

Case Study

Lubrication of homogenisers in the food and dairy industry

High-performance H1 lubricants help save energy and boost sustainability



The challenge: saving energy in homogenisers

In the beverage and dairy industries, high-pressure homogenisation is a key function of the production process. Homogenisers are both expected to run efficiently and ensure reliable operation. As part of energy management, energy efficiency is particularly in the focus.

Together with Klüber Lubrication, the DMK plant at Zeven reviewed all its applications with a view to potential for optimisation. The review had the following objectives:

- **Save energy** by changing over to a high-performance lubricating oil
- **Extend maintenance intervals**
- **Reduce risk of production contamination** with industrial lubricants through use of registered NSF H1 lubricants
- **Reduce total costs** in the plant

Basic conditions and objectives

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.

Scenario:

- two homogenisers made by GEA¹
- output 10,000 to 15,000 litres per hour
- up to 20 hours of operation per day
- several gearboxes to be lubricated in each homogeniser
- before changeover: oil change intervals of 1,250 h

The continuous operation of the homogenisers is also a challenge for the lubricant used. Before changing over to a product made by Klüber Lubrication, a standard industrial

gear oil was used for the homogenisers as well as in all other gear applications in the plant. Its performance, however, was not satisfactory.

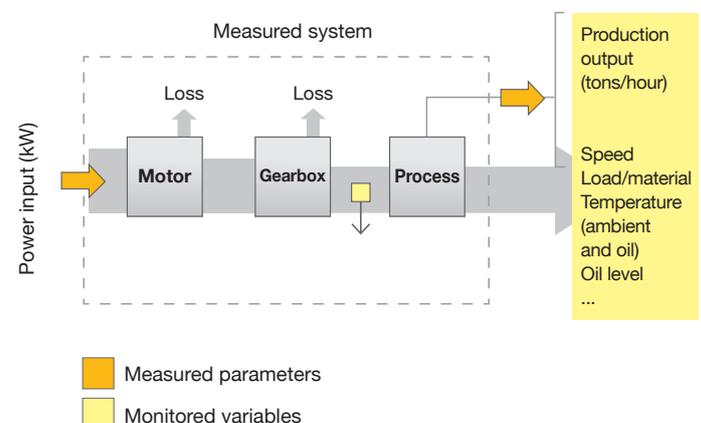
“It was our goal to extend oil change intervals and save energy,” says Rainer Dohrmann, maintenance manager of the drying section at Zeven. **“Hoping to find an innovative solution, we turned to Klüber Lubrication.”**

Solution: H1 oil for higher efficiency and KlüberEnergy for proven energy savings

Thanks to comprehensive experience gained in the food-processing industry and the close relationship with DMK, the experts from Klüber Lubrication rapidly analysed the situation at the plant and offered a matching solution.

“Our good relationship with Klüber Lubrication has proven worthwhile”, is Rainer Dohrmann’s verdict. **“It enabled us to approach the issue in a very focused and efficient manner.”**

KlüberEnergy measurement



¹ "Effizienz im Fokus", in: Molkereiindustrie March 2018, pages 38 ff.

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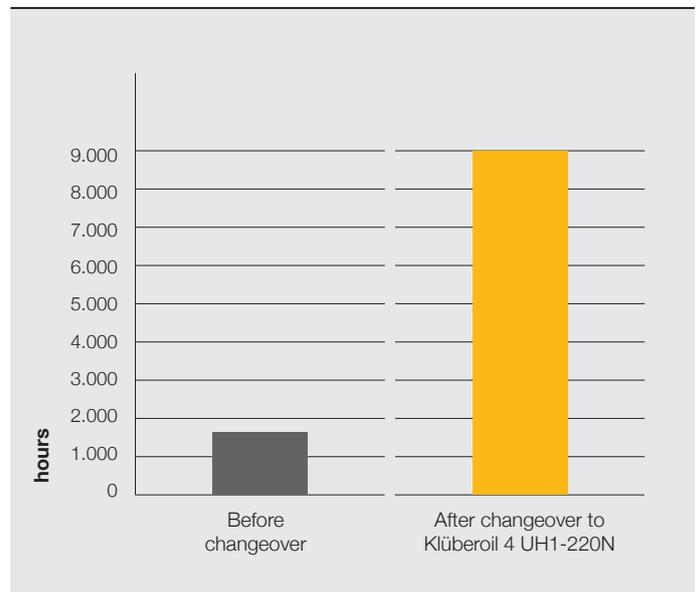
The solution has been a combination of a high-grade H1 oil and KlüberEnergy advice on energy efficiency. KlüberEnergy is a certified measurement and evaluation method made up of several steps. In a first step at DMK, a measurement was performed based on the previously used oil. Once the equipment had been professionally changed over to the NSF H1 lubricant Klüberoil 4 UH1-220 N, a comparative measurement was performed under specific conditions. As requested by DMK, another measurement was performed a year later to verify the result.

Advantages and benefits

The package of oil and KlüberEnergy measurements paid off after five months only, leading to considerable cost savings from then on. The use of the H1 oil Klüberoil 4 UH1-220 in combination with a KlüberEnergy measurement enabled major benefits:

- ▶ **Energy savings of about 5 %.** This means 55 MWh of energy and 33 t of CO₂ less.
- ▶ **Longer relubrication intervals:** they could be extended from previously 1500 to 9000 operating hours. This equals an operating time of approx. three years, contributing to a reduction of costs, energy consumption and material waste.
- ▶ **Improved food integrity** due to a high-performance NSF H1 lubricant.
- ▶ **Equipment life** could be optimised.
- ▶ **Better sustainability profile** due to lower waste, material and energy consumption.

Extension of relubrication intervals



Conclusion

Due to its expertise and experience, Klüber Lubrication succeeded in finding a matching solution in a short time. **“The combination of lubricant and energy measurement helped us to save approximately 5 % of energy and the corresponding costs,”** Rainer Dohrmann sums up. **“The close relationship between DMK and Klüber Lubrication has been a major pillar of this success. We cooperated to take this innovative path.”**

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