



Chemraz® 555 Large Diameter Seal Provides Reliable Solution, Minimizes Downtime for Chemical Processing Company

Customer

A leading North American global chemical processing company required a large diameter seal with an ID of 55.5 inches in four of its polymerization reactors.

Problem

The customer was using a large-diameter PTFE encapsulated FKM o-ring in the reactor. The site engineer felt that FFKM was needed to achieve a higher level of chemical resistance with other ingredients being introduced into that reactor; incompatibility with these additional chemicals would risk premature seal failure and delays in reactor start-up if the incumbent seal was used. The customer was looking for a more reliable solution that would allow them to install the o-ring properly and without damage during their annual maintenance cycle.

Solution

Greene Tweed reviewed the application carefully, taking all operational parameters into consideration, including compatibility with chemicals the o-ring would encounter. Based on an assessment of fluid exposure, a material with chemical resistance close to PTFE would be required. To ensure chemical compatibility, Greene Tweed application engineers recommended the use of Chemraz 555 perfluorelastomer.

With an upper temperature limit of 600°F (316°C), Chemraz 555 is the elastomer of choice for the most demanding services found in the chemical processing industry. For nearly 20 years, Chemraz 555 has been used reliably in a wide variety of media, including acids, caustics, aldehydes, esters, ethers, aromatics, hot water, steam, amines, methanol, ketones, TBA, MTBE, and mixed process streams.

After selecting the material best suited for the application, the Greene Tweed engineering and manufacturing teams collaborated to manufacture a quality part on an aggressive timeline. For this application, horseshoe molding was used.



Chemraz 555 provides outstanding chemical resistance, superior compression set resistance and high temperature capability up to 600°F/316°C, making it a reliable sealing choice for chemical processing.



Horseshoe molding is a process that yields the highest performance and is consistent with that of typical compression molded o-rings. With this method, uncured extrudate is continuously vulcanized along a horseshoe-shaped mold cavity. This process most closely aligns with traditional compression molding processes and produces a truly homogenous joint. Horseshoe molding is typically used for critical equipment applications where reliability is paramount.

Once the part was molded, Greene Tweed performed extensive dimensional and visual inspection using a combination of standard measurement tools and ISO 3601-3 criteria. Upon passing inspection, Greene Tweed delivered the part on time to the customer.

Results

Upon delivery of the Chemraz 555 o-ring, the customer was able to install the o-ring without damaging it.

Benefits

By replacing the PTFE-encapsulated FKM o-ring with a Chemraz 555 o-ring with an ID of 55.5 inches, the customer was able to install the seal into its reactor with no issues during their annual maintenance period, enabling them to resume operations on schedule.

Upon start-up of the reactor after the maintenance outage, the Chemraz 555 o-rings worked perfectly, eliminating extended equipment downtime and lost production batches.



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Greene Tweed

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