



STEIN SEAL INDUSTRIAL

HYDROGEN SEALS



Hydrogen Seal



Hydrogen Seal

Stein Seal Hydrogen Seals

Stein hydrogen seals play a critical role in many industrial applications where the containment and control of hydrogen gas are necessary. Power generation, oil and gas, chemical processing, power transfer, aerospace, semiconductor manufacturing, and hydrogen fuel cell production are just the beginning of the long list of industries where hydrogen seals come into play.

Design Considerations and Materials Selection

Designing the right seal requires consideration of multiple factors that are unique to each application. Stein engineers look at pressure and temperature conditions, ease of seal maintenance and replacement, and material compatibility, among others, to arrive at the correct solution for every application.

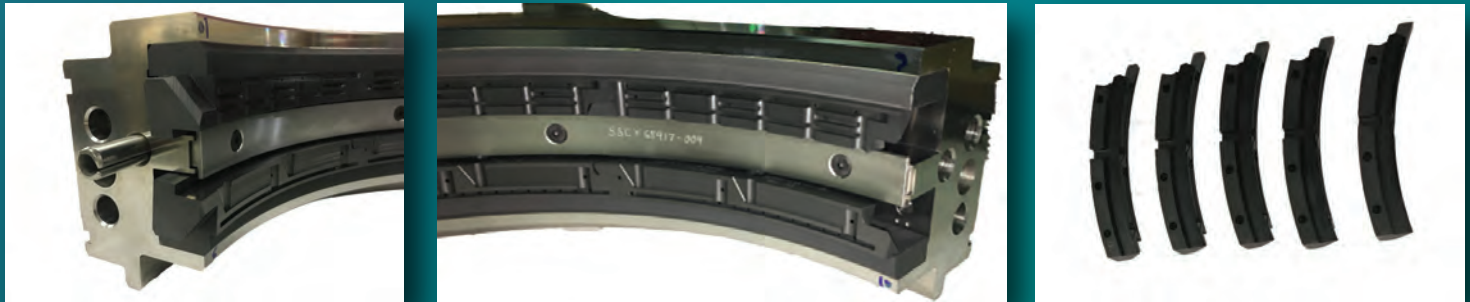
Stein's patented Hydroload® and Hydrovent® generator hydrogen seals were developed to solve oil ingress, shaft movement at start-up, and other issues inherent to traditional generator hydrogen sealing systems.

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375 East Church Road
Telford, PA 18969
U.S.A.



Seal Materials Compatible with Hydrogen

- Metals: Certain metals like stainless steel, copper and aluminum alloys
- Polymers: High-performance polymers like polytetrafluoroethylene (PTFE), polyetheretherketone (PEEK), and polyimides
- Elastomers: Specialty elastomers, like hydrogenated nitrile rubber or fluorocarbon rubber
- Ceramics: Ceramics and ceramic composites
- Coatings: Thin, hydrogen-resistant coatings



Testing and Verification for Hydrogen Seals

For all of its considerable benefits, hydrogen does present significant hazards and challenges in use. Colorless and odorless, hydrogen does not readily make its presence known. It also evaporates easily and is extremely flammable. These qualities together amplify the need for mechanical seals that are properly engineered to effectively contain hydrogen within a system, and for rigorous testing and verification of all seal components.

Stein Seal Industrial, a leading expert in the design and manufacture of hydrogen seals, is also an industry leader in seal testing and verification. There are many ways to test and verify a hydrogen seal:

- Visual Inspection
- Pressure Testing
- Helium Leak Detection
- Bubble Test
- Ultrasonic Testing
- Thermal Imaging
- Dye Penetrant Inspection



Whichever method is used, Stein Seal Industrial performs all of its hydrogen seal testing to industry-established standards and best practices. Every Stein-built hydrogen seal can be relied upon to provide safe and effective performance over a long service life.



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