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RAPID System for Hot Spot Corrosion Monitoring of Gas Pipelines

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Monitoring the structural integrity of the elbow area of a gas pipeline is challenging. Utilizing SMART Layer® sensing technology, a Real-time Active Pipeline Integrity Detection (RAPID) system is developed for in-situ structural integrity assessment of a pipeline. This system can evaluate and diagnose the structural integrity of a pipeline's elbow area and welding interface joints. The RAPID system is comprised of a SMART Layer® sensor network permanently mounted on the structure, ScanSentry hardware—Acellent's proprietary active-sensing Structural Health Monitoring (SHM) hardware, and intelligent diagnostic software operated via a portable handheld tablet computer. Acellent has performed this study with the support of ConocoPhillips. Previous research has shown that the SMART Layer sensing network technology can survive harsh environmental conditions that a pipeline undergoes throughout its operational lifetime. The RAPID system has been validated on a metallic pipeline structure in a cylindrical pipe and an elbow-shaped pipe. Damage simulation via drilling, grinding, and saw-cutting on the pipeline specimen, demonstrated the RAPID system detection functionality as effective in diagnosis of the corrosion growth in a pipeline elbow joint area.

Ключевые слова:

Содержание.

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