

DF-SGR mechanical seal for gas/oil multiphase

Information 091201



EagleBurgmann Type SGR mechanical seal

At 3.7 million tons a year, German production of crude oil covers about 3 % of domestic demand. The largest recoverable reserves are located in Northern Germany. Compared to other oil & gas producing regions, extraction and refining in Germany tend to be more challenging. Highly-optimized cutting-edge technology and processes along with very sophisticated extraction and refining equipment are needed to compete in the international marketplace.

Operating conditions

Medium: oil/gas mixture ... 95 % gas content
Temperature: $t = 10\text{ °C}$ suction side,
 $30\text{ °C} \dots 40\text{ °C}$ pressure side, at the seal
Pressure: $p = 2 \dots 3$ bar suction side,
 $10 \dots 11$ bar discharge side, at the seal
Speed: $n = 2,700 \dots 2,800\text{ min}^{-1}$
Seal incl. materials: DF-SGR1/55-E3,
Q15Q15VGG (1.4571)
Seal type: single seal

The pump

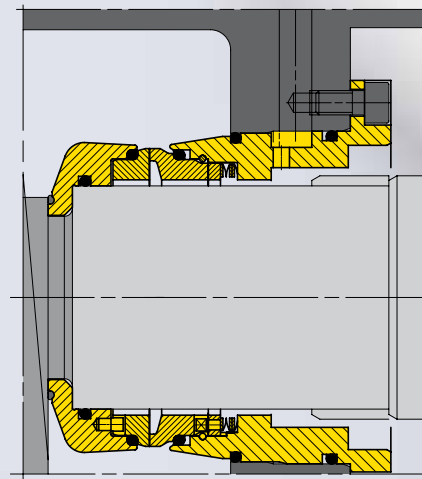
One oil producer in Northern Germany uses a Bornemann SLM twin screw pump to transport the oil/gas mixture. The relatively compact pump has two mechanical seals.

The problem

Originally, a competitor's double seal with barrier fluid circulation system based on API Plan 54 was installed. However, this solution required a lot of maintenance, which caused high personnel involvements for maintenance and made things difficult for the user.

As the pump system was located in a remote wooded area which was not easily accessible, it was in the customer's interest to find a solution which reduces maintenance effort to a minimum.

Bornemann and EagleBurgmann were aware of the problem. A proposal was made to the user to carry out a field test with a new EagleBurgmann sealing solution. The competitor's seals were replaced in the middle of 2008.



DF-SGR1/55-E3

The EagleBurgmann solution

Following the retrofit using an SGR with unpressurized quench and a DiamondFaces® coating, the customer benefited from a significant, sustained reduction in maintenance and monitoring activity.

When the radial shaft sealing ring (not supplied by us) on the pump failed in the middle of 2009, the system was checked over and EagleBurgmann suggested operating the seal without quench.

With the DiamondFaces® coating on the seal faces and 5 % residual lubricating oil content in the medium, the seal has been running in the safe temperature range without leakage, and the user is fully satisfied with the results.



Oil rig in Northern Germany



Bornemann SLM multi-phase pump