

Is it time you had a hydrogen powered net zero pathway?

Our Innovating 2030 series looks at the future technologies that have the potential to transform the sustainability of energy. Find out more on our website, or get in touch.

centricabusinesssolutions.com

centricabusinesssolutions.UK@centrica.com

Your business' net zero energy pathway to 2030 and beyond will rely on a mixture of technologies. Today technologies like solar on-site generation and energy optimisation will get you started, but what new technologies will you take advantage of tomorrow?

Organisations will need to be flexible in how developing technologies are implemented, while at the same time limiting reliance on future technologies negating the need for action today.

It's therefore important to have an energy partner like Centrica Business Solutions that supports your business in building a roadmap to net zero that utilises today's solutions in conjunction with future technologies.

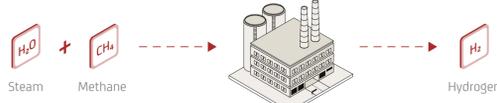
Hydrogen

Hydrogen is one of the most abundant elements in the world and is seen as a versatile, long-term alternative to burning fossil fuels. It produces no carbon emissions at the point of combustion and has the potential to be produced with low or zero emissions.

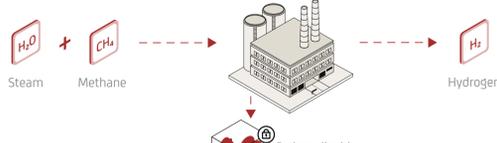
Not low-carbon	Grey H ₂	
Low-carbon	Blue H ₂ Not renewable energy	Green H ₂ Renewable energy

There are 3 main methods by which hydrogen can be generated today.

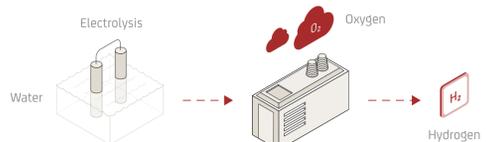
Grey hydrogen is the most available today, created by steam methane reforming and carbon-intensive.



Blue hydrogen is created by steam methane reforming plus carbon capture. However, carbon capture does not yet exist commercially.



Green hydrogen is produced by electrolysis of water. If the energy used to power this process is renewable, then the green hydrogen is emission-free.



Renewable energy



Commercial uses of Hydrogen

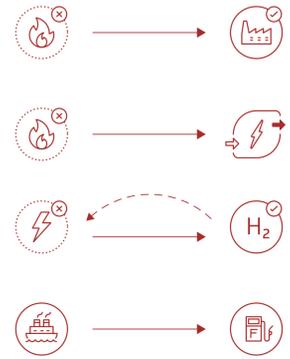
Huge progress has been made in decarbonising power systems, but transport and heat have been left behind. Industrial heat emissions are particularly problematic.

Replacing natural gas for industrial processes that are difficult to electrify due to high-grade heat requirements (e.g. glass, steel, ceramics).

Replacing natural gas for heating, particularly for homes or businesses that are unsuitable for heat pumps, or without significant insulation, potentially in combination with heat pumps.

Providing energy flexibility by converting power to hydrogen during excess supply and then converting back when demand increases.

Powering heavy duty transport, such as shipping and aviation, where the long-range travel plus weight and volume considerations require a high energy density fuel is essential.



Huge potential... just not yet

Our view on the net zero hydrogen opportunity.

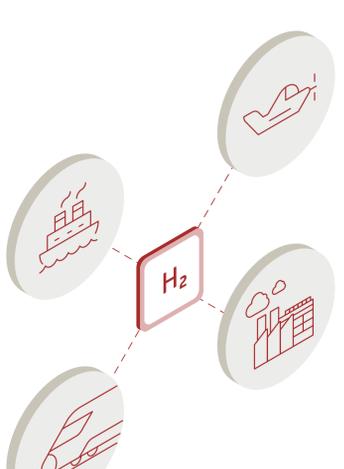
Hydrogen has significant potential to progress the energy transition, although its practical obstacles means that it is unlikely to reach large scale commercial usage in the near-term. Producing carbon-free hydrogen is currently expensive, today's available hydrogen is produced in a way that is carbon intensive, existing infrastructure requires upgrading or replacement and there are additional safety issues compared to using methane or shifting to electrification.

However, it remains that the decarbonised future lies in low carbon 'Blue Hydrogen' and zero carbon 'Green Hydrogen'. Importantly, Hydrogen has the potential to help 'hard to reach' sectors, such as shipping or aviation and high temperature industrial heat.

There is near-term potential for hydrogen clusters to develop around industrial sites where there is demand for hard to decarbonise processes, with organisations taking advantage of shared infrastructure to deliver benefits as wider infrastructure is developed nationally.



Making hydrogen a part of your long-term Energy Pathway planning is therefore key for many businesses to fully decarbonise. But, with uncertainty on timelines and the need for governmental intervention and support, organisations should not view hydrogen as a silver-bullet to deliver their net zero commitments. Implementing a rolling decarbonisation plan that utilises existing technologies, such as solar and heat pumps, but makes space and preparation for developing technologies such as hydrogen is still the best bet to transitioning to a low-carbon future.



Near-term acceleration

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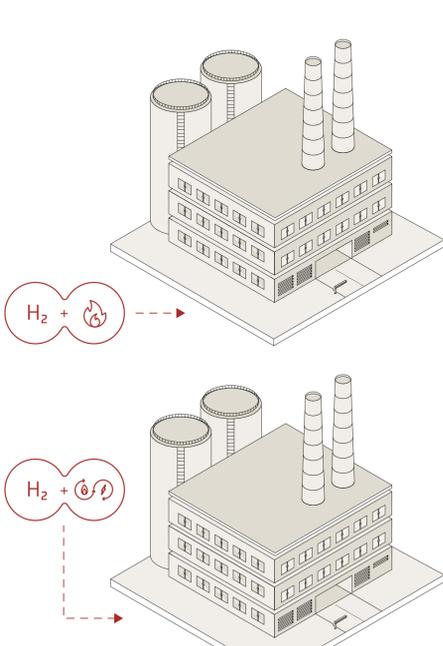
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Long-term energy pathways

While the wide-scale deployment of hydrogen could take time, there are opportunities to capitalise on this versatile technology today and help to accelerate the commercialisation of hydrogen.

Hydrogen blending in natural gas network
Hydrogen can be deployed speedily and cost effectively by blending it with natural gas. This could provide an easy win to decarbonise gas-powered end uses and serve as a market entry point for green or blue hydrogen.

Hydrogen Combined Heat and Power (CHP)
Blending hydrogen with natural gas opens opportunities to use Hydrogen Combined Heat and Power (CHP). This technology is ready now and provides an opportunity to decarbonise CHP and use this proven technology to enable energy system flexibility.



Centrica Business Solutions can support your organisation to build and realise your sustainable energy strategy, tailoring a combination of service technologies, solutions and energy based on your individual business needs.

As well as unlocking immediate emission savings, we can help you to future-proof your sustainability strategy, through our continuous investigation, evaluation and deployment of new energy technologies.

Learn more about how Centrica Business Solutions can help you to become more efficient, resilient and sustainable on your pathway to a low-carbon future.

centricabusinesssolutions.com

centricabusinesssolutions.UK@centrica.com

Centrica Business Solutions research - statistics based on a ten country survey of more than 1,500 energy decision-makers in large organisations.

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INFO-2020-15-UK-EN