

# Reaching the parts

Environmentally friendly and synthetic lubricants are creeping into mainstream plant applications as alternatives to conventional mineral oils – and for good, solid economic reasons, as Brian Wall reports



Application-specific lubricants are the subject of ongoing R&D

It is a staggering fact that almost half of all bearing damage is caused by insufficient and/or incorrect lubrication. Hard to believe that such a basic necessity could be so widely neglected. The good news, however, is that, for those who get it right, there are huge savings – not least in terms of downtime, maintenance and repair bills.

As Alex Brain, business development manager at Boccard UK, puts it: “Getting it right can make a real difference to your plant. Get it wrong and you are not only wasting energy and money, but also potentially shortening the life of your equipment.”

No wonder the more enlightened organisations are starting to take notice. And no wonder some are turning their attention to environmentally friendly and synthetic lubricants. Not only do many bear the label ‘renewable’, but some are proving themselves capable of delivering exceptional performance, some outscoring mineral oils even in demanding applications – to the point where higher initial costs are far outweighed by long-term savings, in terms of reduced wear and uninterrupted operation.

For practising plant engineers, it’s not just about lubricants that are non-petroleum based and/or

non-toxic and/or environmentally friendly. Many of today’s synthetics and biolubes also exhibit excellent viscosity-to-temperature behaviour and contaminant rejection, some performing well even under extremes of heat and cold. Similarly, in the world of metals machining, synthetics are readily available with inhibitors to prevent metal corrosion, while others can be diluted with water to cater for heavy-duty or lighter applications in high forming energy applications.

So what should you be using where? Shell UK Oil Products has come up with a guide for planning and monitoring the use of oils and greases. Richard Lonsdale, UK marketing manager for Shell Industry Lubricants, says it’s all about getting your lubrication programme right, in terms of the ‘6 Rs’. “Operators need to ensure that they are using the right quantity of the right lubricant in the right way; that it is being delivered at the right time in the right place; and that it is sourced from the right people,” he explains.

## Better protection

Lubricants are usually a small part of the overall maintenance budget, so they are often seen as commodities bought on price alone, he observes. “This can see companies missing out on the benefits of advanced lubricants, which can justify the initial increase in price by helping to lengthen oil drain periods and protecting machinery for longer, when compared to pure mineral oils,” he points out. And he adds that an effective and efficient lubricant regime can also help reduce waste and cut disposal costs from maintenance, which, in turn, helps plants to meet environmental commitments.

He also makes the point that much modern machinery is now smaller and increasingly complex – meaning that it requires less lubricant, but also that it needs to work harder, longer. “That’s where semi and fully synthetic oils have a real advantage, because they protect equipment better and can extend oil drains to match the manufacturers’ recommendations,” he asserts.

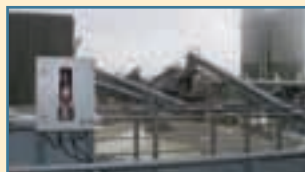
Shell’s guide suggests that operators should first

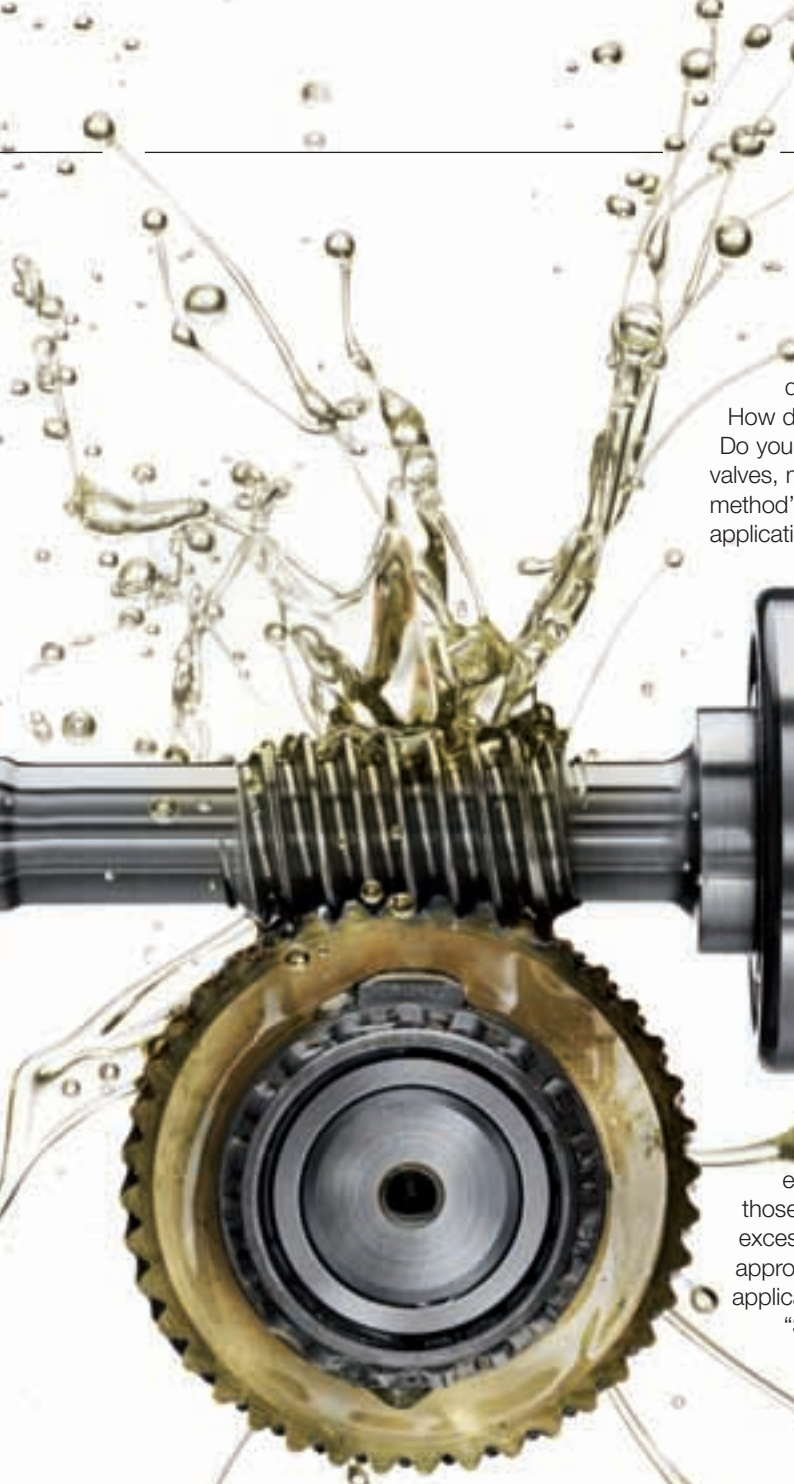
## Automatic lubricators bring massive savings

Getting lubrication right is not just about using the right lubricants: thinking of Shell’s ‘6Rs’, it’s also about right quantity, right time, right place. Which is why automatic lubrication equipment is increasingly being recognised as among the keys to solving otherwise intractable plant difficulties, such as those where access is a problem.

Steve Lacey, engineering manager at bearing manufacturer Schaeffler UK, uses the example of a crushed rock producer in Bad Deutsch-Altenburg, Austria, which reckons it is saving eur 450,000 per year in maintenance costs and production downtime, as a direct result of installing intelligent lubrication systems on double and single platform circular vibrating screen bearings.

The Hollitzer quarry had been averaging five bearing failures per year, each necessitating a 10 hour plant shutdown. FAG Industrial Services (the condition monitoring arm of Schaeffler) trialed a Motion Guard Concept 6 on one of the screens for six months, using Schaeffler’s recommended Arcanol Multitop part synthetic grease, before rolling out the solution, which has since resulted in no failures.

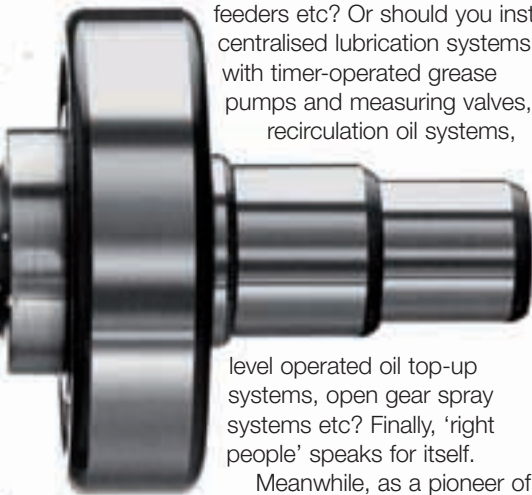




pressurise the lube supply.

It's a similar story with 'right amount': do you know what volume of oil is required?

How do you confirm that this is being provided? Do you have flowmeters, positive displacement valves, measuring containers etc? And 'right method': does the machinery require manual application? Is it a semi-automated system with single point lubricators, drip feeders etc? Or should you install centralised lubrication systems with timer-operated grease pumps and measuring valves, recirculation oil systems,



level operated oil top-up systems, open gear spray systems etc? Finally, 'right people' speaks for itself.

Meanwhile, as a pioneer of synthetic lubricants, the team behind Mobil Industrial Lubricants also offers solutions for equipment subject to extreme operating conditions – whether those are high temperatures, loads or pressures, excessive moisture or high speeds. Its current approach is to formulate products with application-specific performance .

"Synthetics provide a thicker lubricant film at operating temperature, compared to mineral oils, thus reducing the extent of metal-to-metal contact and the associated energy loss," says a company spokesperson. "Also,

energy can be lost due to churn, as mechanical parts move through oil. Synthetics have lower viscosity, when compared to mineral counterparts of the same ISO viscosity grade at start-up – resulting in lower energy loss than a mineral. Also, since Mobil SHC lubricants have a low traction coefficient, they behave better under high pressure."

One last point: whichever lube type you select, routinely checking that reservoirs are topped up is an essential part of ensuring that the right lubricants are applied in the right amount, in the right place, at the right time. And Paul King, technical manager at Rocol Lubricants, adds: "In the same way that switching from conventional to synthetic lubricants improves the maintenance regime, automatic lubrication equipment gives plant engineers the scope to work in a more proactive way, with less reactive 'fire-fighting'. **PE**

check whether their lubricants meet the equipment manufacturer's requirement, that they are the right products for the application, and that they are fit for purpose and can cope with all changes in operating conditions. Then it's about 'right place': "It may sound basic stuff, but are there any indications that the lubricant is not getting to the right parts? Is the machine noisier than it should be or are there any signs of alarms? Are any of the supply lines damaged or broken," asks Lonsdale.

As for 'right time' Lonsdale reminds engineers that this is not just about oil drains, but also checking the frequency of lubrication. "Ask yourself whether the lubricant can get to the parts it needs to in time to protect them, as well as looking at when to change the oil and when to re-grease," he advises. And he adds that, for total loss systems, operators need to think of when to drip or

## Pointers

- Almost half of reported bearing damage is due to incorrect lubrication
- Synthetics and biolubes can handle difficult duties
- Synthetics can provide thicker films at operating temperature and lower viscosity at start-up
- Shell's '6Rs' of lube use can help optimise usage
- Purchase price only is a short-sighted approach
- Plant engineers need to review effectiveness of their lubrication systems

**Shell's 6Rs for lubrication are central to achieving smooth operation, especially on automated plant**

