

Europe makes strides on sustainable semiconductor manufacturing

*Linde installs Europe's first CE-marked on-site fluorine generator at
STMicroelectronics*

Guildford, Surrey, UK 29 June, 2009 – Pioneering the European electronics industry's efforts for sustainable manufacturing of semiconductors, Linde Gases, a division of The Linde Group, has installed Europe's first CE-marked on-site electronics grade fluorine (F₂) generator at STMicroelectronics' Crolles 300mm wafer fabrication plant in France. As part of STMicroelectronics' initiative to lower the environmental impact of producing semiconductors, high-pressure cylinder F₂ has been replaced by two new Linde Generation-F[®] on-site fluorine generators – providing a low pressure, fully redundant supply of high purity F₂ and eliminating the need to transport to and keep cylinders on site.

The Linde fluorine generators and ancillary equipment combine proven technology with intrinsically safe design to provide STMicroelectronics an on-demand, safe and highly reliable source of pure F₂ for Chemical Vapour Deposition (CVD) chamber cleaning. One cylinder of hydrogen fluoride (used as the source material for the on-site generator) provides the same amount of F₂ to the fab as 100 high pressure F₂ cylinders – significantly reducing maintenance workload, while the very low system pressure provides much greater safety for all STMicroelectronics engineers.

“As operators of thermal CVD furnaces look to optimize costs and minimize risk through stricter safety requirements, Linde is seeing a quicker pace of adoption for on-site generated fluorine,” said Greg Shuttleworth, Semiconductor Product Manager for Linde Gases Division. “We are also seeing increasing interest in using F₂ as an alternative to NF₃ for the cleaning of Plasma-Enhanced CVD chambers due to concerns over the very high global warming potential of NF₃ and imminent legislation that could restrict its use.”

“The installation of Europe's first on-site fluorine generators at our Crolles wafer fabrication plant is testament to STMicroelectronics' commitment to increasing safety and improving our eco-footprint,” said David Ferrand, Director of Facilities at the Crolles 200 and Crolles 300 fabs. “We have directly reduced our carbon footprint at Crolles 300mm by eliminating cylinder deliveries. We

are excited by the potential for even greater environmental efficiency by using the generation capacity in other cleaning applications.”

Previously, every cylinder change was an opportunity for contamination of the system, but now the STMicroelectronics Crolles 300mm facility has much greater reliability of gas box components by eliminating these frequent changes. There is also less hazardous waste as there is no need to purge cylinders to ensure they are completely empty before changing, increasing savings and reducing the load on STMicroelectronics’ abatement systems.

The Linde Generation-*F*[®] on-site fluorine generator has been through extensive third-party safety evaluations and can now add the CE Mark to the SEMI S2 certificate among its list of national and industry recognised safety standards. In addition to the generators themselves, Linde’s ancillary buffer and abatement systems, which safely deliver variable amounts of fluorine, have also been CE-marked and SEMI S2 certified. Including those at STMicroelectronics, Linde has supplied and operates nearly 30 Generation-*F*[®] systems worldwide to meet the semiconductor, display and photovoltaic industries’ chamber cleaning needs.

STMicroelectronics' programs to reduce the use of energy, water and chemicals at all sites are the foundation of its longstanding eco-efficiency approach to environmental stewardship. STMicroelectronics considers the management of the chemicals it uses, along with climate change, as the most important environmental issues, and has been reducing chemical consumption by more than five percent a year, on average, since 1998.