

Is Your Pump Properly Lubricated?

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Pump bearings can be lubricated manually, or with a centralized lubrication system, or by smaller multi-point lubricators. Which is best? Here are some factors to consider.

It is well known in the bearing industry that nearly 50 percent of bearing failures are caused by improper lubrication – either under- or over-lubrication.

A large portion of these failures can be attributed to poor re-lubrication practices. A good manual maintenance program can be established on paper. However, the practical execution and follow-through of the program can be inconsistent due to human error, or in the absence of an operator.

Pump bearings can be somewhat problematic when it comes to proper lubrication. One of the biggest issues is that a traditional bearing lubrication system is inadequately designed for optimum lubrication. For example, in oil lubricated bearings the oil level is typically viewed through a sight glass. The oil level reading must be taken when the pump is off and on level ground.

The oil level must be maintained at the midpoint of the lowest roller to prevent overfilling. An overfill can lead to extreme heat generation, which compromises the integrity of the lubricant film over time. Also, sight glasses are usually difficult to read, especially when the oil is contaminated and the sight glass becomes discolored.

Greased bearings have their share of issues as well. As with oil, bearings can be overfilled with grease. Typical pump applications call for a fill level of one-third to two-thirds of the free volume in a bearing. Again, overfilling leads to a high heat conditions and may further lead to bearing failures.

As an alternative, automatic lubrication delivery systems can be a viable option to the problems associated with manual lubrication. Automatic lubrication can range from a lower-cost single-point lubricator to sophisticated centralized lubrication systems. The advantage of single- or multi-point lubricators over the centralized system include lower installation cost, ease of installation, and precise amounts and types of lubricant dispensed for each lubrication point.



This chart compares the cost vs. effectiveness of different types of lubrication systems.

On the other hand, centralized lubrication systems offer the ability to lubricate entire systems and offer a permanent solution. Another advantage is that one system can serve an entire plant, provided the same lubricant is being used for all of the lube points. However, with such a large system, maintenance on the lubrication system may be required to address water and contamination issues.

Single- and Multi-point Lubricators

To remove manual lubrication from the equation and help prevent premature failures, gas-powered and electromechanical-powered single-point lubricators deliver periodic grease or oil to bearings, chains, guideways and other industrial equipment components. Multi-point lubricators are a centralized lubrication system capable of delivering grease to up to six lubrication points.

Smaller, motorized multi-point lubricators are limited to only being able to lubricate up to six points, but this can be



Smaller, motorized multi-point lubricators such as this are limited to lubricating up to six points, but this can be a large advantage over their centralized counterparts.

application needs, certain lubricant delivery systems can last anywhere from one day to 24 months. While certain gas-powered devices are only for one-time use, some electromechanical and multi-point devices can be refilled with replaceable grease cartridges for longer life.

Centralized Lubrication Systems

If a centralized system for the entire plant is desired, it is important to understand the different types available.

The most common type of centralized lubrication system is the *oil circulation* type, where a reservoir containing oil is pumped to various lubrication points. The advantage here is that one unit can service many bearings. Unfortunately, over time contamination and moisture can build up in the system and require maintenance. As little as 0.04 percent water in the lubricant can reduce bearing life by 50 percent. These systems also rely on filters for contamination and must be cleaned periodically.

Another type of centralized lubricating system attractive to the pump bearing lubrication is oil misting. Here, a specific amount of oil is misted onto the bearing at regular time intervals. These systems work well but also must be maintained to

a large advantage over their centralized counterparts. This type of system guarantees continuous lubrication over a set period of time, as do the larger centralized units.

The lubricant chamber always provides pure clean lubricant, requires minimal maintenance and is an independent stand-alone system. If one system malfunctions, it does not shut down the entire plant. This means that any damage caused by a lubrication problem is minimized and maintenance costs are reduced. Multi-point lubrication systems are also compact in size and convenient when more than one type of lubricant is used in the plant.

Depending on which configuration is chosen and the specific

ensure that the spray nozzles are free from contamination and do not plug up. Other considerations are overspray into the worker environment and high cost.

Consider & Compare

In summary, manual lubrication practices may be well-documented on paper, but suffer from the uncertainty of actually sticking to the plan. Centralized lubrication systems can solve this issue by automating the lubrication process, but are costly and require maintenance due to contamination of solids and water. Multipoint lubricators are limited to six lube points, but are virtually maintenance-free, less costly, compact, allow for multiple lubricants in a plant, and do not compromise more than six lube points in a plant if there are issues.

Which one is best? It depends on your needs. Remember to consider and compare all of these factors when selecting the proper lubrication system to meet your unique operating conditions and maintenance intervals.

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