease, filters, and process materials.
- Prepaid kits are not available for SEM-EDS analysis and are performed on an individual basis.



SEMO Basic Oil	SEM-X Basic Other	SEMS Custom Analysis
Sample Type Oil	Sample Type Filters, Spinner Filters, Grease	Sample Type Any suitable sample – specific situational analysis
SEM Analysis Defined report and deliverable	SEM Analysis Defined report and deliverable	SEM Analysis Open ended custom service tailored to needs
Outputs Basic Report SEM micrographs, particle count & classification, observations, and Reliability review.	Outputs Basic Report SEM micrographs, particle count & classification, observations, and Reliability review.	Outputs Variable – based on requirements Includes SEM micrographs, particle count & classification, observations, and Reliability review. Structured to address a specific concern.

DIESEL FUEL ANALYSIS TEST PACKAGES	DF1	DF2	DF3	DF4	DF5
Applications	Fuel delivery acceptance & routine analysis	Verification of fuel in storage, assessment of contamination	Fuel seasonal characteristics	ASTM D975 & Cummins Fuel Specifications	Troubleshooting & long term storage
Bottom Sediment and Water	•	•	•	•	•
Viscosity @ 40°C			•	•	•
ISO Particle Count	•	•		•	•
Sediment Photo		•			•
% Water Karl Fischer Method	•	•	•	•	•
Clear & Bright Fuel Test Visual Check	•	•	•	•	•
ICP Spectrometry		•		•	•
Bacteria / Yeast / Mold		•			•
Flash Point Closed Cup				•	
Cloud Point Outsourced			•	•	•
Sulfur				•	•
Active Sulfur Copper Corrosion				•	•
Distillation (Outsourced in USA)	•	•	•	•	•
Density (Outsourced in USA)			•	•	•
Cetane Index Calc. from Distillation & Density			•	•	•
Sample Size	1L	1L	1L	1L	1L

COOLANT / ANTIFREEZE ANALYSIS TEST PACKAGE

Base Test

- Physical Appearance (Color/Clarity/Precipitates)
- pH
- Conductivity
- Nitrites by Titration
- Refractive Index Freeze Point/Boiling Point/ % Glycol

Sample Size: 100ml

Optional Tests

- Carboxylates – can be added to base test depending on coolant formulation
- Reserve Alkalinity

NOTE: Tests are not sold on an individual basis

DIESEL EXHAUST FLUID ANALYSIS

Individual Tests

- ISO Particle Count
- % Urea

Sample Size: 100ml

For the full ISO 22241 test slate, contact Fluid Life for details.

SAMPLE COLLECTION

The key to a successful oil analysis program is to first establish the 'normal' baseline for a given asset. Every asset may have its own unique conditions for maintenance and operations and determining its typical levels of contamination and wear help identify when those levels become abnormal.

Consistent sampling at regular intervals, utilizing a repeatable procedure, will reduce the noise within the data to make it easier to spot any deviations from normal results, providing the earliest, and proper, notification of necessary action.

NOTE: The accuracy of the laboratory analysis is dependent on fluid sample quality. Collection of clean fluid samples representative of the main body of fluid are necessary for ensuring meaningful lab results. Erroneous readings can result from improper collection, handling, packaging, and shipping practices prior to the sample being tested by the lab.

- Remove the sample bottle cap only when ready to take the sample. Keep the cap clean. Do not put it in your pocket or let it get contaminated in any way. Do not allow any airborne dirt, etc. to enter the sample bottle.
- Do not remove sticker from sample jar.
- Ensure that all sampling valves and drain plugs are clean and free of debris before taking a fluid sample.
- Refer to the applicable machine Service Manuals for sample valve and drain plug locations.
- Fill jar to bottom of threads, leaving 10mm of airspace. This will prevent leakage during transport and loss of sample.
- Do not allow oil onto threads of the jar. Oil will prevent the lid from being fully tightened and may result in loss of sample during shipping.
- Allow sample to cool and re-tighten the lid. Always ship samples in their white outer shipping bag to prevent accidental sample loss.
- All samples taken should be immediately forwarded to the lab for processing.



Contact Fluid Life to purchase additional or replacement sample valves or drain plugs. In cases where fluid samples must be pumped or otherwise drawn out of a component reservoir or housing, a hand-operated fluid suction pump is also available from Fluid Life.

Following these guidelines ensures samples arrive intact and uncontaminated allowing for the most accurate results.

Click here for more information on various sampling procedures and sampling hardware. Fluid Life offers **Sample Point Audits** to assess your overall lubrication and sampling program.

SAMPLE REGISTRATION

Fluid life offers 3 methods for registering your samples.

Method 1: myLab Mobile App*

Simplify sample setup with your mobile device using the myLab Mobile App available for download for iPhone, Microsoft or Android. This method accelerates sample registration and improves turnaround time and accuracy of your data.

Instructions

1. Scan equipment tag, scan VIN/PIN number or search for the unit.
2. Choose component.
3. Scan QR code on sample bottle.
4. Enter meter reading and indicate if oil has been changed.

Method 2: myLab Web Portal*

Setup samples within myLab from your computer or smart phone browser.

Instructions

1. Select equipment to register.
2. Enter meter reading and indicate if oil has been changed.
3. Enter or scan bar-code. Optionally: Print label and affix label to bottle.

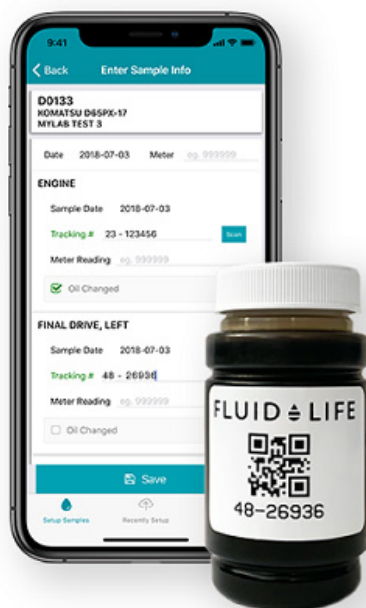
*Requires myLab account setup (<https://mylab2.fluidlife.com/mylab/signup.html>).

Method 3: Sample Card Form

Manual sample setup by handwriting accurate information in paper form. Be sure to use ink, print clearly, and avoid smudging, so it can be processed correctly in the lab.

Instructions

1. Document sample, contact, operating and maintenance information clearly.
2. Roll form up into white outer shipping bag with sample jar.



FLUID LIFE EQUIPMENT RELIABILITY SERVICES		FLUID LIFE EQUIPMENT RELIABILITY SERVICES	
CUSTOMER: _____		SAMPLE DATE: _____	
UNIT #: _____		COMPANY: _____	
COMPONENT: _____		CONTACT: _____	
LOCATION: _____		ADDRESS: _____	
SAMPLE DATE: _____		CITY: _____	
PLEASE RETAIN THIS PORTION OF THE SLIP FOR RECORD OF SAMPLE		PROV/STATE: _____ POSTAL/ZIP: _____	
CUSTOMER CARE GROUP:		PHONE: _____	
TOLL FREE 877.962.2400 www.fluidlife.com		FAX: _____	
EMAIL: _____		PLEASE INCLUDE SAMPLE CARD INFORMATION WITH YOUR SAMPLE	
TRACKING #		TRACKING #	

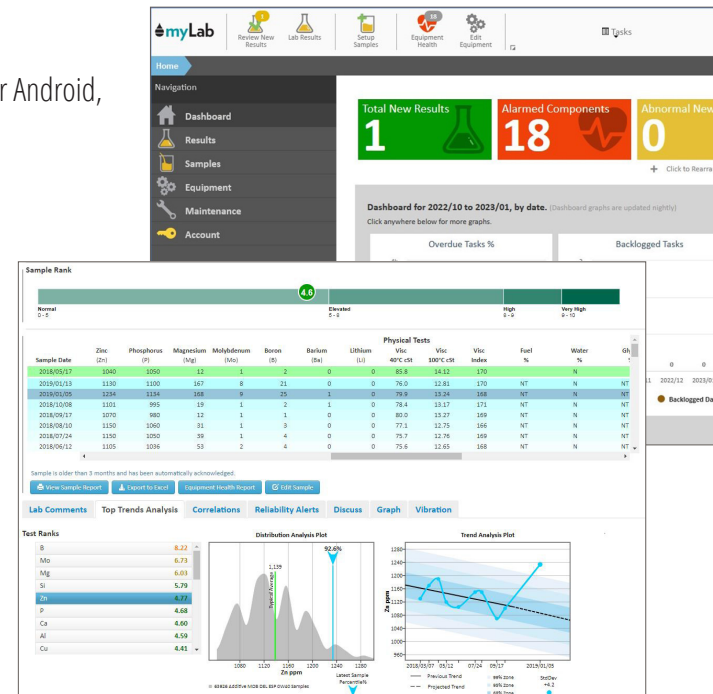
LAB USE ONLY			
UNIT #	HR/MO/KM/MI	OIL MANUFACTURER:	
SITE LOCATION:	ON COMPONENT:	OIL BRAND:	
SERIAL #	ON OIL:	OIL GRADE:	
COMPONENT MANUFACTURER:	METER READING:	OIL CHANGED: <input type="checkbox"/> YES <input type="checkbox"/> NO	
MODEL #	AMOUNT MAKEUP OIL ADDED:	COMMENTS OR ADDITIONAL INFORMATION:	
SYSTEM CAPACITY:		L/GAL	
COMPONENT		LOCATION	
<input type="checkbox"/> ENGINE	<input type="checkbox"/> SCREW COMPRESSOR	<input type="checkbox"/> LEFT	<input type="checkbox"/> REAR
<input type="checkbox"/> TRANSMISSION	<input type="checkbox"/> WHEEL MOTOR	<input type="checkbox"/> FRONT	<input type="checkbox"/> BOTTOM
<input type="checkbox"/> HYDRAULICS	<input type="checkbox"/> BEARING	<input type="checkbox"/> TOP	<input type="checkbox"/> OUTBOARD
<input type="checkbox"/> DIFFERENTIAL	<input type="checkbox"/> TURBINE	<input type="checkbox"/> NORTH	<input type="checkbox"/> WEST
<input type="checkbox"/> COMPRESSOR	<input type="checkbox"/> GEARBOX	<input type="checkbox"/> EAST	<input type="checkbox"/> AUXILIARY
<input type="checkbox"/> OTHER:	<input type="checkbox"/> TYPE:	<input type="checkbox"/> MAIN	<input type="checkbox"/> INBOARD
		<input type="checkbox"/> RIGHT	<input type="checkbox"/> SUPPLY LINE
FUEL		POWER TYPE	
<input type="checkbox"/> DIESEL	<input type="checkbox"/> PROPANE	<input type="checkbox"/> STEAM	<input type="checkbox"/> CONVENTIONAL GLYCOL
<input type="checkbox"/> NATURAL GAS	<input type="checkbox"/> OTHER:	<input type="checkbox"/> ELECTRICITY	<input type="checkbox"/> ELC GLYCOL
<input type="checkbox"/> GAS		<input type="checkbox"/> MECHANICAL	<input type="checkbox"/> WATER
		<input type="checkbox"/> FLUID	<input type="checkbox"/> AIR
COMPLETE SAMPLE INFORMATION IS REQUIRED FOR ACCURATE INTERPRETATION OF RESULTS			

myLAB

Designed in partnership with our customers, myLab enables you to manage your oil analysis program easily and efficiently through a secure application via your internet browser. Use myLab to search, track, and manage your equipment information, oil analysis data, and lubrication and maintenance tasks all in one integrated system.

Features:

- Works on desktop, tablet, and mobile devices (mobile app also available for Android, Microsoft, and iOS devices)
- Helps your team communicate and manage your reliability program
- Quickly register samples, print and scan bar coded sample labels
- Quickly find and review new results
- Interwoven oil analysis and maintenance results for superior viewing
- Forward result capability and sample discussion area with email notices and tracking
- Track samples that are in transit to the lab
- View which samples are in lab and percentage complete
- Optional additional equipment organizational levels
- Advanced search-and-replace and Excel exporting
- Spreadsheet editing capabilities
- Customizable dashboard with built in key metrics and test breakdowns
- Roles and customizable main page
- Custom fields and list entries



Take your myLab experience further as an **all-in-one CMMS solution**. Ensure all of your critical tasks are scheduled and completed for better maintenance management using myLab's built-in functionality:

- Define and schedule lubrication and maintenance tasks
- Create routes and standing PMs and manage work orders
- Create and edit maintenance records
- Assign work to employees

All of these features are available at **no additional charge** when you register for a myLab account.

Need support with setting up your myLab account?

We offer a number of myLab set up support options for your team including:

- Lube scheduling audits
- Oil analysis program set up
- Historical data imports
- Program training (i.e. utilization of CMMS functionality)

Contact us to scope out your requirements and get a no-obligation quote.



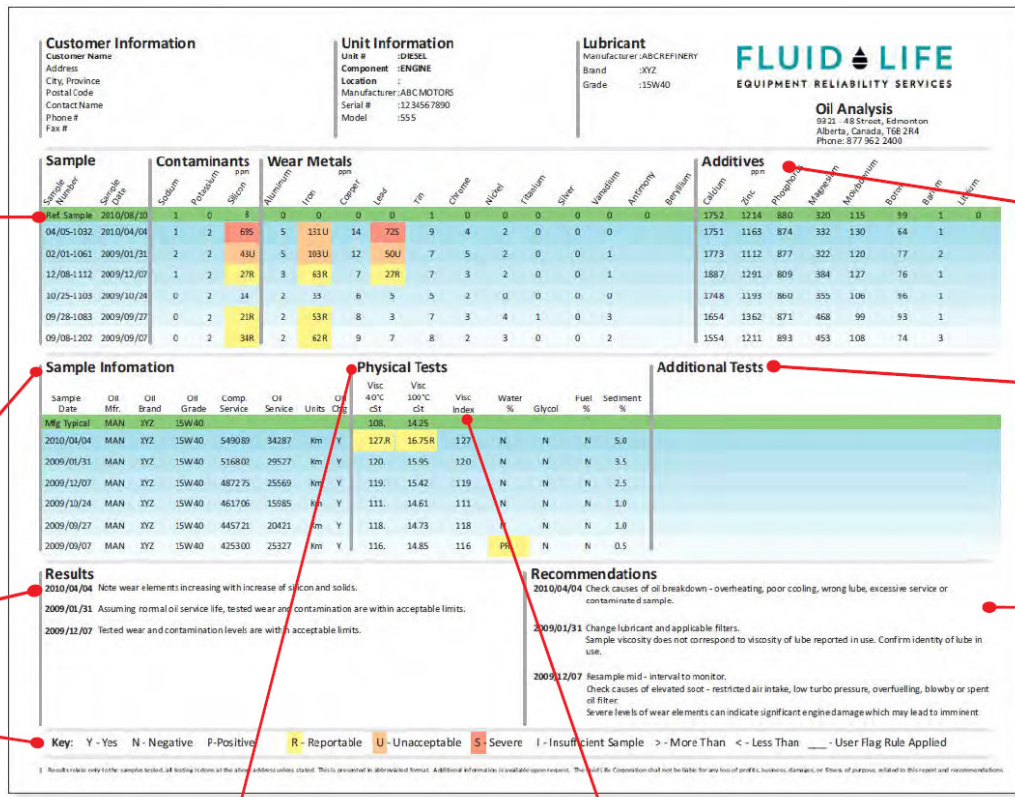
READING AN OIL ANALYSIS REPORT

The New Oil line shows the reference sample (shown as Ref. sample) if available or the oil manufacturer's specification average (shown as Mfg Typical) if a reference is not available. Reference sample date will be colored yellow if it is older than one year.

Sample information section provides lists current and previous sample tests for comparison.

Result comments describe key findings and things you should notice about your results. Up to six previous results are noted.

Key: Description of flag meanings



Elements put in categories with related elements together, such as Si and Al, Pb and Sn, Cr and Ni. Elements are also roughly ordered by how common they are in results.

Additional tests requested or as part of your test package are shown here.

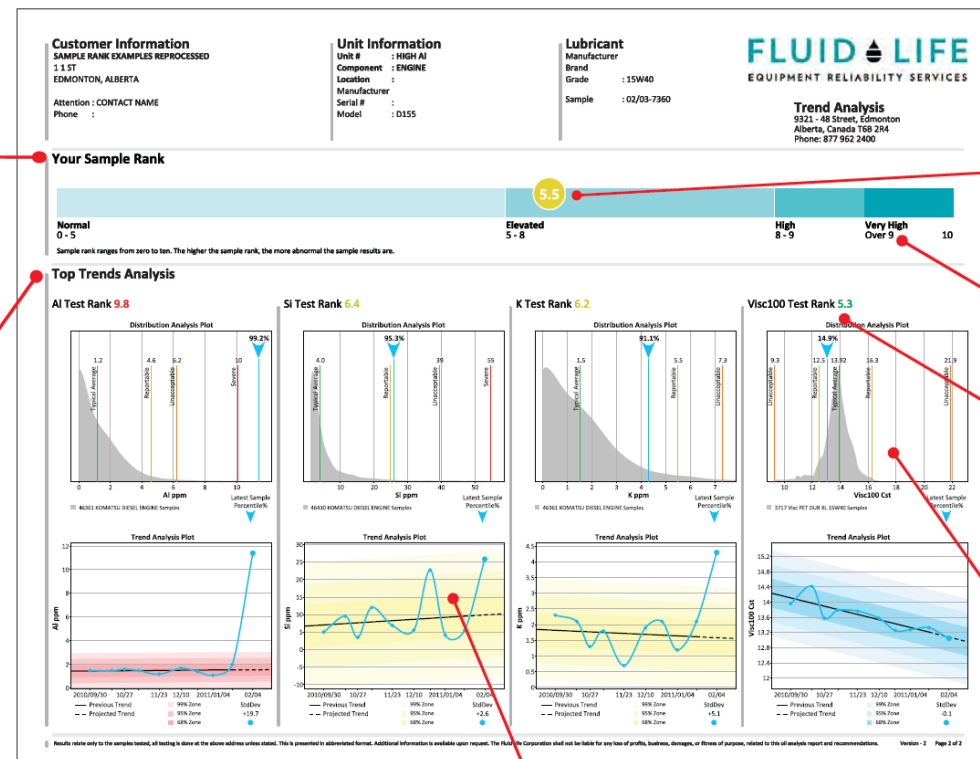
Recommendations describe things you should consider doing based upon the findings. Up to six previous recommendations are noted.

Physical Tests have been ordered to put most common tests first and to show the actual tests done.

The viscosity index clearly identifies mixing and the use of single versus multi-grade oils.

Sample Rank:
Each sample is assigned a rank from 0 to 10, with higher ranks indicating more abnormal sample results. You should prioritize your review of results by the highest ranked samples you have yet to follow up on.

Top Trends Analysis
This section shows the four most abnormal test results based how your results compared with similar samples, combined with how far the results are from the predicted trend.



This sample has a rank of 5.5, which is in the lower end of the 'Elevated' zone and shown in yellow. As the rank increases, it moves up the rank bar and changes color.

This text under the bars describe rank zones and indicate where they start and end.

Each test result is also given a rank from 0 to 10. Again, higher is more abnormal. The test and its rank are shown here above the graphs that led to its rank.

This graph shows how the current sample result relates to the results we see from all the samples in our database for similar samples. The flag limits and machine average levels are also shown on this graph if available.

This graph shows how far the current sample is off the trend set by the previous samples. The distance from the current result to the trend is shown.

DATA INTEGRATION

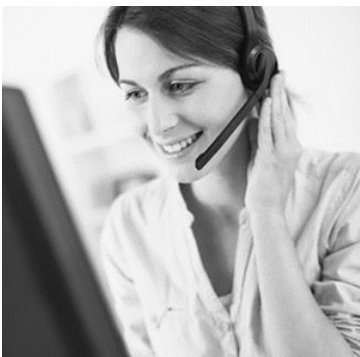
Have an existing maintenance management system or CMMS?

Then talk to us about integrating your fluid analysis results with your maintenance reporting. Eliminate the need for multiple systems and enhance the visibility of your oil analysis program. Fluid Life offers a number of data export and import options so you get the oil testing and analysis data you need, when and where you need it, to make informed maintenance decisions.

- **Email Import File Formats:** Use the generic emailing formats (CSV OR XML) or more program-specific ones (ENTEK, CSI, DMSI).
- **myLab Public API:** Using myLab's public API you create XML or JSON import files of all results processed by the lab based on parameters you set.
- **myLab RESTful API:** Enables you to read/fetch data on Customers, Units, Components, Sample Results and more. Plus, you can register samples, add new equipment, track equipment changes, and import maintenance events. Available in two tiers - Basic (free with myLab subscription) and Professional (monthly fee). Your IT/Development team can review the API documentation available on the Developer Portal to determine the option best suited for your needs.
- **Customized Solutions:** Fluid Life will work with you to scope out the project requirements and provide a quote for the development work.

PROGRAM LOGISTICS

- Fluid Life Laboratory Testing Services are performed at one of our four in-house facilities.
- Our Edmonton, AB, Dallas-Fort Worth, TX, Brantford, ON and Bloomington, MN Fluid Life laboratories are accredited by CALA to ISO/IEC 17025:2017 for the testing listed on the scope of accreditation and are committed to quality, competency, and reliable, repeatable testing protocols.
- All laboratory technicians employed by Fluid Life have post-secondary degrees/diplomas in Science.
- Samples typically take 1-3 days of transit time to reach our facility from anywhere in the continental U.S. and Canada, sample turnaround is generally 1-3 business days for most routine analysis.



ORDER DESK

877.962.2400
orderdesk@fluidlife.com



FREIGHT OPTIONS

USPS / Canada Post
1-3 Day Delivery



SAMPLE TURNAROUND

Routine: Next Day/ Second Day
Advanced: 3 or 7 day
Outsourced: varies depending on
test required



INVOICING

Prepaid Test Kits or
Invoice Upon Completion

SAMPLE SHIPPING

Fluid Life labs are located in Canada and the United States. Samples should be shipped to the nearest location unless instructed otherwise.

Fluid Life Locations:

Western Canada: 4371 Savaryn Drive SW, Edmonton AB T6X 2E8

Eastern Canada: 95 Copernicus Blvd. Brantford, ON N3P 1 N4

Northern United States: 9555 James Ave S #210, Bloomington, MN 55431

Southern United States: 3710 W Royal Ln #145, Irving, TX 75063

Shipping Diesel Fuel

Diesel fuel is considered a regulated substance in both Canada and the United States and is therefore subject to various regulations. Diesel fuel CANNOT be shipped via AIR. Diesel shipped via ground must be shipped in an approved container:

- CANADA – metal container
- USA – reinforced plastic container

Contact our **Order Desk at 877-962-2400** if you need to order the right container to ship your diesel fuel sample.

For more information on our Laboratory or Reliability services, contact a Fluid Life Representative.

We're a company that's All Ways Reliable. From analysis and evaluation to planning and strategy, Fluid Life has the expertise to help you achieve a higher level of reliability.



EDMONTON, AB | DALLAS-FORT WORTH, TX | BRANTFORD, ON | MINNEAPOLIS, MN
Toll Free: 877.962.2400 www.fluidlife.com