

Clean and efficient: Air Liquide hydrogen solutions at Hannover Messe 2015

Air Liquide is driving forward the expansion of the hydrogen infrastructure for mobility uses worldwide. The aim is to enable a comprehensive use of hydrogen as an energy and to facilitate the upcoming launch of the first fuel cell-powered series production vehicles. Air Liquide is also focusing on hydrogen in the Material Handling sector, and will be presenting a hydrogen fuel cell system specifically developed for forklift trucks at the Hannover Fair (13 - 17 April 2015).

Air Liquide has decades of expertise across the entire hydrogen energy chain – from production, distribution and storage to a wide range of applications – and is now one of the drivers for the **market penetration of hydrogen as an energy**. “Right now it is crucial to create ideal conditions for ensuring that the launch of the first series production vehicles will be a success – in Germany and in the rest of the world,” said Antoine Mazas, Managing Director AIR LIQUIDE Advanced Technologies GmbH.

A member of the **Clean Energy Partnership (CEP)** since 2011, Air Liquide operates North Rhine-Westphalia’s first public hydrogen refuelling station in Düsseldorf and is currently building ten additional stations to contribute to the total of 50 H₂ refuelling stations the CEP partners committed to establish by the end of 2016.

As a partner in the **H2 Mobility Deutschland joint venture** newly formed at the start of 2015, Air Liquide is working with Daimler, Linde, OMV, Shell and Total to build a nationwide hydrogen infrastructure in Germany. The public refuelling station network in Germany is to be gradually increased from currently 17 to up to 400 stations by 2023. “Hydrogen as a fuel is a new sales channel that we will do everything in our power to push forward. It is important to always consider the entire energy system. Hydrogen fuel must be optimally integrated into the H₂ energy chain. This is the only way to ensure that fuel cell propulsion will convince people not only in terms of sustainability and range, but also as a business case,” said Mazas.

Building a global H₂ infrastructure

Air Liquide is committed to the **development of hydrogen refuelling stations** not only in Germany, but also around the world. In the US, the Group has announced a partnership with Toyota to support the launch of the hydrogen fuel cell vehicle “Mirai” in the US market. The plan is to initially build a network of 12 refuelling stations in the north-eastern United States. This is to be further expanded as needed. In Japan, Air Liquide has already inaugurated in January 2015 its first refuelling stations in Nagoya and Toyota City. In Europe, too, Air Liquide is strongly committed to the expansion of the hydrogen infrastructure: In Denmark, the Group is currently building four hydrogen stations through its affiliate Copenhagen Hydrogen Network (CHN) – two in Copenhagen, one in Aalborg and one in Vejle. Air Liquide’s first refuelling station in the Netherlands was built in Rotterdam in 2014.

Material Handling, powered by fuel cells

Increased environmental requirements also present the industry with challenges. In Hannover, Air Liquide will present the **GenDrive® fuel cell solution** by HyPulsion, a joint venture between Air Liquide and the US hydrogen fuel cell systems manufacturer Plug Power, as an alternative to battery-powered industrial trucks. Its advantages over the battery drive are obvious: Fuel cells deliver a continuous long-term performance, even in cold-storage rooms with temperatures at -33°C. It takes just a few minutes to refill the forklift truck with gaseous hydrogen – and long load times and time-consuming battery changes become obsolete. Fuel cell propulsion scores high when it comes to sustainability, too. The only ‘waste products’ produced by a GenDrive® fuel cell unit are heat and water. In other words: zero emissions, and no costs for transporting and storing toxic substances.

Air Liquide at the **Hannover Fair / Hannover Messe** (13 -17 April 2015): **Hall 27** (Group Exhibit Hydrogen + Fuel Cells + Batteries), **Booth B57**.

Event alert:

On Wednesday, 15 Apr 2015, 10:40-11:00 a.m. says Dr Antoine Mazas, Managing AIR LIQUIDE Advanced Technologies GmbH, in the public forum of the Group Exhibit Hydrogen + Fuel Cells + Batteries (Hall 27, Booth C66) to current national and international developments in hydrogen mobility:

'National and international hydrogen mobility developments', Dr Antoine Mazas, Managing Director Air Liquide Advanced Technologies GmbH

CONTACT**AIR LIQUIDE Deutschland GmbH**

Andrea Feige

Corporate Communications Officer

Phone: 0211 6699-264

andrea.feige@airliquide.com

World leader in gases, technologies and services for Industry and Health, Air Liquide is present in 80 countries with more than 50,000 employees and serves more than 2 million customers and patients. Oxygen, nitrogen and hydrogen have been at the core of the company's activities since its creation in 1902. Air Liquide's ambition is to be the leader in its industry, delivering long-term performance and acting responsibly.

Air Liquide ideas create value over the long term. At the core of the company's development are the commitment and constant inventiveness of its people.

Air Liquide anticipates the challenges of its markets, invests locally and globally, and delivers high-quality solutions to its customers and patients, and the scientific community.

The company relies on competitiveness in its operations, targeted investments in growing markets and innovation to deliver profitable growth over the long-term.

Air Liquide's revenues amounted to € 15.4 billion in 2014, and its solutions that protect life and the environment represented more than 40% of sales. Air Liquide is listed on the Paris Euronext stock exchange (compartment A) and is a member of the CAC 40 and Dow Jones Euro Stoxx 50 indexes.