

# For the Trenches

TIPS & NEWS FOR EQUIPMENT OWNERS AND OPERATORS

## Scheduled Oil Sampling

Have you already experienced the difference that planned equipment maintenance makes to your fleet performance, and are you committed to improving your practices? Then, this is for you. You'll find some updates, important points and useful reminders about the role and

the appropriate implementation of scheduled oil sampling analysis or S-O-S.



**Josh Gaynor**  
Service Solutions  
Center Manager  
Milton CAT

When talking about scheduled oil sampling or S-O-S the first question that needs to be addressed is, who needs S-O-S? If you think the answer is obvious – everyone needs S-O-S – think again. Unless you are committed to a disciplined, consistent regimen, adhering to the process, regularly following up and taking action on the results, S-O-S can be a waste of money and time, giving you an illusion of proper maintenance but not providing any real value.

Let's start by defining scheduled oil sampling as a program that allows you to get an insight into the health of your machine by collecting, analyzing and interpreting small amounts of oil and other fluids stored in the cavities of the components in your machine, including the engine, powertrain, hydraulics, braking and coolant system. Scheduled oil sampling is one of a number of important practices that can be used to support your decision-making when it comes to maintenance, helping you lower your owning and operating costs, maximizing component life and optimizing your investment. Others include:

- 1) Cutting and inspecting filters and looking for debris that may not appear in oil sampling.
- 2) Keeping track of hours on components.
- 3) Monitoring performance – paying attention to power, slippage, and excessive oil consumption.
- 4) Monitoring tell-tale physical warning signs such as smoke and leaking components.

Used together, all those activities will help you determine why a machine is functioning the way it is, and can support your follow-up steps to maintain its current performance or to improve it.

**What are some examples of problems that S-O-S can help you catch early enough so you can take care of them before they become much bigger and more costly?**

- 1) A plugged water pump weep hole. That is a problem that can lead to major engine failure, and can be detected early enough with S-O-S if coolant is found in the oil.
- 2) A bad injector. Another relatively easy to fix problem that can lead to major failure and is detected by the appearance of fuel in the oil. If not remedied, the fuel quickly breaks down the viscosity of the oil which in turn can lead to component breakdown.
- 3) Compromised air intake. If silicon is found in your oil, it is a good indication that there may be a pin hole in a filter, or a loose or broken filter housing clamp. Any of those can greatly affect the performance of your machine.

In addition, an important benefit of a well executed and documented S-O-S program comes at the time of selling the machine. The historical data provided by oil sampling goes a long way to substantiate the claim that the machine was properly maintained.



**A knowledge of both the oil, and the equipment, is key to being able to understand and use the results of the test.**

# For the Trenches

## The eight mistakes to avoid.

- Focusing on the condition of the oil and not on what the oil is telling you about the machine. Whoever is testing and reporting on your oil should know about equipment, not just about oil.
- Forgetting that to be effective, sampling must be a program. One sample is of no value – the purpose of sampling is to determine baselines, and from there, trends. Trending, when negatively, can tell you when there is a problem, and when positively, can indicate that a problem has been fixed.
- Sampling from a dirty port. Remember the old computer saying, “Garbage in, garbage out?” If your sample has particles of foreign substances that come not from the oil itself but from around the port, the data from the sampling will be flawed.
- Sampling from a cold engine. You need a warm sample from a machine that has been run; a cold sample is not representative and can give you faulty information.
- Labeling sample containers with incorrect information.
- Not taking into account other relevant machine information such as operating environment.
- Neglecting particle counting. A relatively new aspect of oil and fluid analysis, it allows for the tracking of larger pieces of foreign material and contaminants that may collect over time in your oil.
- Not taking action! This is a very common mistake, and carries the worst consequences. S-O-S provides you with a very useful bank of information regarding your machine’s overall health, but unless you take the time to look at the data and use what you learn to guide your maintenance decision-making, you are just wasting your resources.

In closing, let’s emphasize again that scheduled oil sampling is an important information tool that can support your maintenance decision-making. It is not magic, it doesn’t work when used without the other available tools, and it is not to be seen as a standalone operation to be done once, when you have an issue, but as a program.

As important as performing the in-house steps, including committing to a program, proper collection, labeling and shipment of samples and following up on results, is having the best resource as a partner for your S-O-S program. Choose a vendor based on their knowledge of both oil and equipment. ■

## WHAT STORY CAN AN OIL SAMPLE TELL YOU ABOUT A MACHINE?

Recently, we processed an oil sample, the first on this particular wheel loader, that



brought back an unusual combination of results for a machine with such relatively low hours –

- The additive package in the oil was breaking down indicating excessive heat.
- Dilution in the oil indicated the machine ran a great deal at low RPMs.
- Silicon and debris in the oil indicated a very dirty, dusty work area.

After speaking with the customer, it became clear why. This sample came from a machine that worked long hours, day after day, in a coal plant. The recommendation to the customer? More frequent fluid changes and strict adherence to preventive maintenance protocol.

This article is part of a series of articles designed to help equipment owners and operators lower owning and operating costs. Other article topics include:

Emissions • Parts Options • Safety • Machine Evaluations  
Certified Rebuilds • Getting the Most from Your PSSR  
(Parts and Service Sales Representative) • CSAs (Customer Service Agreements) • Financing

All articles are available on our web site at [www.miltoncat.com/articles](http://www.miltoncat.com/articles)

Milton

CAT

Milford, MA  
508-634-3400

Wareham, MA  
508-291-1200

Cranston, RI  
401-946-6350

Richmond, VT  
802-434-4228

Warner, NH  
603-746-4671

Hopkinton, NH  
603-746-4611

Scarborough, ME  
207-883-9586

Brewer, ME  
207-989-1890

Syracuse, NY  
315-476-9981

Batavia, NY  
585-815-6200

Binghamton, NY  
607-772-6500

Clifton Park, NY  
518-877-8000