



wear and tear, reduce corrosion and protect from rust.

Says **Pulkit Khemka, Vice President, Pensol Industries Ltd**, "Bearing failure is majorly due to inappropriate or wrong grease being charged. Less greasing increases the wear of bearings, and over-greasing also reduces the bearing's life due to churning effect and increase in the operating temperature. Overall, 70 per cent of bearing failure is due to inappropriate and wrong grease selection."

He adds, "Our products are able to cater to all the applications in earthmoving equipment. For medium-large to very large bearings used in construction equipment applications, we recommend Pensol Lithonex EP Grease. For wheel bearing applications, we recommend Pensol VB Grease. For general-purpose lubrication, we recommend Pensol AP-LR 30000 Grease and Pensol AP3 Grease."

Says Shenoy, "Lubricants play a key role in the life of bearings. In fact, the life of the lubricant can sometimes decide the life of the bearing. NTN works very closely with lubricant makers. We offer a choice of over 400 lubricants for cases where the bearing is supplied with pre-filled lubricant."

According to Zaveri, energy-efficient lubricants aim at reduction of oil viscosities and improvement of lubricity by addition of extreme pressure additives. She says, "While working with such lubricant bearing products, especially those containing nonferrous material, we have to study their chemical compatibility and aging stability with energy efficient lubricants. NRB's engineering centre has a state-of-the-art chemical laboratory for such studies and to conform product performance with different compositions of energy-efficient lubricants."

The lubricant and lubrication system

are often integrated into the bearing system where specific greases are chosen, dedicated to the application. "Application engineering, consultancy services, training, lubrication management, condition monitoring, reliability maintenance, technical support, tools, products and systems together form the complete lubrication solution," explains Lall.

He adds, "The perfect bearing would be lubricant-free. However, lubricant is needed to separate the rolling elements from the raceways in order to prevent damage due to (micro) slip. The ideal separating medium is liquid, which is able to accommodate shear with low frictional losses and may replenish the bearing surfaces (self-healing action)."

### Trends in bearing lubrication

There has been a tremendous advancement in bearing technology over the past 10 years. The bearing industry is now using high-hardness coatings, ceramics and new specialty steels with bearings. These specifications were not available a few years ago.

According to Khemka, currently, bearing lubrication has to withstand a wide temperature range. At the same time, greases have to withstand the load and temperature simultaneously during operations. Through vast and dedicated research on new resources, grease technology helps us to cater to the all the areas from low temperature application to high temperature application, low load to high load, normal condition to extreme environment condition. Major grease manufacturers make customers aware about new technology in the greases and newer thickeners, that will replace lithium grease to overcome various issue.

"Pensol, being one of the leading grease manufacturers in India, invests a lot in R&D.

Over the years, we have successfully launched products that have set milestones in the industry. Recently we have introduced Pensol AP-LR GEL grease in the market, which is again one of its kind in India. This grease further enhances the life of bearings and guarantees high drain interval of 1,00,000 km or more under ideal operating conditions," claims Khemka.

### Innovations

The expectation level from customers has been increasing. They are now looking for more than just a bearing supplier. Says Shenoy, "Our engineering team in India works closely with the actual user of the product, identifying the root causes and offers a range of solutions, from new technology products, auto-lubrication solutions, maintenance tools and more."

Kulkarni elaborates on the innovations in SKF; "One of the key innovations is the SKF Extended Life Plain Bearings which are lubricated for life and are virtually maintenance-free. Combining a virtually maintenance-free design with the robust performance of conventional steel/steel spherical plain bearings, the new SKF Extended Life Plain Bearings offer a re-lubrication-free alternative to frequent re-greasing. For applications with moderate contamination levels, SKF Extended Life Plain Bearings will last at least as long as standard steel/steel spherical plain bearings, even if those standard bearings are re-lubricated in accordance with recommended maintenance schedules."

Zaveri explains, "The key to success in this industry is product and process innovation, research on cutting-edge technology development and lightweighting. Our range of bearings has equal stress distribution. The lubricants used are specially selected and the bearing material is custom made for extra fatigue life. We reduce the friction by reducing relative contact speeds and slips of bearing elements. This helps us maintain quality and extend life of our bearings."

"For the last few years, we have been expanding our Ultage range of bearings. The word 'Ultage' is a combination of 'ultimate', signifying refinement, and 'stage'. It is the general name for NTN's new generation of bearings with the world's



**"We at MRS are working on designs that will provide customers with weight reduction through use of recyclable materials."**

**Mitul Doshi,**  
Director, MRS Bearings