Extend Life of BWE Cylinders

Chesterton Fluid Power Equipment Sealing Solutions

Mining – Bucket Wheel Excavator
Chesterton AWC660, AWC800, 5K, 10K, 19K
Case Study 028 FP

Challenge

Issue

A continuous surface lignite mine was facing issues with boom lowering hydraulic cylinders of compact type bucket-wheel excavator. Only a few years into operation, the cylinders were experiencing continous leakage and malfunction (piston seal by-pass).

The large diameter cylinders were exposed to heavy payload, shock load, pressure peaks, and deflection by long stroke and angle position.

Solution

Recommendation

The Chesterton team developed a seal system that was installed during a planned overhaul.

The sealing solution included a ***5K Wiper, 10K Rod Seal, 10K Piston Seals, and replaceable 19K Bearing Bands.*** A combination of innovative sealing materials was used:

- ***AWC800*** proprietary polymer: Best-in class sealing technology with high wear and abrasion and extrusion resistance.
- ***AWC660***: A high loading capacity, engineered plastic with built-in lubricants that prevent metal-to-metal scoring and prolong equipment life.

Results

Improved cylinder performance and reliability

- The end-user was extremely satisfied with the performance.
- Extending the hours of operation between maintenance intervals and increasing the overall asset life.
- Environmental concerns were eliminated by leak-free operation of the rod seal system.
- The high-performance piston seal system reduced the possibility of cylinder malfunction.

Compact lignite bucket-wheel excavator.

Bucket-wheel boom lowering cylinders in operation.

Boom lowering cylinders in repair shop.

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