Mobil™

Technical Topic

Grease analysis – essential maintenance for enhanced productivity

Used lubricant analysis plays a vital role in optimizing maintenance activities, improving equipment life and reliability, and preventing component failures. While lubricating oils have been the focus of analysis for decades, grease testing has now become more common and more meaningful thanks to the development of new technology and sampling techniques. More than ever, grease analysis is critical in helping operations minimize maintenance costs and enhance productivity.

Effective grease analysis focuses on three areas that help improve equipment reliability:

Equipment condition

Contamination assessment

Grease condition

At Mobil™ Lubricant Analysis labs, our testing slate analyzes three key performance areas:

Wear

Contamination

Quality

Grease testing

Using just one gram of grease, as many as seven performance tests can be performed.

Trace metals

In this method, the grease is analyzed with a spectrometer to detect up to 23 metals, such as iron and titanium. It also can look for additive components that indicate contamination with another grease or lubricant, as well as detecting potential environmental contamination or component wear. By comparing elemental composition levels to the original baseline grease, this test can assist in identifying early issues and in improving long-term equipment performance.

Colorimetry

This method uses a color spectrometer and a thin film of the grease to generate a visible light spectral graph of the grease.The color spectrum can then be used to validate the appearance or changes in the grease, track trends such as darkening due to aging or overheating, dyes indicating grease contamination, and qualify if environmental contamination, such as coal dust or other solids, is accumulating in the grease.

Stress index:

This test determines the grease consistency as an alternate method to the NLGI grade. As the stress index value varies higher or lower, it indicates grease softening or hardening. Changes in stress index provide a screening tool to assess how the grease is performing in your equipment.

Infrared spectroscopy:

This test is used to provide a fingerprint of the grease composition by analyzing the different molecular bonds present in the components used to make the grease. A thin strip of grease is scanned, generating the grease fingerprint, which is overlaid with the baseline grease sample. Software analysis allows you to then look for changes in the grease that may be related to breakdown or grease contamination. Identification of changes can help improve your lubrication practices and increase machine life.

Ferrous debris:

This test method measures ferrous debris content of the grease using the Hall Effect. The results can be used as an indicator identifying solid ferrous wear particles in a grease sample. Early identification of wear particles can help address potential performance issues and extend equipment life.

Water content:

The sample analysis looks at the water content present in the grease sample. Comparing results against the baseline content provides an indication if excessive water is entering the bearing. Results can help with early intervention to prevent rust or adjust operating conditions to minimize water ingress.

Analysis report

In your grease analysis report, comments on the sample are provided to help identify potential problems, list possible causes and recommend actions for follow-up.