



WR® 600

Extends Canned Motor Pump Life While Offering Substantial Energy Savings

Greene Tweed

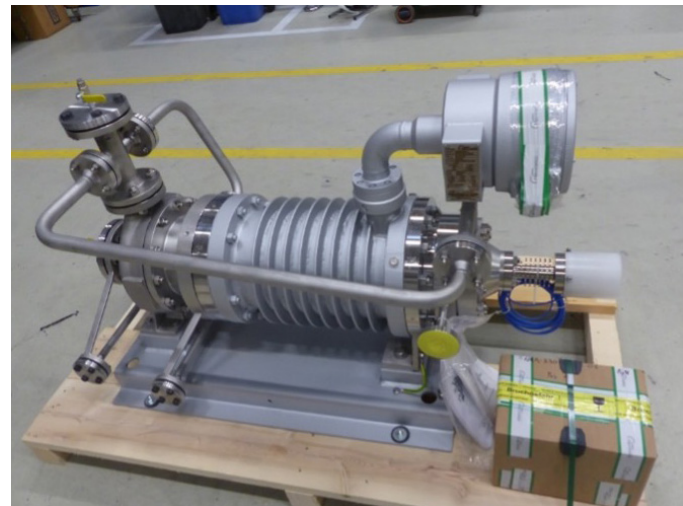
Greene Tweed, a leading global manufacturer of high-performance materials and products, leverages extensive engineering, design, and manufacturing expertise to provide solutions that provide exceptional performance in the challenging environments of the chemical processing industry.

The Customer

One of the world's leading specialty chemical companies, provides innovative and sustainable solutions in the areas of care chemicals, natural resources, and catalysis. Supporting many industries, they focus on energy efficiency, renewable raw materials, emission-free mobility, and conserving finite resources.

Their chemical processing plant in Germany produces ethylene oxide, a highly flammable and explosive chemical at ambient conditions. Due to the critical nature of the ethylene oxide process, they use canned motor pumps produced by HERMETIC-Pumpen GmbH.

HERMETIC-Pumpen GmbH is a leading global developer and manufacturer of sealless and leakage free pump technologies. As a specialist for canned motor pumps, HERMETIC has a worldwide reputation for safe and durable pumps under the most extreme applications and in the most hazardous pumped media.



Hermetic Canned Motor Pump

The Challenge

The HERMETIC canned motor pumps contained carbon-fiber filled PEEK wear rings that were swelling in the ethylene oxide media. The excessive swell of the wear rings resulted in unreliable pump operation, reducing mean time between failure (MTBF) to a monthly and sometimes weekly basis.

The client was facing a major problem common to many chemical companies – how to convert the unplanned maintenance averaging several weeks to preventative maintenance after several years, while improving safety throughout all pump installations.

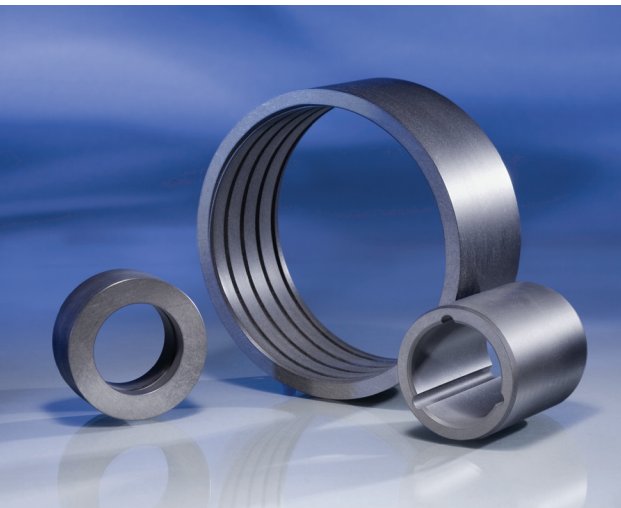
The client reached out to Greene Tweed in search of a new wear ring material to handle the harsh processing conditions of the ethylene oxide service. Greene Tweed recommended replacing the carbon-filled PEEK wear rings with WR® 600 wear rings.



The Solution

The application range of HERMETIC canned motor pumps covers fluid temperatures from -160°C to +480°C (-256°F to 896°F) and system pressures up to 120 MPa (17,404 psi). With power ratings from 1 kW to 690 kW, HERMETIC offers the largest performance range of canned motor pumps on the market.

HERMETIC canned motor pumps are used whenever liquids and gases have to be pumped at extreme temperatures, under potentially hazardous conditions, and whenever conventional technologies reach their limits.



WR[®] 600 Components

Type: CNF

Industry: Chemical oil & gas

Pressure Generation: Single-stage

Marking: II 2 G Ex de IIC T1 to T6

Capacity: 1,600 m³/h
(56,503 cubic feet/hr) max.

Head: 200 m (656 feet) max.

Rotating Speed: 1,450 to 3,500 rpm

Operating Temperature: -120°C to
+120°C (-184°F to 248°F)

Viscosity: 300 mm²/s
(.465 inches squared/sec) max.

Pressure Rating: PN 16 & PN 25

- Normal-suction design
- Liquefied gas design
- Dimensions & performance curves in accordance with EN 22858; ISO 2858
- Explosion protection according to Directive 2014/34/EU
- EC-type-examination certificate

Greene Tweed's WR[®] 600

WR[®] 600 is a carbon-fiber-reinforced, PFA-based composite with a maximum continuous service temperature of 260°C (500°F). Its outstanding chemical resistance comes from its constituents, which can withstand virtually all environments, including the strongest acids, bases, halogens, and solvents. WR[®] 600 is a non-galling/non-seizing composite material, which allows the wear rings to be designed with tight clearances, leading to improved efficiency and longer life.

The result – extended MTBF from weeks to two years and counting. The client has specified WR[®] 600 on all onsite Hermetic pumps in EO service.

The Benefits

Significantly reduced Life-cycle costs due to the following factors:

- Substantial energy savings from improved pump efficiency, due to tighter running clearances and reduced wear over time.
- Greatly improved MTBF from several weeks to longer than two years.
- Superior chemical resistance of PFA polymer.
- Allows for extended periods of dry running during upset conditions.
- Offers excellent impact and thermal shock resistance.

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