ROSEN researchers at work.

Developing opportunities to improve the energy transition

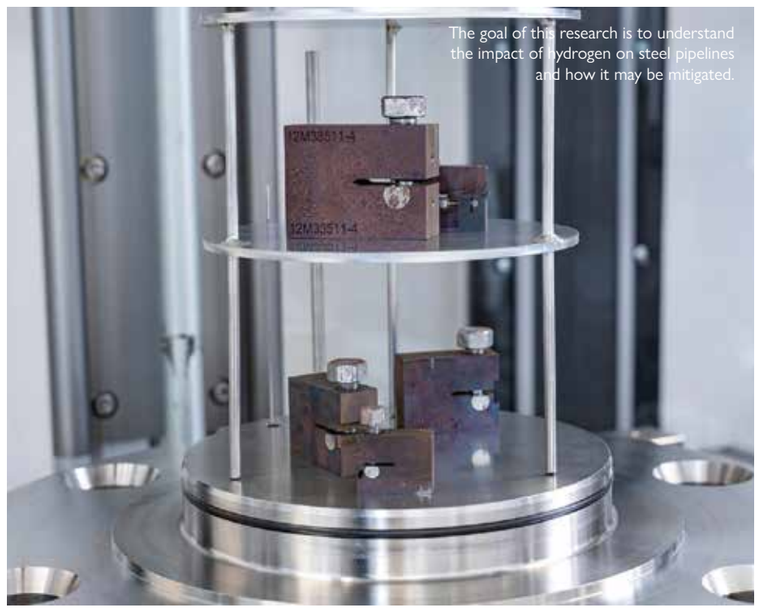
ROSEN Group is supporting National Gas with understanding how to extend asset lifetime and capability in the energy transition.

As the world looks to reduce its carbon emissions, the oil and gas industry is faced with the dilemma of resolving this in parallel to the continued increase in global demand for fuel and energy.

With renewable hydrogen identified as a flexible energy carrier, existing gas infrastructure offers the potential conditions for storing, transporting, and distributing this 'clean energy'.

Understanding the effects of hydrogen on pipeline materials is vital in determining potential asset lifetimes, understanding potential issues, and determining safe operating conditions.

As part of ROSEN's hydrogen research project, the company will utilise its newly developed materials testing laboratory. This facility is dedicated to testing under hydrogen conditions to understand the conversion of existing pipeline infrastructure to transport hydrogen or blended mediums in the energy transition.



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Images: ROSEN Group.

The facility was built by ROSEN in Lingen, Germany, and is fully equipped to conduct extensive testing and is supported by a team of materials and pipeline integrity experts that are on hand to analyse the results of the tests that are carried out.

It serves as a critical element in ROSEN's ambitious mission to de-risk the introduction of renewable fuels and help operators by assuring a safe and reliable future energy supply.

ROSEN and National Gas are working together to understand and mitigate the potential challenges in transporting hydrogen, including the potential for limitations in operational parameters and asset lifetime.

"The goal of this research is to understand the impact of hydrogen on steel pipelines and how it may be mitigated. Several studies have shown that oxygen may reduce the effects of hydrogen," ROSEN Principal Engineer Neil Gallon said.

"ROSEN Group looks forward to working together with National Gas and its partners to further improve the understanding of hydrogen and its effects on materials.

"Together, we will enable National Gas to continue to play its leading role in the introduction of hydrogen into the UK National Transmission System."

The research project set to be completed this year, the project promises to deliver fracture and fatigue property tests to provide insight into how different quantities of oxygen in a hydrogen gas flow can prevent permeation into the network materials.

National Gas Head of Innovation Corinna Jones said the two companies have built a strong rapport.

"We have built a strong rapport with ROSEN over the years, given their experience of developing innovative and novel solutions," Jones said.

"We are confident that this initiative will result in an optimised approach to transporting hydrogen across the NTS."

ROSEN is also researching how the design and execution of a test program will quantify the effects of oxygen on different materials.

The company supports pipeline operators in the change process to extend the lifetime of their valuable assets.

"An integrated hydrogen integrity framework coupled with a phased approach enables pipeline operators to make smarter decisions when converting their existing gas grids to hydrogen and ensures hydrogen transport operations that are reliable in all aspects of performance, safety and security," ROSEN Head of Business Line Hydrogen Marion Erdelen-Peppler said.

Since its origins as a one-man business in 1981, ROSEN has rapidly grown and continues to do so.

Today, the business is privately owned and consists of a team of more than 4000 employees operating in more than 120 countries. **P**

This research is the fruit of a strong rapport and collaboration between ROSEN and National Gas.

For more information, visit **rosen-group.com**