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**LIVE A
HEALTHY
MACHINE LIFE**

**MAINTWORLD
MAGAZINE FOR MAINTENANCE & ASSET
MANAGEMENT PROFESSIONALS**

Live a Healthy Machine Life - Asset Management

There are only a few ways to store lubricants in a good manner. Only proper organization with cleanliness and contamination control lead to Best Practice storage.



Figure 1: Lustor is a modular plug & play system. User selects the number of units, tank sizes and components based on lubricant data and will be supplied with the turnkey modules.

How many times have experts in maintenance and reliability said that lubrication is the bloodstream of your machine and that it should be taken care of as if it were the blood flowing through your own veins? And yet still today, many companies sin against these rules of good conduct. Lubricants like oils and greases and lubrication in general are still perceived as back room products and activities, not needing any special care.

The condition and cleanliness control of lubricants have a high impact on the condition of your machinery and this only requires small investment, thus high ROI.

In fact, increasing the cleanliness level of new oils by pre-filtration and proper storage in the best conditions can result in 2 to 10-times longer-lasting machine components (gearboxes, diesel engines, even hydraulic systems). Lubretec's approach provides the right advice and tools to achieve these improvements.

This article will explain how to organize proper storage and conditioning of lubricants in your plant.

What Is Involved?

In all cases, lubricants for maintenance must be ordered, shipped to the plant and stored until needed for the lubrication activities. Lubricants can be oils in bulk (1000's of litres), or standard packaging like IBC, 200 litre steel drums, 20 litre kegs or jerry cans. Grease comes in bulk like 200 kg or 50 kg steel drums, smaller cans and cartridges.

By the way, do you keep track of the age of each lubricant in this spare storage?

Full packs, drums, cans of each lubricant is stored in warehouses or maintenance storerooms. Once the lubricant is needed, the container will be opened and a part of it will be used immediately, the rest at a later stage – which could be days, weeks, months or even years later.

So far so good? Yes, for 90 percent of companies with low reliability and high machine failures. But we understand the reader wants to learn how to be part of those 10 percent world-class companies excelling in our so-called Lubrication Reliability™ strategy.

All these different sorts of packaging create many challenges to find the best possible storage method. Thus, we recommend as a starter the consolidation of all lubricants. This has many advantages: one size of supply type, better pricing, easier management and faster turnaround.

The type of supply packaging will also determine the way you can store the lubricants: standardization into 200 l drums will result in being able to apply standard storage equipment like spill pallets or racks. Also, some lube room conditioning equipment is only designed for 200 l drums.

How to store unpacked lubes?

Basic rule: DRY / COOL / CLEAN. Whether oils or greases, cans or cartridges.

Additionally, storage time to be as short as possible.

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Drums should be stored where they are protected from severe weather conditions (high temperature, sun, frost, rain). Preferably in a closed room at constant temperature.

Did you know a drum left outside, even with both connections factory sealed, will in time absorb moisture from the air because of internal air pocket expansion and contraction caused by temperature changes? Imagine the same effect when the drum has a centimetre of water on top after a rain shower.

The French put a “Charlotte” head on the drum – better yet, you can store the drums horizontally with seals at the 9 and 3 o’clock positions so that they remain immersed in the lubricant contained inside.

Something quite often forgotten is the need to properly identify the lubes: beside the suppliers labels we recommend the application of a Lubrication Reliability™ identification standard: colour/symbol/viscosity (and/or application). This Lube ID standard will then be applied throughout the complete lubrication process: from storage over distribution to application on the machine. This standard needs to be posted on a wall chart in the storage room.

A last recommendation: apply FIFO. We have seen new untouched oil drums of three and four years old in unprotected storerooms. Some lube suppliers recommend a shelf life of one year, maximum two in good storage conditions. For greases this is even more critical as grease shelf life can be six months because of a bleeding effect of the base oils.

Condition, Protect and Improve!

Once drums are opened for further transfer and distribution the war against contamination starts. We even go one step back and recommend to start with an even lower level of contamination compared to the level of the purchased oils. Why?

Because it has been shown that in many cases the ISO4406 code (a measure of cleanliness of lubes) can be way above desired levels recommended by machine designers. We found levels of 25/22/19 compared to prescribed levels of 16/14/11. How do we know? Because the customers had an income quality control analyzing new oils for cleanliness. Another recommendation for you.

When we offer or design our storage equipment, the possibility of increasing the purity of the lubes is an indispensable feature incorporated. To achieve “purification”, we always employ heavy-duty hydraulic filters with the lowest possible filter mesh: 10 μ (engine oil, gear box) or 3 μ (bearing oil, hydraulics). These filters are used to start a closed loop tank/drum filtration to decrease contamination and lower the ISO4406. The same filter is used to pre-filter oils during tank filling and in a 3rd stage for filtering before transfer to dispensing equipment like OilSafe cans.

**TO ACHIEVE “PURIFICATION”, WE EMPLOY HEAVY-DUTY
HYDRAULIC FILTERS WITH THE LOWEST
POSSIBLE FILTER MESH.**

The equipment is always powered by pumps (pneumatic or electrical) as gravity alone cannot perform the closed loop filtration, not even one-pass filtration.

So how do I keep the precious fluid in best shape possible? Simply by encapsulating it in proper tanks, drums, containers. Ideally containment that protects from the impact of sunlight, doesn't rust nor oxidize. And of course, protects lubricants from external ingress of foreign material like dust, dirt, production chemicals, moisture, and water and so on.

You understand that if a volume of lube leaves the tank, the same amount of air needs to enter. This air can be poisoned with all the contaminants mentioned so we need to keep them out!

One simple tool called a desiccant breather is useful: a very fine particulate filter of 2 μ minimal and a correctly designed amount of desiccant product that dries out the moisture in the air.

A common mistake we see on certain lube storage tools is that the equipment only uses one pump, one filter, one transfer and filling hose set for different lubes for sometimes up to eight different lubes of different viscosity, type, application and so on. Personally, I call these cocktail bars as they mix the remaining lubes of the previous transfer with the next one. NEVER DO THIS because cross contamination is an even bigger enemy for your lubes.

Of course, Best Practice storage will need to comply with identification rules: a lube chart, all tanks and equipment properly colour coded + symbol + type + viscosity, dispensing equipment stored in the same room using same ID coding, etc.

And it speaks for itself that the environment of the lube room needs to answer to: dry, cool, clean. A clean environment means clean lubricants.

Lustor™ Lubrication Storage System.

A growing number of companies are trying to become Lubrication Reliability™ adept. Last year we designed and developed a Best Practice storage system called LUSTOR.

Lustor™ is based on a set of plastic MDPE roto moulded tanks. Black inert plastic is chosen for its ability to protect the lubes from sunlight and because it does not rust or react with the chemicals in the lubricants.

The system is equipped with tanks of three different sizes: 125 litres (catering for 50-60-liter drum consumptions), 250 litres (because most plants order in 200 litre drums) and 500 litres for larger consumption.

All individual units are equipped with the Lubrication Reliability™ compliant basic components:

- Heavy-duty pneumatic oil pump
- Hydraulic filter with saturation indicator
- Filter cartridges selected for the respective lube type, viscosity and application
- Desiccant protection breather to keep dust and moisture out
- Lube identification label (colour/symbol/type/viscosity)

The system is designed to be user-friendly including features such as 3D oil sight glasses or levels, digital flow meter to keep track of oil consumption and to detect abnormal spills or lubricant use. Options such as hose reels, retention spill tanks, anti-static wiring, and so forth complete the line.

1. Choose a clean, dry and cool room to install the storage equipment

2. Apply Identification on all the lubricants
3. Only use Lubrication Reliability™ compliant storage equipment:
 - a. Proper tanks: protected from sunlight.
 - b. Dedicated lube pumping and filtering components: 1 per lube
 - c. Entry air protection equipment: desiccant breather
 - d. Closed loop filtering feature with properly designed filters
 - e. Additional features like oil levels, consumption metering etc.
4. Keep the lube room and equipment clean and tidy at all times.



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