

## Challenge

### Issue

A large surface copper mine experienced premature seal and cylinder failure on the stick cylinders of a large mining excavator.

Stick cylinders were exposed to severe operating conditions including shock and radial load, pressure peaks, and a harsh environment.

Cylinders lasted only 4,000 hours with their original seal repair kit.

The challenge was to extend the operating hours between maintenance intervals of the cylinders to improve the availability of the excavator. The mine was looking for a more reliable seal system to prolong the life of the cylinder's metal components.



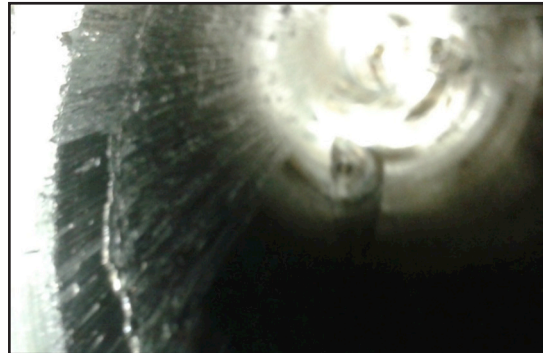
Excavator in operation loading a haul truck.

## Solution

### Recommendation

The Chesterton specialist recommended a cylinder upgrade solution in co-operation with a local cylinder repair workshop. Chesterton's custom seal kit was installed.

- All seals were made of **AWC860** polymer, Chesterton's exclusive high-temperature polymer.
- The sealing solution included a **21K** wiper, **22KE** rod seal, **20KB** buffer seal, **20K** piston seal, **20KD** static seals, trash rings, and bearing bands.



Damaged cylinder bore.

## Results

### Improved Performance and Reliability

- Seals lasted 9,000 to 13,000 hours of continuous operation vs. 4,000 hours with original seal.
- Increased the availability of critical equipment for production.

### MTBR Improvements: 2-3X

### Savings

- Customer saved thousands in downtime and labor costs.



Chesterton rod seal system installed.