



**Q**uality assurance is the primary governing aspect of your business. When safety is paramount to your daily operation a condition monitoring program is an inherent part of your procedures. Oil and wear particle analysis is the most widely accepted method of condition monitoring, in use today, for aviation systems. It is no wonder why most OEMs recommend, or insist, upon some form of oil and wear particle analysis.

**O**il and wear particle analysis is a combination of spectrometric, ferrographic, and filter analysis. When used as part of your quality assurance program, oil and wear particle analysis will detect abnormal wear modes in aviation systems, long before the wear can lead to any serious damage. WearCheck's analysis will indicate when components are near failure. This gives you time to plan maintenance. Worn components can be replaced at your local facility avoiding rental, and shipping charges. In flight shutdowns, as a result of failed critical components, are avoided, as WearCheck's analysis pinpoints the wear signatures of rolling element bearings, gears, splines, and other critical components. WearCheck's filter and ferrographic analysis utilizes the morphology of wear particles to detect specific wear modes. Avoid installation errors, and rapid failures, when analysis detects cutting wear from misaligned components. WearCheck's oil and wear particle analysis you will allow you to realize a reduction in the cost of equipment maintenance, and an increase in aircraft availability and reliability.

**C**ontact a WearCheck technical representative to recommend the proper testing package for your application. WearCheck offers a comprehensive selection of oil and wear particle test kits to cover your specific needs.

**W**earCheck's laboratory authorization includes Pratt & Whitney, Allied-Signal - Garrett Aviation, Textron Lycoming, Turbomeca, and Aerospatiale. Wearcheck is a longstanding member of the Spectrometric Oil Analysis Laboratory Association (SOALA), and a founding member of the WearCheck International (WCI).

### The Benefits of Oil and Wear Particle Analysis

- Avoidance of In Flight ShutDowns (IFSDs).
- Reduction in unscheduled maintenance.
- Increase in equipment availability
- Reduction in maintenance costs.
- Minimization of installation errors.
- Verification of maintenance service plan claims.



### Multitude of Uses

WearCheck's oil and wear particle analysis is effectively used today for a broad range of aviation systems including jet turbines and turbo props, reciprocating engines, helicopter rotors, gearboxes, and transmissions, and aircraft hydraulic systems.



## WearCheck Test Packages - A Complete Wear Analysis

### Spectrometric Oil Analysis



**S**pectrometric, or SOAP, analysis is the foundation of any monitoring system. SOAP measures concentrations of the shear mixed layer wear particles present in the oil. Trendline analysis of this data detects subtle changes to wear modes in the system, usually long before any significant wear to those components occurs.

**C**omponents such as rolling element bearings have unique failure modes. To detect this, Direct Reading Ferrography (DR-Ferr) is used to monitor the concentrations of small and large ferrous wear particles in the oil. Sudden increases in large particles, or shifts in the normal baseline, when compared to historical data, indicate an abnormal wear mode.

### Direct Reading Ferrography



### Analytical Ferrography



**A**ny indication of abnormal wear, either by DR-Ferr or SOAP analysis, will trigger an Analytical Ferrogram (A-Ferr). A sample of the microscopic wear metals, and contaminants present in the oil, are deposited on a slide and examined under a high-powered microscope. By analyzing particle morphology, A-Ferr indicates the mode(s) of wear present in the system, and can detect the cause(s) of abnormal wear modes.



501 Madison Avenue  
Cary, NC 27513  
Phone: (919)379-4102  
Fax: (919)379-4050  
Customer Service: 1-800-237-1369  
E-mail: [info@wearcheckusa.com](mailto:info@wearcheckusa.com)



4161 Sladeview Cresc., Units 11 to 13  
Mississauga, ON L5L 5R3  
Phone: (905)569-8600  
Fax: (905)569-8605  
Customer Service: 1-800-268-2131  
E-mail: [info@wearcheck.ca](mailto:info@wearcheck.ca)

Visit our World Wide Web home page at <http://www.wearcheck.com/>

The leader in oil analysis since 1966

A Proud Member of WearCheck International  
Africa, Australia, Europe, North America, South America

## Aviation

### Analysis Test Kits

#### WC-AVI 1

SOAP ONLY

*For use with piston aircraft engines*

- Spectrographic Analysis (SOAP). 17 elements for wear metals, contaminants, and additives.
- Viscosity. The kinematic viscosity reported in centistokes (cSt).
- Visible Debris Patch. Microscopic examination of any visible debris in the sample.

#### WC-AVI 2

SOAP & FILTER

*For use with turbines with ultra-fine filtration (10 microns or less), or filtered piston aircraft engines. Includes all tests from WC-AVI 1 plus*

- Filter Analysis. Microscopic analysis of the trapped debris from the oil filter. Morphological analysis of the wear particles reveals specific components that are wearing, and cause of the wear.
- Filter weight. Weight of the filter debris reported in mgs.
- Photomicrograph. A photo of the filter patch is included.

#### WC-AVI 3

SOAP & FERROGRAPHY

*For use with all aircraft components (turbines, gearboxes, rotors, etc.). Includes all tests from WC-AVI 1 plus*

- Direct-Reading Ferrography (DR-Ferr). Detects subtle changes in abnormal large ferrous particles that is an early indication of abnormal wear.
- Analytical Ferrography (A-Ferr). Microscopic analysis of the minute metal particles, and debris present in the oil. Morphological analysis suggests mode and cause of wear.

#### VARIOUS

OTHER KITS

*In addition to these kits, WearCheck also supplies*

- Garrett TPE-331 / TFE-731 / ATF SOAP kits.
- WC-IND 2 kits for aircraft hydraulic systems.

