

Air Liquide inaugurates a pilot site for the production of carbon-free hydrogen in Denmark

Today, in Hobro, Denmark, Air Liquide is inaugurating HyBalance, a pilot site for the production of carbon-free hydrogen, in the presence of the project's partners. This facility uses electrolysis technology and allows to balance the electricity grid and store surplus electricity in the form of hydrogen that will be used in industry and transportation. This project, initiated in 2016, is led by Air Liquide with funding from the European public-private partnership Fuel Cells and Hydrogen Joint Undertaking (FCH JU) and the support of the Danish EUDP* program.

As part of this project, Air Liquide developed, built, and is operating **the facility that produces hydrogen from water electrolysis** as well as the filling center for its customers delivered by trailers. The electrolyser, with **a capacity of 1.2 MW**, enables the production of around **500 kg of hydrogen a day without releasing CO₂**. Besides industrial customers, the hydrogen that is produced is used to supply the network of five hydrogen stations installed and operated by the Copenhagen Hydrogen Network (CHN), a subsidiary of Air Liquide in Denmark.

Denmark is a pioneer in the integration of renewable energies into the national energy mix, with 40% of the country's electricity produced from wind turbines. By compensating for renewable energy intermittency, hydrogen offers **a solution for storing surplus electricity to meet the challenges posed by the energy transition**.

François Darchis, Senior Vice-President and member of the Air Liquide Group Executive Committee, supervising Innovation, stated: **"Hydrogen energy has a tremendous potential to support energy transition. Air Liquide is proud to be part of the HyBalance project. It also contributes to the Group's commitment to develop technological solutions towards lower greenhouse gas emissions in order to fight climate change."**

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The HyBalance project

Under the coordination of Air Liquide, the HyBalance project brings together a group of partners - Hydrogenics, LBST, Neas Energy, and Hydrogen Valley - for the construction of one of the largest carbon-free hydrogen production units in Europe. The project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under grant agreement No. 671384. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation program. The HyBalance project has furthermore received funding from the Danish EUDP* programme (Energy Technology Development and Demonstration Programme).

For more information: <http://hybalance.eu>

Hydrogen, a clean energy

Hydrogen offers a number of benefits numerous advantages for clean transportation. Used in a fuel cell, it combines with the oxygen in the atmosphere to produce electricity, with water as the only byproduct. It does not generate any pollution at its point of use: zero greenhouse gases, zero particles, and zero noise. Hydrogen brings a concrete response to the challenges of sustainable mobility and local pollution in urban areas. It takes less than five minutes to recharge hydrogen-powered electric vehicles for a driving range of around 600 kilometers.

Air Liquide's Blue Hydrogen commitment

Blue Hydrogen® is an Air Liquide program whose goal is to gradually decarbonize its production of hydrogen dedicated to energy applications. In practical terms, Air Liquide has made a commitment to produce at least 50% of the hydrogen necessary for these applications through carbon-free processes by 2020 by combining:

- The use of renewable energies, water electrolysis, and biogas reforming
- The use of technologies for the capture and upgrading of carbon emitted during the process of producing hydrogen from natural gas.

Even when it is produced from natural gas, hydrogen is a virtuous energy: for equal distance traveled, hydrogen cars allow to reduce GHG emissions by 20% compared with internal combustion vehicles and do not produce any fine particles.

The world leader in gases, technologies and services for Industry and Health, Air Liquide is present in 80 countries with approximately 65,000 employees and serves more than 3.5 million customers and patients. Oxygen, nitrogen and hydrogen are essential small molecules for life, matter and energy. They embody Air Liquide's scientific territory and have been at the core of the company's activities since its creation in 1902.

Air Liquide's ambition is to lead its industry, deliver long term performance and contribute to sustainability. The company's customer-centric transformation strategy aims at profitable growth over the long term. It relies on operational excellence, selective investments, open innovation and a network organization implemented by the Group worldwide. Through the commitment and inventiveness of its people, Air Liquide leverages energy and environment transition, changes in healthcare and digitization, and delivers greater value to all its stakeholders.

Air Liquide's revenue amounted to 20.3 billion euros in 2017 and its solutions that protect life and the environment represented more than 40% of sales. Air Liquide is listed on the Euronext Paris stock exchange (compartment A) and belongs to the CAC 40, EURO STOXX 50 and FTSE4Good indexes.