RotaLube **Thrives in Extreme High Temperatures** of a Bread Oven

Case Study

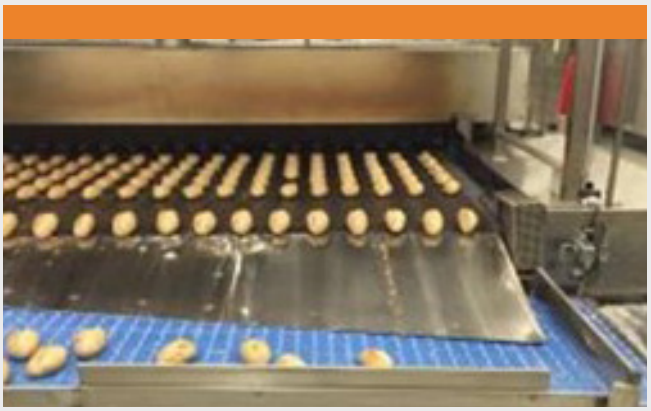
Challenge

Our customer encountered major challenges in maintaining their ovens, especially with the chains that operate continuously under high loads and extreme temperatures (250-270 degrees). One critical issue was the high cost of unplanned, reactive maintenance, which often surpassed the expense of scheduled bi-weekly shutdowns for an hour for cleaning and lubrication. Given the demanding environment, the chains require constant lubrication to perform.

A lack of proper lubrication led to frequent breakdowns in their bread oven, resulting in costly and disruptive unscheduled shutdowns.

The customer initially lubricated the chains manually using a brush method. However, after several unscheduled shutdowns to clean the chains of food debris and buildup, they sought a more efficient solution. They then implemented an oil spray system, but it quickly proved ineffective. The nozzle frequently became misaligned, leading to insufficient lubrication. Additionally, the system, along with the lubricant used, was unable to withstand the extreme temperatures inside the bread oven, further exacerbating the problem.

- Inefficient lubrication, combined with the use of a lubricant incompatible with extreme temperatures, led to chain stretching and damage.
- Health and safety is of the highest priority. The existing oil spray lubrication system frequently became misaligned, leading to oil spillage onto the machine and causing contamination issues.



Identification

To prevent high-temperature oils with esters from affecting the seals, Extreme Temperature Rotalubes with steel sprockets, steel central shafts, and Viton seals were recommended.

To avoid blockages in the extreme temperature, and food debris heavy environment, the Rotalubes featured slightly larger outlets.

Designed to apply small amounts of oil precisely to the correct place on the pin, this setup minimised the risk of coating the entire chain with oil, thereby reducing the likelihood of food debris build-up.

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Solution

After conducting a comprehensive analysis of the situation, we consulted with the company and emphasised the importance of implementing a lubrication system that could protect the chains from wear, handle shock loads, and operate effectively under extreme temperatures, while remaining unaffected by speed fluctuations.

We recommended the installation of our RotaLube system, which involved placing two RotaLubes—one on each side of the bread oven. This setup enabled lubricant distribution from a pump positioned outside the machinery guard to the two steel RotaLubes. The system ensured precise lubrication of the chain links on both sides at optimal intervals, regardless of chain speed or elongation, ensuring consistent performance and reduced maintenance issues.

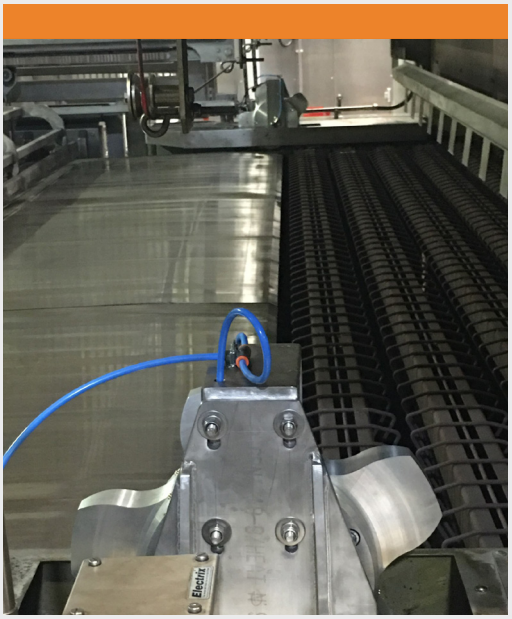
Results

The company experienced immediate improvements, including reduced power consumption and more consistent energy use across the machine. Oil consumption also decreased significantly, as waste was effectively eliminated. With this reduction in lubricant usage and maintenance costs, the RotaLube system achieved a return on investment in less than 90 days.

The need for manual lubrication and frequent chain cleaning was removed, as the automatic system precisely applied oil to the pins and bushes. This not only reduced operational downtime but also minimised the buildup of food debris on the chains.

With the combination of the appropriate lubricant, the RotaLube system proved highly effective in maintaining continuous food production with minimal interruptions.

- Return on investment achieved in less than 90 days.
- Reduced unscheduled maintenance stops due to the elimination of chain stretching.
- Reduced power consumption as a result of precise chain lubrication enabling the system to operate more efficiently.

Bread Oven

Bread ovens are designed to consistently bake large quantities of bread and other baked goods. These ovens often operate at high temperatures, typically between 180°C to 260°C, to ensure uniform baking, crust development, and the proper rise of dough. Conveyor systems are integrated into bread ovens to transport dough through different stages of baking. Driven by chains, they are exposed to both high temperatures and potential contamination from flour and other baking ingredients. This creates a demanding environment where the chains must be well-maintained to ensure continuous, efficient production.