RotaLube **Optimises** the Performance of **Log Accumulator**

Case Study

Challenge

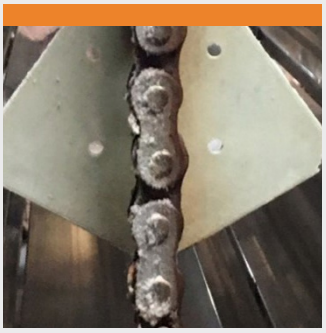
The operational demands placed upon the machine revealed a persistent issue stemming from inadequate chain lubrication through a brushing method. This led to the tightening and subsequent bending of chain links, resulting in the tilting of the Gondolas. Consequently, manual chain tensioning became a bi-weekly necessity, requiring production to stop for approximately 15 minutes each time it had to be replaced.

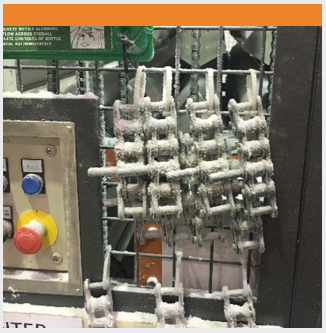
In addition, a continuous-pressure oil feed brush was used to lubricate the chain, causing excess oil to coat the entire chain, which attracted dust. The dust mixed with the lubricant, creating a barrier that prevented the oil from properly reaching the pins and bushings. This insufficient lubrication induced the need for replacement of at least one main chain section between the Gondolas every six weeks due to wear.

The company concluded that over the course of a year, the cumulative impact of inadequate lubrication translated into a substantial financial loss. This highlighted the critical importance of implementing effective maintenance protocols to mitigate such costly disruptions to operations.

- Initially, a continuous-pressure oil feed system was used to try resolve the issue, but it led to dust mixing with the lubricant, causing the chain to become clogged.

- Excess lubrication can cause lubricants to drip onto the drying boards, contaminating them. This can lead to surface defects, weakened structural integrity, and compromised product quality, making the boards unsuitable.





The images display chain from the Perini Log Accumulator damaged by tensioning, resulting from insufficient lubrication.

Identification

Rotalubes featuring bronze, Acteal, or aluminium sprockets and steel central shafts with NBR standard seals were recommended to prevent oils with esters from affecting the seals.

To avoid blockages in this dusty environment, the Rotalubes will have slightly larger outlets.

Designed to apply small amounts of oil precisely at the correct point on the pin, this system prevents the entire chain from being coated with oil, thereby reducing the chance of attracting dust.

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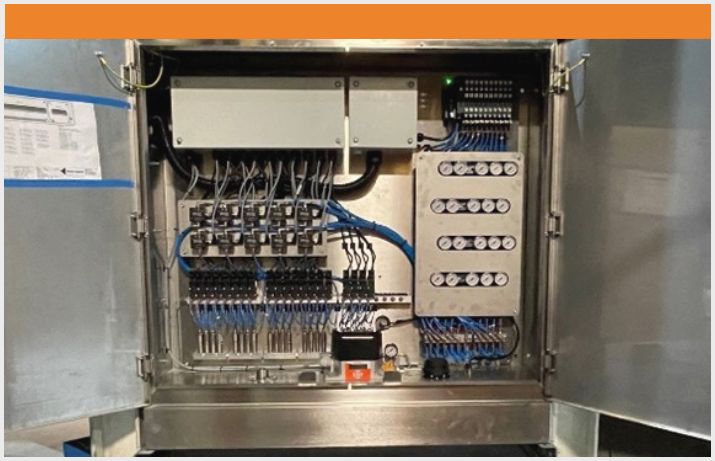


Solution

Upon identification of the issue, we proposed the implementation of our RotaLube system, tailored specifically to address the challenges posed by this environment. The RotaLube system uses a precision-based approach to deliver precise quantities of lubricant onto the chain linkages. The applicator's advanced technology ensures consistent lubrication without succumbing to excessive wear, regardless of chain speed. This innovative solution not only saves time but also diminishes the necessity for manual chain lubrication every two weeks. The centralised lubrication system is comprised of an electrically operated oil pump rated at 24V DC, featuring a 6 Litre perspex reservoir with a low-level indicator, solenoid, regulators, and pipework/fittings, all conveniently mounted on a back plate for effortless installation. Operated by the machine's PLC, the pump functions in tandem with a sensor that tracks the chain links, programmed to engage for a predetermined number of revolutions each day. This meticulous approach ensures optimal lubrication management, enhancing operational efficiency while mitigating maintenance requirements.

Results

The implementation of the RotaLube system yielded immediate and tangible success. Based on the projected costs associated with the previous lubrication method, the company witnessed a return on investment in just over 4 months. The system's unwavering reliability obviated the need for production halts, chain tensioning, or replacement due to faults.

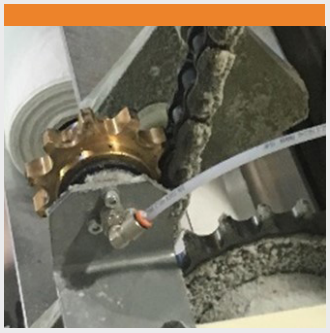
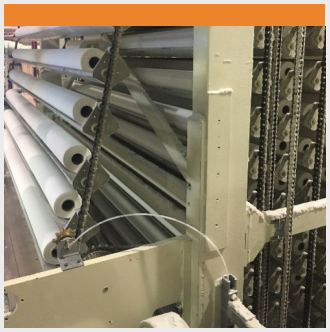
In its inaugural year, the RotaLube system delivered substantial savings, totalling £65,000 in maintenance and production costs for the company. Furthermore, the system generated additional benefits, including reduced power consumption—a direct result of the precisely lubricated chain enabling the system to operate more efficiently.

Return on investment achieved in 128 days.

Lubricant consumption was reduced by £7,000 annually.

Reduced power consumption as a result of precise chain lubrication enabling the system to operate more efficiently.

Log Accumulator

The Perini Log Accumulator typically operate 24 hours per day, 5 days a week and is designed to collect and store 620 paper logs per hour. They have a 45-minute storage capability before they are then processed into smaller rolls of toilet paper.

By temporarily storing the logs, the accumulators help maintain a continuous production flow, allowing for uninterrupted operation of downstream processes such as cutting, embossing, and packaging.