

Dedicated to serving its utility member companies with focus on natural gas RD&D, technology development & commercialization, and joint industry collaboration

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### Final field test to advance leak detection from drones with emissions quantification

PG&E hosts NASA JPL and Aeronautics to complete field-testing campaign

### EM-TDR feasibility evaluated at NYSEARCH Test Bed

A non-intrusive inspection capability using EM-TDR is advancing to test bed

### Southwest Gas develops Line Locate HoLens training guide

Augmented Reality creates new experience for students learning Line Locate at SWG



Dominion Utah showcased a hydrogen injection system at the NYSEARCH Quarterly March meeting in Salt Lake City, UT. The system is made up of specially designed metering, gas quality, and odorization equipment to deliver 5% vol hydrogen into Dominion's distribution system.



## NYSEARCH technical presentations garner high interest at AGA Operations Conference in Grapevine, TX

The AGA 2023 Operations Conference held in Grapevine, TX this year hosted the largest attendance group in AGA history. With over 3,000 attendees, NYSEARCH showcased our R&D program via the Exhibit (organized by Renee Davis) and several technical presentations. In particular, the Impact of Hydrogen/Natural Gas Blends on LDC Infrastructure Integrity project, managed by Suzy Hartwell and presented alongside Ed Newton of SoCalGas drew packed rooms at AGA. NYSEARCH staff also presented on topic areas in methane emissions and microbial power-to-gas with NYSEARCH committee members Carrie Berard of NYSEG/RGE and Danielle Mark of PG&E respectively.







**sUAS field test to advance aerial leak detection and quantification with NASA JPL developed sensor complete**

The third and final campaign of field testing for this project was completed in early May at PG&E. The overall objectives of this program are to advance the sUAS technology for leak survey

already established for methane detection capability and ground emission location accuracy, as well as develop methods for methane emissions quantification. The development of enhanced aerial leak detection and ground localization has been completed. The extended development beyond leak detection to include measurement of emission quantification has been demonstrated by JPL in the three field campaigns organized for this project. A summary of results from the three field campaigns is underway.

**Southwest Gas develops Line Locate HoloLens training guide**

In February, CraneMorley collaborated with the training team at the Southwest Gas Tempe, AZ service location to develop a Line Locate



HoloLens Guides application. The NYSEARCH project offered a unique opportunity for SWG to identify the best internal training procedure where an Augmented Reality experience would transform or enhance the current process of teaching. The Line Locate curriculum was identified as the most failed training for new hires and thus was selected for development with Microsoft HoloLens. The goal is to empower and immerse the student in the Line Locate procedures using the HoloLens to provide a visual aid allowing the student to follow step-by-step directions while having their hands free to operate specific line locating equipment. The newly developed Guide was provided to SWG in May for review and feedback.



**Bob Wilson of NGA awarded Milton W. Heath, Sr. Memorial Award**

At the AGA Operations Conference, Bob Wilson of NGA received the 2023 Milton W. Heath, Sr. Memorial Award. Bob was recognized as a key contributor to the natural gas industry for his dedication in improving leak detection and prevention over the past 30 years. Congratulations Bob!

**RNG Trace Constituents appliance testing to begin in the Netherlands**

Following a long, complex road to acquiring appliances, testing is finally set to begin with DNV-GL. A big shout out and thank you to Rick Trieste of ConEdison for securing appliances for testing in this project. DNV-GL will perform RNG trace constituents trigger limit specifications testing on American utilized water heaters and gas furnaces. Results from testing will help expand or validate the trace constituents trigger limits currently known.

## Demonstration of Electromagnetic Time Domain Reflectometry (EM-TDR) at NYSEARCH Test Bed in NY

With NYSEARCH, Lawrence Berkeley National Laboratory (LBNL) is carrying out research to determine the potential of using Electromagnetic Time Domain Reflectometry (EM-TDR) technology to detect defects in natural gas transmission pipelines. The method is non-intrusive and promises long inspection lengths (in contrast to the short ranges of DA methods) without needing access to the inside of the pipeline (as in line inspections require). The tests carried out at the NYSEARCH Test Bed in early May 2023 are a significant step towards establishing the capabilities of this technology.



## Evaluation of threaded connections in hydrogen blends - experimental testing complete



Experimental testing by Bruce Campbell to evaluate threaded connections in hydrogen/natural gas blends up to 20% vol is completed. This project addressed the question of whether more leaks are created with 20% H<sub>2</sub> blend of gases than with the pure NG in threaded joints. Any threaded joint that could develop a leak during cyclic temperature testing was equated to a failed joint. A total of 793 joints were made for cyclic temperature testing. An initial analysis of results for each thread sealant did not show any significant differences in the failure rates between pure methane and hydrogen blend. The project also addressed the question of whether joint failures have a higher flow rate through them with the 20% H<sub>2</sub> blend than with pure NG. A total of 33 leaks were evaluated with seven types of thread sealants to determine flow rates. An initial analysis of the results indicates a small (0 to 3%) increase in flow rate with the blended gas, but this may not be statistically significant. The raw data gathered from this project testing is being analyzed by a statistician to provide statistically significant conclusions and recommendations.

**The table below presents recent or upcoming Final Reports for NYSEARCH funders:**

Project Number	Project Name	Month Issued/Project Manager
2016-002 Ph II	Odor Detection and Recognition Study – Odor Adaptation and Odor Masking	April 2023 / Ahra Kwon
M2020-002	Impact of Hydrogen/Natural Gas Blends on LDC Infrastructure Integrity	May 2023 / Suzanne Hartwell
M2020-008	Study Impact of RNG Trace Constituents on Natural Gas Grids and Consumer Appliances	Materials testing results ONLY to be released in May 2023 / Ahra Kwon
M2021-007	Impact of H <sub>2</sub> on Threaded Connections	To be released June 2023 / Ahra Kwon