

CASE STUDY

Customized Solution for High Temperature Environment

FURON®

Pure Performance

ASK AN ENGINEER

The Challenge

Saint-Gobain is always eager to work with our customers to solve their equipment and process challenges, and most importantly, create a safer work environment for their staff. A well-known OEM in the United States had been using a standard Furon HPV 3-Way Valve with a polypropylene actuator housing for many years with no problems. They started to experience issues with failures in which the valves were not actuating properly. The customer had used hundreds of these valves in the past and did not know what was contributing to the failures.

Saint-Gobain Sleuths & Problem-Solving Services

Saint-Gobain's Application Engineering Team spent time investigating the issue with an on-site visit to analyze the application. The fact that only a handful of valves were failing made it difficult to isolate the root cause. After careful study, we determined a portion of their valves had been exposed to an increasing ambient temperature over time with various changes to their equipment.

In order to find the exact issue, we utilized the Research & Development laboratory at our Garden Grove facility. First we tested the valves the customer originally used. We recreated the ambient temperature to replicate the elevated condition with CDA actuation pressure of 80 psig (5.5 bar), cycled for 20 minutes on / 2 minutes off until failure occurred. We analyzed and examined the failed valves to pinpoint exactly where the problem was. We found that their ambient environment had reached a temperature where the valve's polypropylene material was at risk of losing mechanical strength, and possibly expanding with the air pressure applied to the actuator. This would compromise the actuator's housing dimensions and result in a potential failure at the elevated ambient temperatures. Once we discovered the trouble area of the valve, Saint-Gobain's **Application Development Center** quickly designed variation prototypes to test.

Our solution to this temperature issue was to offer the same valve, but customized with a black, anodized aluminum actuator housing. When aluminum is anodized, the surface becomes three times harder than standard aluminum, and will not flake, peel or chip, protecting the actuator mechanism from unwanted particles. Because the anodization process is controlled oxidation of the aluminum, the product will never rust, patina, or weather. This lightweight metal can withstand temperatures up to 1221°F (605°C). The body of the valve is made from PTFE, so it is ideal for their elevated ambient temperature.

We put the newly proposed valves into an elevated temperature test stand with accelerated life cycle testing. All the valves passed the test and the customer was pleased with the results and added the new valve into their specifications. They replaced all the valves on their new equipment and implemented a retrofit program to replace all the valves in the field. The OEM is satisfied to know their equipment has been specifically designed and tested for their application and their customers will experience less downtime as a result.



Customized Furon HPV HT 3-Way with High Temperature Features

Customer Experience

The Furon HPV 3-Way Valve was customized into a Furon HPV HT 3-Way valve with a high temperature feature to solve the customer's actuation failures and provide a tailored solution for their fluid handling system. Our careful analysis of the root cause of the issue allowed us to focus on proposing a robust change that would solve their issue if they continue to move towards higher ambient temperatures in their equipment.