

The sustainable and economic solution
for pump applications with dry run

EagleBurgmann®
Rely on excellence

Mechanical seal DF-M7N DiamondFace for tank drainage pumps



EagleBurgmann single mechanical seal DF-M7N. The sliding surfaces of both seal face and stationary seat are coated with EagleBurgmann DiamondFace.



Allweiler tank drainage pump in use

The chemical company Global Amines is one of the worldwide leading manufacturers of special chemicals. The "Southeast Bavarian Chemical Triangle", near Altötting, Germany is the location of the Gendorf plant. Global Amines produces preliminary, intermediate and finished chemical products here.

The products are used for the production of detergents, softeners, industrial and household cleaners, for cosmetics, personal hygiene and disinfectants.

Approx. 110 employees manufacture nearly 100,000 tons of products per year in the nitrile-amine plant. More than 300 different types of pumps (such as centrifugal, diaphragm and piston pumps) are applied in the processes. These are the challenging operating conditions for the deployed machines and components: Temperatures up to 350 °C (662 °F), pressures up to 220 bar (3,190 PSI) and pumped media containing solids and gases also place great demands on the seals.

Operating conditions

Rotational speed: 3,000 min⁻¹
Delivery head: 62 m
Temperature: +60 °C ... +80 °C
(+140 °F ... +176 °F)
Viscosity: 1 ... 15 mPas

The problem: Dry run while draining the tank

The tank storage for intermediate products uses an Allweiler type CGA-CGH chemical standard pump. It ensures the product is circulated, or recirculated, and it also periodically drains the tank toward a distribution station. When the pump stands still, nitrogen is blown through the system.

The shaft was originally sealed by a competitor's single seal with an installed hard/soft face material combination. The seal was increasingly damaged due to the developing dry run when the tank was drained and the pressure surges that occurred when nitrogen was blown through the system: broken and worn seal faces and seats and increased wear of the shaft sleeve caused nine failures already within two years and over 13,000 Euro in repair costs. The longest documented uninterrupted running period of the seal was barely six months.

Together with EagleBurgmann the operator searched for a permanent solution to the problem. Since product-side changes were out of the question for process and financial reasons, a reliable, safe and economic sealing alternative needed to be found.

The solution: EagleBurgmann DF-M7N with coated sliding faces

The concept of an unbalanced single seal that matched the existing DIN installation space was retained. The innovative component was the EagleBurgmann DiamondFace coating of the sealing surfaces. This guaranteed safe operation during dry run and a significantly extended operating period. Sliding faces with DF coating exhibit extreme hardness and resistance to wear, offer low friction and excellent thermal conductivity and have the highest chemical resistance.

First, a spare pump was retrofitted to the EagleBurgmann DF-M7N and then it was waited for the next opportunity to change. Soon after the spare pump was exchanged, it became apparent that the new sealing solution far exceeded the end user's expectations. There were no further disruptions to production operation, and the shift personnel no longer had to deal with time-consuming maintenance and cleaning work. The new seal significantly increased pump and system availability to a great degree.

The EagleBurgmann DF-M7N has been operating reliably now for more than 40 months, saving more than 20,000 Euro in repair costs, according to the end user. Based on this success, a further nine tank drainage pumps were retrofitted to the EagleBurgmann DiamondFace solution.

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