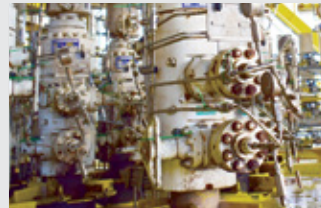
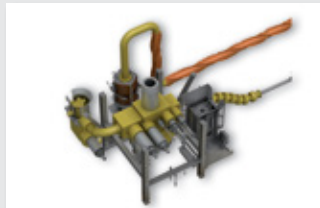




XploR™ S-Seal and XploR™ FS-Seal

CUSTOM-ENGINEERED, SPRING-ENERGIZED ELASTOMER SEALS FOR OIL & GAS APPLICATIONS



Combining the benefits of integral support components with the flexibility of an elastomer seal, the XploR™ S-Seal and XploR™ FS-Seal offer maximum extrusion resistance in demanding high pressure sealing environments.

Commonly known as spring seals, the XploR™ S-Seal and XploR™ FS-Seal from Trelleborg Sealing Solutions are custom-engineered, spring-energized elastomer seals. They combine the benefits of integral support components with the flexibility of an elastomer seal, offering maximum extrusion resistance in demanding high pressure sealing environments, such as those found within oilfield casing and tubing applications.

In the XploR™ S-Seal and XploR™ FS-Seal, sealing is achieved by controlled deformation of the elastomer element. Optimal stress distribution throughout the elastomer body is modelled through Finite Element Analysis (FEA) to ensure high performance sealing coupled with long seal life. Extrusion resistance is provided by the specially designed integral steel springs that provide support to the rubber, yet are flexible to allow straightforward installation.

The seals are manufactured in the Trelleborg Sealing Solutions range of XploR™ Rapid Gas Decompression (RGD) and sour gas resistant elastomers, together with corrosion-resistant steel springs. This allows custom sealing solutions to be engineered to suit specific oil field conditions, including the requirements of high temperature, high pressure (HTHP) environments.

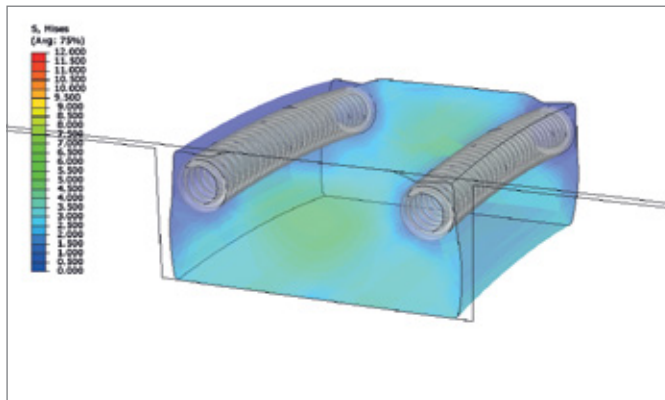
Features and benefits

- Single piece bidirectional seal for high pressure applications
- Integrally molded helical springs provide a high level of extrusion resistance in a single piece, compact sealing element
- Flexibility given by the springs allows installation in closed grooves
- Elastomer sealing element provides leak tightness against sub-optimal tubing surface finishes
- Custom-engineered to fit existing tube sizes
- Materials certified to NORSOK, API and Total standards for demanding downhole environments
- Withstand pressures up to 103.4 MPa / 15,000 psi
- Temperature resistance up to +177 °C / +350 °F

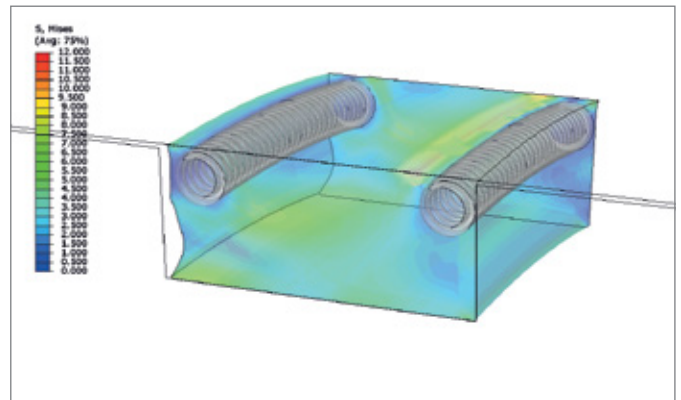
Applications

- High pressure wellhead sealing environments such as casing strings and tubing hangers

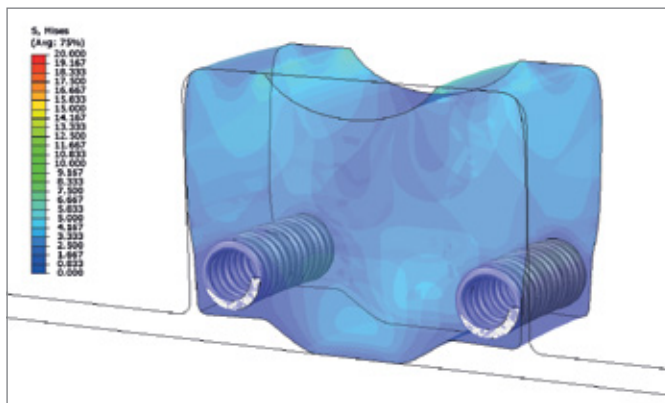
XPLOR™ S-SEAL AND XPLOR™ FS-SEAL



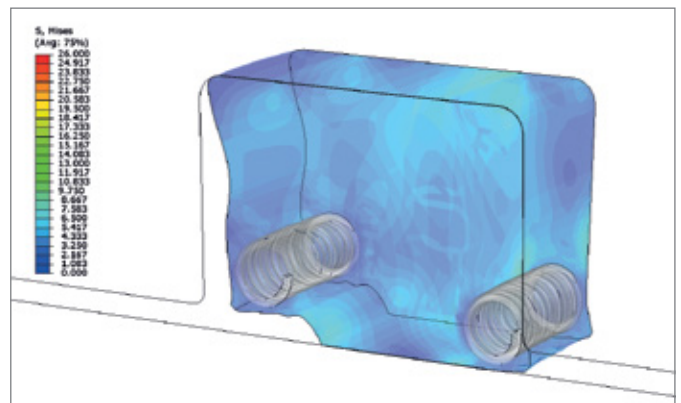
Finite Element Analysis of XploR™ S-Seal installed in hardware



Finite Element Analysis of XploR™ S-Seal operating at 177 °C under 103 MPa / 350 °F under 15,000psi



Finite Element Analysis of XploR™ FS-Seal installed in hardware



Finite Element Analysis of XploR™ FS-Seal operating at 177 °C under 103 MPa / 350 °F under 15,000psi

TECHNICAL INFORMATION FOR XPLOR™ S-SEAL AND XPLOR™ FS-SEAL

Operating Pressure	103.4 MPa / 15,000 psi Pressure capability reduces as temperature increases. Excessive e-gaps also limit pressure resistance.
Temperature Range	-20 °C to +177 °C / -4 °F to +350 °F Dependant on elastomer material. Temperature range is reduced for high pressure and excessive e-gaps.
Speed	For static use only.
Media	Mineral oil, synthetic fluids, water-based hydraulic fluids and other media depending on elastomer material selection.

