



SGS OIL, GAS AND CHEMICALS
GREASE ANALYSIS

SGS

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Approximately 90 percent of all bearings are lubricated with grease. But how much do you know about the grease or greased bearings in your plant? A thorough analysis of the grease in question can prevent headaches and save money.

SGS offers complete grease analysis programs to monitor contamination levels, grease degradation characteristics and wear rates. These programs are designed to be rapid, thorough and economical.

SGS offers the patented Grease Thief® for its grease analysis. Grease Thief® offers incomparable benefits as a field tool and unmatched efficiency for grease sampling and analysis because it requires only one gram of grease. The small grease volume and innovative sampling methods ensure that operators can now include grease analysis as part of a complete predictive maintenance program.

The non-Newtonian flow properties of grease make it difficult to collect representative, in-service samples. Historically, equipment operators were forced into expensive machinery disassembly to collect representative samples or to take readily available samples from locations that were not representative of lubrication conditions.

The Grease Thief® tool allows you to secure a repeatable, representative, in-service grease sample to submit for analysis.

Grease analysis is a valuable diagnostic tool for condition monitoring. Samples of grease are either submitted individually for evaluation of a special problem or over time to establish a baseline for use as a predictive maintenance tool. The rates of contamination ingress, additive depletion, grease degradation and wear rates can be monitored when trending grease analysis results over time and comparing these results to new grease. Knowing these critical characteristics can assure you that you are taking the right steps in protecting your investment.

How does Grease Thief® capture grease?

- Grease Thief® has a 1/8" NPT thread that can be threaded into several different ports and drains.

What do I do with Grease Thief® after it is filled with grease?

- Remove it from the equipment and cap the open end. Place in the provided plastic tube and mail to SGS for testing.

What does grease analysis reveal?

- Contamination

Contamination of grease is detrimental to the lubricating quality of the grease. Whether the contamination is from water, dirt, or an incompatible grease, the performance levels of grease are severely impaired. Contamination can cause serious bearing damage if gone undetected and thus uncorrected. The most common damage from contamination is abrasive wear followed by corrosive wear and contact fatigue. Early detection and correction of grease contamination problems will dramatically reduce the risk of bearing damage that would otherwise occur.

- Degradation

As grease is used, the beneficial additives that are blended into the grease to protect against base oil oxidation are depleted. Once these additives are depleted, the grease will become oxidized and the designed performance characteristics will be dramatically altered. One of the most important performance characteristics is the viscosity of the base oil. Base oil viscosity will increase when the antioxidants can no longer protect the oil.

- Wear

Measuring the concentration, metallurgy and topographical characteristics of wear metals in used grease not only gives the user a measurement of how much wear is occurring, but also the source and mechanisms of the wear. Wear rates can be compared over time for a single bearing and/or against like bearings to evaluate abnormal conditions. When coupled with other technologies such as vibration analysis (where applicable), metals analysis becomes an indispensable part a complete condition monitoring program.

ADVANCED GREASE ANALYSIS

If any of the testing performed during basic analysis indicate unusual or abnormal findings, the laboratory will select further analysis to define in more detail the specific abnormality and the extent of the problem. Advanced analysis may be carried out after a

discussion with the client and authorization to proceed. The client can customize advanced grease analysis, based on their situation, by calling SGS and setting up a special program.

Common analytical methods used in advanced grease analysis include Remaining Useful Life Evaluation Routine (RULER), Emission Spectroscopy, Wear Particle Analysis and Percent Oil and Filler. There are many other analyses available and the laboratory should be consulted if special analytical methods are required. Volume of sample required, fees and turnaround times will change when using advanced grease analysis methods.

SAMPLING

Grease Thief® can be purchased directly from SGS. Samples submitted without Grease Thief® will require a minimum sample volume for basic grease analysis of 1 ounce (28 grams). When sampling, it is important to select grease that is representative of the grease that is actually providing the lubrication to the bearing and will contain those contaminants, wear metals and grease degradation characteristics that are meaningful to the actual lubrication and operation of the bearing.

If non-representative samples are submitted, the laboratory should be advised since this will have an impact on the evaluation and trending of the data. On occasion, there may be a grease analysis required on a sample that is substantially smaller than the required volume. In these cases, contact the laboratory for modifications to the basic grease package.

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