

Case Study: Success in Ultrapure Water Systems for the Semiconductor Industry



INDUSTRY

Semiconductor – Ultrapure and High-Purity Water Processing

BACKGROUND

A global semiconductor producer required an advanced sealing solution for their ultrapure water system. The purity of the water directly impacts the quality of semiconductor chips, making contamination control a top priority. To ensure optimal performance, the customer needed a non-contaminating gasket that could maintain system integrity while handling the challenges of ultrapure water applications.

CHALLENGES FACED

The customer experienced occasional pinhole leaks and cracking with the PTFE envelope with traditional two-piece PTFE/EPDM competitor gaskets, leading to contamination in the ultrapure water system in the form of minerals, metals or even biofilm growth. Contamination in any form could result in loss of the insulating properties of the ultrapure water and create costly production downtime, emphasizing the need for a more reliable sealing solution.

OPERATING CONDITIONS

Size: Various

Temperature: Ambient

Media: Ultrapure Water

Pressure: 50 PSI

Equipment: Flat Face PVDF Flanges, 316 Stainless Steel Ultrapure Water Headers

SOLUTION AND BENEFITS

Garlock recommended the STRESS SAVER® Style 3522, a one-piece, pure PTFE gasket designed to eliminate contamination risks, while offering extensive chemical compatibility. Its seamless construction eliminated any chance of a breached PTFE encapsulation, the possibility of biofilm attachment and growth and ensured a tight, long-term seal on both raised face and flat face flanges. Since installation, the customer has experienced 18 months of leak-free performance, with no adverse effects on water purity levels.

By switching to the STRESS SAVER® Style 3522, the customer reduced maintenance requirements and extended gasket service life, leading to increased efficiency and lower overall costs. Recognizing these advantages, they have now standardized this gasket for all their ultrapure water applications, ensuring consistent sealing performance and long-term system reliability.

For more information, please visit:

<http://www.garlock.com>