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Corrosion Mitigation in Gas Facilities Piping Through the Use of FBE Coated Pipes and Corrosion Resistant Alloy Girth Welds

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Abstract : The operating conditions and corrosive nature of the process fluid in the Haradh and Hawiyah areas are subjecting facility piping to undesirable corrosion phenomena. Therefore, production headers inside remote headers have been internally cladded with high alloy material to mitigate the corrosion damage mechanism. Corrosion mitigation in the jump-over lines, constructed between the existing flowlines and the newly constructed facilities to provide operational flexibility, is proposed. This corrosion mitigation system includes the application of fusion bond epoxy (FBE) coating on the internal surface of the pipe and depositing corrosion-resistant alloy (CRA) weld layers at pipe and fittings ends to protect the carbon steel material. In addition, high alloy CRA weld material is used to deposit the girth weld between the 90-degree elbows and mating internally coated segments. A rigorous testing and qualification protocol was established prior to actual adoption at the Haradh and Hawiyah Field Gas Compression Program, currently being executed by Saudi Aramco. The proposed mitigation system, aimed at applying the cladding at the ends of the internally FBE coated pipes/elbows, will resolve field joint coating challenges, eliminate the use of approximately (1700) breakout flanges, and prevent the potential hydrocarbon leaks.

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