

## Press Release

### **China Fuels Linde's Leadership Position as a Gases Supplier in Global Photovoltaic Industry**

*Linde wins three new long-term thin film contracts to capture over 50 percent of the market in China*

**Beijing, China, November 24, 2008** – Technology company The Linde Group announced the award of three new multi-million US-dollar (USD) contracts to capture more than 50 percent of the thin film photovoltaic (PV) market in China. The agreements are bolstering the company's position as the world's largest supplier of bulk and specialty gases to the thin film PV industry. The Linde Group's local subsidiary, Linde LienHwa has been awarded contracts by Tianwei Baoding, Hangzhou Amplesun Solar and ENN Solar in China.

As part of these new long-term contracts, The Linde Group will be providing ongoing delivery of bulk and specialty gases essential to make thin film solar cells – including large volumes of silane and hydrogen gas, used to deposit silicon light absorbing layers on large-area sheets of glass used in solar panels.

China is fast emerging at the forefront of the global solar industry, with over 50 percent growth in solar cell manufacturing in 2008 – a huge jump compared to only one percent five years ago. With these three new contracts, Linde continues to play a crucial role in enabling China to secure her position as the world's leading manufacturer of PV modules.

Linde has the full capability to deliver both gases and chemicals with turnkey solutions to solar customers today. However, Linde's involvement in the solar industry is much more comprehensive than just materials supply. Customers rely on Linde's commitment to bring industry leading gas technologies into their manufacturing processes and, finally, to help them deliver on their objective of reducing the cost of solar cell production. Its technology focus is an important reason that customers increasingly choose Linde as their supply partner for these essential materials.

"China is a strong contender to become a model for the global solar energy market, with the recent rapid-paced growth in the photovoltaic market, and The Linde Group is excited to be a part of this dynamic evolution of the renewable energy landscape," said Andy Cook, President of Linde LienHwa China. "Linde's successful relationships with Tianwei Baoding, Hangzhou Ample Solar and ENN Solar illustrate our commitment to deploy innovative approaches to

## Press Release

production and utilization of materials in solar manufacturing. Ultimately, Linde's collaboration with such world leading companies is aimed at the universal industry goal of reducing cost per watt of solar cell production and bringing the cost of solar electricity to grid parity."

The first phase of the ENN Solar plant in Langfang will start commercial production by Q2 of 2009, with a capacity of 60 MW, and possible future expansion up to 0.5 GW.

Dr. Rick Wan, General Manager at ENN Solar said: "PV module manufacturing is a very important part of ENN's strategy to contribute to the clean energy revolution in China and other countries of the world. Linde brings synergies with our history of innovation and experience in energy production to develop this renewable alternative energy source at competitive pricing."

Baoding Tianwei Solarfilms is working with Linde to future-proof its gas installation and supply chain. Tianwei's new thin film solar production facility in Baoding worth over RMB 6 billion (about USD 900 million) will go online in the first quarter of 2009.

Dr. Huang Yuelong, Deputy GM at Tianwei Solarfilms said: "There is a huge supply vacuum in the PV markets in the United States, South Korea, Spain and Italy. Linde is enabling us to become a manufacturer of high-efficiency thin-film modules with lower production costs to overcome challenges of over-supply in a burgeoning market."

Hangzhou Amplesun Solar Technology Co. Ltd is a privately invested high-tech company devoted to next generation green power with a current investment of RMB 2.2 billion (about USD 320 million). The company has been introducing production lines from Ulvac, one of the major equipment suppliers in solar industry. Amplesun is installing two turnkey production lines in Hangzhou with a total capacity of 50 MW and plans to achieve a manufacturing capacity of 120 MW by the end of year 2010.

Mr. Jin Qing Guo, CEO of Amplesun Solar said: "AmpleSun is very pleased to cooperate with Linde. And Linde has been facilitating our needs on specialty gases as well as on-site services, which will greatly speed up our capacity scale-up in the production of thin film solar modules."

Linde has established a leading position in gases supply to thin film Si solar module manufacturers, winning 63 percent of industry projects, and a strong position in Crystalline

## Press Release

Silicon with a 36 percent market share globally. Linde is in a leading position in key markets such as Germany, Spain, China, Taiwan and India.

### About The Linde Group

The Linde Group is a world leading gases and engineering company with more than 50,000 employees working in around 100 countries worldwide. In the 2007 financial year it achieved sales of EUR 12.3 billion. The strategy of The Linde Group is geared towards earnings-based and sustainable 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. Linde is committed to technologies and products that unite the goals of customer value and sustainable development. For more information, see The Linde Group web site at [www.linde.com](http://www.linde.com)

### Media contacts:

#### The Linde Group

Steve Pilgrim

phone: +44 (0) 1483 244791

e-mail: [steve.pilgrim@linde.com](mailto:steve.pilgrim@linde.com)

#### Text 100

Sukul M. Bagai

phone: +44 (0)20 8846 0700

e-mail: [sukul.bagai@text100.co.uk](mailto:sukul.bagai@text100.co.uk)