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Italy: major contract with 3Sun, a Solar Joint Venture by ENEL Green Power-Sharp-STMicroelectronics

press release

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Air Liquide Electronics

With over 3,000 employees and €872 million revenue in 2009, 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 Tokyo to ensure proximity to the semiconductor, TFT-LCD and PV markets in Asia.

Air Liquide in Italy

Present in the country since 1909, Air Liquide Italy employs 1,600 people and is the market leader. 100,000 customers are supplied by Air Liquide throughout the country. Besides Electronics, its activities include steel, chemical and petrochemical industries in major industrial areas, different industrial processes (metals, glass, food, laboratories etc.) as well as medical gases and services to hospitals and homecare patients.

Worldwide solar-powered installations are expected to surpass 13,000 MWp in 2010, driven in large part by European market demand. In Southern Europe, this demand in particular should rapidly reach 2,000 MWp per year, with over 20% of this electricity coming from solar power plants and the rest from roof top. Driven by this growing market, **power companies** are now considering entering the promising **solar farms market** through joint ventures with thin film solar panel manufacturers.

Air Liquide has just signed a major long-term contract with 3Sun to become the **sole supplier of gases and services** to the new company.

3Sun, a manufacturing joint venture using Sharp advanced Triple-junction technology to produce solar panels in Sicily, Italy has recently been established by **Enel Green Power, Sharp Corporation and STMicroelectronics NV**.

The Catania-based factory will start operations in 2011, with an initial capacity of 160 MWp per year. Yearly output is expected to reach 480 MWp in the next few years. **The 3Sun factory will be the second largest Si thin film solar factory in the world** after Sharp facility in Japan, and its output will be used by ENEL Green Power and Sharp to serve a large market that extends to Europe, Middle East and Africa.

This agreement covers the supply of **very large volumes of specialty gases**, the **pipeline supply of carrier gases** and the provision of **all related services**. Air Liquide will build the entire **gas distribution and gas abatement networks** on a turnkey basis. In order to meet these needs, **Air Liquide will invest in additional hydrogen production capabilities in Sicily and also in the specialty gases supply chain**.

Air Liquide, which has been present in the photovoltaic Italian market from the beginning by serving **key alternative energy customers**, becomes with this contract **the major player of the country** in this sector.

Augustin de Roubin, Vice-President Southern and Eastern Europe of the Air Liquide Group and member of the Executive Committee, commented: ***"This important contract further strengthens our position in Italy which is already one of the main European countries for Air Liquide."***

We are honored to be awarded this contract by 3Sun, which reinforces our leadership to each segment of the solar panels manufacturing industry. Air Liquide has been chosen based on the competitiveness of its offer, our leadership position in the silane market, its solar R&D roadmap and our strong presence in the Italian market. The Solar market is at the crossroads of High-

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 (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) and specialty gases such as silane (SiH₄), ammonia (NH₃), doping gases/chemicals (POCl₃), passivation and coating precursor materials
- to produce Si Thin Film cells: carrier gases (N₂, H₂), specialty gases (SiH₄, NF₃/F₂, dopant mixtures), inter-layer and coating precursor materials.

Si Thin Film technology

Silicon Thin Film solar cells technology offers benefits for hot climate countries and reliability for large-area installations.

Tech, Energy and the Environment, 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 over **75 countries** with **42,300 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 2009, the Group's revenues amounted to **€12 billion**, of which almost 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.