

TRIBOLOGY SERVICES



AGAT Laboratories

Service Beyond Analysis

AGAT Laboratories is a highly specialized, Canadian-based company that provides analytical laboratory services worldwide. We offer services to the Environmental, Energy, Mining, Industrial, Transportation, Agri-Food and Life Science sectors. With world-class facilities and state-of-the-art instrumentation, our qualified personnel adhere to our mission statement, delivering "Service Beyond Analysis".



AGAT Laboratories' Tribology Preventative Maintenance group performs a number of analytical tests to aid in engine and other mechanical diagnostic services for industries. Included among these are oil analysis, coolant analysis, contaminant analysis, aviation fuel certification and Scanning Electron Microscopy (SEM). We analyze a full spectrum of fluids including; engine oil, lubricating oil, hydraulic and transmission fluids. Our Tribology operations are ISO 9001 internationally accredited and the division boasts exceptional turn-around times.

Accreditation

AGAT Laboratories is accredited to some of the following agencies for specific analysis:

- Canadian Association for Environmental Analytical Laboratories (CALA)
- American Industrial Hygiene Association (AIHA)
- Standards Council of Canada (SCC)
- Ontario Ministry of the Environment
- Nova Scotia Ministry of the Environment and Labour
- Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA)

AGAT Laboratories is accredited to the following international standards:

- International Standards Organization ISO 9001:2008
- International Standards Organization ISO/IEC 17025:2005

Diagnostic Services

Oil Analysis

This includes tests to monitor the rates of wear, contaminants and additives in used engine oils. Examples of contaminants include dirt, water, glycol, metals and fuel. Not only does oil analysis provide insight into the mechanical condition of the component, but it also determines the condition of the oil itself. This type of analysis can be used to determine maintenance strategies such as optimizing oil change frequencies, filter quality and efficiency.

Some industries using oil testing include:

- Oil and Gas Processing Facilities
- Mining
- Transportation
- Equipment Suppliers
- Marine
- National Defence
- Automotive
- Aerospace
- Agriculture
- Pulp and Paper
- Construction

TRIBOLOGY DIVISION



Coolant Analysis

This involves testing to determine the quality and suitability of a coolant for its intended application. Poor quality coolant will corrode significantly more metal surface on liners, coolers, heat exchangers, radiators and other affected components in a given time period. In monitoring system coolant, costly equipment and cooler failures can be prevented. This sampling should be done twice a year or whenever a problem is suspected. This type of testing can be used by any industry that uses liquid cooling media such as glycol or dowers.

Failure Analysis

This involves the use of Scanning Electron Microscopy (SEM), Analytical Ferrography, X-Ray Energy Spectroscopy (XES), X-Ray Diffraction and other analysis techniques. AGAT Laboratories also employs the use of SEM to investigate various deposits of minerals and other contaminants on engine components. This is done for failure analysis or as part of a preventative maintenance program to avoid complications or engine failure.

Contaminant Analysis

This involves investigation of lubricant contamination that can include fuel dilution, coolant leaks, free water, dust and dirt, process fluids, soot content and harmful acids. The regular analysis of lubricants for these contaminant conditions can predict and prevent failure.

Fuel Analysis

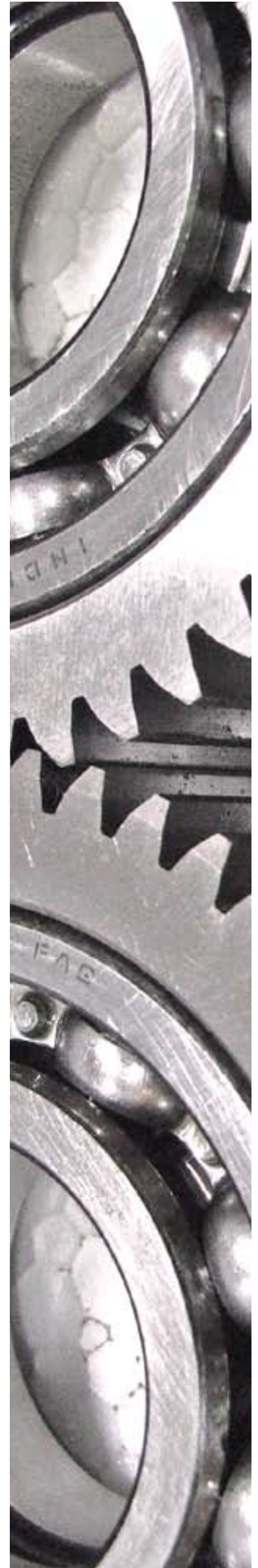
Fuel Check Program: This involves the distillation of diesel fuel (ASTM D 86) to determine contamination from lighter hydrocarbons such as gasoline. We have the capability to perform the distillation in various specified ways in order to present a comprehensive explanation of the sample results, leaving nothing to speculation. Used by most bulk fuel carriers, this test should be completed whenever there is any suspicion of problems with fuel. By completing this test, gasoline contamination can be confirmed in diesel fuel which will prevent major damage occurring in the engines.

Fuel Quality Testing

We ensure that fuel is up to industry standards and this prevents engine damage. Determining the quality of sampled diesel fuel, this test will identify if fuel is within manufacturers' specifications and is safe to use. The analysis is presented with a comprehensive explanation of the test results along with recommendations when applicable. This test should be performed whenever fuel quality comes into question, such as if there is an abnormal amount of smoking or difficulties running the engine.

Aviation Fuel Certification

Fuel quality is vital to the safety of an aircraft. AGAT Laboratories offers Aviation Fuel Certification to ensure fuel meets relevant specifications and is free of unapproved additives and other contaminants.





At AGAT Laboratories, we provide a software package that allows clients access to view and maintain their results via the internet. Clients can update information, obtain laboratory data, view and print historical trends of their analytical data, submit samples and assign corrective actions. Free of charge with no software installations necessary, this program instantaneously transfers data and results to the client.

WebOASIS features include the ability to change unit information (i.e. serial number or hours/kilometers of operation) online. Drag and drop functionality makes it simple for clients to move equipment from location to location, unit to unit. This enables users to group units by data requirements such as location, component or any other criteria required. The system will allow further groupings of each of the data groups to include items such as engine type and transmission types etc.

WebOASIS users can also enter and submit their own sample online which enhances sample information accuracy and the analysis turn-around time.

Our Maintenance Strategies

With condition - based maintenance, AGAT personnel can:

- Provide you with early warning signs of failure.
- Monitor the condition of equipment and lubricants.
- Reduce unscheduled downtime.
- Can determine optimum oil drain periods.

We recommend being proactive in your maintenance so that we can:

- Identify root cause of failures.
- Monitor contaminants and identify possible sources.
- Eliminate the source of contamination results in longer equipment life.
- Identify minor problems before they become major failures.
- Protect warranties by identifying problems prior to warranty expiration.

