

Following a regimented lubrication regime will prevent downtime and save money.

BY STEVE GAHBAUER

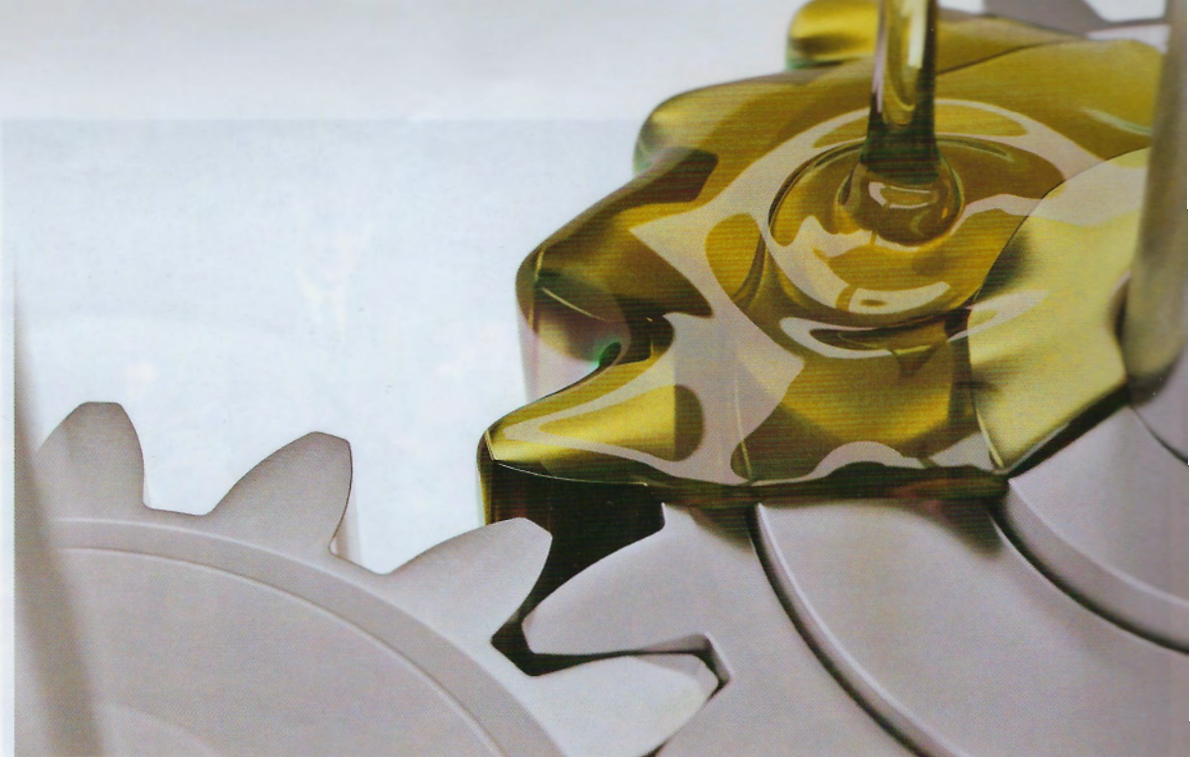
Maintenance of lubricating oils in critical applications is essential but many programs lack the basic tools, required knowledge, sufficient manpower or maintenance budget to keep them within specification, thus missing out on their full benefits. Furthermore, lubricant maintenance is often reactive and limited to reducing particulate matter instead of targeting the causes of failure. This disconnect is costing industry hundreds of millions of dollars annually.

Here are some statistics from several studies: 90% of rolling element bearings do not reach their design life because of faulty lubrication; 80% of hydraulic system failures are caused by lubricant contamination; 70% of component replacements are due to surface degradation caused by friction and wear; more than 50% of equipment failures are the result of improper lubrication.

That's why knowing how tribology works is so essential to running a profitable maintenance operation.

A discussion at a technical education seminar on lubrication fundamentals, hosted by the Society of Tribology and Lubrication Engineers (STLE) – Hamilton, ran through some of the fundamentals.

Navdeep Swach, a certified lubrication specialist, maintenance biologist and coach at ArcelorMittal Dofasco in Hamilton, defined tribology as “the study of rubbing” or the science concerned with interacting surfaces in contact and in relative motion, causing friction and wear. Friction and wear cause abrasion, erosion, adhesion, surface fatigue and, above all, corrosion. While these causes can't be eliminated, their



More than half of equipment failures are the result of improper lubrication.

PHOTO: FOTOLIA

Rubbing the wrong WAY

WHY UNDERSTANDING TRIBOLOGY IS IMPORTANT

consequences are mitigated by following a lubrication regime that's anchored in five principles: using the right lube, at the right place, the right time, right amount, and in the right way.

Increase reliability

The most frequent failure modes are often related to lubricant contamination, chemical degradation or cross-contamination. Other causes include the use of the wrong lubricant type or grade, says John Melanson, an engineering manager at SKF-Canada Ltd. in a presentation about lubrication management. Best practices increase equipment reliability, productivity, machine uptime and safety, and reduce energy consumption, wear, noise, downtime, operating expenses, repair costs and lubricant con-

sumption.

In the same lubrication fundamentals seminar, Mike Deckert, vice-president of Flo Components Ltd., a lubricant specialist company in Mississauga, Ont., reiterated these points:

- Manual lubrication is still the predominant method of lubrication for grease-lubricated bearings (more than 95%).
- Maintenance budgets have been declining, resulting in fewer technicians carrying out inspection data interpretation, lubrication requirements and analysis.
- Plant production has increased, allowing less scheduled time for lubrication/maintenance.
- Longer intervals between servicing are required for mobile equipment.

Deckert defines the basic functions of a lubricant as reducing friction, wear and temperature, minimizing corrosion, sealing out contaminants, and helping to dampen or absorb shock. He also reminds us that lubrication intervals depend on the metal-to-metal contact area of bearings, machine speed, operating temperature, and the type of grease used (thicker grease tends to have a longer staying ability in a bearing).

Finally, some good advice from Ken Brown, principal of Eco Fluid Center Ltd. in Toronto and an executive member of STLE-Toronto, in a presentation to students at Ryerson University. Usually you can't find all the answers to tribology problems inside an organization, so regularly attend technical meetings, develop contacts, network with colleagues, and learn from studies. He also advises ISO 55000 asset management standards are great for real engineering with a focus on root cause analysis and training.

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Comments?

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