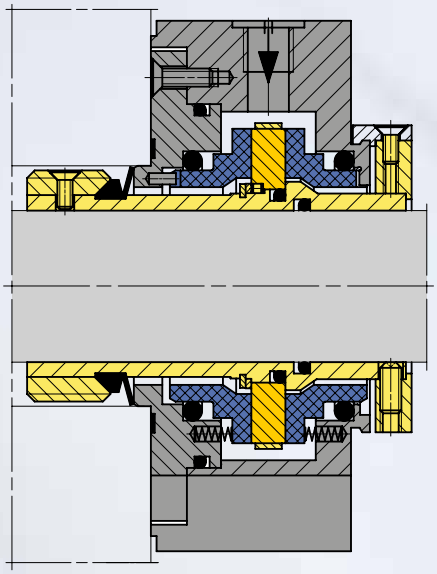
Gas-lubricated sealing solution for TA-Luft* related applications

EagleBurgmann
Rely on excellence

Mechanical seal GSO-DN in Sulfolan pumps

Cutaway model of an EagleBurgmann GSO-DN.
The uni-directional V-grooves of the rotating counter ring and the pumping ring in the background are clearly visible.



The EagleBurgmann GSO-DN gas-lubricated double seal.
Yellow parts rotating with the pump shaft, blue stationary, gray: shaft and housing parts.

In an aromatics plant of a German refinery, pyrolysis gasoline is processed to highly purified benzene and toluene and then supplied to the chemical industry where these important basic materials are needed to manufacture plastics. The pump utilized in the process delivers the Sulfolan solvent from an exchanger to a rectification column with a pressure of 0.4 bar (6.5 PSI) and a temperature of 120 °C (248 °F). The speed is approx. 2,390 min^{-1}.

The plant is subject to emission protection as required by TA-Luft, so sealing the utilized pumps is an important factor essential to achieving and maintaining the strict emission values.
Because of previously recurring failures due to specific operating states that were critical for the seals, a permanently reliable sealing system needed to be found.

The solution: gas lubricated GSO-DN seal

Dependably tight to the atmosphere and no entry of friction heat to the product - good reasons to choose an EagleBurgmann gas-lubricated GSO-DN type double seal to seal the pump shaft and accordingly retrofit the pump.

The sealing concept with its non-contacting and non-wearing operation is proven in practice. The rotating central stationary seat is equipped with uni-directional 3-D gas grooves which ensure the reliable lift off and establishment of a stable gas film between the broad sealing faces.

The GSO-DN is a compact, outside arranged face-to-face double seal, not much longer than a conventional cartridge seal. This simplifies installation and enables trouble-free retrofitting.

The result: extremely extended operating periods

The seal was installed close to the bearing, meaning it will remain safe to operate even when cavitation occurs in the pump. A consistent buffer gas pressure prevents any deposits which could affect the sealing performance from penetrating the mechanical seal. Nitrogen consumption is low with only 0.05 ... 1 Nl/min. An integrated pumping ring on the product side ensures that solids will be kept away from the sealing surfaces.

Since its commissioning in December 2012 the EagleBurgmann GSO-DN has been operating reliably and fault-free to the satisfaction of the end user; further retrofits are planned.

GSO-DN: large operating range

Shaft diameter: d_1 = 30 ... 75 mm
(1.125" ... 2.625")
(please inquire for other dimensions)
Product pressure: p_1 = max. 22 bar (319 PSI)
(depends on shaft diameter and face materials)
Buffer pressure: p_3 = max. 25 bar (362 PSI)
Differential pressure: Δp= min. 3 bar (44 PSI)
Temperature: t = -20 °C ... +170 °C
(-4 °F ... +338 °F)
(depends on the resistance of the O-Rings)
Sliding velocity: v_g = 16 m/s (52 ft/s),
in special version max. 25 m/s (82 ft/s)
Axial movement ±0.2 mm

* Technical Instructions on Air Quality Control

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