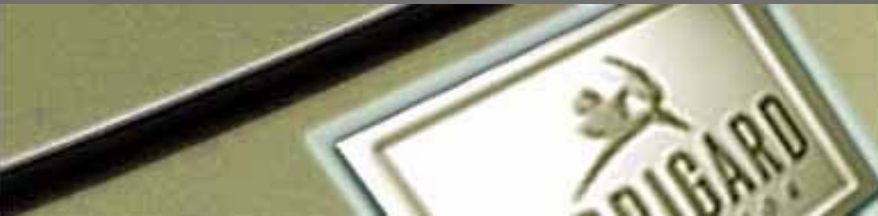


Lubrigard

FROM AUDITING TO IMPLEMENTATION LUBRIGARD PROVIDES THE SERVICES, TRAINING, AND PRODUCTS TO TRANSFORM *REACTIVE* MAINTENANCE INTO *PROACTIVE* MAINTENANCE.

A Guide To Lubrication Management



plant audit
filtration
lubrication
maintenance



training
condition **MONITORING**
MANAGEMENT



PROACTIVE LUBRICATION MANAGEMENT



How do you treat your lubricants? When you walk through your organization does the term lubrication management come to your mind? We started Lubrigard to provide you with the necessary services and products to implement an effective lubrication management program within your company. Isn't it time to transform reactive maintenance to proactive maintenance?

Bill Quesnel Jr.
Vice-President
Lubrigard Ltd.

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Why Lubrication Management?

In order to compete in a global marketplace companies today are focusing on improving operations at all levels. ISO 9000, Six-sigma, and Q-1 initiatives demand on-going improvement of all business processes. Improvement in turn often requires dramatic change at the operations level. Today formal maintenance programs including TPM, RCM, PMO, PdM, and RBI are being implemented to improve maintenance practices. The changes are driving an ever-increasing level of awareness in the industry.

With this increased awareness today's maintenance managers know significant improvements can be made in existing operations to reduce both the number and frequency of equipment failures. Lubrication Management is an effective strategy to achieve these goals. Surprisingly many of the changes required to implement a Lubrication Management Program are common sense.

Developing a program and putting that program into place can be challenging when starting from scratch. Lubrigard offers services and products designed to improve your maintenance and lubrication practices. Understanding is the key to change. Lubrigard provides a range of auditing services designed to compare the current practices in your organization to industry best-in-class solutions. Change is good! Let Lubrigard help you to advance your organization from your current lubrication practices to best in class for your industry.

This guide to Lubrication Management provides you with practical solutions to common Lubrication Management problems, and the means to fulfill needs that have been identified. Read the guide and complete the self-assessment included at the end, to highlight areas that require attention within your company. Armed with this knowledge you can move forward to implement change now. You are ready for change and Lubrigard is ready with the products and services to match your organization's needs.



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The typical lube room today is often in a tragic state of neglect.

Where Do you Begin?


Lubrication Management begins in a lube room. Oil is the lifeblood of equipment. Why do we pay so little attention to the storage and handling of our oil? The typical lube room today is often in a tragic state of neglect. Drums are the most common oil container, generally stored upright, or tipped on their sides when in use and often sport open bungs. Proper lubricant storage is usually nowhere to be seen. Most oil containers in use are not sealed and provide no air or oil filtration.

Luckily your lube room can be transformed. Fluid storage racks allow you to dispose of oil drums. Oil is transferred directly from the drum to the storage containers with the use of an integrated (and timed) pump and suction wand. Suddenly 200 square feet of random drums becomes a neat and organized 20 square foot integrated oil storage solution. Lubricants that are filtered and free from gross particulate and water contamination will last longer and actually serve to increase the life of your equipment. An investment in proper lubricant storage is an investment that improves the reliability of lubricated equipment.

Optional dispensing stations with metered dispensers allow for the convenient filling of mobile fluid handling carts. Durable fluid handling carts are available in a multitude of designs and can be customized to meet your particular lubrication dispensing requirements. Your operators will appreciate the efficiency of the carts as it will reduce the number of trips to and from the Lube Room carrying various containers of oil.

With the appropriate tools in place, operators report that lubrication jobs are safer, faster and more efficient.





What is the best way to Dispense Lubricants?

We don't know who decided that the open galvanized oilcan was the industry standard for dispensing oil. Why are these horrible tin cans present in every mechanics oiling gear? The answer must be that mechanics and operators alike found topping up equipment easy to perform with this oilcan in the past. Why else would it have survived until today?

Luckily there are alternatives to the myriad of jugs, cans and tins that are used today to top-up lubricated equipment. The fluid dispensing containers of today are rugged, durable, sealed to the environment, and come with an array of attachments to make filling even the most awkward system easy and efficient.

Color-coded lids and large bright labels allow operators to quickly identify that the proper lubricant has been chosen for the job. A pump attachment outfitted with quick connections, allows for a completely sealed method of topping-up lubricated equipment.



Luckily there are alternatives to the myriad of jugs, cans and tins that are used today to top-up lubricated equipment.





To be proactive you need to prevent the oil from becoming contaminated while it is circulating through your equipment.

What is Contaminant Ingression Control?

So you've cleaned up your act, and now your lubricants are not only properly stored, but you have invested in the proper lubricant dispensing carts and containers. The oil that you are putting into your equipment is essentially free of particulate and water. So what happens after you put the oil into the equipment and the equipment is in use?

If your equipment is like 95% of all lubricated equipment in North America, then that oil is getting dirtier and wetter by the minute. To become really proactive in your lubrication management program you need to focus on contaminant ingress control for your equipment. To be proactive you need to prevent the oil from becoming contaminated while it is circulating through your equipment.

Contaminant ingress control is all about the prevention of the entry of dirt and water into the lubricant during equipment operation. Ensure that proper air breathers are installed on the equipment. A proper air breather will employ 3, 5 or 10-micron filtration to prevent dirt and dust from entering the oil. The oil is kept clean.

Today's air breather ports are multifunctional also serving to provide sealed lubrication fill ports equipped with efficient quick connections. These air breather ports allow for a variety of air breathers to be fitted, including standard air filtration, desiccating air breathers, or completed sealed bladder systems.



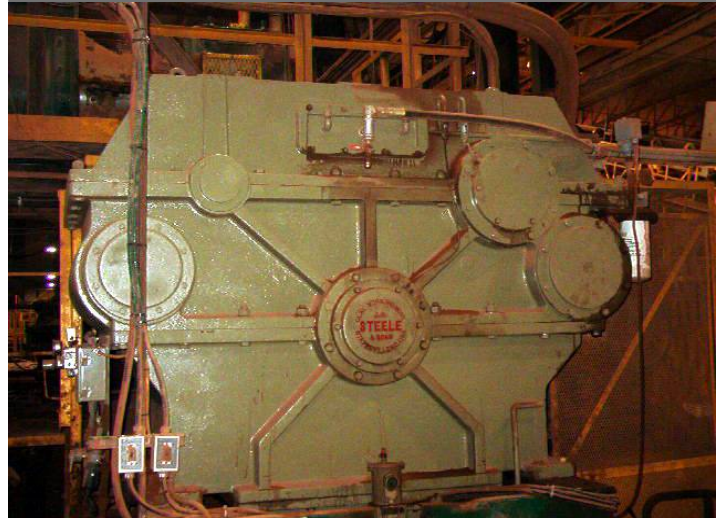
When do I need Additional Filtration?

Sometimes it's not enough to simply try to prevent contamination from entering equipment. To be truly proactive requires that you go a step further and clean the oil while the equipment is in operation. The standard filtration that is in place on equipment when it is purchased, if any at all, can be ill-equipped to deal with the contamination levels present in your operational environment. In these cases outfitting equipment with permanently mounted off-line filtration is a sound investment.

Permanently mounted off-line filtration systems employ either one or a series of kidney loop filters to continuously polish the oil flowing through the equipment. These systems are extremely effective in removing particulates and system moisture to low values.

Comparisons in operating results of equipment outfitted with permanently mounted off-line filtration systems against equipment with standard filtration show dramatic results. In some cases Mean-Time Between Failure (MTBF) has been extended by a factor of 4 or more.

If you consider that a typical off-line filtration system costs less than 1% of the total equipment cost, and on-going maintenance costs even less, additional filtration is an inexpensive way of quickly increasing MTBF and improving equipment reliability.



The standard filtration that is in place on equipment when it is purchased, if any at all, can be ill-equipped to deal with the contamination levels present in your operational environment.



Off-line filter carts can be utilized for a variety of maintenance tasks in addition to the removal of oil contamination from systems while in operation.

When do I use Off-Line Filtration?

The oil you are putting into your equipment is an investment. The equipment that you are putting the oil into is an even larger investment. When oil becomes contaminated during service the life of the oil and the equipment is reduced. The typical maintenance decision being made involves draining out and replacing the circulating oil. While this serves to protect the equipment, the value of the oil is lost. Getting maximum value out of your oil investment requires you to rethink the practice of draining oil. An investment in offline filtration to clean the oil will achieve extended life for lubricants.

Off-line filtration is accomplished through the use of a portable filter cart. When oil becomes contaminated during use, a portable filter cart is quickly wheeled into place and connected to the reservoir. While the equipment continues to operate, the oil is filtered to acceptable cleanliness levels in a few hours. Not only is the original investment cost of the oil preserved, there is no lost downtime to drain and refill the unit. Total waste oil disposal costs are reduced and this is environmentally friendly.

Off-line filter carts can be utilized for a variety of maintenance tasks in addition to the removal of oil contamination from systems while in operation. Filter carts can be used for transferring oil from bulk storage tanks into large reservoirs, oil fills and topping up of systems with new oil, clean-up of the system lubricant after a failure, the temporary transfer of lubricants during servicing, and for flushing hoses and new components prior to installation or use.

Lubrigard can provide several designs of filter carts utilizing either regular membrane filtration or depth-filtration media. For low-level water contamination of systems, water-adsorption media can be employed. Off-line carts can be designed as either one stage or two stage employing two or more filters. Pumps can be provided in a variety of flow rates in either air-operated or electrically powered configurations.



How do I monitor my Lubrication Management Program?

You've had an oil analysis program in place for years, but what seems to elude you is the high return on investment that you know oil analysis provides. This lack of success is due to the lack of a framework encompassing your oil analysis program rather than the oil analysis program itself.

Now that you have implemented a lubrication management program, the necessary proactive practices are engrained, the appropriate maintenance procedures are in place, and the necessary tools are at hand to make use of your oil analysis results. Lubrication Management provides the framework to ensure a high ROI from your oil analysis program.

Oil analysis is the key to monitoring both the success and ongoing condition of your lubrication management program. Required maintenance actions will be highlighted by the oil analysis sample reports that you receive on your equipment oil samples.

When particle-count testing indicates high levels of particulates in the oil, you carry out filter changes and off-line filtration. When Karl-Fischer analysis detects the presence of moisture in the oil, you carry out water drain-off procedures and utilize filtration equipment to remove water from the oil. You base your oil change intervals on Total Acid Number (TAN) determinations to ensure that you get maximum life from your oil.

Lubrigard will set-up a best-in-class oil analysis program that includes pre-labeled scheduled sampling. Use the on-line Internet access to view results and manage your oil analysis program interactively. Our diagnosticians are available to assist you with technical experience for your maintenance decisions.



Oil analysis is the key to monitoring both the success and ongoing condition of your lubrication management program.





Don't waste time and money on oil analysis testing, and end up reacting to phantom problems with your oil.

How do I take Representative Oil Samples?

Of course the best way to get your oil analysis program off to a good start is to utilize the proper sampling apparatus and to install sampling ports in proper locations. Sometimes this is easier said than done.

Lubrigard provides a variety of sampling ports and sampling devices to ensure that you are provided with the proper sampling hardware to match your needs. Lubrigard has the knowledge to show you the proper sampling locations for all your lubricated equipment.

Sampling from an improper location oftentimes leads to incorrect oil analysis results. Don't waste time and money on oil analysis testing, and end up reacting to phantom problems with your oil. Installing proper sampling apparatus in the correct location before undertaking an oil analysis program ensures that samples are always taken from the same location in the equipment and are representative of the circulating oil in the equipment.

It is virtually impossible for an operator to take a non-representative sample using proper equipment and ports. Oil sampling is easier and takes less time when the appropriate sampling apparatus is installed. A small investment in proper sample ports will ensure that your oil analysis samples are taken on time, in an efficient manner, that your samples are truly representative of the condition of the oil and that your oil analysis results are accurate and consistent.



What's my First Step?

By this point you cannot help but see that implementing a Lubrication Management program just makes common sense. Lubrigard provides on-site auditing services to assist you in taking the first step towards implementing a successful lubrication management program.

Lubrigard offers two audit formats to suit your requirements. The first format is an in-depth audit format. In-depth audits require an on-site visit of a technical representative, walking through your operation, taking photographs, and making detailed notes. Your company's practices will be audited against the ten distinct elements of a successful lubrication management program.

Deliverables from an in-depth audit include a detailed audit report of your company's practices as compared to best in class for each of the ten elements. The audit results will be presented to your maintenance team in a comprehensive presentation compiled from the photographs, notes and results of the audit. The auditor will field questions and comments from your staff and discuss recommendations for proactive changes.

Lubrigard also offers a simplified checklist audit. During this audit a technical representative will perform a quick walk-through of your operation, taking photographs, and noting areas for improvement. You will receive a concise report showing current practices and suggested improvements shortly after the audit.

Lubrigard personnel have the necessary knowledge and experience to offer you on-site auditing services to assist you in taking that first step towards a successful lubrication management program.



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Complete this form
and fax back to
905-569-8605 to
receive a concise
recommendations
report.

If you would prefer to
have Lubrigard send
a technical
representative to
meet with you and
discuss your needs
call 1-800-268-2131.

Take the Lubrication Management Self-Assessment

Now it is time to test your company's current Lubrication Management program. Take 30 minutes to complete a self-assessment of your practices. When you fax this assessment form back to us we'll provide you with a concise recommendations report.

Please indicate whether or not you comply with the following;

Oil Storage and Dispensing

Yes No

- Oils stored in fluid storage racks
- Fluid storage racks have oil filtration
- Fluid storage racks have air filtration
- Use of proper oil dispensing containers
- Lubricant stocks properly rotated
- Bulk oil changes performed using a filter cart

Oil Sampling Techniques

Yes No

- Oil sampling procedures are documented
- New oil deliveries are sampled
- Oil sampling ports are properly located
- Proper oil sampling hardware is installed
- Sample ports are properly labeled
- Automatic monthly scheduled oil sampling in place

Contaminant Ingression Control

Yes No

- Proper air breathers are installed on equipment
- Additional off-line filtration is installed on critical equipment
- Lubrication ports are installed
- Lubrication ports are properly labeled
- Off-line filter carts are available and employed regularly
- Water-stripping equipment is available
- Off-line filtration and oil filter changes are performed on-condition

Oil Analysis Program

Yes No

- Proper sampling frequencies are defined
- Oil analysis test slates are well defined
- Proper limits and targets are employed by machine type
- Oil analysis data is effectively communicated through the company
- A process exists for troubleshooting exception conditions

Program Management

Yes No

- Equipment criticality assessed and determined
- Regular and condition-based PMs in place
- Oil changes are based on-condition
- Qualified and trained technicians dispense lubricants
- PM schedules are tracked in a database
- Trend charts showing sample/analysis performance are publicly displayed

Company Name _____

Contact Name _____

Contact Phone _____ Fax _____

E-Mail Address _____

Address _____

City _____ State/Prov _____ Zip/Postal _____