



Largest European nitrogen production unit for German photovoltaic industry

press release

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The use of gases in the photovoltaic industry

Gases are used at all stages of solar cells manufacturing process:

- to produce Poly-Silicium: high-volume of nitrogen (N₂) and hydrogen (H₂)
- to produce Si wafers: large quantities of nitrogen, argon (Ar) and helium (He)
- to produce crystalline-Si cells: carrier gas (N₂) & specialty gases such as silane (SiH₄), ammonia (NH₃)
- to produce Si Thin Film cells: carrier gases (N₂, H₂), specialty gases (SiH₄, NF₃, dopant mixtures) and coating precursor materials.

Leading solar photovoltaic companies in Germany are increasingly focussing on the so-called thin film technologies for the production of solar cells. Due to their lower usage of substrate materials, these innovative approaches are helping reduce production costs.

Since 2005, Air Liquide, the global leader in gases for the solar photovoltaic industry, has been delivering the necessary production gases, as well as related full services, to all customers located in Thalheim near Leipzig (Germany), the largest "Solar Valley" in Europe .

Air Liquide will now build a large dedicated on-site production unit – due to start up in 2010 to serve all customers in this high technology park. The particularly energy efficient unit, built to accommodate increasing demand from all solar cell manufacturers located in Thalheim, will ultimately produce more than **38,000 tons per year of nitrogen** and represents an investment of around **€10 million**.

It will notably ensure the nitrogen supply for **Calyxo GmbH**, a subsidiary of **Q-Cells**, one of the **leaders in photovoltaics worldwide**, as well as for a subsidiary of **Sunfilm AG** (former Sontor GmbH), and for **Q-Cells AG**.

Guy Salzgeber, Vice-President European Industrial Business and member of the Air Liquide Executive Committee, commented: ***"By combining the needs of the major companies and investing in a single large unit, we are pleased of being able to offer a very energy effective and flexible solution for the nitrogen consumption of customers in Thalheim.***

These new long term agreements with PV market leaders and the new unit to come confirm the success of our global solar offer as well as illustrate our commitment to this fast changing industry and specifically to this major site for the development of the photovoltaic industry in Germany. The photovoltaic business is at the crossroads of Energy and the Environment, two growth drivers for the Air Liquide Group".

Air Liquide is the world leader in gases for industry, health and the environment, and is present in over **75 countries** with **43,000 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.

Air Liquide combines many products and technologies to develop valuable applications and services not only for its customers but also for society. **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, homecare, fighting nosocomial infections...

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 2008, the Group's revenues amounted to **€13.1 billion**, of which almost 80% were earned 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.