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China: strengthening in the hydrogen market

press release



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Air Liquide in China

operates approximately 60 plants and employs 4,000 people today, with a presence in the key coastal industrial areas, and is expanding into the center, west, south and northeast.

Air Liquide has also **strong Engineering and Construction capabilities** based in Hangzhou and Shanghai.

Air Liquide returned to China in the 1970s to supply Air Separation Units and restarted gas operations in 1990.

The Large Industries Business Line

offers gas and **energy solutions** that improve process efficiency and help achieve greater respect for the environment, mainly in the refining and natural gas, chemicals, metals and energy markets. **2011 revenues were €4,585 million.**

Air Liquide has laid the “first stone” of a new hydrogen plant following the **signature of a long-term agreement with Zhejiang Huaфон Spandex Co., Ltd (Huaфон) to supply hydrogen for its 120,000 tonnes per year cyclohexanone project** located in Liaoyang Aromatics and Fine Chemical Park, Liaoyang city, Liaoning province, China. Cyclohexanone is a key ingredient in the creation of nylon.

Under the terms of the agreement, Air Liquide will invest in a new **Steam Methane Reformer (SMR) unit** that will **supply 13,000 Nm³/hour of hydrogen as well as steam** to Huaфон via pipelines. This new unit, which is expected to be commissioned by the **end of 2013**, uses Lurgi’s latest technologies providing high reliability, world class safety and energy efficiency and will be designed and manufactured by the Air Liquide Engineering and Construction team based in Shanghai.

This hydrogen plant will be the **third largest operated by Air Liquide and its subsidiaries in China**. In January this year, a large hydrogen unit was started mainly to supply Bayer MaterialScience in Shanghai.

Hydrogen is a steadily growing market. It is **used today in many industrial sectors**, from refining for the treatment of heavy crude oil to produce sulphur-free fuels that comply with environmental regulations to chemicals and petrochemicals for the production of a variety of everyday products, including polyurethanes (foams) for construction materials, polycarbonates for DVDs, and nylons for textiles. In China, Air Liquide benefits from **the remarkable local experience of its Engineering and Construction team in highly energy efficient hydrogen technologies as well as from the Group’s worldwide capacity in the provision of safe and reliable hydrogen supply.**

Zhejiang Huaфон Spandex Co., Ltd is a listed company of the Huaфон Group. Founded in 1991, the Huaфон Group is a privately owned company with over 6,000 employees and more than 12 billion RMB total assets. It has become the world’s largest manufacturer of polyurethanes resins for shoes and leather and the largest domestic manufacturer of spandex.

Mr. You Xiaoping, President of the Huaфон Group, said, **“We are delighted to enter into a long term relationship with Air Liquide. Thanks to Air Liquide’s industrial gas solutions ensuring increased efficiency and reliability, we can better focus on our core business. We look forward to a close partnership with Air Liquide and hope to benefit from its global reputation for excellence in engineering and operational expertise”.**

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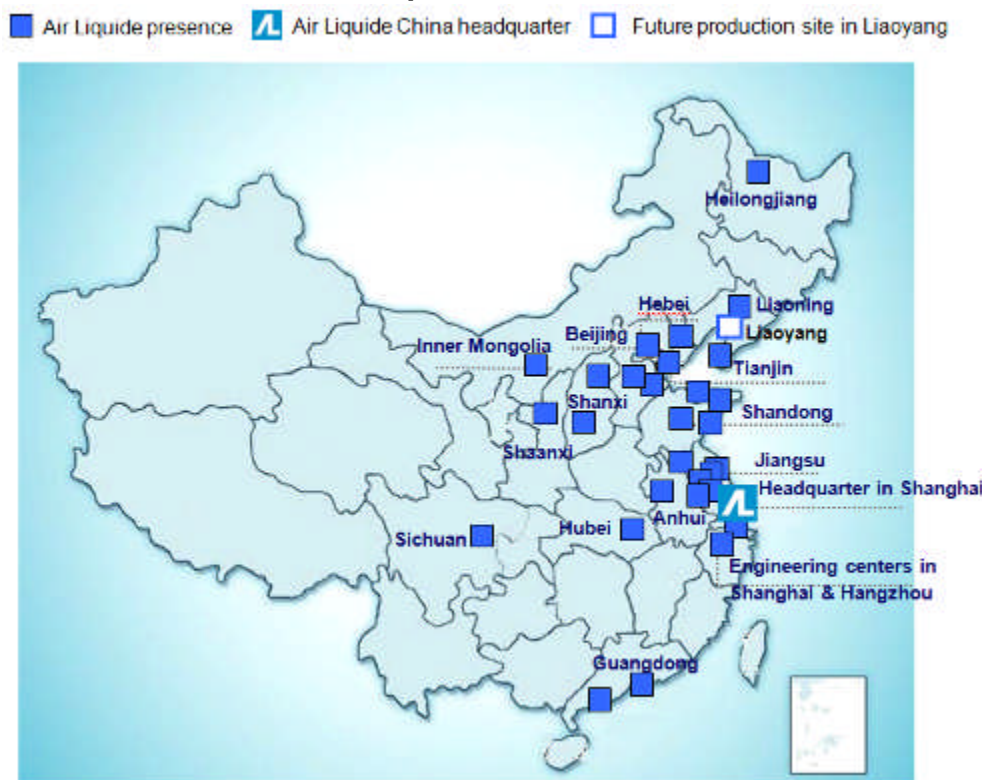
Hydrogen for the Air Liquide Group

Worldwide, Air Liquide operates **41 large hydrogen production units**. The desulfurization of hydrocarbons to produce sulfur-free fuels is one of the main applications for hydrogen.

In 2011, the hydrogen Air Liquide supplied to refineries throughout the world prevented about **760,000 tonnes of sulphur oxide** emissions from being discharged into the atmosphere.

Jean-Marc de Royere, Asia Pacific Vice President and member of the Air Liquide Executive Committee, commented: ***“We are very honored to have been selected by Huaferon to supply its production site in Liaoyang. This new contract confirms our ability to deliver highly reliable and efficient gas solutions not only in air gases but also in hydrogen to leading Chinese chemical companies. It also illustrates Air Liquide’s commitment to supporting the industrial development of the Liaoning province and reinforcing our position in northeast China.”***

Air Liquide in China



Air Liquide is the world leader in gases for industry, health and the environment, and is present in **80 countries** with **46,200 employees**. Oxygen, nitrogen, hydrogen and rare gases have been at the core of Air Liquide’s activities since its creation in 1902. Using these molecules, Air Liquide continuously reinvents its business, anticipating the needs of current and future markets. The Group innovates to enable progress, to achieve dynamic growth and a consistent performance.

Innovative technologies that curb polluting emissions, lower industry’s energy use, recover and reuse natural resources or develop the energies of tomorrow, such as hydrogen, biofuels or photovoltaic energy... Oxygen for hospitals, home healthcare, fighting nosocomial infections... Air Liquide combines many products and technologies to develop valuable applications and services not only for its customers but also for society.

A partner for the long term, Air Liquide relies on employee commitment, customer trust and shareholder support to pursue its vision of sustainable, competitive growth. The **diversity** of Air Liquide’s teams, businesses, markets and geographic presence provides a solid and sustainable base for its development and strengthens its ability to push back its own limits, conquer new territories and build its future.

Air Liquide explores the best that air can offer to preserve life, staying true to its sustainable development approach. In 2011, the Group’s revenues amounted to **€14.5 billion**, of which more than 80% were generated outside France. 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.