

Case Study: Steam EVOLUTION[®]



BACKGROUND

An expansion device was being installed downstream of a control valve. This expansion device was made of SS316, while the upstream piping to the device was A106B, and the downstream tank connection to the device is 2205 Duplex SS. In this case, both the upstream and downstream connections are of dissimilar metals. Additional challenges for this application were that the flanges on the expansion device were a 6" Raised Face Slip on, while the upstream piping flange is a Raised Face Weld Neck SCH 160, and the downstream flange was Raised Face Weld Neck SCH XH. In both of these cases, these were dissimilar metals, as well as dissimilar bores/faces to seal on.

With these connections being dissimilar metals paired together, an isolation gasket is needed so that galvanic corrosion does not occur and corrode away these less noble metal in each at an accelerated rate.

As this was a steam condensate line, sourcing an isolation gasket that was compatible was challenging, there are very few isolation gaskets in the market that are chemically compatible with steam service. The most common isolation gasket material, GRE (Glass Reinforced Epoxy), is not compatible with steam, and cannot be used in this service. In addition, because there are mismatched bores, it is paramount to ensure that the sealing elements of whatever gasket is used lands on BOTH flange faces to create a proper seal, and ensure that no leak occurs. Steam inherently is of high energy and a safety concern which makes this a critical flange connection that must have a tight seal for the lifetime of its service.

OPERATING CONDITIONS

Temperature:	150 °C / 302 °F
Pressure:	1170 kPag
Media:	Steam Condensate
Size:	6" 300#

SOLUTIONS

The only viable option and the recommended solution for this application was the EVOLUTION[®] isolation gasket and kit. The unique design of EVOLUTION[®] completely eliminates the GRE material, making it chemically compatible to be used in steam service. In addition to this, the GPT Engineering team was able to configure the gasket such that the sealing elements land on the both flange faces of the mismatched bored flanges, to ensure that a proper seal can be made in both the upstream and downstream flange connections. The gasket is designed to isolate effectively, so it also solves the issue of breaking up the dissimilar metals so that galvanic corrosion will not occur. This design provides the highest level of confidence that can be provided to applications with these types of issues.

For more information, please visit: <http://www.gptindustries.com>