



CASE STUDY: CUSTOM SEAL DESIGN -DELIVERING PERFORMANCE UNDER PRESSURE

PROBLEM:

A long-time European customer had been successfully using a proven seal supplied by HPS for years. Confident in its reliability, they expanded the seal's use into a new, seemingly similar application. However, the new application involved sealing two different fluids, one of which had a much smaller molecular structure. This subtle but critical difference led to repeated seal failures, causing costly leakage issues. Despite several attempts to reduce rejections, the seal continued to fail, leaving the customer frustrated and facing mounting losses in both time and money.

Adding to the challenge, the customer was under pressure from their end client to maintain the same seal profile due to cost constraints, and with the equipment already in production, they needed a fast solution—essentially, they needed it "yesterday."

ANALYSIS AND ACTIONS:

Recognizing the urgency of the situation, HPS mobilized its expert engineering team to dive into the problem. After an in-depth analysis of the application and failure modes, we discovered that the existing seal profile could indeed be used, but only with key modifications. Here's how we solved the problem:

- 1. Advanced Manufacturing Process:** We redesigned the seal manufacturing process, requiring the creation of a more sophisticated tool to precisely mold the parts for the new application.
- 2. Premium Material Upgrade:** The seal material was upgraded to one of HPS's high-performance compounds, specially designed to handle the fluid's smaller molecular structure while maintaining long-term durability and performance.
- 3. Stricter Quality Controls:** We also advised implementing tighter controls on the production of the hardware into which the seals were fitted, ensuring optimal performance.

These adjustments allowed us to maintain the original seal profile, as requested, while enhancing its performance for the new application. We swiftly delivered prototypes to the customer, who rigorously tested the parts and confirmed that the new seals met their performance needs.

RESULTS:

Thanks to HPS's rapid response and technical expertise, the customer was able to resolve their critical sealing issues without disrupting their production schedule. Over 50,000 seals have since been supplied, with ongoing orders ensuring a stable supply for the future.

By maintaining the original seal profile, we minimized disruption to the customer's operations, while delivering a permanent, high-performance solution that prevented further losses.

WHY HPS:

When timelines are tight and failure isn't an option, HPS delivers. Our ability to innovate and tailor solutions to meet unique customer challenges makes us the go-to partner for critical sealing applications. Whether facing a new challenge or simply needing a reliable partner, HPS is ready to help you succeed.

Let us solve your toughest sealing problems and ensure your operations keep running smoothly.

