

H₂ Aberdeen – a hydrogen economy for the Aberdeen City Region

Aberdeen City Council has a strategic aim to build on its position as a leading energy city now and in the future, by attracting innovative renewable energy developers to the region. Hydrogen is an important opportunity here.

By being a leader in hydrogen technology development and deployment Aberdeen can further enhance its economic competitiveness through inward investment, job creation and industry diversification.

Hydrogen technologies can help the region to maximise the capacity and value of renewable energy by storing electricity generated from intermittent sources such as wind which can then be used as required. This is significant to the North East of Scotland where wind is plentiful but there can be constraints on getting connected to the electricity grid.

Through the strategic hydrogen programme, H₂ Aberdeen, a series of targeted investments have been made to help Aberdeen secure a position as a leading deployment centre for hydrogen technologies.

Aberdeen is home to Europe's largest hydrogen fuel cell bus fleet, with 10 buses operating on the City's roads, supported by the UK's first fully integrated renewable hydrogen production and refuelling station and a dedicated maintenance facility within the city centre. In addition the Council operates two hydrogen diesel hybrid vans. The bus fleet emit only water from their exhaust and operate with reduced noise. The hybrid vans emit 59g/km carbon dioxide (CO₂) under test, which equates to a 70% reduction in CO₂ and 40% reduction in nitrogen oxides (NO_x) compared to a diesel equivalent. Thus both vehicle types are helping to reduce harmful pollutants within the City, such as CO₂, NO_x and particulate matter (PM₁₀). This is important for Aberdeen which has three designated air quality management areas declared due to exceedances of national air quality objectives for nitrogen dioxide (NO₂) and PM₁₀.

Hydrogen presents an economic opportunity for the City Region both in the short - medium term through local supply chain development and in the longer term through diversifying the oil and gas sector. The existing oil and gas skills base is well placed to capitalise on the opportunities presented by the hydrogen sector. The City Council is using its current hydrogen deployment activity to promote nearer term growth opportunities in the region such as working with private sector organisations to maximise local benefits whilst also having an eye on the longer term goal of industry diversification.

The City Region's strategic approach outlines the key actions required over the next 10 years to ensure Aberdeen is a world-class energy hub leading a low carbon economy and at the forefront of hydrogen technology.

H₂ Aberdeen key near term priorities

The H₂ Aberdeen initiative aims to open up greater potential for hydrogen technology in the long term and present a real opportunity for businesses to diversify their activities in the energy sector. The initiative aims to encourage the development of skills, know-how, and expertise in the hydrogen and fuel cells market initially through the deployment of H₂ transport. The key near term priorities are to:

- build a second refuelling station capable of refuelling all hydrogen vehicle types in order to attract early releases of cars. This station will be open to the public;
- work with local partners and passenger car manufacturers to deploy first generation vehicles;
- support the Council fleet as an early adopter for new vehicle types;
- support local fleet operators to become early adopters;
- work with bus operators to ensure a second major bus deployment from 2018;
- work with other regions to seed a Scottish refuelling network linking to the work of the UK H₂ Mobility programme.

Why hydrogen?

The EU, UK and Scottish Governments have set ambitious local policies and targets to reduce greenhouse gas emissions and increase the proportion of low carbon energy sources. Hydrogen will play a key role in helping Scotland to realise its targets.

Hydrogen can be produced through a process called electrolysis. This involves using electricity to split water into hydrogen and oxygen. By using electricity from renewable sources in this process, the hydrogen can be produced with very low carbon emissions.

The hydrogen acts as an energy storage medium, and can be used in a wide range of applications including vehicles, generators or, in principle, anything that requires electrical energy to operate. Hydrogen can also be used in internal combustion engines.

When electricity generated from intermittent renewables, such as wind, cannot be fed into the electricity grid it can be used instead to produce hydrogen and be stored for use as required. This helps to balance supply and demand ensuring renewable energy plays a bigger part in the energy mix.

With the expertise that this energy city has in dealing with high pressure gases, Aberdeen is in a great position to be at the heart of a future hydrogen economy.

Aberdeen is promoting hydrogen technologies as a low carbon alternative to fossil fuels and as an energy vector to facilitate the deployment of renewable energy sources in the area.

For further information see
www.aberdeeninvestlivevisit.co.uk/hydrogen

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