Epiroc

Case Study:
Epiroc Australia

Industry:
Underground Mining

Problem:
Prematurely failing seals resulting in reduced performance and lost production

Outcome:
Significantly longer seal life and minimised down time

qldsales@hsa.com.au
www.hsa.com.au

About Epiroc Australia

Epiroc Australia provide innovative equipment, consumables and services for drilling and rock excavation throughout Australia.

When you need to excavate, transport or process ore or demolition more efficiently, their complete portfolio of surface and underground mining equipment sets the standard in an increasingly competitive industry.

Photo courtesy of https://www.epiroc.com/en-au

"A solution was found and implemented achieving an improvement that has resulted in seal life lasting beyond our expectations when combined with the improved shank adaptor seal running surfaces."

Justin Quigley
New Technology Introduction Specialist
Epiroc Australia

HSA
Hydraulic Seals Australia

1700%

increase in equipment operation hours

"In summary, the initial problem was one that became a daily issue that was resulting in reduced performance and lost production and which included an element of developing failures that is hard to measure.

The outcome was a solution was found and implemented achieving an improvement that has resulted in seal life lasting beyond expectations when combined with the improved shank adaptor seal running surfaces.

A success story as far as I'm concerned!"

-Justin Quigley
Epiroc Australia

Problem

Epiroc approached us with a problem they discovered late 2019 with prematurely failing water flushing seals when an Epiroc Boomer E2C development drill equipped with high speed high impact frequency COP3038 rockdrills was delivered to a site in NSW. Standard water flushing pressure was required for this machine configuration up to 35 bar at a flow rate of up to 190L/min. The flushing was performed with highly corrosive recycled water. The rotation speed of the seals was around 300 rpm.

The problem consisted of the sealing lip on the standard water flushing cup seals wearing away within hours of operation (Approximately 4 – 6 impact hours of operation), or in severe cases, both the pressure and back-up seals failing out through the front head. This resulted in drilling equipment/steels getting stuck due to reduced flushing efficiency. There was also a higher possibility of flushing water entering the rockdrill which accelerates wear and in severe cases can cause catastrophic failure. Maximum water flushing pressure had to be reduced which resulted in poorer drilling performance.

Strategy

Epiroc approached HSA with the problem who proposed a number of seal compounds, hardness and designs (R05, R06, R08 & R09_SHA) which were trialled over a period of 3 months. This consisted of running variants between 2 different rockdrills running at the same time drilling out a development heading. HSA supplied additional tooling to assist with easier seal installation.

A suitable seal profile manufactured from XSL polyurethane was decided upon and a seal supply contract negotiated where the XSL seals became the standard supply for all future rockdrill service kits. A variety of different seal running surface trials on the Epiroc supplied shank adaptors were conducted in parallel and a suitable cladding of shank adaptors seal running surface has now also been made the standard for all future shank adaptor supply.

Results

With the introduction of the new seal machined from HSA's high abrasion resistant polyurethane XSL, the seals are now able to last up to 2 weeks of operation (equating to approximately 80 – 100 impact hours of operation).