Wide Footprint Kalsi Seals

Introduction

A new style of Kalsi Seal, the **Wide Footprint Seal**[1], has been developed that provides longer life in abrasive service conditions (Fig. 1). This new seal is directly interchangeable with Standard 0.335" Kalsi Seals.

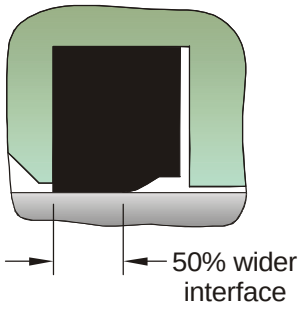

Figure 1

The Wide Footprint seal is optimized to provide enhanced performance in severe service rotary seal applications.

Seal Features and Benefits

Improved Abrasive Exclusion

The geometry has been optimized by FEA and testing to provide dramatically improved abrasive exclusion[2]. It also provides significantly higher compression, to compensate for radial wear and compression set.

Wider Dynamic Lip

The dynamic sealing lip is 50% wider at its narrowest location, compared to Standard Kalsi Seals. This provides significantly more sacrificial material to accommodate any axial wear or extrusion damage that may occur in severe applications.

Hydrodynamic Lubrication

The optimized geometry assures efficient hydrodynamic lubrication of the wider, more heavily compressed dynamic lip, even with high differential pressure. Hydrodynamic lubrication provides longer seal life, compared to conventional rotary seals, by reducing friction and wear.

Performance Testing

Laboratory tests have been performed over a range of pressures and speeds. Under conditions where severe abrasive wear mechanisms have been found to limit Standard Kalsi Seal life, no discernable wear was present on the Wide Footprint Seals (Fig. 2).

Figure 2

In rotary tests with an abrasive slurry, the standard Kalsi Seals (bottom) exhibited significant wear. The wide footprint seals (top) had no observable wear under identical test conditions. The test duration of the wide footprint test specimen shown here was 70% longer than the tests of the standard seals.

Implementation Considerations

Wide Footprint Seals are generally recommended as an alternative to Standard seals to achieve reduced seal wear and longer life. With either Standard or Wide Footprint seals, the use of positive lubricant pressure differential or spring loading is recommended to prevent skew-induced wear[3]. If neither is practical, the Axially Constrained Seal[4] style is typically recommended.

Contact Kalsi Engineering

Please contact our staff for additional information on this and other styles of Kalsi Seals. Seal implementation guidelines are provided in the **Kalsi Seals Handbook**, available online at www.kalsi.com.

[1] Covered by issued and pending U.S. and foreign patents. "Wide Footprint", "Wide Footprint Seal", Kalsi Seal", "Axially Constrained Seal" and "Kalsi Seals" are trademarks of Kalsi Engineering, Inc. The seals in this brochure are offered under the same general terms and conditions as the "Offer of Sale" that is included in the current revision of the **Kalsi Seals Handbook**.

[2] The optimized geometry can also be provided with a standard width dynamic lip for improved abrasive exclusion.

[3] For a description of skew-induced wear, see the **Kalsi Seals Handbook** Rev. 0 Sections 3.12 and 3.13.

[4] See the **Kalsi Seals Handbook** Rev. 0 Section 2.6.

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