

PVP2025

Pressure Vessels & Piping Conference 2025

July 20-25, 2025, Montreal, Quebec, Canada

FURTHER INVESTIGATION ON THE NUT FACTORS OF PTFE-COATED STUDS

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ABSTRACT

This paper explores the inconsistencies in nut factors of PTFE-coated studs, particularly focusing on the effects of manufacturing processes such as over-tapping. Hamilton's 2022 "K-Factor Testing of PTFE-Coated Studs" demonstrated wide variability in nut factors across different manufacturers. While lubrication was found to improve consistency, many end-users report an inability to use lubricants due to specific process requirements, such as those involving chlorine, leading to challenges in maintaining reliable bolted joint assemblies. To address these concerns, this study evaluates the nut factors of a new PTFE-coated stud manufacturer compared to industry standards. As in the previous study, a Skidmore-Wilhelm Bolt Tension Measuring System was used to measure torque and bolt load. Results showed that the new manufacturers' studs achieved a highly consistent nut factor of 0.12, both lubricated and unlubricated, with significantly reduced bolt scatter compared to other manufacturers. This consistency held true in both Skidmore and flange tests, suggesting that the new manufacturing process produces more reliable and repeatable results.

The study concludes that the newly analyzed PTFE-coated studs present a viable solution for environments where lubrication is restricted, offering better reliability in joint assembly. These findings underscore the importance of manufacturing quality and process consistency in achieving accurate nut factors for PTFE-coated studs.

