

“Oil the News That’s Fit to Print!”



Spotlight on...

Cutting the Fat

by Jim Stark

About Sampling Procedures...

An important thing to remember when you're sampling your industrial machines is to always take the samples the same way.



If one month you take the sample while draining the fill and the next time it comes off the top, you're apt to get different results, with one sample potentially containing more metals and solids than the other. Make sure everyone who pulls samples is doing it the same way to avoid any possible problems.

Oil and lubrication programs at industrial plants have a way of feeding on themselves and growing to unmanageable proportions. There are many causes of it, not the least of which is machine makers insisting on a particular brand and grade of oil being used in their machines.

It happens like this: the purchasing department innocently buys what they think is the best machine for the job. After it's installed you find a brass tag installed suggesting the machine's warranty will be invalid if anything other than a specific oil is used. There oughta be a law! You may, for instance, have a perfectly good oil of that grade already on the property, but now you are forced to buy another brand of the same product. No one wants to be responsible for voiding the warranty on millions of dollars in new equipment, so adding a new oil to inventory becomes the least painful of the alternatives.

Take a walk down to the lubricant storage area and count the various products on hand. In a large operation, you will be amazed at the myriad products available to do what is really a simple task: lubricate machines. For decades, financial managers have been pushing to reduce inventory since it is an expensive excess. Though it probably isn't a budget item that may affect your next review, you could greatly aid your company's efficiency by eliminating half the lubricants in inventory.

Here are some things to think about, should you decide to cut the fat from your lubricant inventory.

But first, a caution! There are a few specific types of oil that are required for some machines, such as various types of compressors and high-speed applications. If you stray too far from the recommended viscosities, additives, and/or base stocks, you could get yourself into a more costly fix than the cost of inventory. But

these applications are few and far between and contribute little to the headaches of your massive lubricants inventory.

Trimming the Excess



Where you can safely cut fat is in the area of different brands and grades of hydraulics and gear lubes. These separate categories of oil aren't interchangeable, so you can't substitute one for another. But you can safely reduce the number of grades and brands within each category. Viscosity is largely overrated. Don't believe it? Think about this: two cars or trucks doing the same job with the same engine have different types of transmissions. One is a manual and one is an automatic. The gears in both carry the same loads, yet the manual unit is treated to an 80W/90 where the automatic gets by with a 10W. Neither gets checked or serviced often, if ever. Yet the gears have similar lifetimes.

I'm not suggesting you make that dramatic of a cross over in your machines, but by using a little common sense you could probably reduce two of the three grades in your hydraulic and lube oil categories.

The common hydraulics — 32, 46, and 68 grades — are usually interchangeable. For most hydraulic systems you could switch to the 46 mid-grade without changing anything in the way a machine functions. If you have any questions about the outcome of such a choice (beyond simple observation of the machine's function), you might want to do an analysis to monitor wear.

You could do a similar simplification for your lube oil program. Commonly, lube systems run 150- to 320-grade oil. A mid-grade 220 will probably work just as effectively as the others. Check the machine's wear with oil analysis to make sure the change isn't hurting anything. Go slow. Change over one machine and monitor it. If the change is harmless, you can consider switching the oil grade on all similar machines.

A couple of other thoughts: You can get rid of any fixed-machine multi-grade oil on the property. Your oil operates in a constant temperature environment, and the machine will function perfectly well on straight-grade oil. Buying multi-grade oil is an unnecessary expense.

You can eliminate any oil being designated for machines that leak. Oil seals are damaged when the oil is not maintained in serviceable condition. No oil possesses the magic ability to correct a mechanical fault, including damaged seals. A higher viscosity (thicker) oil may inhibit the seepage problem, but damaged seals require replacement.

Simple programs are often the most effective programs. The next time you get a break, take a stroll through your lubricant supply depot and make a hit list of products you may be able to eliminate. Don't hesitate to use analysis to identify differences in products, or any possible changes in a machine's wear due to using a different grade or brand of oil.

Report of the Month

What was wrong with this pump? See the caption below for an explanation. Don't look right away -- take a good look at the report first.

(To learn where the various elements might be coming from, [click here.](#))

Elements in Parts Per Million	M/HR ON OIL	35	UNIT/ LOCATION AVERAGES	15	19	24	UNIVERSAL AVERAGES
	M/HR ON UNIT						
	SAMPLE DATE	1/24/05		11/18/04	8/21/04	7/30/04	
	ALUMINUM	0	0	0	0	1	0
	CHROMIUM	0	0	0	0	0	0
	IRON	1	2	1	1	0	3
	COPPER	12	11	99	32	10	7
	LEAD	5	6	73	14	2	4
	TIN	0	2	8	4	3	2
	MOLYBDENUM	0	0	0	0	0	0
	NICKEL	0	0	0	0	0	0
	POTASSIUM	0	0	0	0	0	0
	BORON	0	0	0	0	0	0
	SILICON	1	0	0	0	0	0
	SODIUM	1	0	1	0	0	0
	CALCIUM	0	1	0	0	0	1
	MAGNESIUM	0	0	2	0	0	0
	PHOSPHORUS	1	0	0	0	0	0
	ZINC	1	1	0	1	0	1
	BARIUM	0	0	0	0	0	0

Properties	TEST	cST VISCOSITY @ 40 C	SUS VISCOSITY@ 100 C	cST VISCOSITY@ 100 C	SUS VISCOSITY @ 210 F	FLASHPOINT IN F	FUEL %	ANTI- FREEZE %	WATER %	INSOLUBLES %
	VALUES SHOULD BE				43-47	>390	-	-	<0.1	<0.1
	TESTED VALUES WERE				44.5	405	-	-	0.0	TR

This pump contained a design flaw. The rings were made of a bronze alloy that didn't work well with the carbon steel in the keeper. The keeper was supposed to prevent the rings from riding up, but the dissimilarity in metals prevented the keeper from doing its job, allowing the rings to move around. That scraped bronze off the rings, causing the high wear. The company contacted the manufacturer who solved the problem by designing a new keeper made of the same metal as the rings. The two parts started working properly together, resulting in the improved wear you see in the most recent sample.

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