

Increased reliability and efficiency

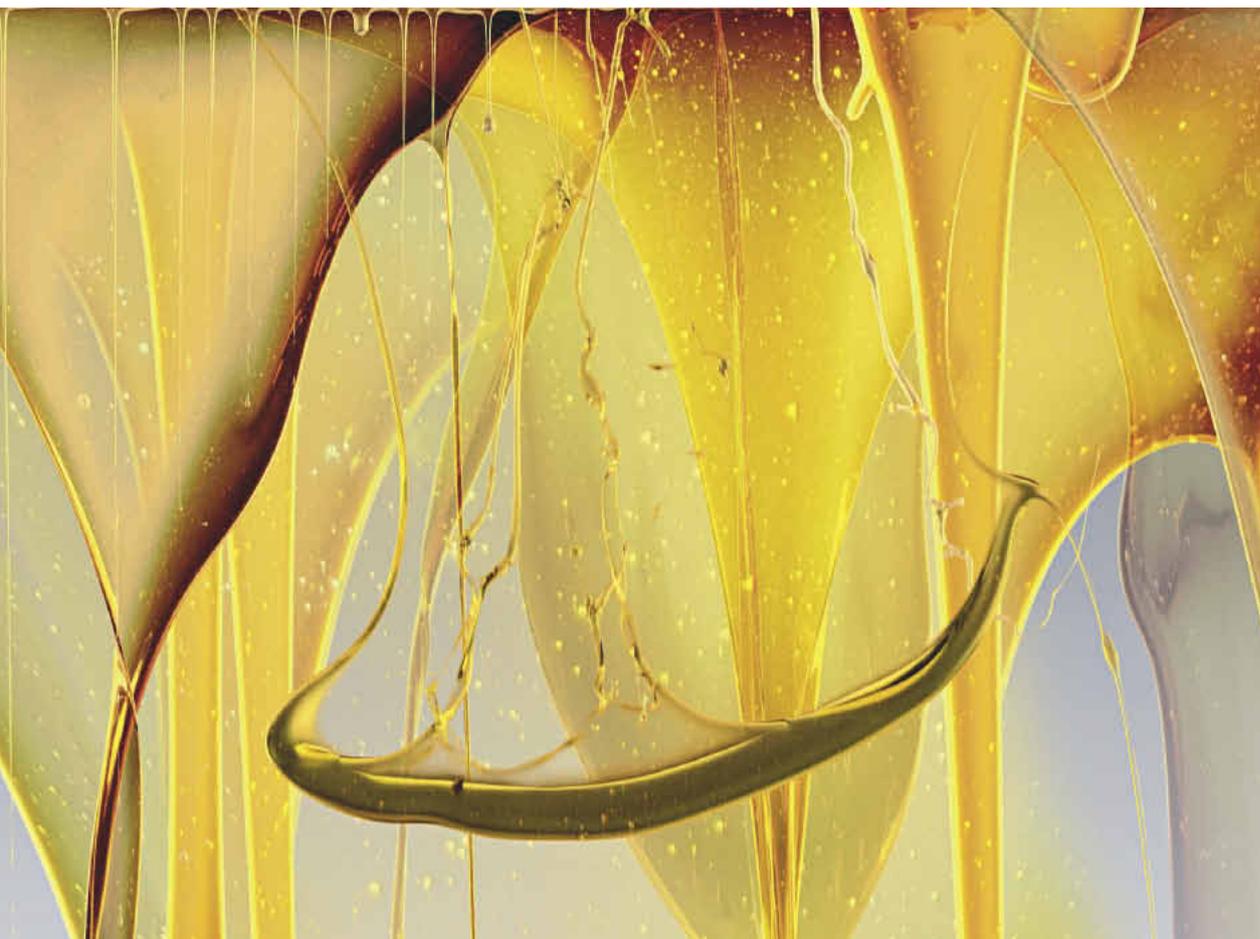
Precise tribological solutions

Whether in the pharmaceutical or cosmetics sector, plastics production or other chemical industries – choosing a lubricant that is just right for each individual manufacturing context is always a vital task. High-performance lubricants and specific services can be effectively combined to attain a measurable and lasting increase in the reliability and efficiency of chemical production processes.

The foremost criteria to be observed are thermal stability and resistance to media – the lubricant must not decompose when exposed either to chemicals or to high temperatures. A high-quality lubricant used in the right application, however, offers more than that. Tribological solutions suited to the specific requirements of chemical industry processes have been proven to increase efficiency and reliability and reduce energy consumption.

Operating conditions in the chemical industry are a complex field. Among the challenges encountered are extreme temperatures and the risk of interaction between process chemicals and other substances. Chlorine or process gases containing hydrochloric acid, for example, tend to corrode the plain bearings in screw-type compressors. This is why some compressor oils were developed specifically for acidic process gases: they contain special addi-

tives which protect the oiled bearing surfaces against the corroding effect. The plain bearings of conveyor belts, e.g. for transporting inorganic salts, may also be exposed to aggressive substances which are dissolved from these salts by the humidity in the air and may form sulphuric vapours. These vapours have a tendency to corrode the plain bearing surfaces and decompose the bearing greases. The use of hybrid greases has proven successful in such ap-



Synthetic high-performance lubricants provide optimised friction coefficients and viscosity ratings

plications: they offer better resistance to media than mineral oil-based alternatives because their base oils contain ester or PAO as well as PFPE oils. The composition of hybrid greases combines the know-how available for traditional hydrocarbon-based greases with the benefits of PFPE-based lubricants, thus offering the best of both product families.

Full use of potential

Although simply changing over from a mineral oil-based to a synthetic lubricant can bring rapid improvements, the potential for additional benefits is vast. A systematic approach for identifying and implementing potential for optimisation has been developed by Klüber Lubrication, a company specialising in tribology. Its name: the Klüber Efficiency Support programme. The aim of this programme is for solutions suited to the specific conditions encountered in practice to be developed together with users. These solutions involve much more than just lubricant recommendations. In fact, the programme combines high-quality products with services such as consultation, cleaning and inspection as well as the measurement and evaluation of the savings achieved. The result is higher efficiency in the long term and a tangible reduction in energy consumption and operating costs.



High-performance lubricants combined with professional services can lead to considerable energy savings

Reduced energy costs

The chemical industry is one of the sectors where the consumption of power and gas is highest, offering considerable potential for saving energy and resources. In a single large gearbox operated in a chemical plant in Brazil, for example, the reduction totals 2300 MWh, amounting to savings of more than 200,000 euros p.a. It was achieved by switching from a mineral oil-based lubricant to a synthetic, high-performance lubricant that was exactly right for the application in combination with professional services. The synthetic lubricant was selected following a thorough analysis of the gearbox application and provides optimised friction and viscosity ratings; this in itself led to considerable energy savings as the multi-stage gearbox was several metres long. In addition, the change helped eliminate the substantial vibration in and around the gearbox, enabling even more energy to be economised. Further effects such as reduced foam formation additionally enhance the gearbox's efficiency. The introduction of the new lubricant was assisted by professional services in the form of cleaning and safety measures. The whole process and the results obtained were comprehensively documented.

Lubricant-related services

All of Klüber Lubrication's services are aimed at a long-term enhancement of the specific tribological system. This includes regular and continuous monitoring of the condition of both the lubricant and the tribological system, which is decisive for reliable operation of machines and installations. The experts at Klüber Lubrication analyse oils, greases and the lubricated components to detect unwanted influences e.g. from contaminants. The facilities at the company's huge testing station are used to model the lubricant's behaviour at the friction point under extreme conditions without exposing the machines or processes to unwelcome risks. The results are compared with those of a professional surface and material analysis to permit sound recommendations regarding maintenance intervals and optimisation of the tribo system.

By changing over from a simple mineral oil-based grease to Barrierta L 55/2, the maintenance intervals for the rolling bearings in paddle dryers (operating temperature +150 °C) were extended from two to four years thanks to the product's excellent thermal stability. The rolling bearings in a rotoformer used for the production of sulphur pellets in a refinery are subjected to similarly high operating tempera-



Both the lubricating oils and greases and the lubricated components are analysed

tures. When used for other, highly viscous products, these rotoformers sometimes operate at temperatures up to +300 °C. For applications exceeding +260 °C, Klüber Lubrication has developed a perfluorinated lubricant called Klüberalfa HPX 93-1202.

Maximum gearbox requirements

The product range offered by Klüber Lubrication is also complemented by specific services for gear oils. Besides a holistic view of all gearbox components – i.e. gearwheels and teeth, rolling bearings, seals, etc. – KlüberComp Lube Technology additionally comprises consultation and services at the customer's site. These services can help optimise process conditions, prolong maintenance intervals and reduce energy consumption. KlüberComp Lube Technology is a comprehensive package of services and speciality lubricants for gears that can be tuned to the individual requirements of customers in the chemical industry.

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