



Identifying the Low-Hanging Fruit in Your Lubrication Program



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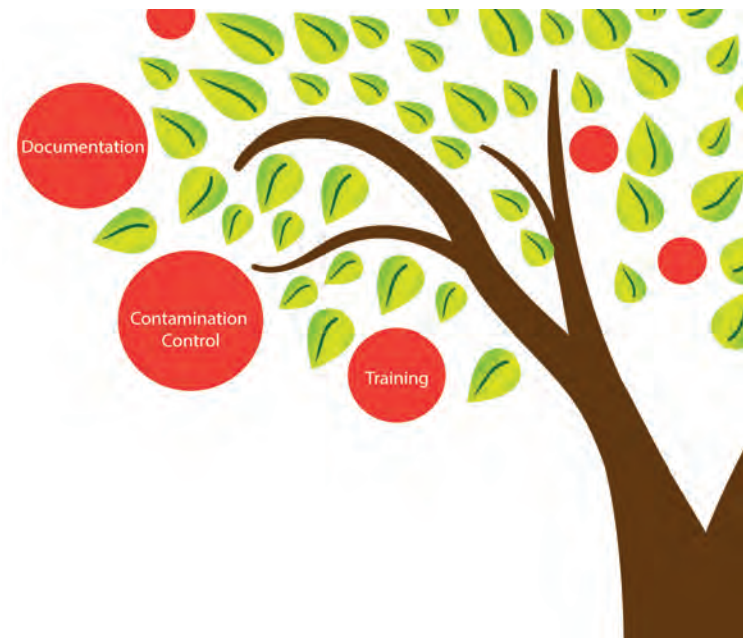


After assessing and developing multiple lubrication programs across numerous industries over the years, Noria has been able to identify common "low-hanging fruit" or gaps which, if corrected, can significantly improve the program's development and often with minimal cost, time and effort. While fixing these issues alone will not establish a world-class program, it will address the majority of items that early-stage programs habitually fail to resolve.

To the untrained eye, some of these elements may not typically be considered imperative for a lubrication program. However, in truth, they are the simple, yet effective low-hanging fruit that must be harvested to ensure long-term success and sustainability. These elements include inventory management, labeling and tagging, documentation, contamination control, lubricant handling and training.

Inventory Management

Your reception area is the starting point in the lubricant's journey. In this area, inventory management will be one of the key components. Having correct practices on the



front end will help set the tone for lubricant handling practices across the site. When it comes to inventory management of lubricants, several things must be considered, such as shelf life, minimum and maximum levels, first-in/first-out (FIFO) practices, reception dating, quality assurance and control, and filtration.

Shelf Life

Using a lubricant after its noted shelf life can decrease its performance. Therefore, it is important to know each

lubricant's shelf life, as not all are the same. Contact your lubricant supplier if you are unsure of the timeframe.

Another consideration is auditing your supplier to uncover any issues before the lubricants arrive onsite. If an oil drum is found with a shelf life that has already expired, a sample should be pulled from the drum and compared to the new oil baseline.

Minimum/Maximum Levels

Minimum and maximum storage levels should be established

in the reception area. These will be crucial to mitigate shelf-life issues and unnecessary spare-part overhead. Storeroom usage should also be reviewed annually to determine if these values need to be adjusted.

FIFO

First-in/first-out (FIFO) practices can help to reduce shelf-life concerns. You not only need to understand this philosophy of utilizing the oldest lubricant first but also implement a storage strategy to make it convenient. If individuals on the lubrication team must move and rearrange oil drums whenever a new drum is needed in order to get the oldest drum in stock, this practice likely will not last.

Reception Dating

Again, refer to the shelf life but note two specific dates: the batch date and the date the lubricant arrived onsite. This process can be as simple as highlighting the noted batch date and using a paint pen to write the arrival date on the side of the drum. This will help minimize additive depletion issues and allow the reception department to move closer to a just-in-time delivery system. If your facility is receiving drums that are several years older than the batch date, you may want to have a talk with your supplier.

Quality Assurance/Control

Quality control is another essential element of inventory management. For a world-class lubrication program, emphasis should be placed on verifying that the correct lubricant has been received. Establishing testing, quarantine and ready-for-use areas will enable the site to ensure that it at least has the right lubricant and that the viscosity falls within the 10 percent range of the ISO code. Obtaining quality certificates from your lubricant suppliers can also provide assurance that your lubri-

cants have been tested and approved.

Filtration

If your lubrication program is small, the lubricant reception area may be inside your lube room. If this is the case, you have a great opportunity to integrate filtration into your program's inventory management. By minimizing particle and moisture ingress, you will maximize asset life.

Labeling and Tagging

A lubricant identification system with a specific shape, color and naming nomenclature for each lubricant is imperative for a world-class program. This system not only should be utilized in the lube room but also for lubricant reception, satellite cabinets, lubricant handling, transfer and sampling equipment, assets, and components.

Lubricant Reception

Just as reception is the starting point in the lubricant-handling process, it should also be the first place to consider labeling. All lubricants should be labeled and tagged upon reception before they are staged or released for use.

Lube Room and Satellite Cabinets

As many lubrication champions have stated, the lube room is the heart of your program. As such, labeling and tagging will be paramount in this area. All lubricants, bulk storage containers and transfer pumps should be properly identified to prevent cross-contamination.

Lubricant Handling, Transfer and Sampling Equipment

Lubricant handling, transfer and sampling equipment are often overlooked when it comes to labeling and tagging. While some facilities have upgraded to dedicated, sealable and refillable containers with labels, it is still fairly common to see transfer pumps, filter carts and

vacuum sampling pumps used for multiple lubricants.

Assets and Components

Assets on the plant floor should also be labeled with the correct lubricant identification. Since relubrication tasks are frequently delegated to operations, this is imperative to prevent confusion as to which lubricant goes where. The idea is to create a tagging system that is so clear that anyone can walk in and understand which lubricant should be used throughout the handling process.

Documentation

Documentation is another area where gaps are often identified in underdeveloped programs. Although there may be some resemblance of work instructions, it is rare to find programs that have comprehensive procedures for tasks and line-by-line steps that verify work is being performed the same way by different people. These procedures for lubrication tasks should be carefully considered so as not to hinder workflow in the field while also providing enough detail to standardize the work being completed. Procedures should be created for the majority, if not all, lubrication-related tasks, from reception to used oil sampling.

Reception

Standardized procedures should be established for incoming lubricants, testing and handling. Incoming lubricants should have

36%

of lubrication professionals say training is the most important factor for continuous improvement of a lubrication program, based on a recent survey at MachineryLubrication.com

	Reliability and PdM Professionals	Lubrication Management Professionals	Lubrication Technicians	Machinery Lubricant Analysts	Mechanics & Craftsmen	Operators	General Managers & Supervisors
Machinery Lubrication I (Cert. MLT I)	Required	Required	Required	Required	Required	Optional <i>But Recommended</i>	Optional <i>But Recommended</i>
Machinery Lubrication II (Cert. MLT II)	Optional <i>Personal Development Only</i>	Required	Required <i>For Program Managers</i>	Optional <i>But Recommended</i>	Optional <i>Personal Development Only</i>	Optional <i>Personal Development Only</i>	Optional <i>Personal Development Only</i>
Oil Analysis I & II (Cert. MLA I & II)	Required	Required	Optional <i>But Recommended</i>	Required	Optional <i>But Recommended</i>	Optional <i>But Recommended</i>	Optional <i>But Recommended</i>
Oil Analysis III (Cert. MLA III)	Required <i>For Program Managers</i>	Required	Optional <i>Personal Development Only</i>	Optional <i>But Recommended</i>	Optional <i>Personal Development Only</i>	Optional <i>Personal Development Only</i>	Optional <i>Personal Development Only</i>

An example of a training matrix for individuals involved in a lubrication program

documentation indicating any damage or concerns with the packaging, along with the reception date and batch date. Testing procedures should detail how and where to pull a sample, as well as which oil analysis tests the laboratory should perform. Handling procedures should specify the correct labeling and tagging process and ensure first-in/first-out practices are carried out.

Lubrication Room

In the lubrication room, the procedures and documentation generally fall under the umbrella of confirming proper maintenance and upkeep of transfer equipment. These procedures typically consist of inspecting and cleaning bulk storage containers, satellite cabinets, transfer containers and filter carts. These simple work instructions can help your team be more proactive. The tasks can be measured by creating 5-S audits to confirm effective follow-through.

Routine Inspections

Route-based documentation often involves visual inspections utilizing both instrumentation and the human senses. Ensuring maintenance personnel “observe” and not just “see” will be key for good inspections. Recognizing specific sounds, normal gauge readings and how equipment usually operates can offer insight for addressing unheeded maintenance and reliability issues. Through effective training, communication and documentation, a quick operator round

or flashlight inspection can provide critical asset information.

Routine Lubrication Replenishment

Routine replenishment is another aspect of frequency-based lubrication tasks. Documentation of these procedures should identify how regreasing, oil draining, flushing and refilling practices should be performed. Inconsistent greasing volumes, cross-contamination and improper flushing techniques will lead to lubrication-related problems, so documentation of these tasks is essential.

On-Condition Routes

An on-condition route refers to a consistent, triggered response based on an inspection. These procedures should describe how to top up oil, replace a desiccant breather or change a plugged filter. While these may seem like simple tasks, there are certain details that may require follow-up.

Sampling

It is important to have sequential steps for the sampling process, from confirming proper field techniques to verifying the appropriate tests. Missing information and analyzing poorly collected samples will jeopardize the opportunity to catch potential failures before they occur. With sampling, the goal should be to maximize data density and minimize data disturbance.

Contamination Control

Contamination control is one element within a lubrication program that many sites have begun to address. However, there usually is still low-hanging fruit to be picked. The lubrication team must understand all the possible contaminants in their facility, how and when they are likely to enter a system, and the most effective strategies for excluding and removing them.

Exclusion vs. Removal Strategies

More emphasis should be placed on exclusion strategies, since it is much easier and more cost effective to prevent contaminants from entering a lubricant than it is to remove them once they have made their way into the system. Minimizing exposure during the handling process greatly lowers the opportunity for contamination. Among the methods used to limit exposure include utilizing quick disconnects, reducing the number of times a lubricant is handled, optimizing transfer container openings, and outfitting assets with suitable headspace management hardware and seals. Removal strategies should not be ignored either, as they will be quite helpful in the continuing process of ensuring your lubricants remain clean, cool and dry.

Hardware

Determining the right contamination control hardware to add to a piece of equipment primarily comes down to understanding

the asset's criticality, cost of replacement, related downtime costs and replacement-part lead time. The higher the asset ranks on the criticality list, the more time, money and effort should be spent on it. In regard to oil reservoirs, the key locations where you should consider adding hardware will be the headspace, oil level and bottom drain. Using the appropriate hardware in these locations will help keep the reservoir dry, decrease foam and enable you to visually inspect the bottom for contaminants that have settled out.

Filtration

Even if efforts have been made to prevent contaminant ingress, filtration is still needed for those contaminants that make it through or are already in the system. For larger, more critical equipment, online and offline kidney-loop filtration should be considered. Smaller, less critical reservoirs often can be drained and flushed based on oil analysis results. Portable filter carts, which can be moved from asset to asset, are another option.

Lubricant Handling

Although some organizations have made advances in lubricant handling, many lubrication programs are still lacking in this area. Common gaps include improper use of transfer containers, sharing resources among lubricant types and failing to deploy grease guns correctly.

Transfer Containers

With transfer containers, typically an initiative is launched to purchase sealable and refillable (S&R) versions, but no one ever follows up to ensure they are utilized to their fullest extent. Most facilities struggle with leaving spout tops open, staging them next to an asset outdoors, or cleaning the inside and outside of the containers.

Lubricant-Dedicated Handling

Another common issue is not dedicating items for specific lubri-

cant types. Flushing methods can be used to limit the number of handling resources, such as filter carts, pumps and transfer containers, but this generally is not recommended, as there is always a risk of cross-contamination.

Calibrated Grease Guns

It is rare to visit a site where the correct grease, volume and frequency have been verified for the assets. Inconsistencies are often seen in the amount of grease delivered by different styles and types of grease guns. Proactive measures, such as grease gun calibration, metering and other predictive maintenance technologies, can help to avoid these issues.

Training

Reliability engineers and lubrication champions usually receive some type of training, but the training component should be extended to include all individuals involved in the program. A training matrix also should be developed. The type and depth of training should vary according to each individual's involvement. Basic awareness training for the team is frequently enough to identify initial improvement actions.

Formal Training

Personnel involved in lubrication on a daily basis should consider formal certification-based and non-certification-based training. These training sessions may vary from a few hours to a couple of days and should provide both classroom and field exercises. Topics generally include lubrication concepts and fundamentals, lubricant selection, oil analysis, contamination control, lubricant disposal practices and program development.

Informal Training

While formal training frequently receives most of the attention, informal training is often overlooked. Brief 15-minute conversations with maintenance or operations personnel who may perform lubrication tasks

on a monthly or quarterly basis can help to ensure engagement of craftspeople and enable new improvements, metrics and concerns to be discussed.

Computer-based Training

Computer-based training (CBT) is becoming more and more popular. This type of training can help address attrition gaps in a lubrication program by introducing or re-emphasizing lubrication basics and best practices. Standardizing a training method for new or transferred employees will set the standard for lubrication expectations at the facility. Although documentation will be the foundation upon which habits and behaviors at the site are built, computer-based training can assist in this process.

Recognizing the Gaps

If your organization currently falls short in any of these program elements, you are not alone. By understanding and recognizing where the gaps are in your inventory management, labeling, documentation, contamination control, lubricant handling and training, you should be able to identify low-hanging fruit to help develop your program and achieve long-term success. **ML**

About the Author

Matthew Adams is a technical consultant for Noria Corporation, concentrating in the field of predictive maintenance. He has experience in multiple condition-based maintenance technologies and focuses the majority of his attention on lubrication program development, training and general consulting. Matthew holds a Machine Lubricant Analyst (MLA) Level III certification and a Machinery Lubrication Technician (MLT) Level I certification through the International Council for Machinery Lubrication (ICML). Contact Matthew at madams@noria.com to find out how Noria can help you identify the low-hanging fruit in your lubrication program.