

STATE OF THE ART ASSESSMENT OF COMPOSITE SYSTEMS USED TO REPAIR TRANSMISSION PIPELINES

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ABSTRACT

For the past decade there has been relatively wide acceptance in using composite materials to repair damaged gas and liquid transmission pipelines. There have been numerous independent research programs performed by pipeline companies, research organizations, and manufacturers that have contributed to the acceptance of composites as a legitimate repair material. Additionally, insights have been gained by both pipeline operators and composite repair manufacturers during field installations. ASME has also responded by adding sections to both the ASME B31.4 and B31.8 pipeline codes, as well as currently developing a repair standard for non-metallic composite repair systems by the Post Construction Committee.

Stress Engineering Services, Inc. and Kiefner & Associates, Inc. have been integrally involved in assessing the repair of pipeline systems, with the former having been involved in performing full-scale testing and analysis on most of the major U.S.-based composite repair systems. The purpose of this paper is to provide for the pipeline industry a third-party evaluation of composite repair systems and information that is needed to properly evaluate how composite materials should be used to repair high pressure pipelines. The contents of the paper will include discussions on what critical elements should be evaluated for each composite system, items of caution and concern, and the importance of evaluation to ensure safe long-term performance.

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