

## Discussion notes for Biolubricants event 'Oiling a Green Economy'

16 November 2010

Key message – Biolubricants have undergone significant improvement in performance and reduction in cost since they were first introduced 30 years ago, but this message has not consistently reached machine manufacturers and operators. The poor publicity created by unsatisfactory performance of early biolubricants 20 years ago has inhibited their introduction more widely. More education, more demonstration projects, more tests are required in order to change this and to ensure that machinery manufacturers will add biolubricants to the list of products permitted under warranty.

After the presentations, the participants of the event got involved in a lively and constructive discussion. The first part of the discussion addressed issues surrounding use of biolubricants. One of the first questions was “how easy is it to switch over to the biolubricants?” Cliff Lea from Fuchs Lubricants responded that it is fairly easy to switch to biolubricants, although care needs to be taken to drain and flush the previous mineral oil from the system, so as not to mix fossil-derived with biologically derived lubricants. Regarding the use of biolubricants at low temperatures, Cliff Lea responded that there were no issues. The issue of blocking filters in oil circulation systems was known when biolubricants were first introduced which was due to their being mixed with mineral oils. Currently, when used as directed, latest biolubricant products do not clog filters. Some participants were concerned about higher susceptibility of biolubricants to degradation by bacteria, since they were manufactured to be biodegradable. Cliff Lea responded that since biolubricants were used in sealed systems and sumps, where bacteria do not reside in any number, this situation did not occur. Biodegradation only takes place when the lubricants are released into the environment, onto soil or water, and encounter high populations of micro-organisms. There are also no issues with corrosion. Currently, there need be no significant difference in shelf life. Whilst the purchase prices for Biolubricants tends to be higher than for equivalent mineral oils, prices were gradually converging. A participant shared that they had recently been offered a biolubricant for five times the price of a petrochemically derived lubricant: Fuchs reiterated that prices are chiefly regulated by supply-demand mechanism. Although raw material costs are higher at present, economy of scale will come in to the equation as more of the biolubricants are used, and the differential will decrease. At the present time, chain saw lubricants are similar in price to the older mineral oil products, and prices for bio-hydraulic fluids in some cases are approaching the prices for mineral oils. Simon Nash from Green Oil also confirmed that he only has marginally higher prices for his bio-based bike care products, in some instances there is 10-20% premium.

The discussion then turned to the limitations of Biolubricants. A participant asked why the automotive industry did not change in their recommendations for engine oils. Cliff Lea responded that the switch does not happen due to conservatism of engine manufacturers; introduction of new products under warranty requires tests to prove their performance, which are extremely expensive. Cliff Lea noted that the biggest issue with use of mineral oil based lubricants is leakage to the environment causing major pollution. The greatest impact and reduction of pollution can be effected by concentrating not on engine oils, but on switching industrial hydraulic systems to use of bio-based hydraulic fluids, rather than with mineral-based hydraulic fluids.

An engineer commented that he is pushed to use mineral oils by manufacturers. Another issue in his view was higher costs for biolubricants and the fluctuation of costs. In his view, it is key to determine for which applications it makes most sense to use biolubricants (eg wetlands or conservation areas).

He also remarked that a key barrier for introduction of biolubricants is the bad publicity created 10 years ago by the unsatisfactory performance of early generation biolubricants. There is a lack of information about new products and their performance.

Cliff Lea pointed out the advantages of using biolubricants – for example in cutting liquids and in industrial lubricants: he pointed out too that biolubricants reduce friction and therefore generate savings on energy. This is based on experience but to convince manufacturers there is a need for proper test with statistically significant results. Such tests are expensive. Also wear and tear are reduced, leading to longer life-time of equipment.

It was remarked that the increased life-time is not of benefit in all sectors, since equipment needs to be upgraded at certain intervals. As long as the wear and tear does not lead to failure within the needed timespan of operation of a particular model, this benefit of using biolubricants is not felt by the operators.

A boat-builder raised the question about the dependency of prices for bio-based oils on the price for crude oil. Ian Connelly from Fuchs Lubricants explained that the costs of biolubricants are based on economies of scale more than on raw material costs. In his view biolubricants will take over in the next 10-12 years. It is important to convince manufacturers to allow use of Biolubricants under warranty for equipment.

An engineer stressed that it is important to push manufacturers. Cliff Lea replied that if biolubricants comply with their lubricant specification, the manufacturer does not have the authority to wave the warranty; already many equipment manufacturers approved use of biolubricants, and FUCHS were happy to take the issue up with others. Beatrix Schlarb-Ridley from InCrops asked how the process of convincing manufacturers to switch to biolubricants could be accelerated. Ian Connelly suggested that if one big manufacturer will commit, it would be a big step forward. A participant suggested that government should facilitate the process by mechanisms of legislation and taxation.

Another important question raised by a participant from the automotive sector was the sustainability of supply. Is enough raw material available to be used as feedstock for biolubricants? A lubricant manufacturer replied that in his opinion it is more important to work on demand now. Use of biolubricants can significantly improve the green credentials of companies. Also, if biolubricants can reduce friction by 50%, one needs to calculate how much savings on energy input could be made. He suggested that manufacturers need to join forces in presenting the business case for biolubricants.

Liliya Serazetdinova from InCrops suggested that in addition, Life Cycle Analysis data would be very convincing and InCrops can assist with this. Currently, stated Cliff Lea, the carbon footprint of biolubricants is directly compared with the footprint of biofuels and end users of biolubricants would improve their “Green” credentials. Cliff Lea gave the example of the water treatment sector, where lack of compliance with environmental standards results in severe penalties (up to £5M). Use of biolubricants in this sector is the most obvious choice.

In the opinion of Simon Nash from Green Oil, another important message that needs to be brought forward is that the performance of “Green Lubricants” is comparable or even better than mineral oils!

A participant from the food sector asked if biolubricants have another market after end of use, which may offset some of the carbon footprint. Cliff Lea replied that because Biolubricants become cross-contaminated with mineral oils and heavy metal contaminants during use unfortunately they are currently not recycled, and have to be disposed of by combustion.

At the close of the official discussion, InCrops reiterated the invitation to SMEs in the East of England to make use of the 14 h of free business support that InCrops can offer them; individual conversations were continued during the networking session.