

Hidden benefits of lubrication

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Cement plants have countless pieces of equipment operating to complete their production processes – including thousands of bearings. A typical plant uses a large number of lubricants to reduce friction in this equipment and keep it running smoothly. However, most plants would see several benefits if they were to implement lubricant consolidation.

One of the first critical steps in implementing an effective Reliability Centered Maintenance (RCM) programme is to perform a reliability assessment, which often reveals opportunities for lubricant consolidation.

Questions to ask during reliability assessment:

- How many different types of lubricant are being stored in inventory?
- Are lubricants stored in an organised, contaminant-free manner?
- How many inventory locations are there for lubricant storage?
- Does the plant ever run out of lubricants when they are needed?
- Has the wrong lubricant ever been installed in machinery?
- Are lubricants purchased from multiple suppliers?
- Is the wrong lubricant ever ordered by mistake?
- Are the proper lubricant specifications known for each piece of equipment?
- Have the lubricant application parameters changed for any of the equipment?

Before lubricant consolidation can occur, a thorough reliability assessment needs to take place.

Reliability assessment

Many cement plants – lacking the expertise to perform this survey – outsource this function by finding a certified lubrication consultant or a company with the capability to provide this service. It is normally a simple five-step process.

1. perform a reliability assessment
2. analyse for lubricant consolidation
3. establish a new contaminant-free lube room
4. purchase lubricants
5. begin lubricant conversion process.



It is highly recommended that any consolidation and conversion of lubricants be done systematically.

Benefits of lubricant consolidation

Lubricant consolidation is a process during which a many individual lubricants are reduced to a manageable few, resulting in a variety of benefits, including:

Reduction in lubricant misapplication

The more lubrication products a plant has in storage, the more opportunities there are for costly mistakes to be made, such as using the wrong lubricant in equipment. Other contributing factors are employee training and equipment labelling. Companies often rely on employees who have not been fully trained on basic lubrication principles and equipment viscosity standards. Bearings and other pieces of equipment are not always readily marked with the correct National Lubricating Grease Institute (NLGI) grade that must be used. Given

these circumstances, the likelihood of mistakes is high.

Regardless of the cause, introduction of the wrong lubricant type or NLGI grade can create unplanned downtime and can be extremely expensive to correct. The wrong grease introduced into bearings unnoticed can cause premature equipment failure.

Lubrication consolidation helps reduce the likelihood of lubricant mistakes by reducing a large number of available lubricants down to a manageable few.

Simplification of vendor management

Before lubricants can be stocked and used in cement plants, they must be purchased. Sometimes, maintenance or reliability personnel perform lubricant procurement, but larger plants usually have a purchasing department that orders supplies on behalf of the department that requests them. Employees purchasing these materials are not always versed in the science of lubrication standards or equipment viscosity needs.

Communication errors can and do occur, and the wrong product types or viscosities are ordered. If a mistake such as this occurs during a critical time, it could result in downtime. Lubrication consolidation will help limit these mistakes. In addition, lubrication consolidation will reduce the amount of time employees spend seeing suppliers, expediting purchase orders and negotiating lubricant pricing.

Decrease in inventory and associated costs

Cement plants have many opportunities to consolidate lubricants, suppliers or both. A plant may purchase the same type of lubricant from different suppliers to service different locations or different equipment within the plant. An example would be a plant with various equipment manufacturers recommending a variety of commercial lubricants, when quite possibly one product would cover all of the requirements. In this case, the same type and NGLI grade of grease could be used in multiple locations across the plant, providing a total product volume that would enable better pricing from one supply source. Combining total volume into one manageable lot would also streamline the purchasing process. Another benefit is that with bigger volumes, the plant is less likely to run out of lubricant because of missing a reorder point.

Fewer lubricants to manage can also lead to a reduction in inventory carrying costs. The more lubricants a plant buys, the higher the inventory costs are that consume cash assets that could be used for other needs. Some lubricants are very expensive; consolidation limits the potential losses due to contamination, obsolescence, spoiling and other problems.

Another important point to remember is that lubricant purchases cannot always be planned and having the right amount on-hand is critical to continuous plant operations. Table 1 provides a breakdown of the percentage of inventory carrying costs that can be associated with space, handling, stock obsolescence, spoilage and other losses.

Simplification of storage and handling

Imagine a cement plant's lubricant storage room containing more than 30 lubricants

Table 1: typical breakdown of lubricant carrying costs

Item	Typical cost percentages
Space (heating, lighting, depreciation, etc) (%)	1-3
Handling (%)	1-3
Stock obsolescence (%)	1-3
Spoilage, pilferage, inventory damage, etc (%)	3-10
Total (%)	6-19

Lube storage room (before)



Lube storage room (before)



Lube storage room (after)



Lube storage room (after)



that must be purchased, stocked, monitored and maintained. The more lubricants there are, the more difficult it is to keep this room clean, organized and contaminant-free. If the lubricant storage room is not clean, organized and contaminant-free, this creates a variety of problems for the plant.

Worse yet, some plants do not even have a lubricant storage room. In this case, the lubricants are stored throughout the plant, making the inventory management process extremely difficult. One of the worst things that can happen is to run out of a lubricant when it is needed. According to Murphy's Law, this will always happen at the worst possible time – probably in the middle of the night on a holiday or during peak production demand.

A contaminant-free, well-organised lubricant storage room is a vital part of any RCM programme. Many companies are now recognising this need and are investing in refurbishment of their

lube rooms. Before budgeting for this, however, they should make sure that lubricant consolidation is part of the process. An opportunity may exist to reduce the footprint – and the associated costs – of the refurbished lube room.

Conclusion

When cement plants decide to implement a RCM programme, they should include a lubricant consolidation process. Not all lubricant vendors are capable of providing this service, but those that are able to provide it will deliver huge benefits to their customers.

After a lubrication consolidation process is successfully implemented, it can result in other benefits, such as reduced re-lubrication intervals, reduced lubricant consumption, less lubricant maintenance, and decreased energy consumption. Ultimately, all of these benefits result in reduced operating and maintenance costs and contribute to increased company profits.