

Can Ireland warm homes and cook dinners with hydrogen?

Whether we will be able to warm our homes and cook our dinners with hydrogen in the future is a question that researchers from University College Dublin's Energy Institute (UCDEI) are hoping to answer as part of a new research project to investigate the potential use of hydrogen in Irish homes. Led by Gas Networks Ireland's Head of Technical Development and Technical Training, Liam Nolan, and Dr Ali Ekhtiari and Dr Eoin Syron from UCDEI; the team is testing the operation and performance of household appliances with varying levels of hydrogen and natural gas blends.

Using the testing facilities at both UCDEI's Integrated Energy Lab and Gas Networks Ireland's new hydrogen innovation facility in west Dublin, which enables the safe testing of pipelines, meters and appliances off-network; the team is working to understand the full potential of hydrogen and ensure Ireland's gas pipelines are capable of safely transporting and storing this vital carbon free gas.

"The decarbonisation of Ireland's gas network is essential if we are to transition to a net-zero energy system in Ireland by 2050. This project will provide the data needed to understand how adding hydrogen to the gas network will impact the devices and appliances we use in our homes today to ensure a smooth transition with minimal cost and disruption to consumers," Dr Syron said.

Hydrogen can be produced from renewable electricity and stored until needed, making it an attractive option to decarbonise energy systems and a strong example of how greater integration between gas and electricity systems can drive a cleaner energy future for Ireland.

Embraced in the UK and across Europe, Hydrogen is a critical component of the European Green Deal and recognised by the European Commission as offering "a solution to decarbonise industrial processes and economic sectors where reducing carbon emissions is both urgent and hard to achieve".

The cornerstone of Ireland's energy system providing almost one third of all primary energy, 40% of heating and more than half of Ireland's electricity generation, Gas Networks Ireland last year invested €112m into the national gas network to support the country's transition to a cleaner energy future.

By gradually replacing natural gas with renewable, carbon neutral and ultimately zero carbon gases, such as biomethane and hydrogen, Ireland can benefit from a net-zero carbon gas network and reduce emissions across a number of key sectors, including those that are traditionally difficult to decarbonise, such as transport, agriculture, industry, heating and reliable power generation.

"Ireland has already transitioned to a cleaner gas once before, from the old town gas, which was a combination of hydrogen, carbon monoxide and methane, to natural gas in the 1980s and we have a head start on this next chapter thanks to having one of the safest, most modern gas networks in the world," Mr Nolan said.

He continued, "Like many gas network operators around Europe, we are investigating how much hydrogen can be blended with natural gas and transported through our existing national gas pipelines. Initial indications look very promising, particularly at lower percentage blends. Our research with UCDEI will allow us to test the operation and performance of household appliances in a very safe and controlled environment."

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Notes to Editor

About the UCD Energy Institute

UCD Energy Institute brings together researchers from a wide range of academic disciplines to tackle the challenges associated with the decarbonisation of energy. Focusing on energy systems, energy management, and energy in society, we drive Ireland's position as a world leader in the integration of renewable energy. In practice, this research determines things like how wind and solar energy can be added to the network in a safe way, and how different energy systems interact with one another.

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About Gas Networks Ireland

Gas Networks Ireland operates Ireland's €2.7bn, 14,617km national gas network, which is considered one of the safest and most modern gas networks in the world.

Over 706,000 Irish homes and businesses trust Ireland's gas network to provide affordable and reliable energy to meet their heating and cooking needs.

The gas network is the cornerstone of Ireland's energy system, securely supplying more than 30% of Ireland's total energy, including 40% of all heating and over 50% of the country's electricity generation.

By replacing natural gas with renewable gases and complementing intermittent renewable electricity, Gas Networks Ireland is supporting Ireland's journey to a cleaner energy future.

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