Linde AG: Leading industrial companies agree on an action plan for the construction of a hydrogen refuelling network in Germany

Source:
Initiative ‘H2 Mobility’

- Hydrogen refuelling network to grow to about 400 filling stations by 2023
- Precondition for the market success of fuel cell-powered electric vehicles initiated
- Overall investment of around EUR 350 m planned
- Development plan represents the benchmark at international level

MUNICH & STUTTGART, Germany—The six partners in the ‘H2 Mobility’ initiative – Air Liquide, Daimler, Linde, OMV, Shell and Total – have set up upon a specific action plan for the construction of a nationwide hydrogen refuelling network for fuel cell-powered electric vehicles. By the year 2023 the current network of 15 filling stations in Germany’s public hydrogen infrastructure shall be expanded to about 400 H2 filling stations. As a first step the deployment of 100 hydrogen stations in Germany over the next four years is intended. This would ensure a need-related supply for fuel cell-powered electric vehicles to be introduced into the market in the next years. An agreement in principle has been signed by representatives of all the partners involved.

In addition to plans for a nationwide filling station network, the agreement includes the principles for the procurement and distribution of the necessary hydrogen and a request for support to the German Federal Government. Following the foundation of a joint venture (subject to necessary regulatory approvals), gradual expansion of the national filling station network will commence next year. This means that an H2 supply suitable for everyday use shall be created not only for densely populated areas and main traffic arteries, but also for rural areas. The objective is to offer an H2 station at least every 90 kilometres of motorway between densely populated areas. According to this plan, there will be at least 10 hydrogen refuelling stations available in each metropolitan area from 2023. Thus zero tailpipe-emission H2 mobility is becoming increasingly attractive for customers. The ‘H2 Mobility’ initiative expects that a total investment of around EUR 350 m will be required for this future-oriented infrastructure project.

The launch of fuel cell-powered production vehicles on the German market has been announced by first manufacturers for 2015. In addition to attractive procurement and operating costs for the vehicles, a need-related number of H2 filling stations is one of
the major preconditions for market success. Accordingly, the planned ‘H2 Mobility’ joint venture will work closely with the automobile industry.

Particularly in view of the high costs of such innovative technology, advances in hydrogen and fuel cell technology are at least as important. Continuation of the innovation and research activities in this field which are envisaged in the mobility and fuel strategy of the German Federal Government plays a decisive role in this respect. In particular the continuation of the ‘National Innovation Programme for Hydrogen and Fuel Cell Technology’ (NIP) represents the necessary support for the market establishment.

Fuel cell-powered electric vehicles can make a considerable contribution to establishing Germany as the lead market for sustainable mobility solutions and efficient technologies. This is because the great advantage of this drive technology lies in the significant reduction of CO2 emissions. This innovative technology also offers great potential for strengthening Germany as an industrial location. The challenges associated with such a system change aimed at a zero-emission transport sector were already addressed at a very early stage with the formation of the inter-industry ‘H2 Mobility’ initiative in Berlin in 2009.

The Clean Energy Partnership (CEP) with its members* and others** welcome the infrastructure development. With the support of the Federal Government the CEP tests fuel cell electric vehicles and their refuelling. The interface to the Federal Government in both cases is the National Organization for Hydrogen and Fuel Cell Technology (NOW).

* Members of the CEP are Air Liquide, BMW, Daimler, EnBW, Ford, GM/Opel, Hamburger Hochbahn, Honda, Hyundai, Linde, Shell, Siemens, Total, Toyota, Vattenfall Europe and Volkswagen.

** Nissan and Intelligent Energy

Statements of the partners involved:

Professor Dr Wolfgang Reitzle, Chief Executive Officer of Linde AG: ‘Linde has been a pioneer in the further development of hydrogen technology for many years. Especially with respect to the series production of hydrogen refuelling stations, we have achieved major advances over the last few years. The time is now right to roll out this environmentally friendly technology on a nationwide basis.’

Professor Dr Thomas Weber, Member of the Board of Management of Daimler AG, Group Research & Mercedes-Benz Cars Development: ‘Hydrogen is the most common element in the Universe. However, filling stations for this environmentally friendly alternative fuel are still scarce. The ‘H2 Mobility’ initiative wants to change this. By 2023 there should be more hydrogen filling stations in Germany, than there are conventional
petrol stations along the Autobahns today. With this, we create step by step a comprehensive infrastructure for the everyday use of fuel cell technology.’

Thomas Pfützenreuter, Managing Director of AIR LIQUIDE Deutschland GmbH: ‘The signature of this agreement is a decisive step towards the construction of a network of hydrogen stations in Germany. Air Liquide is proud to take an active part in the German ‘H2 Mobility’ initiative which aims to substantially contribute to the national ambitious objectives for electro-mobility. As an expert of the entire hydrogen energy chain including production and hydrogen filling stations, Air Liquide is actively involved in allowing the widespread use of hydrogen as a clean energy source. Hydrogen energy is an innovative solution that offers a response in the short-term to the challenges of sustainable mobility thus contributing to the preservation of the environment.’

Dr Gerhard Roiss, Chairman of the Executive Board and CEO of OMV AG: ‘Achieving the EU’s Energy Roadmap goals will only be possible with innovative new technologies. Hydrogen is set to also play a key role in the way we get around in the future. Setting up the infrastructure for hydrogen filling stations is our contribution to a future of emission-free motoring.’

Peter Blauwhoff, Chief Executive Officer, German Shell Holding: ‘Shell already operates a network of hydrogen filling stations based on the very latest technology in Germany and California – including the world’s largest H2 filling station in Berlin. Following the foundation of the joint venture, Shell will play a significant role in the development of the future H2 retail station network in Germany. Hydrogen is an important component for the mobility of the future.’

Hans-Christian Gützkow, Chairman of TOTAL Germany: ‘Out of the 15 hydrogen refuelling stations existing in Germany today, we already run five – another TOTAL multi-energy-station will start running nearby Berlin’s future airport until the end of the year. We will continue contributing to the infrastructure’s expansion! TOTAL reinforces its pioneering role whilst building up the hydrogen network in Germany and in terms of research when it comes to produce green hydrogen from renewable sources!’

The Linde Group is a world-leading gases and engineering company with around 62,000 employees in more than 100 countries worldwide. In the 2012 financial year, Linde generated revenue of EUR 15.280 bn. The strategy of the Group is geared towards long-term profitable growth and focuses on the expansion of its international business with forward-looking products and services. Linde acts responsibly towards its shareholders, business partners, employees, society and the environment – in every one of its business areas, regions and locations across the globe. The company is committed to technologies and products that unite the goals of customer value and sustainable development.
Under the ‘Clean Technology by Linde’ label, the company offers a wide range of products and technologies that help to render renewable energy sources financially viable, and significantly slow down the depletion of fossil resources or reduce the level of CO2 emitted. This ranges from specialty gases for solar module manufacturing, industrial-scale CO2 separation and application technologies to alternative fuels and energy carriers such as liquefied natural gas (LNG) and hydrogen.