



Plunger Pump

Case Study

FTL's LLPA solution extends pump service to 4000 hours

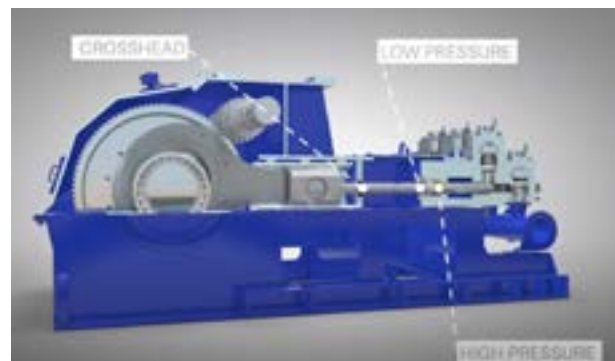
Improved dry running capabilities reduces wear and increases seal life, exceeding 500 hours operation

Advantages of an optimised plunger pump include:

- Longer service life than conventional packings and chevron seals.
- Cost savings possible as a result of self-lubricating properties.
- Reduced low pressure leakage.
- Low friction, for low power loss.
- Dry running capabilities.
- Live loading allows for controlled wear loss.
- Packing materials suitable for use in abrasive media.

The Client

A market leading high pressure, triplex and quintuplex, plunger pump OEM designing and manufacturing in the UK, supplying pumping systems into mining and industrial applications around the world.



FTL provides several sealing solutions to optimise plunger pump performance

Sealing rings with smooth, no-fray edge improve installation and eliminate blocked valves

The Challenge

The customer was experiencing leakage issues due to the quality of the sealing rings that were being produced from individual rings of braided packing cut from a roll. These quality issues were apparent across all plunger sizes, ranging from 40 to 80mm.

Specifically, these problems included:

- Leakage due to increase leak paths inherent with individual cut rings
- Accelerated wear of cut rings during periods of dry running
- Unpredictable loading of cut packing sets, causing leakage
- Effective operation of the pump not reaching 500 hours in certain applications
- Frayed cut ends of packing rings causing installation problems (trapping underneath support/extrusion rings, particles easily breaking off under pressure and blocking valves)
- Spares supplied to their customers being aesthetically poor

The Solution

FTL collaborated closely with the customer, to provide a fit-for-purpose and ready-to-install high pressure LLPA sealing solution able to meet the criteria of the application.

The material used for the sealing element was upgraded in order to increase life, with the added benefit of having dry run capabilities—especially on start up.

Sealing rings were precisely angled cut with a smooth, 'no fray' edge.

The final element of the FTL solution was for packing rings to be packaged specifically with the customer brand including part number and batch number, for greatly improved traceability, ready to use on new build and to ship out as aftermarket spares.

FTL's LLPA achieved the required service life for every size of pump

The Benefit

The customer implemented FTL's LLPA solution on every size of pump, from 40 to 80mm.

Analysis has shown that all pumps consistently achieved, and exceeded, the required lifetime of 500 hours; most pumps achieving in the region of 4000 hours.

The valve failure rate was significantly reduced by eliminating the pieces of frayed packing that were preventing the valves operating, and a substantial cost saving achieved associated with stripping them down to remove the debris.

Additionally, FTL implemented a stock holding and fulfilment agreement handling over 1000 parts a year on behalf of the OEM. Branded components are ready to ship off-the-shelf for any build and spares requirements around the world.

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