NEWSLETTER

HyTrEc Hydrogen Transport Economy for the North Sea Region

December 2014

The Hydrogen Transport Economy (HyTrEc) project aims to improve access to and advance the adoption of hydrogen as an alternative energy vector across the North Sea Region. The project will identify and address structural impediments constraining development of, access to and adoption of this alternative fuel in urban and rural settings.

The aims of the HyTrEc project are to support

- **regional accessibility strategies**
- **environmentally responsible energy production practices**
- **developing different modes of transport**
- **transnational transport corridors**
- **efficient and effective logistics solutions**
- **sustainable growth solutions.**

Schools Challenge

Aberdeen City Council and Gateshead College carried out hydrogen awareness activities for secondary school pupils in the form of a Schools Hydrogen Challenge. In September 2014 the Aberdeen Schools Hydrogen Challenge was launched. This is a partnership project between Aberdeen City Council, First Group and Arcola Energy to support the roll out of hydrogen buses in Aberdeen.

Pupils from 9 secondary schools across Aberdeen had the opportunity to engage with fuel cells, challenging them to design the most fuel efficient miniature hydrogen powered vehicle.

Through the creative application of science and technology, students develop scientific enquiry skills and knowledge about the role hydrogen will play within a low-carbon society. The Aberdeen Schools Hydrogen Challenge was based on the highly successful London Schools Hydrogen Challenge – delivered to over 1,500 students over the last three years. For more information please go to the following website: http://aberdeenschoolshydrogenchallenge.com/ Due to the success of this event, Aberdeen is planning another similar event in 2015. Gateshead College is running the same challenge, which is also based on the London model.

Gateshead College has developed a new course called 'Hydrogen Awareness' and they have been actively marketing the course at various conferences and exhibition events. Gateshead college has also produced a summary leaflet on the course too. Information has been uploaded onto a virtual platform in order that partners and stakeholders can access units of the course to trial, and feedback information on the course material. Please go to http://www.hytrec.eu.for further details.

The North East Hydrogen Strategy document (funded through HyTrEc) was launched on 21 October, 2014. To access the executive summary please go to: http://www.hytrec.eu.

WaterstofNet proud owner of a Hyundai IX35 Fuel cell electric vehicle

After Colruyt Group, WaterstofNet is now also the proud owner of a Hyundai ix 35 hydrogen car. The car, which is powered by a fuel cell, is zero-emission, has a range of over 500 km and is refuelled within 5 minutes. Refuelling will be done at their own hydrogen refuelling stations at the logistics site of Colruyt Group in Halle near Brussels and at the Automotive Campus in Helmond, near Eindhoven. Colleagues from WaterstofNet plan to drive the car from the Netherlands to the next HyTrEc partners meeting in Denmark in January 2015.

- Hyundai is the first large scale producer of hydrogen vehicles who will be launching around 1000 onto the market in 2015.

Elfl on the way for HyTrEc

In the past months the European Institute for Innovation represented HyTrEc at various events, fairs and open forums. The following is a brief summary of the events where Elfl participated:

German-French search for the Business Case, Berlin On 24 June 2014 around a 180 business leaders and politicians discussed the "Dreams and Reality" at the French Embassy in Berlin. A currently much debated issue in the energy industry is whether and - if so - how hydrogen can make a contribution to energy storage in the energy revolution. This topic moves not only in the minds of Germany; the French are thinking about such an industry model, too. The event mainly focused on the question whether there is a business model for hydrogen storage in the wake of the energy revolution, or not.

German Hydrogen Congress: Hydrogen - storage and fuel for the energy turnaround

Berlin Around 100 experts had gathered on May 22nd and 23rd 2014 in the North Rhine-Westphalia-State (NRW) representation in Berlin to participate at the 6th German Hydrogen Congress.
Focus was on the role of hydrogen as a large-scale storage for renewable generated electricity and as fuel for zero-emission mobility. The Energy Agency NRW, the German Hydrogen and Fuel Cell Association (DWV) and the National Organisation for Hydrogen and Fuel Cell Technology (NOW) invited, as joint organiser, prominent speakers from academia, industry and politics to analyse the role of hydrogen in the network integration and storage of renewable energies as well as to illustrate and discuss its use in the mobility and stationary energy supply.

H2Expo - The opening day was marked by the German energy turnaround, Hamburg As part of the Wind Energy Trade Fair, Hamburg, the premiere of the four-day trade fair H2Expo hydrogen was celebrated on Tuesday, 23 September 2014. In addition to innovative energy storage solutions, the entire process chain of hydrogen - from production through to subcontractors and industry applications were presented.
The main focus of the exhibition was on innovative solutions in the development of renewable energies. The Wind Energy Hamburg exhibitor Enercon has many years of experience with storage technologies for renewable energies. At the exhibition stand of Enercon were, inter alia, island systems with wind turbines, batteries, flywheels, and hydrogen generation and storage issued. Together with partners Enercon working on several pilot projects for energy storage, to which the company contributes the wind turbines as well as internally developed power converters, control and system integration technology. An important example of such is their pilot project - "Feldheim". Their project includes a 10 MW power storage system of lithium-ion batteries, which is being built jointly with its partner "energy source" in the energy self-sufficient village Feldheim in Brandenburg, Germany. The stored energy can be sold on the utility market and energy fed into

the local power grid. Furthermore the H2Expo provided a storage tour and lectures. Presentations were held to illustrate some approaches for the integration of renewable energy in the market and offered solutions for storage and portability.

Experts of E.ON Energy Storage Innovation Centre, Siemens AG, Industry Solutions, German Energy Agency (dena) and others discussed the topics "storage for the energy turnaround" and "The German 'energy turnaround' - an international blueprint". A further point of the programme was the H2Expo Ride & Drive fleet. The visitors received first-hand insight into electric mobility, hydrogen and fuel cell technology. The visitors were also able to test drive the vehicles with alternative drive systems from the Ride & Drive fleet on a route to the fairgrounds. Vehicles included the Mercedes-Benz F-CELL, the Honda FCX Clarity and Toyota FCHV-ad. The Toyota FCV prototype was demonstrated on the Toyota Motor Europe stand.

Aberdeen Hydrogen Strategy & Model In July 2014, Element Energy was awarded a contract to develop the ***"Aberdeen Hydrogen Strategy"*** which recommends a series of near and medium term activities that will maximise the chances of Aberdeen effectively leveraging its existing investments, cementing its position as a leader in a low carbon economy and achieving its overall aims.

The ***"Aberdeen Hydrogen Strategy"*** assessed both the supply and demand side of the hydrogen transport supply chain within Aberdeen and the surrounding region. Substantial analysis identified a series of opportunities for bringing online new cost-effective, 'green' hydrogen production pathways in the region and linking them to an expanding refuelling infrastructure. In parallel, subsequent work involved consulting with a wide range of potential hydrogen vehicle end-users to understand the regional appetite for adopting the emerging technologies on offer.

As part of this work a detailed economic model has been developed to allow users to understand the economics of small hydrogen refuelling station network. The model produces cash flows for four hydrogen demand scenarios based on vehicle end-user and infrastructure characteristics. The model was developed to be adaptable to each partner's scenarios within their region.

The facility will have three electrolysers to produce the hydrogen on site, which will then be compressed to 500bar, and stored ready for dispensing when required.

HyTrEc Final Conference – Save the Date To mark the end of this project and to celebrate its achievements there will be a HyTrEc conference to be held in Aberdeen on 20-21 May 2015. Further information will be available over the coming months.

HyTrEc partners include:

- Aberdeen City Council
- European Institute for Innovation
- Narvik University College
- WaterstofNet
- Gateshead College
- Green Network
- Hydrogen Sweden
- SP Technical Research Institute of Sweden.

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