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## 15 additional contracts signed with solar photovoltaic industry leaders

*press release*

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### **Air Liquide Electronics**

With over 3,000 employees and €1,177 million revenue in 2010, Air Liquide Electronics has activities in ultra-pure and specialty gases, new molecules, related equipment, and customized services.

The Electronics division management is based in Asia to enhance its proximity to the semiconductor, TFT-LCD and PV markets.

New installations of solar photovoltaic panels reached 17GWp in 2010, **doubling the amount installed the previous year**. Leading solar panel manufacturers around the world and in Asia in particular, are therefore continuing to add significant new production capacities to cope with such growth, while pursuing vertical integration to lower their costs. Photovoltaic installations are expected to contribute approximately **5% of the worldwide electricity generation by 2020**, providing greenhouse free energy to nearly 1 billion people.

In this context, Air Liquide reinforced its **leading** position in the supply of gases and precursors to the solar photovoltaic manufacturers by signing **15 new long-term contracts** with photovoltaic industry leaders in **China, Taiwan, Japan, and Germany**.

In **China** in particular, Air Liquide strengthened its position **with 6 out of 7 c-Si solar cells market leaders**, by signing numerous new supply agreements.

In Wuxi, Air Liquide will supply gases under contracts to the new manufacturing facility of the world leading supplier of c-Si solar cells & modules manufacturer.

In Hefei, Air Liquide will supply gases under new long-term contracts to the world leading supplier of c-Si wafers, now investing in a large-scale wafer & cells solar campus; and to a major Si wafer manufacturer now investing in solar cells.

The installed capacity of these new fabs will reach 6,5GWp by the end of 2011.

In **Taiwan**, Air Liquide signed long-term supply contracts with **3 out of 4 market leaders for** their new campus located in Jhunan Science Park and in Tainan, having a new installed capacity of 3,5GWp by the end of 2011.

In **Japan**, Air Liquide signed a supply agreement for the new fab of a leading c-Si industry solar cells maker.

In **Europe** finally, the Group has been awarded to supply a major CIGS manufacturer in Germany.

These latest contracts make the Group **the supplier of over 150 photovoltaic customers worldwide**, with an overall manufacturing **capacity well above 20GWp per year**.

**Francisco Martins**, Vice-President World Business Line Electronics of the Air Liquide Group, commented: ***“Air Liquide continues to demonstrate the value of its offer and credibility with PV leaders. These numerous successes were facilitated by our global PV experience, strong strategic account***

## The use of gases in the photovoltaic industry

Gases are used at all stages of the solar cell manufacturing process:

- to produce Poly-Silicium: high-volume of nitrogen (N<sub>2</sub>) and hydrogen (H<sub>2</sub>)
- to produce Si wafers: large quantities of nitrogen, argon (Ar) and helium (He)
- to produce crystalline-Si cells: carrier gas (N<sub>2</sub>) and specialty gases such as silane (SiH<sub>4</sub>), ammonia (NH<sub>3</sub>), doping gases/chemicals (POCl<sub>3</sub>), passivation and coating precursor materials
- to produce Si Thin Film cells: carrier gases (N<sub>2</sub>, H<sub>2</sub>), specialty gases (SiH<sub>4</sub>, NF<sub>3</sub>/F<sub>2</sub>, dopant mixtures), inter-layer and coating precursor materials.

**management and our innovative technology solutions enabling lower costs/Wp. The photovoltaic activity is at the crossroads of Energy and the Environment and requires High Tech solutions, three 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 **80 countries** with **43,600 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, homecare, 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 2010, the Group's revenues amounted to **€13.5 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.