

DiamondFace – ideal solution for multiphase pump

# DF-SGR mechanical seal for gas/oil multiphase



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:  $t = +10\text{ °C}$  (+50 °F) suction side,  
 $+30\text{ °C}$  ...  $+40\text{ °C}$  (+86 °F ... 104 °F) pressure  
 side, at the seal  
 Pressure:  $p = 2 \dots 3\text{ bar}$  (29 ... 44 PSI) suction side,  
 $10 \dots 11\text{ bar}$  (145 ... 160 PSI) 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

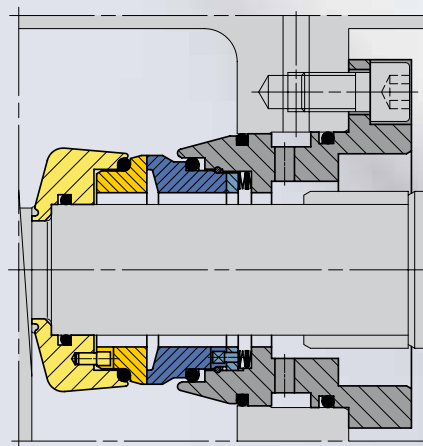
An oil producer in Northern Germany uses a Bornemann SLM twin screw pump to transport the oil/gas mixture. The relatively compact pump has two mechanical seals.

## 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.



EagleBurgmann DF-SGR1/55-E3

## The EagleBurgmann solution

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

When the radial shaft sealing ring (not supplied by EagleBurgmann) on the pump failed after 1 year service, the system was checked over and EagleBurgmann suggested operating the seal without quench.

With the DiamondFace 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 multiphase pump