Peoples Natural Gas, H Quest, and University of Pittsburgh Team to Produce and Test Hydrogen Energy from Natural Gas

June 10, 2024

Hydrogen production process converts natural gas into pure hydrogen and a solid carbon byproduct; could provide breakthrough for hydrogen as economic, zero-emission energy source

PITTSBURGH--(BUSINESS WIRE)--Jun. 10, 2024-- An innovative demonstration project that will attempt to create zero-emission hydrogen energy at the scale needed for widespread adoption is now underway in Western Pennsylvania. Peoples, an Essential Utilities company, leads the pilot with support from Pittsburgh-based energy technology start-up company H Quest and the University of Pittsburgh's Swanson School of Engineering. The testing is one of multiple ways Essential and Peoples are working to be leaders in hydrogen.

First, Peoples installed one of H Quest's proprietary **microwave pyrolysis** units at its training center in McKeesport to transform natural gas into pure hydrogen (H2) without CO_2 emissions. The process creates what is often referred to as **turquoise hydrogen**. Roughly the size of a shipping container, technology within the unit heats the natural gas as it flows through the system in an oxygen-free setting. This almost instantaneously "cracks" the gas into two distinct byproducts: clean H2, and a solid carbon material called **carbon black**: an industrial product used as a crucial component in batteries, paints, pigments, rubber products, tires, and more. H Quest's system will produce hydrogen directly from natural gas without CO_2 emissions.

Peoples then blends the hydrogen with natural gas at various ratios to assess impacts on physical pipeline operations and various home appliances. The ongoing blending and testing at the Peoples Training Center in McKeesport occurs within a closed-loop system; H2 is not inserted into distribution lines that serve customers at this point.

"Our mission to provide safe, reliable, and affordable natural gas is based on a commitment to make lives better," said Peoples President Michael Huwar. "That commitment means pursuing innovations that leverage our local abundance of natural gas while placing a focus on decarbonization. At the same time, we have a regulatory commitment to purchase gas at the lowest cost for our customers. Supporting technological advancements that allow hydrogen to be produced at a scale that makes H2 affordable is critically important."

Peoples co-hosted two conferences bringing together regional and national leaders in hydrogen technology and policy, and began a research project with Pitt in 2022 to study the impacts of hydrogen on existing natural gas delivery systems. That work provides valuable benchmarks for this multi-phase pilot.

Turquoise hydrogen may solve multiple challenges that have kept hydrogen from large-scale adoption. By extracting the carbon from natural gas as a solid material, greenhouse gas emissions that are typically associated with conventional hydrogen production can be entirely prevented. These solid carbon products, such as **carbon black** and graphene, would be sold to offset the cost of hydrogen fuel. H Quest's distributed modular package reduces the need for and costs of transportation and infrastructure upgrades required to deliver the fuel to the customer, and may in some cases even eliminate them altogether. This changes the financial model to make hydrogen energy competitive with standard natural gas and other alternatives.

"We appreciate the support and contributions from Peoples that allows us to pilot our system at a prospective customer's facility," said H Quest CEO and Founder George Skoptsov. "This pilot is instrumental in demonstrating that our microwave pyrolysis technology can help the natural gas industry to significantly reduce overall carbon dioxide emissions while creating valuable, in-demand products that change the calculus for hydrogen energy."

In conjunction with the operational testing in McKeesport, Pitt's material scientists will evaluate the influence of hydrogen blends on the integrity of Peoples' commonly used pipeline material in a controlled environment. Pitt will test H2–natural gas blends ranging from 5 – 20% hydrogen to see how each interacts with different pipeline materials. The ultimate goal: providing low-cost energy that is just as safe and reliable as natural gas, but with reduced emissions.

"This is a special opportunity to conduct materials testing under the practical conditions provided by this H2 demonstration facility," said Dr. Brian Gleeson, Professor and Chair of the Mechanical Engineering and Materials Science Department at Pitt. "The results will guide materials selection for the safe and long-term delivery of H2–natural gas blends to Peoples' customers in the future."

For more about Peoples' efforts in hydrogen and an in-depth video explanation of the collaboration between Peoples, Pitt and H Quest, visit www.Peoples-Gas.com/hydrogen.

About Peoples Natural Gas

Peoples, an Essential Utilities (NYSE:WTRG) company, provides clean, safe, affordable and reliable natural gas service to approximately 740,000 homes and businesses in Western Pennsylvania and Kentucky. Peoples is committed to its customers, its employees, the environment, and to the regions it serves.

About Essential Utilities

Essential Utilities, Inc. (NYSE:WTRG) delivers safe, clean, reliable services that improve quality of life for individuals, families, and entire communities. With a focus on water, wastewater and natural gas, Essential is committed to sustainable growth, operational excellence, a superior customer experience, and premier employer status. We are advocates for the communities we serve and are dedicated stewards of natural lands, protecting more than 7,600 acres of forests and other habitats throughout our footprint.

Operating as the Aqua and Peoples brands, Essential serves approximately 5.5 million people across 9 states. Essential is one of the most significant publicly traded water, wastewater service and natural gas providers in the U.S.

About H Quest

H Quest provides decarbonization solutions and produces zero carbon emissions products by economically converting natural gas into hydrogen and valuable carbon solids. The Company is based in Pittsburgh and targets commercial deployment of its systems in early 2025.

About the University of Pittsburgh Swanson School of Engineering

The University of Pittsburgh's Swanson School of Engineering is one of the oldest engineering programs in the U.S. and excels in basic and applied research with focus areas in sustainability, energy systems, advanced manufacturing, bioengineering, micro- and nano-systems, computational modeling, and advanced materials development. More than 210 faculty members serve nearly 3,600 undergraduate, graduate and PhD students across six departments: bioengineering, chemical and petroleum, civil and environmental, electrical and computer, industrial, and mechanical and materials science.

Forward-Looking Statements

This release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, including, among others: the potential for the project to provide a breakthrough for hydrogen as economic, zero-emission energy source and that "turquoise hydrogen" may solve multiple challenges that have prevented hydrogen from large scale adoption. There are important factors that could cause actual results to differ materially from those expressed or implied by such forward-looking statements including; the success of the project and other factors discussed in our Annual Report on Form 10-K, which is on file with the Securities and Exchange Commission. For more information regarding risks and uncertainties associated with Essential Utilities business, please refer to Essential Utilities annual, quarterly and other SEC filings. Essential Utilities is not under any obligation — and expressly disclaims any such obligation — to update or alter its forward-looking statements whether as a result of new information, future events or otherwise.

WTRGG

View source version on businesswire.com: https://www.businesswire.com/news/home/20240610258169/en/

Peoples/Essential Media Contact:
Nick Paradise
External Communications Manager
Media Hotline: 1.877.325.3477
Nick.Paradise@Peoples-Gas.com

Essential Investor Contact:
Brian Dingerdissen
Vice President, IR and Treasurer
O: 610.645.1191
BJDingerdissen@Essential.co

H Quest Media Contact:
Haley Norton
Manager, Operations and People
330.703.4319
haley.norton@h-quest.com

Pitt Swanson School of Engineering Contact:
Paul Kovach
University of Pittsburgh
412-624-0265
paulkovach@pitt.edu

Source: Essential Utilities, Inc.