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## **Overcoming the challenges posed by pipeline and flange corrosion while ensuring optimal performance and reducing downtime**

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Protecting pipelines and flange connections from corrosion while ensuring they are leak-free, safe, and compliant with industry standards and regulations has become increasingly challenging. Pipeline corrosion professionals must now navigate various challenges that were once minor inconveniences but have now become everyday concerns. These challenges include an increase in chemicals in pipelines, the use of steam, increased pressures and temperatures, fire safety, sour gas, and emissions. When these challenges come to the forefront, they can directly impact performance of the system and will increase downtime for operators.

In this paper we will explore the resultant effects these challenges have on corrosion prevention, particularly the effects on Electrical Isolation Kits and offer solutions to minimize downtime, streamline process and improve productivity. We will be addressing harsher media conditions such as sour gas, steam, CO<sub>2</sub>, CO, ammonia, and H<sub>2</sub>S. The results of these conditions include electrical bridging, permeation, material degradation, and higher corrosion levels.

As the world embraces newer energy methods such as CCUS and Hydrogen all of which provide unique challenges that we will explore. With these newer methods comes a greater focus on greenhouse gases (GHG) reductions and has led to an increase in regulation and emission focus. In the paper we navigate through all the challenges facing flange corrosion prevention in 2024 and beyond.