

'BACK TO BASICS'

In the second of a 'Back to Basics' series, Martin Williamson of independent oil analysis and machinery lubrication training and consultancy firm Noria UK, looks at the issues of properly storing lubricants....

Designing the Optimum Lubricant Storeroom

Are you Guilty?

In the first article, the issue of Best Practice Lubrication Management was discussed within the context of Proactive Maintenance. The philosophy was that the root cause must be addressed in respect of failure avoidance. It makes sense that in a programme designed to minimise the risk of error and to avoid the ingress of contamination, the improvements must begin at the beginning.

Therefore, it is fair to say that an oil storage room should be brought up to a high standard - not lacking in anything. In my experience, most oil stores are often located in some dark and unused area of the plant that nobody else wants. Why aren't they treated as the crucial hub to production?

If improving your oil store is not on your list of priorities, then it should be. Whether you are a low-volume lubricant user, or a large plant, this article is intended as a guide to setting up an efficient and well-organized oil store. It addresses many of the minor issues often overlooked, which as a whole, form an important and crucial part of a good lubricant store.

When drawing up plans to upgrade the oil store, it is important to consider the amount of space needed, the furniture and work benches, provision for storage, lighting, power and ventilation, and above all, to ensure the ergonomics of it all. Making the work area and procedures as simple and as painless as possible will encourage ownership and enthusiasm in the store, and ensure proper lubrication. Because several people may be involved in the storeroom, consistency in the procedures and housekeeping is critical to good management.



Figure 1

Each member of staff with authorised access to the storeroom is essential to the overall success of the storeroom's design. Therefore, it is imperative that the work area is laid out properly, and to avoid unwittingly contaminating stock, that good housekeeping is practiced at all times. The storeroom will be a showcase, the hub of an efficient operation if successful, and should look presentable at all times. Visitors and colleagues should feel proud of their work area.

Do You Need an Oil Store?

Whether you run a small automotive workshop or a large power station or open cast mine, an adequate storage area for lubricants, lubrication equipment and supplies is necessary. For some, this may simply be an appropriate cabinet or locker (Figure 1); whereas for others, it may be bulk storage in Intermediate Bulk Containers (IBCs - Figure 2) or it maybe pumped dispensing systems. What is common to all three is the need to ensure the basics of avoiding outdoor storage, providing adequate racking for the containers, providing suitable handling and dispensing systems, as well as disposal arrangements. More important is the need to comply with

Health and Safety regulations and ensure that all members of the staff are trained in fire-fighting and spillage procedures; no organisation wants the stigma of a disaster on its track record.

Addressing Health, Safety and Environmental Issues

The work area is critical to the smooth operation of the service. The comfort of the lubrication technician is important because of the somewhat hazardous nature of the store and the job. In addition the technician will need to complete paper work and will perhaps have a terminal for work orders etc., so this is an additional ergonomic consideration. Giving ownership to the

employee who will have ownership of the store will help develop interest in the job at hand. This may involve the individual in playing an active role in the design and functionality of the area. Apart from the comfort of the lubrication technician, it is also important that the storeroom is maintained at a constant room temperature with adequate ventilation. Ventilation is important to avoid the build-up of potentially hazardous fumes that pose a fire and health risk. Ensuring maximum shelf life of the lubricants is just as important, and constant temp will help. The store should be dry to avoid contaminating the oil with the ingress of moisture. It is worth requesting a Materials Safety Data Sheet for each lubricant to keep in the storeroom for quick reference, and more importantly, for the lubrication technician to check before handling the lubricant.



Figure 2

Obviously, warning signs are necessary to communicate the danger of the fluids in these containers; and smoking and eating should be prohibited in this area. Currently, work by an ISO working group will improve the colour-coded labelling of lubricants, providing a more consistent and global quick reference system. Fire extinguishers should be available, although the type of lubricants stored will dictate exactly what form is required. As mentioned earlier, all staff should receive appropriate training in the correct handling of these units. A first-aid kit and eye wash solution should be kept on hand, and staff should be trained on their use. If possible, a small sink with both hot and cold water should be available, along with quality hand soap. In addition to the company policy on hard hats and safety shoes, safety glasses, eye wash and safety gloves should be available for use at all

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times when working in the plant. Any safety charts with explanations of warning symbols or procedures "in the event of" should be displayed around the lube store. Advice from the company's HSE should be sought on these matters, though.

Non-slip flooring should be installed for safety reasons. This will allow for easy clean up and is impenetrable to oil spillage. A concrete floor looks unsightly after a short period, and is difficult to sweep, and could contribute to airborne contaminant. Likewise, the walls should be painted or tiled to minimize cleaning and dust release.

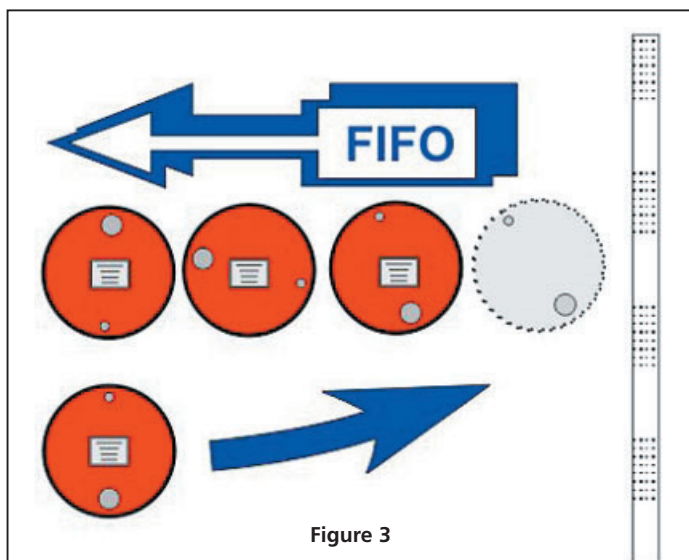


Figure 3

Most companies now participate in ISO 14001 and have access to an expert in these matters regarding their lubricant types and local conditions or circumstances. The oil store must comply with local and national laws and regulations regarding the environment and may even contribute to the measurements used in attaining and maintaining the organisation's "green" status. Therefore, space for disposal of used oils must be considered, whether storing them for removal by a contractor or for reclamation on-site. It is also important to consider any drains that may run under or near the oil store, because a spill could possibly contaminate local water sources. This may require special drainage within the storeroom. Special containment sacks should be available at all times to prevent a spillage from seeping into drains and should be placed not just in the storeroom but around the site. The environmental officer will be able to identify critical areas where this might be an issue.

Signs, labels and tags on the containers and piping used to dispense oil should be adequately descriptive and well placed. Any individual working with lubricant storage and distribution systems should be familiar with such conventions. Training, work instruction sheets and signage are crucial.

Dispensing Systems

Depending on the nature of the business, a simple cabinet (Figure 1) may suffice for the storage of the small containers (less than 25 L). Even with this small volume of lubricants, it is important to ensure it is indoors and protected against airborne contaminants such as dust and moisture. Stock rotation (Figure 3) is just as crucial for small container storage as is inventory control. Too little stock on hand and machines may operate with too little lubrication. Too much stock and the lubricant may degrade beyond its useful life before it reaches the machine.

Figure 3. First In, First Out. Use products in same sequence as they arrive.

Next, some sort of dispensing container is required to get the lubricant into the system (Figure 4). Proper oil dispensing cans are designed to exclude extraneous contaminant. They have spouts that dispense oil inside the machine and not outside. While the human eye may not see any contaminant, and thus assume that new oil is clean oil, particles of silica from the dust in the atmosphere or from production activities can have a serious impact on the wear rates of the equipment.

In larger operations, the use of 210L barrels is often the norm. Some sites have moved away from this for HSE reasons in their handling, preferring the smaller 20L or 25L drums, which are generally more expensive per litre of oil purchased, however. Indoor storage is crucial for this arrangement. The shelving should allow the barrels to be stored on their sides with the bungs at three and nine o'clock to ensure an airtight seal. Outdoor storage is not recommended because water accumulates on the top of the barrel. This can lead to corrosion and water ingress, causing lubricant damage. Carts, or overhead lifting tackle should be available for moving the barrels from the delivery point to the racks. With the need for bunding (containment walling), it is increasingly more difficult to use wheeled barrel carriers or forklift trucks into and out of the storage area.

When several tiers of shelving are used, appropriate equipment such as a drum/barrel stacker should be readily available for lifting to higher levels. Some lubrication technicians prefer to dispense manageable amounts from drums into smaller containers (2-5L types). However, some sites require that the drum be taken to the filling point, and appropriate handling equipment must be available, because the drums exceed 200 kg when full. While the most common method of dispensing oil from the drum is to use a hand crank pump, this allows contamination in the drum to be dispensed into the system, as well as contamination from the pump itself where it has been badly stored between use. More proactive organisations now use a filter cart, which may be capable of carrying the drum plus drum pumping and filtering

the oil as needed. These are recommended where it is necessary to dispense from the drum directly into either a smaller container or the machine. The use of barrel pumps of filter carts should be restricted to one type of oil to avoid cross-contamination, where feasible, particularly where the containers are replenished on a regular basis from a bulk store. Use caution when standing a pack at any time, because it is possible for a sharp object, such as a nut or stone, to pierce the bottom of the drum, causing leakage.

Where a site has a high throughput of a few lubricant types, then the ultimate oil store is a bulk container area with distribution piping to the required areas. Several points must be considered when identifying an ideal location for a bulk tank area. Tankers should be able to easily access drums and electricity for the pumping units.



Figure 4.
Transfer
Containers

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The bulk containers may be stationary - with a tanker replenishing the lubricant, or the container may be portable (IBC Containers) - delivered, hooked up, used and then removed for refill.

If a suitable roofing structure cannot be provided, containers should be designed to avoid water settling on the tops of the containers; preferably, these should be designed with domed tops. In addition, containers may need quality desiccant breathers to avoid dust and moisture ingress. Sight glasses or level gauges will help technicians know when to reorder lubricants. Sampling points on tanks allow analysis to be performed at regular intervals to ensure quality of the stored lubricant. Provisions should be made for cleaning the containers at regular intervals.

Transfer system precleans the oil.

The area will require adequate drainage for catching spillage or leakage, and environmental concerns must be considered. Ideally, the pumping station and dispensing points should include filtration units to ensure clean delivery of the oil to the system, and may include flow meters for the management of lubricant consumption in each area.

Lubrication technicians and the Digital Age

Many organisations now operate sophisticated data management systems to which the oil store should be linked. Whether it is the issuing of daily work orders, or the logging of top-up volumes for each system, or the stock and inventory control of the lubricants, there is a definite need for the oil store to link to the network. While the location of a computer may not be essential in the oil store, the use of handheld units (PDAs) would assist the lubrication technician in synchronizing data between the unit and the network.

In Summary

Obviously, not all of the information presented here is relevant to all

operations, but health and safety issues are important wherever oil is handled. It is important to work with the company's environmental, health and safety personnel to ensure compliance with relevant policies. In fact, part of the measurable benefits of maintaining the optimum oil store is the reduction of lubricant consumption and leakage, so it is important to involve these departments in gaining their support. Above all, apart from the issue of Health & Safety, and the environment, the other big benefit to upgrading storage areas is the improvement in reliability, whether through minimised handling errors, or just supplying the machines with cleaner oil.



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Martin Williamson is a graduate Mechanical Engineer and has managed an oil analysis programme in a mining environment, more latterly supported oil analysis products in a wide variety of industries, and is currently managing Noria UK Limited, based in Chester. Noria Corp, the parent company, based in Tulsa, OK is an independent body of experts in all matters lubrication. Noria provides training and consultation globally through their offices in the US, Canada and the UK and Middle East, and through their partners in over ten countries. Noria publishes two journals bi-monthly; *Practicing Oil Analysis* and *Machinery Lubrication*, and these are available free on subscription.

Their web-site at www.practicingoilanalysis.com is one of the most comprehensive sites for independent lubricant information.

UK REGULATIONS TO CHANGE THE WAY CARGO INSURANCE IS PURCHASED

From 14th January 2005 a substantial change in the way the general insurance industry is regulated will have far reaching effects - even on exporters.

Background

European legislation, particularly the Insurance Mediation Directive has been introduced with the aim of creating a single market in insurance across Europe.

In December 2001, the UK government had already announced it was making the Financial Services Authority (FSA) responsible for regulating the selling and administration of general insurance in the United Kingdom and it is the FSA's mandate to impose the regulation determined by European legislation.

One of the profound effects of this new regulatory environment is that if a firm is in any way involved in the arrangement of insurance for the benefit of its customers, it will become mandatory for that firm to be regulated by FSA in some form. This has obvious benefits in

ensuring the professionalism of insurers and intermediaries but for the first time it extends the arm of regulation to what has been termed secondary intermediaries.

Impact on Exporters

Secondary intermediaries are firms whose core business is not the sale of insurance but who nevertheless are involved in insurance mediation activities as some form of additional or ancillary service. The range of secondary intermediaries is large and covers many industry sectors including international transit where the role of the freight forwarder in the arrangement of insurance has been under the spotlight.

It is customary for a freight forwarder, as part of the service they provide, to offer their exporting customers cargo insurance to cover the risks of damage and loss to cargo they are arranging the transport for. Traditionally the freight forwarder arranged an open cover insurance with their own insurance provider against which they would submit regular declarations based on the insurance they had

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sold to customers, generally with the premium charged as part of an overall freight cost transaction.

Under FSA regulation from 14th January 2005 this will be deemed a regulated activity and the forwarder is having to make the choice now as to whether they intend to be a regulated firm or stop selling insurance altogether. The need for action is all too real as forwarders' insurers are cancelling policies that provide this cover and run beyond 14th January.

The primary body representing the UK international freight services industry, BIFA have been arguing for an exemption from regulation for the industry, but have been unsuccessful.

Options

For exporters this means that the forwarder may no longer be able to provide the inclusive service and ease of access to cargo insurance for goods.

Options open to forwarders are to:

- obtain authorisation from the FSA to continue selling insurance in their own right be authorised to sell insurance under an umbrella arrangement with another authorised firm
- negotiate an arrangement with an insurance provider to effect introductions and to avoid the provision of insurance and therefore the regulation altogether.

Exporters who deal with forwarders who will be regulated will see no obvious effect on the freight arrangements they make.

If your preferred forwarder decides not to be engaged in selling insurance you effectively have three options: -

- Use the services of the insurance provider that your forwarder might introduce you to. If a forwarder is trying to introduce you to another insurance provider then it will be within the framework of a contractual arrangement between insurance provider and forwarder providing protection for the exporter that the arrangements in place are managed within the regulated environment.
- Use the service of your own insurance provider.
- Your own insurer and/or broker should be fully aware of the current legislation and regulatory framework relating to cargo insurance and the involvement of forwarders. They may not be a marine specialist and so they themselves may seek support from a specialist marine insurance provider.
- Use the services of a specialist provider.
- A small number of insurance intermediaries are marine specialists with solutions for both freight forwarders and exporters. They will be able to provide the forwarders with the contractual framework to effect introductions and insurance solutions for the exporters within the new regulated environment.



WSA CHALLENGE FUND - SECOND ROUND OPENS FOR BUSINESS

Bill Callaghan, Chair of the Health and Safety Commission (HSC), today announced the opening of the second round of the Worker Safety Adviser (WSA) Challenge Fund. The fund operated by the Health and Safety Executive (HSE) will run between April 2005 and March 2007.

The aim of the fund is to inspire organisations to collaborate on projects that encourage and promote employees and their employers to work together to drive improvements in managing health and safety. The scheme focuses on small firms and organisations that lack such arrangements.

Applicants must demonstrate a commitment to improve health and safety, support the work of a WSA to promote worker involvement and demonstrate the vitality of the partnerships they have established to achieve this aim.

The application form and details of how to apply can be found at the link below.

