**Internal Corrosion Monitoring in Pipelines by using Helical Ultrasonic Waves**

Stylianos Livadiotis, Arvin Ebrahimkhanlou, Salvatore Salamone  
Smart Structures Research Group (SSRG), Department of Civil, Architectural and Environmental Engineering  
University of Texas at Austin

**Main Objective**

This project was awarded to Professor Salvatore Salamone in order to design, implement and validate a nondestructive evaluation (NDE) technology for detecting, evaluating and monitoring the progression of internal corrosion in pipelines. It is proposed to use a novel class of sensing system, helical guided ultrasonic waves (HGUW) and advanced data processing techniques for supporting corrosion diagnosis and decision-making.

**Methodology**

- Permanently attached network of (PZT) sensors  
- Active (HGUW) and passive (AE) health monitoring  
- Localization of various types of defects in steel pipes  
- Finite element modeling  
- Experimental validation and correlation with numerical models

**Results**

- Corrosion-like damage was simulated externally on the surface of the pipe in order to verify the effectiveness of the proposed methodology.  
- An accelerated corrosion test was carried out inside the pipe. Work is now underway and targets on quantifying the corrosion progress.

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**References**


**Public Project Page**

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