



Media Release

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Power to gas trial to inject hydrogen into Australia's gas grid

The Australian Renewable Energy Agency (ARENA) today announced a trial for an innovative new type of electrolyser which could see excess renewable energy stored in the gas grid and used to decarbonise Australia's gas supply.

On behalf of the Australian Government, ARENA has provided \$5 million in funding to Wollongong-based company AquaHydrex to commercially develop its new class of electrolyser to produce cheap hydrogen from splitting water.

In partnership with Australian Gas Networks (AGN), which owns the gas distribution network in South Australia, AquaHydrex will design and build an electrolyser pilot plant to trial injecting a small amount of hydrogen into the South Australian gas grid in a process known as "power-to-gas".

Power-to-gas involves converting electricity into hydrogen by splitting water, then injecting this into the gas grid, providing long-term energy storage and stabilisation of variable output solar and wind power.

ARENA Chief Executive Ivor Frischknecht said this demonstration is the first Australian trial to test 'power-to-gas' that will see hydrogen being injected into the gas network.

"Hydrogen can be injected directly into the natural gas network without modification at levels of at least 10 per cent, with some experts recently suggesting levels closer to 30 per cent are viable to supplement our gas needs. Depending on the material the gas pipeline is made out of, the network can support up to 100% hydrogen in due course, once appropriate regulatory transition and appliance modifications are implemented. When hydrogen burns, it produces only water vapour and no carbon dioxide.

"There is huge untapped potential in power-to-gas to convert surplus renewable energy to hydrogen and use our existing gas network infrastructure for long-term, safe, reliable energy storage. In the future, there will be increasing amounts of surplus renewable energy when it is sunny or windy," Mr Frischknecht said.

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**For more
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AquaHydrex was developed out of research undertaken by scientists and engineers at ACES (ARC Centre of Excellence for Electromaterials) - University of Wollongong and Monash University nodes.

AquaHydrex Managing Director Paul Barrett said the funding would bring the Australian developed innovation closer to producing cheap hydrogen at commercial scale. Storing renewable energy directly in the gas network was a logical first route to market for the invention.

“Hydrogen is an outstanding energy carrier, and has the potential to connect the electricity and natural gas grids, significantly increasing the storage capacity available for renewable electricity and helping decarbonize the natural gas grid. This renewable hydrogen also opens up the possibility to exporting renewable energy – which Australia, with its vast renewable resources, is well positioned to exploit.” he said

AGN CEO Ben Wilson has observed that in line with Energy Network Australia’s recently released *Gas 2050* vision, “the volumetric potential of renewable energy stored in the Australian gas infrastructure could be as much as 6 billion household Li-ion batteries. This provides what is for all intents and purposes a ‘bottomless battery’ that is already in place and capable of storing and transporting vast amounts of time-shifted renewable energy.”

For further information, visit arena.gov.au/news

ABOUT ARENA

On behalf of the Australian Government, ARENA is working to accelerate Australia’s shift to affordable and reliable renewable energy. We collaborate with industry and innovators to make renewable energy affordable and reliable for all Australians. Our role is to support the development of local renewable energy technology by helping bring the best ideas to life. We provide funding to researchers, developers and businesses that have demonstrated a pathway to commercialisation for their technologies and projects. Our funding helps find good renewable energy ideas and gets them to market. We build and support networks, and share the knowledge, insights and data from our funded projects to help people and organisations learn from one-another. Our success can be measured by a better energy system, cost effective technologies and an invigorated economy powered by a reliable supply of renewable energy. For more information, visit www.arena.gov.au.

ABOUT AQUAHYDREX

AquaHydrex Pty Ltd has recently developed a new class of water electrolyzer whose capital and operational cost, and high energy-efficiency makes the conversion of (excess renewable) electrons into hydrogen, commercially attractive. AquaHydrex was founded in 2012, based on foundation IP developed at ACES (ARC Centre of Excellence for Electromaterials) - University of Wollongong and Monash University nodes.

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ABOUT AGN

AGN is one of Australia's largest natural gas distribution companies. They own approximately 25,000 kilometres of natural gas distribution networks and 1,100 kilometres of natural gas pipelines, serving over 1.2 million consumers in South Australia, Victoria, Queensland, New South Wales and the Northern Territory. AGN's role in the energy chain is to transport natural gas to customers for retailers.

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