The most reliable steam seal in the industry

GTS Series
Seals for steam turbines

Experience In Motion
The advanced GTS seal is designed to handle real world steam applications providing the benefits of a mechanical seal in sealing steam turbines.

**Designed to succeed in steam turbine applications**

**The GTS seal advantage**

Conventional dry gas seals applied to steam turbine applications can fail prematurely due to clogging of grooved face patterns, thermal distortions, and hang-up problems of dynamic secondary sealing elements.

Flowserve expended considerable effort developing a mechanical seal that is especially designed for steam turbine applications. The result is the GTS seal, which brings the benefits of mechanical seals to steam turbines such as:

- Significant energy savings
- Virtually no contamination of bearing oil resulting in enhanced MTBF of the turbine
- Elimination of hazardous “steam clouds” which improves plant safety

**Wavy face dynamics**

Unique wavy face technology tapers the seal face in both the radial and circumferential directions to simultaneously create lift-off and flow circulation.

**Bellows design helps eliminate secondary seal problems**

Alloy 718 bellows helps eliminate dynamic secondary sealing element hang-up problems traditionally experienced in lightly loaded pusher seal designs which require a dynamic O-ring.

**Precision Face Technology Waves**

Laser-applied wavy face technology creates a gas film barrier between the seal faces to provide non-contacting, low drag, and low energy consumption performance.

- Smooth wave texture is self-cleaning to resist contamination or fouling in low quality steam.
- A positive sealing dam regulates steam leakage to atmosphere while maintaining the minimal clearance to prevent seal face wear.
- Sinusoidal waves allow bi-direction operation to simplify installation on double-ended turbines and eliminate failures from reverse rotation.
**Materials of Construction**

- **Sleeve and Drive Collar**
  - Gland: 416 Stainless Steel
  - Rotating Face: Silicon Carbide
  - Stationary Face: Silicon Carbide
- **Seat Gasket / Rotating Face Gasket**: Composite
- **Bellows Assembly**: Alloy 718
- **Labyrinth Bushing**: Carbon or Aluminum depending on design

**Operating Parameters**

- **Products**
  - Steam (saturated and superheated)
  - Hot Condensate
- **Maximum Speed**: 7000 rpm higher speeds with review by Flowserve Technical Services
- **Minimum Slow Roll Speed**: 3 m/s (10 fps) for pressures less than 3.4 bar (50 psig)
  - No minimum speed for pressure greater than 3.4 bar (50 psig)
- **Seal Chamber Pressure**: 0 - 20 bar (0 - 300 psi)
- **Seal Chamber Temperature**: up to 343°C (650°F)
Flowserve Corporation has established industry leadership in the design and manufacture of its products. When properly selected, this Flowserve product is designed to perform its intended function safely during its useful life. However, the purchaser or user of Flowserve products should be aware that Flowserve products might be used in numerous applications under a wide variety of industrial service conditions. Although Flowserve can provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser/user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation, and maintenance of Flowserve products. The purchaser/user should read and understand the Installation Instructions included with the product, and train its employees and contractors in the safe use of Flowserve products in connection with the specific application.

While the information and specifications contained in this literature are believed to be accurate, they are supplied for informative purposes only and should not be considered certified or as a guarantee of satisfactory results by reliance thereon. Nothing contained herein is to be construed as a warranty or guarantee, express or implied, regarding any matter with respect to this product. Because Flowserve is continually improving and upgrading its product design, the specifications, dimensions, and information contained herein are subject to change without notice. Should any question arise concerning these provisions, the purchaser/user should contact Flowserve Corporation at any one of its worldwide operations or offices.

To find your local Flowserve representative and find out more about Flowserve Corporation, visit www.flowserve.com

Standard Sizes

<table>
<thead>
<tr>
<th>Basic seal</th>
<th>Maximum shaft</th>
</tr>
</thead>
<tbody>
<tr>
<td>2875</td>
<td>60.3mm (2.375&quot;)</td>
</tr>
<tr>
<td>3250</td>
<td>69.8mm (2.750&quot;)</td>
</tr>
<tr>
<td>4125</td>
<td>88.9mm (3.500&quot;)</td>
</tr>
<tr>
<td>5000</td>
<td>111.1mm (4.375&quot;)</td>
</tr>
<tr>
<td>6000</td>
<td>133mm (5.250&quot;)</td>
</tr>
<tr>
<td>8000</td>
<td>181mm (7.125&quot;)</td>
</tr>
</tbody>
</table>

© 2015 Flowserve Corporation