NYSEARCH
Natural Gas RD&D

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NYSEARCH SPOTLIGHT

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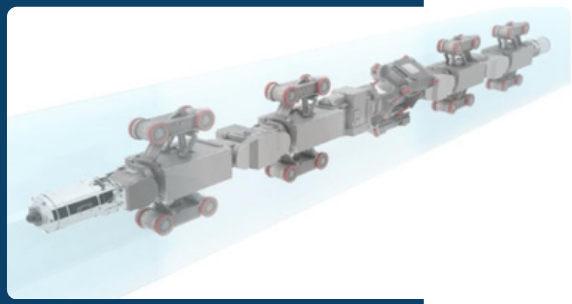
Inside The Issue

Development of an NDE Tool for PE Electrofusion Fitting

As part of the ongoing effort to address needs related to improving pipeline safety and reliability, NYSEARCH is developing an NDE tool to visually inspect the internal configuration and fabrication of PE EF pipe joints. At the start of this project, in 2022, the project team identified and evaluated non-destructive (NDE) tools and instruments capable of enhanced visual inspection of EF PE pipe joint interiors. After careful consideration, NYSEARCH funders opted for the use of x-ray technology, specifically digital compact x-ray cameras designed for field use. X-ray imaging presents the advantage of providing easily recognizable visualization within the NDE image.

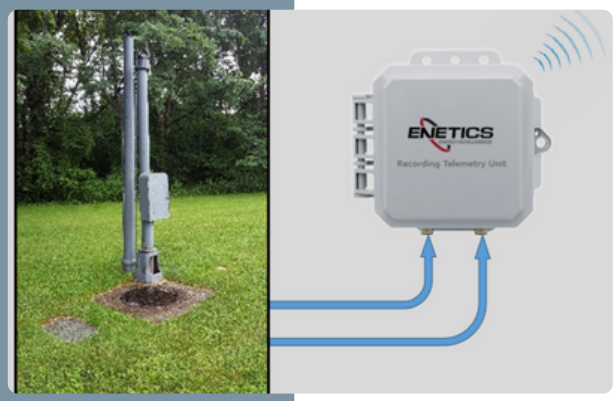
The NYSEARCH contractor, Eagle Hawk gave a demonstration of x-ray capability at the June 2023 NYSEARCH meeting. As a result of recent work, Eclipse Scientific is issuing for consideration an operations manual, which includes NDE x-ray standards and procedures to ensure safe and effective implementation.



Exploring Breakthroughs in Pipeline Inspection: Seam Weld Crack Detection

During a SoCalGas R&D webinar in August, Daphne D'Zurko and Suzy Chaillou presented the background and status of the Seam Weld Crack Detection Program as it heads to commercial release by Intero/Invodane.

The Seam Weld Crack Sensor is a product developed through a multi-phase project. The webinar outlined the transition from early crack sensor designs to the final weld sensor configuration. The project objectives revolved around the development of a crack sensor capable of seamlessly integrating onto the Explorer 20/26 robot. The goal was to identify cracks around the seam weld and metal loss using traditional MFL in a single pass. Culmination of these efforts yielded a weld sensor configuration that can detect various axially oriented cracks, both internal and external, near the seam weld. Intero/Invodane is commercializing the seam.

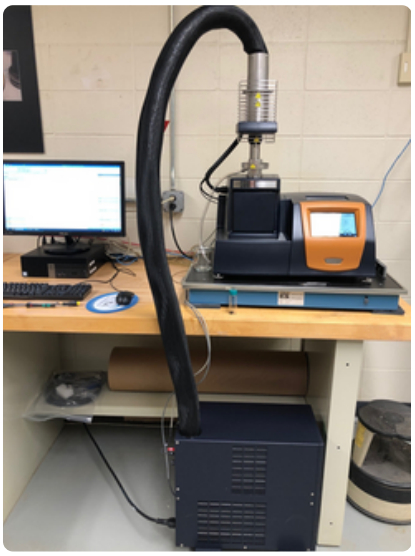


Spotlight Session: The GasComm® Control Module (GCM)

An NGA 'Spotlight Session' was held online in August. It featured work completed by NYSEARCH and its contractor, Enetics, for the GasComm® Sensor Array and GasComm® Control Module (GCM). Jeff Kramer of Enetics described these innovative solutions that focus on monitoring gas distribution companies'steel and PE distribution networks. The GasComm® products, developed by NYSEARCH promise to revolutionize the way gas utilities manage their networks, ensuring consumer safety and network efficiency.

The GasComm® Sensor Array is an advanced patented flowmeter that provides static pressure, temperature, humidity, and vibration monitoring in a single Class 1 Division 1 Intrinsically Safe device. This also works seamlessly with the GasComm® Control Module (GCM) enabling precise measurement of critical parameters provided by the GasComm® Sensor Array.

Gas utilities can employ the GCM with a wide range of monitoring options such as on-demand data collection and defining alarm thresholds easily recognized by the utility's SCADA system. The GasComm® Products ensures that gas utilities have a complete and real-time understanding of the daily performance of their gas distribution steel or PE pipeline network's performance and environmental conditions, facilitating proactive and informed decision-making in minutes.

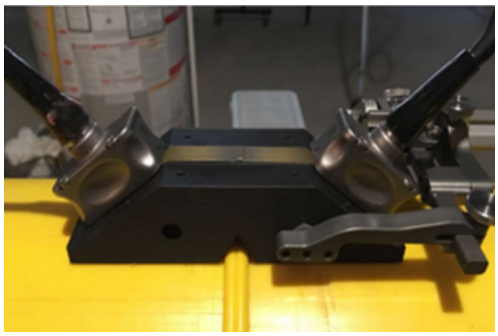


Understanding Elastomeric Material Behavior in Hydrogen/Natural Gas Blends

As the gas supply in the US diversifies, the composition of gas reaching consumers evolves. In 2020, NYSEARCH initiated an effort (building on extensive prior work with GTI) that assess the effects of hydrogen/natural gas blends on the elastomer materials that are in the LDC network. Under the extensive testing of virgin and field-extracted materials, the elastomers did not show a significant impact under the conditions studied. Elastomeric materials are used throughout the LDC infrastructure, and the results of this testing could factor into the operational decisions regarding the use of blended hydrogen. The testing in this project determined that the material properties of the elastomers did not show a significant impact due to the presence of hydrogen.

Red/Green Light Tool for PE Pipe Butt Fusion Joints

This project focuses on developing an automated non-destructive examination (NDE) tool to inspect PE (polyethylene) pipe butt fusion joints. Designed to be operated by properly trained, non-NDE expert gas industry workers, a Red Light/Green Light tool will not only help bridge the gap between expertise and accessibility, but also revolutionize the inspection process for PE pipe butt fusion joints. NYSEARCH has opted for Phased Array Ultrasonic Testing (PAUT) for the inspection of EF joints and the evaluation of test PE pipe joints is now complete. PAUT provides a 100% volumetric examination of the joint, offering an unparalleled level of precision and reliability in assessment.



To accomplish the project goals, Eclipse Scientific developed a specialized transducer-holding wedge, ensuring the utmost efficiency and accuracy in inspections. Jonathan Lesage and Mohammad Marvast, both Research Engineers at Eclipse Scientific, presented the results of improved PAUT transducer wedges designed specifically for NDE inspections to members in June. Advancements in hardware components are instrumental in creating a rugged and compact PAUT tool suitable for on-field applications, encompassing both butt fusion and EF joints.

Recent Final Reports Released to NYSEARCH Funders

Project Number	Project Name	Project Manager	Date Issued
M2018-006	Augmented Reality/Hololens Application Development	Ahra Kwon	March 2023
M2017-006	Pipeline Cleaning Tool for Liquids with Flow	Suzanne Chaillou	June 2023
M2020-004	Multi-Technology Test Program of NDE Technologies for PE Pipe Joints	Joseph Mallia	July 2023