

PVP2023

Pressure Vessels & Piping Conference 2023

July 16-21, Atlanta, Georgia, USA

A CONTINUATION OF EVALUATING THE SEALING PERFORMANCE OF ENGINEERING PTFE-BASED GASKETS IN FIBERGLASS-REINFORCED PLASTIC FLANGE

Aidan Berrios

VSP Technologies
Prince George, VA

Jeff Wilson

VSP Technologies
Prince George, VA

Tim Rice

VSP Technologies
Nashville, TN

ABSTRACT

Proper gasket selection for fiberglass-reinforced plastic (FRP) flanges is critical to the long-term success of the flanged connection. Typically, the chemical capability and the finical aspects of the gasket material dictate the materials recommended for use in the system. While chemical compatibility is essential and has to be a factor in determining the correct material, the sealing performance of the material should also be heavily considered during this process. However, limited efforts have been allocated to evaluate the sealing performance of the various gasket materials in FRP systems. Historically, full-face elastomer gaskets have been utilized in FRP connections. This is primarily influenced by elastomeric materials' inherent ability to seal at low gasket stresses and a wide variety of available materials with broad chemical resistance. The low stress to seal materials are a benefit for flange designers; however, elastomeric materials have less than ideal mechanical characteristics in flanged connections, leading to long-term service reliability issues.

The industry has dealt with these issues for decades, and now that engineered PTFE-based products are commercially available, they have started utilizing them with positive results. Based on the testing protocol and research discovered in the PVP paper PVP2022-80474, "EVALUATING THE SEALING PERFORMANCE OF ENGINEERED PTFE BASED GASKETS IN FIBERGLASS REINFORCED PLASTIC FLANGES"; the authors aim to continue this endeavor by testing additional materials to expand the industries knowledge and awareness.

This paper compares the sealing performance of two additional PTFE-based gaskets and two elastomer-based gaskets under these test parameters. This evaluation will provide end-users with a comprehensive method of assessing gasket styles and guiding proper gasket selection for FRP flange services.

Keywords: Fiberglass Reinforced Plastic, PTFE Gaskets, Engineered Gaskets

