

Lubrication Best Practices

Numerous products are available to help improve efficiency and safety.

This article is based on a presentation by Chris Nowlen, lubrication consultant, Lubrication Engineers, Inc., Tullahoma, TN (931-563-7264), about lubrication contamination control and

best practices at the 2012 International Association of Operative Millers (IAOM) Southeast district's fall meeting and technical conference, Oct. 3-4, in Myrtle Beach, SC.

At any milling facility, proper lubrication of motors and other mechanical equipment obviously plays a critical role in reducing downtime, having equipment operate more safely, prolonging equipment life, and improving the bottom line.

This is especially true of the facility's critical equipment, which includes air compressors, gearboxes, bearings, and hydraulic reservoirs. In fact, it has been estimated that 60% to 80% of bearing failures are caused by cross-contamination of incorrect lubricants.

But like any maintenance chore, having a well-organized area to store lubricants safely and identified properly also plays a key role in reducing potential contamination issues with food-

related materials and to meet compliance standards of the Occupational Safety and Health Administration (OSHA).

In order to start achieving best practices, there are a variety of products available to help any mill manager meet the mark, such as safer and better containers to store and organize lubricants and hydraulic oils, and more effective ways to do a better job at matching the right products to the correct equipment.

Lubricant Storage Options

First, there are a variety of basic options to store, organize, and dispense key lubricants and hydraulic oils.

Stackable totes made from steel or polypropylene and at different holding capacities are widely available on the

market today. These totes also can be color-coded to match specific lubricants and oils and placed in spill containment trays for added food-safety measures (see photo on following page).

Specialized storage cabinets and high-end lubrication workstations and bulk systems also are a good option to keep things nice and tidy when working with lubricants and oils inside a milling facility.

Variety of Products

• Oil Safe® containers.

For more than a decade, Oil Safe has been the oil transfer management system preferred by leading companies around the world.

People often go to great lengths to preserve the quality of their oil only to contaminate it by using filthy containers, pouring it through a dirty funnel, or mixing it inadvertently with a different oil.

That problem can be solved by using the color-coded range of Oil Safe containers. Here are two basic reasons why.

1. A fully sealing unit prevents contaminants from getting into the oil.
2. Easier dispensing without the need for secondary tools such as funnels.

With different lid types designed to fit each of the five different storage drum capacities for oil, a maintenance person also can configure and tailor a system to meet the facility's oil transfer requirements.

• **Label-Safe™ system.** Using color-coded tags in conjunction with Label Safe identification products can prevent cross-contamination and misapplication of oils.

For example, color-coded tags specific for certain lubricants can be attached to critical pieces of equipment and contain proper application information for maintenance personnel.

Tags with the safety diamond emblem can contain specific application information, along with any noted safety hazards.

These tags can be used where ►



Chris Nowlen

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Stackable polypropylene tanks equipped with desiccant breathers, which can hold from 35 to 70 gallons of lubricants placed in large spillproof trays, are an example of safe and well-organized storage and is considered to be OSHA-compliant. The colored-framed units on the floor and the handheld carts are used for on-the-spot filtration of hydraulic oils or other lubricants. Photos courtesy of Lubrication Engineers, Inc.

necessary, such as on bulk fluid storage units, smaller containers of oils and lubricants, hydraulic oil reservoirs, gearboxes, bearing housings, machine filling points, breather outlets, and on auto-lubers.

- **Oil sight glasses.** Designed and manufactured by Esco in Houston, TX, oil sight glasses (OSGs) are an integral part of lubrication management programs in many industries.

The OSG is a clear acrylic cylinder fitted with a spring loaded drain valve that installs in the drain port of the oil reservoir of pumps, gearboxes, bearing

housings, and other lubrication-critical pieces of equipment. This easy-to-install fitting provides continuous monitoring of the fluid's level, clarity, color, sediment, and possible water contamination.

The drain valve also allows for the discharge of accumulated water and other potential contaminants one micron or larger in size, and it withstands exposure to the chal-

lenging working conditions inside a facility. The ability to see and instantly drain water contamination makes the OSG a handy device for monitoring oil levels and conditions.

The OSG even can be equipped with dual ports, so that the maintenance operator can draw an oil sample easily and quickly when needed.

- **Clear tube grease guns.** Clear tube grease guns are available to make identifying the lubricant insert cartridge easier, reduce cross-contamination errors, and help save time and money. Many are made from high-impact, fracture-resistant polycarbonate materials with collars consisting of durable T6061 aircraft-grade aluminum.

To enhance identification further, the collars are available in a variety of colors, including silver, gold, purple, blue, black, red, and green. ►

This yellow cabinet is designed for efficient storage of supporting supplies for equipment lubrication.



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This lubrication work center is perhaps considered the high-end in the industry, with numerous stackable steel 300-gallon totes, which each are equipped with its own filtration system, for oil and lubricant storage and for storing individual lubricant dispensers. This system also includes its own lubricant dispensing bar (center).

Battery-powered grease guns. Battery-powered grease guns also are available and can be fitted with an extra-long whip hose for those hard-to-reach places. With a 19.2-volt rechargeable battery, these guns offer an efficient and near effortless way to deliver grease.

The tubes are made from high-impact, fracture-resistant polycarbonate material, which can withstand heavy use

and high temperatures. These tubes also fit many standard grease guns, making upgrades of existing guns easy and cost-effective.

The collars, which are available in a variety of colors, are constructed of durable T6061 aircraft-grade aluminum and will not rust or crack.

- **Filtration carts.** To help prolong the lifespan of hydraulic oils and other lubricants, color-coded filtration carts are available and equipped with all the necessary quick connect and disconnect hoses to help filter out any impurities in the respective equipment's oil.

These filtration carts are designed as a closed-loop system, which functions roughly in the same manner as a kidney dialysis machine.

On the equipment itself, the filter head assembly also should include a high-pressure sample port and a differential gauge to aid operators and lube technicians in determining the filter's effectiveness.

Some Maintenance Tips

In addition to using some of these products in a lubrication program, there still are a few basic maintenance tips to

consider.

- **Hydraulic reservoir.** On each hydraulic system, it's a good practice to check the original equipment manufacturer's breather or mushroom cap ▶



While a smaller lubrication work station, this one still has plenty of storage with stackable 300-gallon capacity steel totes and a dispensing system, each with its own filtration system.

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These are oil-safe, spillproof, OSHA-compliant containers equipped with hand pumps, five-foot hoses, and color coding. This type of container normally is used for filling small gear boxes.

periodically for any signs of undue rust or blockages. This cap normally is located on the corner of the hydraulic reservoir. Typically, when this cap and the associated filter start plugging up with contaminants and other crud, the breather cap stops working properly and causes an ingress or system shutdown.

Besides replacing old breather caps with new ones, the filters also may need

to be changed regularly.

Filtering the hydraulic reservoir oil periodically with a filtration cart, especially when the equipment is operating under dusty conditions, also can help keep hydraulic systems running more smoothly and efficiently.

Plus, if the maintenance operator feels that the hydraulic oil is becoming contaminated too frequently despite changing the cap and filter, another option is to install a hydraulic adapter kit.

A hydraulic adapter kit incorporates quick-connect fittings, desiccant breather filters, vacuum indicators, and sample ports that function as the connection between the application and filtration system.

Pairing fluid handling filtration with breather protection maximizes the system's integrity, requires less equipment and labor, and reduces contamination in the hydraulic system.

Using special handheld devices for thermal imaging also can help determine if the hydraulic oil is running too hot, which can decrease its lifespan considerably. In addition, if the oil is reaching temperatures above 145 degrees F, the first thing to check is the breathers, and



Color-coded tags can be placed at the lubrication points on the equipment to identify what proper lubricant is required.

then check to make sure pumps, filters, and bypasses are working properly.

Regular Oil Analysis

It's very important to perform an oil analysis periodically on critical equipment, which not only will help determine complete oil changing intervals but also help avoid potential problems with the equipment.

Karl Ohm, editor



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