Stack Seal Sets Hold Up for High-Pressure Hydraulic Pump

Oil and Gas
Chesterton Series 500 (521) Stacked Seal Set
Case Study 004 SES

Challenge

Background

As part of pipeline services, a customer runs pigging systems to clear lines of unwanted materials and also inspects for corrosion. These systems must be cleaned of debris on a regular basis with high-pressure water-based cleaners fed by reciprocating positive displacement pumps. Seals for these pumps must be leak tight and low friction with high cycle performance to handle the pressure which can exceed 35 MPa (5000 psi).

Solution

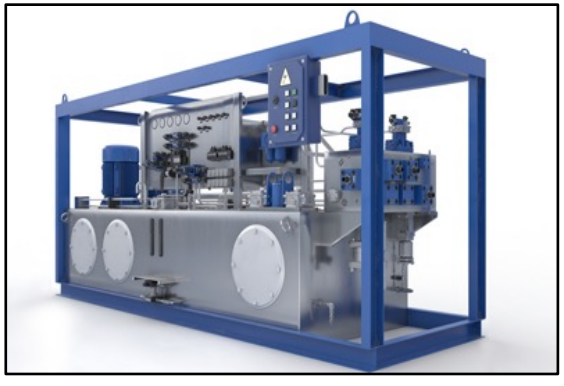
Product

Chesterton Series 500 (521) Stacked Seal Sets were installed in the gland to seal against the shaft. The primary seal element was a Spring-Energized Seal (SES) backed by redundant v-rings. Seal materials were made from wear-resistant carbon/graphite filled PTFE. A backup ring made of PEEK was included to prevent seal extrusion under high-pressure. A PEEK hat ring was used to prevent SES damage due to back pressure.

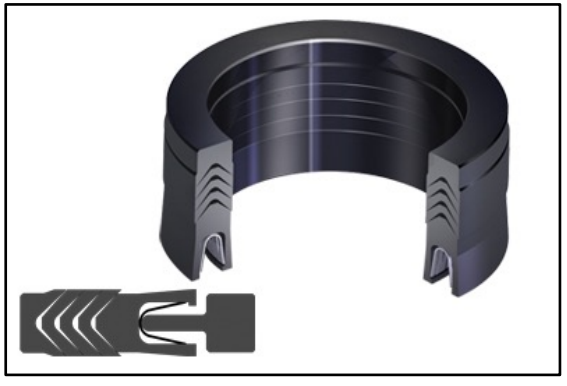
Results

Seal performance was verified through functional trial in the positive displacement pumps of the hydraulic power unit.

The Chesterton Series 500 (521) Stacked Seal Sets provided successful sealing for five years before replacement was necessary.



A hydraulic power unit.



Chesterton Series 500 (521) Stacked Seal Set.

Pipeline system.

A.W. Chesterton Company
860 Salem Street, Groveland, MA 01834 USA

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