

Lubricant Technology Developments

Lubricant technology is advancing in leaps and bounds, essentially driven by the need to conserve energy. Therefore nanotribology; biotribology; engineered surfaces, surface texturing, green tribology are all topics of great interest in the Research and Development (R&D) field. Numerous international publications and seminars are being held on these issues. Statements are being made that the friction losses in a vehicle can be reduced by 61% within the next 15 to 25 years. These are big savings, and result in BIG energy (CO₂) savings.

These were the major issues that were being discussed at the International Joint Tribology Conference that was held recently and are the cutting edge that will hit us in the future. However, from a Southern African perspective there are a number of more important and bigger issues that can be understood and implemented that will save energy, increase machine life and reduce overall costs. The most common question that I hear is “what is the price of the lubricant”, this should rather be turned around to “what is the cost of lubrication?” This is subtle, but significant. More expensive lubricants on a cost per liter basis may result in reduced energy consumption due to lower internal friction, better stability and lower heat generation. This has been shown in a recent South African study that proved a significant 3 to 6 % energy saving in a gearbox, by moving from a mineral to a PAO based industrial gear oil. There is unfortunately a large caveat here, being that not all claims made by the oil marketers are true in ALL circumstances, and the machine operating environment (temperatures, loads, environmental condition and service periods) MUST be taken into account when choosing the correct lubricant for the application.

Conducting lubrication surveys and root cause analyses are critical in understanding the cost of lubrication for an industrial plant or piece of equipment. Reductions in lubrication breakdown and stoppages can have a significant saving on the bottom line and it could be as simple as improving the cleanliness levels of the lubrication fluids, or ensuring that the lubrication schedules are appropriately set and adhered to.

The product quality and specifications clearly need to match the operating environment as well as the machine manufacturers requirements. As the newer technology is being introduced these issues are becoming more and more critical and an oil is no longer an oil. Care should always be employed on the part of the end consumer that they are using the correct lubricants in the correct application or machine, and that it is of the correct quality and specification as is required by the equipment manufacturer. Just because “we have always used a specific lubricant in this application” it does not mean that it is still applicable with newer or harder working machines, with higher loads, shorter residence times, higher ambient temperatures and smaller sumps. The use of non-compliant lubricants may affect machine warranties, machine life and energy consumption.

The bottom line is that energy savings can be made and overall costs reduced, by getting back to basics. Understanding the cost of lubrication, rather than the lubricant spend is a step in the right direction and small increases in the lubricant price will reduce the cost of lubrication over time.

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