

Eco-Snow cleaning technology improves efficiency for U.S. photomask manufacturer

Technology cleans 28nm node photomasks and reticles

LIVERMORE, Calif.--([BUSINESS WIRE](#))--Eco-Snow Systems is helping a major U.S. photomask manufacturer save money and improve the quality of its photomasks and reticles with a cleaning technology designed for the 28nm DRAM half-pitch technology node.

Eco-Snow Systems, an affiliate of The Linde Group, is the leading supplier of automated, carbon dioxide (CO₂)-based cleaning tools and processes to the semiconductor industry.

The photomask manufacturer has been using the Eco-Snow MaskClean® 150 technology for several months on masks now in production, as well as for development of the 28 nm node scheduled for production by 2014.

Joe Clark, general manager, Eco-Snow Systems, said, "The new Eco-Snow MaskClean® 150 technology is a full mask cleaning tool that delivers significant cost savings. The technology allows manufacturers to start fewer masks in order to ensure a completed photomask or reticle meets specification. This manufacturer has said it is now able to start 20 percent fewer masks and be confident of delivering a good mask on time."

Because even one small particle left during the manufacturing process can ruin a photomask, manufacturers require precise cleaning to ensure zero print defects on the integrated circuits the masks and reticles are used to produce.

The MaskClean 150 system helps manufacturers achieve three major goals: The system reclaims masks by removing contaminants left behind by wet cleaning; preserves mask quality by reducing the number of erosive wet cleaning cycles required and reduces the cycle time required to create masks, since fewer cleanings are needed.

"The Eco-Snow MaskClean 150 technology takes the benefits of dry CO₂ snow cleaning technology to another level. It uses the highest purity carbon dioxide and smaller CO₂ snow particle size to clean the entire photomask. This ensures the smallest mask features can be cleaned and repaired multiple times without incurring physical or chemical damage," Clark said.

The MaskClean 150 system also accepts masks in SMIF pods, making it compatible with current generation mask production tool sets and extends usability to at least 2014.

Eco-Snow Systems is a wholly owned subsidiary of The Linde Group. As a leading innovator of dry CO₂ technology, with over 100 tools installed, Eco-Snow Systems sets the standard for quality dry process cleaning solutions. Eco-Snow, based in Livermore, California, holds over 20 U.S. patents and has R&D clean room facilities to conduct process qualification and testing for customer application development. For more information visit the Eco-Snow Systems' website at www.eco-snow.com

The Linde Group is a world leading gases and engineering company with almost 50,000 employees working in around 100 countries worldwide. In the 2008 financial year it achieved sales of EUR 12.7 billion (USD 15.9 billion). The strategy of The Linde Group is geared towards sustainable earnings-based 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 about Linde visit www.linde.com

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