

# Energy Saving – Does Tribology Have a Role to Play?

Although South Africa has plenty of coal reserves energy efficiency needs to be tackled on all fronts. Energy efficiency is a topical issue, but is normally addressed by switching things off and or procuring different appliances. However energy can be saved by thoroughly understanding the mechanism of friction and wear where both friction and wear can be reduced.



**T**ribology has significant energy efficiency possibilities, this is most evident in the automotive sector, where CO<sub>2</sub> penalties are driving change.

The correct selection of technology (surface finish), fluid viscosity and additive technology can result in a saving in excess of 6% CO<sub>2</sub>, that relates directly to fuel saving and hence cost reductions. The latest lubricants launched by certain manufacturers in Europe are claiming 4% improvement with the new VW specifications.

The question therefore is why older lubricant specifications and viscosity grades are still procured in significant volumes in South Africa, and what can be done to change this?

**The challenge to lubricant manufacturers and end users is to start to think about the ‘cost of lubrication’ rather than the cost of the lubricant**

## Dispelling the myth

Some end-users of lubricants do not consider the cost of lubrication, but rather the cost of the lubricant. They therefore make their decision based purely on the cost per litre of the product. This needs to change as the total cost of lubrication needs to be considered. This includes the life of the machine, the energy used to operate the machine over its lifetime and the efficiency of the machine.

To change this mindset across all sectors will require education, training and the sharing of best practice, which will help in dispelling the myth that ‘oil is oil’.

Lubricant technology has changed significantly over the past few years, not only in the automotive sector, but

in the industrial sectors as well. Also, machine technology is continually changing, with improved surface finishes, higher pressures and loads and reduced sum sizes.

This increases the stress on the lubricant, be it a hydraulic or circulating lubricant or a high performance stop start turbocharged Direct Gasoline Injected engine.

Synthetic base fluids (group IV / PAO's) play a significant role in energy efficiency strategies, due to the molecular interaction, low and high temperature performance properties.

## Cost of lubrication

The challenge to lubricant manufacturers and end users is to start to think about the ‘cost of lubrication’ rather than the cost of the lubricant. This may require breaking down ‘silo’s in organisations between the maintenance, production and procurement departments, to allow a possibly greater spend on the lubricant, to reduce the ‘total cost of lubrication’.

The performance of the selected lubricant can significantly impact the cost of lubrication, and can only be changed through knowledge of the performance of lubrication. Without minimum standards that are applicable in South Africa, there is a concern that ‘low quality’ lubricants will enter the market.

The bottom line is that with a knowledge of tribology and lubrication, the total cost of ownership can be reduced significantly – saving money.

*John Fitton, SAIT Committee Member  
SA Institute of Tribology  
Tel: (011) 804-3710  
www.sait.org.za*

