

# Improved Lubrication Practices?

ONE SYSTEM, ONE RESULT

-- Ian Knight --



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## *“One System, One Result”!*

Regularly I meet customers who know, believe they know or have heard that an improved Lubrication Strategy will help with their plant and equipment reliability. However, many do not understand what it really means, how to go about it, where to go for help or how to cost justify implementing it.

When maintenance, reliability or management folks decide they want to go forward with an improvement in their lubrication practices, they generally reach out to the suppliers that they are locally involved with. These range from trade or spare parts suppliers, lubrication suppliers, lube equipment suppliers, filtering suppliers, oil analysis companies or Pdm and lubrication service suppliers. The problem is that most do have some Lubrication Reliability competencies, but often that knowledge only goes part of the way and this leaves the company with holes or shortages in their implemented strategy.

Don't worry; there is a solution, *“One system, One Result”*, the OilSafe way.

The European, African and Middle Eastern OilSafe supplier, Enluse BV is only a [mouse click](#) away to help you take advantage of the OilSafe way to Lubrication Reliability.

## The Story

**Attention:** *if you do not want to know about the complete Lubrication Reliability picture and the financial gains it will bring your plant or your customer's plant, then do not read further, flip the page and keep scanning.*

So for those with some interest at heart, let us start with the process to implement Lubrication Reliability.

It all starts with 6 questions or should I say the interested parties ongoing questioning check list.

And that is, ***Will this (or any) action ensure that:***

1. I get the right lube into the machine
2. At the right time
3. In the right quantity
4. In the right way
5. In the right condition
6. And kept in the right condition

We call this the 6 Lubrication Rights and if the answer, at any time, on any one single question is a NO, then there is or will be a hole in the strategy – a hole through which the operational dollars can drain.

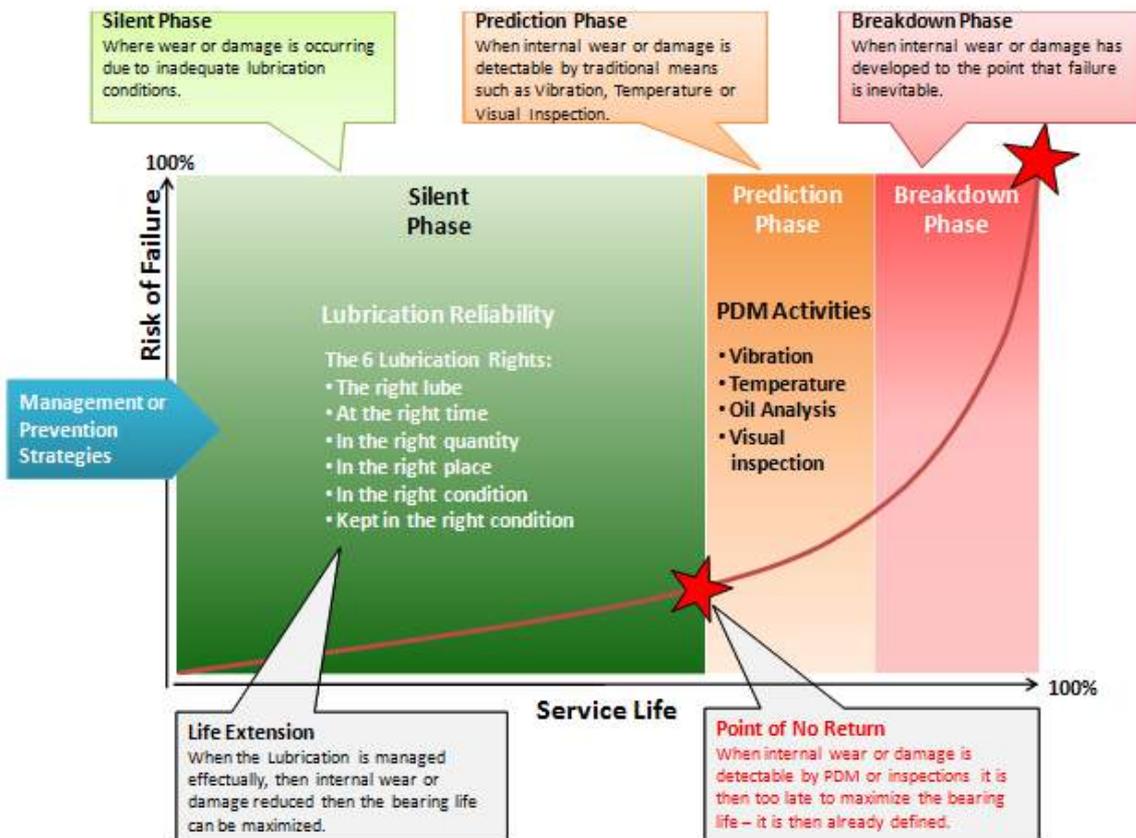
So lets us explore a little more.

# 1. Contamination control.

In the concept of Lubrication Reliability, or you could call it the process of extending machine life, controlling the contamination in the oil is one of the main actions we need to achieve. Simply put, if the size of contaminates in the oil are greater than the lubrication film thickness, then third party abrasion is happening and the application or component degradation is underway. This in layman’s terms we called WEAR. *Note: I have chosen to write the word wear in this article in capitals, simply to bring emphasis to this very high industry cost creator.*

Now the interesting thing about WEAR, is that we do not know it is in process, until it is too late – unless of course we are doing oil analysis resulting in the measurement of the contaminants size / level / type and relating this to an established Best Practice objective or standard. For example, the standard could be an established [ISO 4406](#) standard.

WEAR is what I have coined as the **“Bearing Silent Killer”**. It is silent in its wearing process and it only becomes audible or noticeable when it is too late and then maintenance needs to kick in or in the case where no Pdm or inspection process are in place, a catastrophic machine failure is in the offering. Refer to graphic below.



So to prevent the process of WEAR, one of the main factors we need to control is the contamination in our machine oil.



This is a selection of failed or damaged bearings, many resulting from high contamination levels.

Now let us assume we have removed a bearing from a machine and determined it has a very high degree of wear coming from contaminated oil. So let's now ask ourselves the 6 questions:

1. Was the right oil added to the machine, **yes**.
2. In the right quantity, **yes**.
3. At the right time, **yes**.
4. In the right way, **yes**.
5. In the right condition, **maybe not, maybe it was dirty**.
6. Was it kept in the right condition, **no, the oil had become contaminated**.

The corrective solution to prevent this failure from happening again is to only add clean oil to the machine, using oil analysis to monitor the contamination levels, filtering the oil when it is dirty and adding desiccant breathers to prevent any future contamination ingress.

So far so good, however a contradiction to the statement that contamination is the cause of WEAR, is that this Silent Killing process can also happen when we have zero contaminants in the oil, simply because we have lost our lubrication film thickness or the oil is no longer capable of doing the job it is there to do – lubricate and protect.

## 2. Lubrication Film Thickness.

Oil is a highly chemically formulated substance and it is used to separate machine or component surfaces from touching or rubbing together and ultimately to prevent WEAR from happening. It is also to eliminate or reduce friction.

It is all about viscosity, which is the most important physical property when defining the right lubrication for any given application. There are a number of factors to be considered when selecting the right viscosity grade for any application, for example speed, load and the operating environmental conditions to name but a few. The bottom line of these factors and others is that we want our moving components to be sufficiently separated in order to prevent WEAR, or in other words we need an effective operating lubrication film thickness.

One could make a comparison of machinery oil to the blood in our body and thus describe oil as the life blood of our machines.

Like the blood in our body, if it's not up to standard we can become ill, so does the machine when the oil is in poor health. Or as the chemists say, the oil has degraded and when this happens we can lose our viscosity, resulting in a loss of the lubrication film thickness, with metal to metal contact occurring and adhesive WEAR kicking in. Adhesive WEAR is the microscopic bonding of moving surfaces when contact occurs. In a bearing this is often referred to as smearing.

Now let us assume we have had a catastrophic bearing failure and the cause is determined to be adhesive WEAR due to a loss of our lube film. So again let's now ask ourselves the 6 questions.

1. Was the right oil added to the machine, **maybe not, maybe we added hydraulic oil (viscosity ISO 46) instead of gearbox oil (viscosity ISO 320).**
2. In the right quantity, **yes.**
3. At the right time, **yes.**
4. In the right way, **yes.**
5. In the right condition, **yes.**
6. Was it kept in the right condition **No, the oil had degraded and no oil analysis tests had been done.**

The corrective solution to prevent the failure from happening again is to make sure we add the right oil to the machine and using oil analysis to determine it is operating in a chemically sound condition as well as ensuring that the viscosity is OK.

Now let us ask the same questions for each application when establishing a Lubrication Reliability program.

**1. I need to get the right lube into the machine.**

*We need a labeling system in the lube room, on the dispensing container and on the machine. Preferably colour coded and symbol supported as this will minimize any potential mixing.*

**2. At the right time.**

*We need to map the machines and set up a fault free, time based lubrication schedule.*

**3. In the right quantity.**

*We need to also establish how much lube should be added at lubrication schedule time.*

**4. In the right way**

*We need to use safe and effective dispensing mechanisms.*

**5. In the right condition**

*We need to make sure the oil is clean when it is added*

**6. And kept in the right condition**

*We need to ensure we are doing oil analysis to determine the condition of the oil, establish a filtering system to keep the oil clean when needed and we need to add desiccant breathers on each key oil application.*

### 3. The OilSafe way.

Most folks in Industry know the name OilSafe. This unique coloured oil dispensing system has been the industries Best Practice for more than 20 years. Today the OilSafe package is more than just a dispensing system; it is a complete Lubrication Reliability package, meaning a one stop shop for your lubrication system needs.

Let's look at the 5 questions again now wearing the OilSafe hat.



#### 1. The right lube into the machine.

Coloured based labeling is the common identification process used across the plant. A lube program that wants to prevent any form of mixing where the wrong lube ends up in the wrong machine is to establish a specific colour and symbol for each lube in use. The foundation of this is a wall chart displayed in the lube room and this information is seamlessly applied throughout the whole of the plant; - lube room, dispensing containers, the machine filling point and the filtering process.

The OilSafe unique Visual Lubrication System of products combines to identify, protect and reduce machinery downtime.

See figures 1 through 5 shown below.

COLOUR	SHAPE	TYPE OF LUBRICANT	NAME OF PRODUCT	VISCOSITY
RED	#1	Gear Box Oil	(Company & product name)	ISO ?
BLUE	#2	Gear Box Oil	(Company & product name)	ISO ?
MID GREEN	#3	Hydraulic Oil	(Company & product name)	ISO ?
BLACK	#4	Hydraulic Oil	(Company & product name)	ISO ?
GREY	#5	Transmission Oil	(Company & product name)	ISO ?
PURPLE	#6	Transmission Oil	(Company & product name)	SAE ?
BEIGE	#7	Compressor Oil	(Company & product name)	ISO ?
DARK GREEN	#8	General Lube Oil	(Company & product name)	ISO ?
YELLOW	#9	Turbine Oil	(Company & product name)	ISO ?
ORANGE	#10	Motor Oil	(Company & product name)	SAE ?

Note: any shape can be any colour

Optional only bits  
i.e. #10 are located in storage cabinet

Fig. 1 Wall chart



Fig. 2 Lube room



Fig. 3 Dispensing



Fig. 4 Fill point label



Fig. 5 Filtering Cart

## **2. At the right time**

This activity is generally handled by our customers where the lubrication schedules are built into their own Maintenance Management control programs. For example their CMMS program. Some companies do use dedicated lubrication management software and if companies are seeking to acquire such software, Enluse BV can assist in this matter. However, we always point out the options that are available.

Today there are two types of Lubrication Management programs available, Cloud / Web based or PC based and both of them can be vendor specific or vendor neutral. Vendor specific programs generally mean that one is tied to a specific vendor and their lube data can be at risk if one wants to change the supplier, whereas vendor neutral programs give one more control of ones data.

## **3. In the right quantity.**

Too much or too little lube can both cause machinery problems.

It is always recommended before making any changes to lube schedules relative to frequency of oil changes or top ups, that the Original Equipment Supplier is consulted or the machine operational manual studied.

## **4. In the right way**

Poor dispensing is one of the main causes for contamination entering the machine. 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 inadvertently mixing it with different oil.

The colour-coded range of [OilSafe containers](#) provide a fully sealed unit preventing contaminants from entering the oil and easier dispensing without the need for secondary tools such as funnels. With 5 different lid sizes, designed to fit 5 different drum sizes, you can mix and match the components to build heavy duty durable dispensing containers that will meet your oil transfer requirements. See figure 6 next page.

The OilSafe [Premium pump](#) is feature rich and can handle up to ISO 680 fluids. It has all the features of the OilSafe standard pump, this heavy duty discharge pump with a colour-coded body collar, has an ultra-comfortable D handle grip design and has fully serviceable internals for maximum life. The dispensing hoses can also easily be converted for quick connect use. Refer figure 7 below.



Fig. 6 The OilSafe line



Fig. 7 OilSafe Premium Pump

## 5. In the right condition

Most people don't know the new oil can be dirtier than the oil operating in their machines and the lube room can be a source for adding additional contaminants to the new lubricant. In the past traditional machinery lubrication has been seen as a function of low importance, being messy work, requiring limited skills and lacking organization and structure. **This is changing.**

The OilSafe [Bulk Storage System](#) puts structure and organization into the lube room, with its easily identified colour-coded containers, oil pre filtering before dispensing and coming in a range of storage containers to suit consumption levels. An OilSafe Bulk Storage System will enable you to take immediate control over your lubrication workflow process and get your lubrication storage area and practices clean, efficient and compliant. See figure 8 next page.

The [Lustor System](#) is a modularized storage and dispensing also adding structure and cleanliness to the lube area. The system of 125 and 250 liter tanks safely stores your oil and pre filters it before use. The Lustor System consists of standalone units and is designed as a "**Connect and Operate**" unit. Simply connect the air supply, turn on the tap and the system starts working. Refer to figure 9 next page.

The [Lustor wall mounted system](#) offers the same benefits as the modular standalone units, but pumping directly from the suppliers oil containers.

Refer to figure 10 next page.



Fig. 8 OilSafe Storage System



Fig. 9 Lustor Storage System



Fig. 10 Lustor wall mounted System

## 6. And kept in the right condition

Lubricating oils can deteriorate or change in operation. They can lose their additive pack, they can become contaminated and they will ultimately cease to provide the protection against the process of WEAR.

The Reliability of the machine lubrication needs to be managed in order to ensure that its integrity is maintained.

Maintaining the Lubricant Reliability is a 3 stepped process.

- Adding Desiccant breathers to prevent contamination ingress.
- Filtering the operating oil to eliminate contaminants.
- Using Oil Analysis to monitor the lubricant condition.

[Air Sentry Breathers](#) are a global **Best Practice** in stopping contaminants from entering the oil. The new [Guardian range](#) of breathers with their replaceable cartridges and check valve technology is the most economical breather on the market today. Refer to figure 11 next page.

OilSafe's ground breaking [Filtration Units](#) extends the life of your industrial oils, saving you time and money. They help maintain the purity of the oil in operation and eliminate cross-contamination with colour-coded/error-proof, flat face, zero leak quick connects. Refer to figure 12 and 13 next page.

[FanPro](#), the Enluse fluid analysis program is a global Best Practice in Oil Analysis. Supported by laboratories with state of the art analysis technologies and its web based management control and trending software you will know at any time the condition of your oil - a simple process.



Fig. 11 Guardian



Fig. 12 FilteringCart



Fig. 13 Wall mounted filtering unit



Fig. 14 Oil Analysis System

## Summary

One system, one result – *the OilSafe way*. We are your partner and pathway to implement Lubrication Reliability.



Gain the benefits of improved plant and equipment reliability and talk to Enluse or any one of our wide network of European dealers today or visit our website: [www.enluse.com](http://www.enluse.com)



**Improved Plant Reliability awaits you!**