

Case Study

Lubrication of belt conveyors in the beverage and dairy industry

Operating costs cut with an effective combination
of lubrication system and H1 lubricant



The challenge: high consumption of resources

In the beverage industry, belt conveyors are critical to efficient production processes. Subject to stringent hygiene standards and high levels of wear, they must nonetheless function faultlessly. The right lubrication is therefore a particular challenge for any beverage manufacturer.

In partnership with Klüber Lubrication and SKF LubSys, the DMK plant in Zeven reviewed the lubrication of its conveyor systems to identify potential for optimisation. This was necessary in view of:

- High water consumption
- High energy and filter material costs
- High costs for additives with antimicrobial properties
- Production line workers at high risk of accidents through slipping
- Impaired quality of packaging materials due to moisture
- Impaired sliding properties between product and plastic

Basic conditions

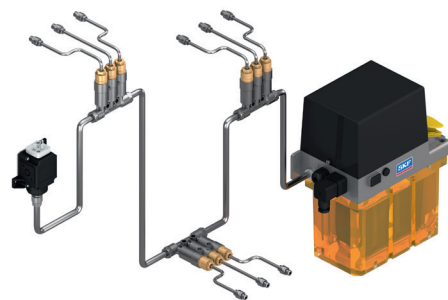
DMK - Deutsches Milchkontor GmbH - is the number one manufacturer in the German dairy industry. DMK has 7,700 staff at more than 20 sites, processing 7,1 billion litres of milk per year. Its headquarters is located at the plant in Zeven in the North of Germany. DMK there produces cream cheese, UHT products, condensed milk and industrial products such as milk powder.

To lubricate its conveyor systems, DMK Zeven installed a system that consumed very high amounts of water. The system wetted the conveyor chain with 800 to 1,000 litres of filtered fresh water every hour – 15 hours a day, 6 or 7 days a week. This continuous lubricating film of water gave rise to large pools of water on the floor of the production hall, impairing workplace safety and hygiene. **“As well as using a lot of water, the system consumed a great deal of energy,”** recalls Holger Ossarek, Maintenance Team Leader (cream cheese and beverages). **“The situation had become intolerable, so we turned to Klüber Lubrication and SKF LubSys.”**

The answer: customised combination of lubrication system and lubricating oil

Working closely together, Klüber Lubrication and SKF LubSys came up with a solution for DMK: **Klüberfood NH1 C 4-58** lubricating oil – specially developed for the lubrication of belt conveyors in the beverage industry – would be metered and applied by a **SKF MonoFlex** single-line centralised lubrication system. Tests involving this combination were carried out on a Tetra Pak filling machine.

Based on synthetic hydrocarbons, **Klüberfood NH1 C 4-58** is used on beverage bottling lines to lubricate conveyor chain surfaces and guides made of plastic. The NSF H1-registered oil obviates the need for large quantities of water-based lyes, which can cause safety problems as well as high wastewater disposal costs.



Mainly intended for use in small and medium-sized machines, the **SKF MonoFlex Standard** single-line system carries oil, fluid grease and other grease. With every lubrication impulse, 0.01 to 2.5 cm³ of lubricant is conveyed to all connected lubrication points. A piston metering valve on each lubrication point ensures precise dispensation, regardless of viscosity and counterpressure.

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Advantages and benefits

Even in the earliest tests, the combination of high-performance lubrication system and high-quality H1 lubricating oil proved its effectiveness and led to excellent results:

- ▶ **Reduced operating costs:** Removal of the costly and complex water lubrication system produced an approximate annual saving of €2,000.
- ▶ **Improved sustainability** thanks to an annual saving of around 5,000,000 litres of water.
- ▶ **Enhanced safety and cleanliness:** metered application of oil improves workplace safety by reducing the risk of slipping.
- ▶ **Reduction in oil** quantities through the precise application of lubricant quantities.
- ▶ **Lower risk of product contamination:** efficient metering has all but eliminated residues.
- ▶ **High overall efficiency** by preventing unplanned downtimes.

Conclusion

By working together effectively and drawing on their considerable experience of the beverage industry, the specialists Klüber Lubrication and SKF LubSys were quickly able to present the DMK plant at Zeven with an efficient and modern solution. **“The general situation at the filling machine has improved enormously in terms of costs, safety and hygiene,”** says Ossarek. **“The working partnership was outstanding. We are delighted to have found such an innovative and sustainable way forward by working together.”**