Case Study: KLOZURE® Model 59 Solves Misalignment Challenges in Lithium Battery Manufacturing

INDUSTRY

Battery Manufacturing- Lithium Battery Production

BACKGROUND

A leading manufacturer of lithium battery production equipment for the automotive market needed a sealing solution capable of meeting exceptionally demanding performance standards. Their automated roller equipment processes highly abrasive battery foils composed of cathode and anode materials under extreme conditions, including high roller force and strict precision requirements. The equipment operates at elevated temperatures and speeds and requires sealing solutions that do not compromise roller alignment or system integrity.

CHALLENGES FACED

The customer had searched extensively for a seal that could handle the mechanical stress and shaft misalignment generated by roller forces reaching 80 tons, while still maintaining precision tolerances of less than 3 microns. Previous attempts using competitor seals failed to pass internal testing or maintain reliability under these conditions. Misalignment led to premature seal wear, oil leakage, and performance drift—all unacceptable in the context of high-throughput, precision battery manufacturing.

OPERATING CONDITIONS

Speed: Up to 328 feet/minute (100 meters/minute)

Temperature: Up to 392°F (200°C)

Application: Shaft sealing in lithium battery foil roller equipment

Media: Gear oil ISO VG 460 at 176°F (80°C); battery foil composed of cathode and anode layers (abrasive)

Pressure: Max. 87 psi (6 bar)

SOLUTION AND BENEFITS

Garlock recommended the KLOZURE® Model 59 with MILL-RIGHT® V elastomer sealing elements, engineered for dynamic misalignment, high temperatures, and demanding industrial environments. The seal's construction and material selection provided excellent resistance to abrasion, chemical exposure, and mechanical stress.

Model 59 was installed using a press-fit tool and passed all customer validation tests—successfully maintaining sealing integrity despite shaft misalignment and 80 tons of roller pressure. The seal's ability to adapt to mechanical movement without loss of performance made it the only solution to meet the customer's stringent requirements. Following testing, the Model 59 was approved and adopted across multiple production lines, delivering longer seal life, minimized downtime, and enhanced process reliability for this critical application.

For more information, please visit:
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