

Linde: chosen gas supplier by leading display manufacturers in China

The Associated Press

SHANGHAI--(BUSINESS WIRE)--Nov 28, 2012--Capitalising on the growth of the display industry in China, the Linde Gases Division, part of The Linde Group, has become a major supplier of bulk and electronics specialty gases to China's flat panel display industry. Linde's Joint Ventures Linde LienHwa and Linde GISE have been awarded major bulk gas supply contracts by the three largest display manufacturers in China - Samsung Electronics, BOE and ChinaStar Optoelectronics Technology (CSOT) - for their Gen 8.5 facilities to increase the cost effectiveness and environmental efficiency of their display manufacturing process. The total investment in on-site gas generation plants and related equipment for the three projects is in the range of EUR 100 million.

To support innovation in the display sector, Linde also established two new high-purity nitrous oxide (N₂O) gas facilities in Taiwan and Korea and newly acquired a third plant in China. The aim of this major investment is to accelerate the adoption of metal oxide transistors by display manufacturers, which will enable the cost-effective development of next-generation ultra high definition (UHD) 3D TFT-LCD and OLED displays.

This increase in new business has seen Linde become the leading gas supplier of choice to the display industry in China. The majority of this growth has been fuelled by the adoption of the leading SPECTRA-N on-site nitrogen generator series that offers up to 30 percent lower power consumption and the success of Linde's Electronics Specialty Gases facility in Suzhou distributing a comprehensive range of over 40 specialty gases to any display fab anywhere in China.

Andrew Lau, President and General Manager of LLH China, expressed his strong confidence in the electronics business in China and affirmed: "These significant wins not only strengthen our industry references in China, but also demonstrate our continuous commitment to our customers with the state of the art manufacturing solutions." The details of the three landmark partnership agreements are:

Samsung Electronics

Linde LienHwa (LLH), The Linde Group's joint venture with LienHwa MiTAC Group of Taiwan, has signed a long-term deal with Samsung Electronics to supply gases for its latest 8.5 generation display manufacturing plant in Suzhou Industrial Park (SIP). LLH will provide Samsung Electronics with a turnkey installation of the TFT-LCD plant's bulk gases supply systems, with a gas-on-line date of the end of 2013. Overall investment for the project is around RMB 500 million (EUR 50 million), doubling LLH's capacity in SIP. This major gas supply contract is strategically significant for LLH's position in eastern China.

BOE

LLH has opened a major ultra-high purity gas plant at BOE Technology Group Co. Ltd's (BOE) latest 8.5 Gen Display manufacturing facility in the Beijing Development Authority. The on-stream supply marks a significant milestone in the cooperation between LLH and BOE, and follows 15-year bulk gas supply and electronic gas agreements signed in 2010. It is the first project of its type supported by the Chinese government.

CSOT

Linde-GISE, The Linde Group's joint venture for industrial gases in the Guangdong province of China, has made a significant investment of RMB 200 million (EUR 22 million) to construct an on-site gases supply facility in CSOT's Gen 8.5 display fab in Guangming High Technology Park in Shenzhen, which is designed to produce 100,000 LCD panels per month and 17 million LCD TV modules per year. As part of the deal, Linde-GISE has built a SPECTRA-N on-site nitrogen generator, the largest of its type in China, delivering up to 30,000 Nm³ of ultra-high purity nitrogen per hour. Linde will also provide CSOT with an on-site turnkey gas supply installation delivering bulk oxygen, argon, hydrogen, helium and carbon dioxide gases.

Peter Owen, Head of Linde's Global Electronics business and Asia Joint Venture Management, said: "Working with Samsung Electronics, BOE and CSOT enables us to further develop and extend our leading gases solutions in the Chinese display market. These agreements strengthen our position as a leading gas supplier for the country's electronics industry, and demonstrate the increasing demand for our gases from electronics manufacturers looking for the most technologically advanced, cost effective and environmentally sustainable solutions."

Linde is also well positioned to take advantage of the new growth and investment in next generation display technologies. The company is helping manufacturers to develop UHD displays through the adoption of metal oxide transistors. Metal oxide transistor manufacturing requires high volumes of high-purity N₂O that is used to create functional layers of the microscopic thin-film transistors required to control each of the millions of pixels that make up the visible image. Linde's new N₂O plants in Taiwan, Korea and China will facilitate the development of higher resolution screens for mobile, home entertainment and computing markets.

Linde also expects to widen the supply of its patented on-site fluorine (F₂) technology to additional display customers throughout China and Asia. This follows the recent prestigious industry certification by the Korea Display Industry Association (KDIA) that Linde on-site fluorine technology has been successfully evaluated as a replacement for high global warming potential (GWP) sulphur hexafluoride (SF₆), currently used for dry etching of display panels.

In 2013, Linde will continue to lead the market in the supply of gases to China and Asian display manufacturers, building on its recent heavy investment in on-site bulk gas infrastructure, expansion of local specialty gas distribution, provision of

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sustainable manufacturing technologies and its strategic partnerships with Samsung Electronics, BOE and ChinaStar Optoelectronics Technology (CSOT).

For more information, see The Linde Group online at www.linde.com [1].

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