

Optimizing Oil Change Intervals

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With the high cost of petroleum products, it is no wonder that many maintenance programs are looking toward extending oil change intervals. If you add the cost of downtime to perform the maintenance and disposal of the oil, then the advantages and cost savings of extending oil drain intervals become clearer. Caterpillar has a complete program outline that manages extending oil change intervals beyond the typical 250 hours for off highway equipment.

Caterpillar states, “A balanced approach to lubrication management must be taken to ensure that costs are indeed minimized. Change oil too early and money may be wasted by throwing away some of the useful life of the lubricant, and from higher disposal costs. Change oil too late, and risks of incurring even greater costs are increased through shortened engine life.”

Also Cat states, “The opportunity to optimize lubrication-related cost savings depends on a number of factors. Many of these factors can be monitored with SOS Fluids Analysis, allowing customers to achieve balanced management of oil change intervals.”

The main groups of tests that must be monitored are infrared analysis, wear elements, and particle count. Infrared analysis gives oil condition monitoring by measuring oxidation, soot, and sulfur products. All of these are unwanted by-products of combustion and increase over time. Soot must be kept below a certain level to prevent oil thickening and accelerated wear. An increase in sulfur products can indicate possible formation of acids. Wear elements must be kept below a standard set by trending or by manufacturer’s levels. Particle count is a direct measure of the oil’s cleanliness. A lower ISO code means the oil is cleaner.

Two very important factors in extending oil change intervals are using high quality oil, and using quality filtration. Filtration is one of the variables that you can control to keep the oil cleaner for a longer period of time.

By taking samples at frequent intervals, and using oil analysis, the “break point” of the oil can be determined. This is the point where the wear elements make a significant increase, and the oil has begun to lose its lubricating properties.

There is no set level that is a safe increase in oil change interval, but in many cases the interval can be extended to 500 hours *or more* on diesel engines. Some diesel engines have gone as many as **800 hours** on an oil change. An engine that has mechanical problems, is out of tune, or is used in extreme service cannot be expected to increase the oil change interval.

One other important part of a quality maintenance program is starting with clean oil. It is a big mistake to assume that new oil is always clean. No matter what the source is, new oil is often ‘dirty’, especially from bulk deliveries. Particle counting is the only way to tell how clean your new oil is.

With the help of oil analysis (including particle count), and using a high quality oil and high quality filtration, it is usually possible to safely extend the oil drain interval on many kinds of machinery. This is part of a new philosophy called Condition Based Monitoring that helps determine how long oil can be used in a compartment, and when components should be changed just before they fail. This saves time and money because the oil is changed only when it needs to be, rather than some preset time interval (such as 250 hours on diesel engines).