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EV GROUP UNVEILS NEXT-GENERATION UV-NANOIMPRINT LITHOGRAPHY (UV-NIL) STEP AND REPEAT SYSTEM—THE EVG770 GEN II NIL STEPPER

NIL Stepper Offers Increased Pattern Fidelity, Improved Yield at Lower Manufacturing Costs

ST. FLORIAN, AUSTRIA, July 13, 2009 – EV Group (EVG), a leading supplier of wafer bonding and lithography equipment for the MEMS, nanotechnology and semiconductor markets, today unveiled its next-generation UV-nanoimprint lithography (UV-NIL) step and repeat system—the EVG770 Gen II NIL Stepper. The new system features capabilities designed to address growing customer demands for improved pattern fidelity at ever-smaller feature densities, greater process reliability and increased accuracy.

Commenting on today's announcement, EVG's Executive Technology Director, Paul Lindner, noted, "We have been active in the nanoimprint lithography market for more than a decade now, and have seen the technology evolve from its days in R&D to manufacturing reality. To be part of enabling next-generation lithography—and addressing our customers' needs—is truly exciting for the company in myriad ways." Added Lindner, "The introduction of the EVG770 reinforces the company's commitment to our triple 'i' philosophy of invent, innovate and implement—providing our customers with a highly flexible solution to meet their R&D and production requirements. We look forward to continued opportunities to work closely with our customers for their NIL needs."

Market Drivers

Nanoimprint lithography has risen to become a competitive candidate for next-generation lithography (NGL) due to its high resolution and cost-effective advantages. The technology's potential has been acknowledged by leading experts, and has been added to the *International Technology Roadmap for Semiconductors* (ITRS) as a prospective NGL tool for micro- and nanoelectronics at the 32-nm node and beyond.

One of the main markets driving UV-NIL adoption is the micro-optics arena, which utilizes master lenses to develop working stamps for full-wafer lens micro-molding of CMOS image sensors for wafer-level cameras, among others. Augmenting traditional single-step processes, EVG's step and repeat approach enables manufacturers to create a master that can then be replicated across the substrate to subsequently produce a full-wafer lens micro-mold. This approach offers significant yield and cost advantages compared to conventional mastering processes, such as micromachining techniques (e.g., diamond drilling), photoresist reflow, LIGA and e-beam writing.

In addition to CMOS image sensors, there is significant market potential for EVG's NIL stepper in other micro-electronics applications, including micro-lens arrays, waveguides, ring resonators, as well as R&D nanoelectronics processes for dual damascene and contact holes.

EVG770 Key Features & Benefits

Some of the key new features the EVG770 touts include vacuum imprinting on a spun-on polymer layer, which eliminates defect issues caused by trapped air bubbles—ultimately resulting in superior pattern fidelity. With these new capabilities, the EVG NIL stepper tackles issues faced by other UV-NIL approaches in which vacuum-less environments and resists are dispensed as droplets rather than pre-spun, which cause easy air traps and impact structural integrity.

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Additionally, EVG's next-generation system features:

- Optical sensors that align the stamp and wafer into perfect parallelism for contact-free wedge compensation
- Chuck movement via a non-contact bearing system to reduce particle contamination
- High-precision alignment system with accuracy within +/-500 nm; <35-nm overlay alignment accuracy has already been demonstrated on a test set-up system
- Load-cell measurement of embossing/de-embossing force, improving imprint uniformity and process reliability due to active force control and allowing for real-time, in-situ characterization of various commercially available resists and anti-sticking layers
- Flexible equipment automation levels, making the NIL Stepper, an easy and economical transition from R&D to small- or high-volume manufacturing
- De facto template form factor to shorten the fabrication turnaround time
- Capability to support a host of commercially available resists with varying viscosities between 1 to several 1,000 mPas, improving process flexibility for micro molding and nanopatterning

EVG has been active in UV-NIL since 1997, and has since worked with various industry partners and R&D institutions to develop nanoimprinting technologies. Recent UV-NIL activities include an order from Fraunhofer IOF announced in May 2009.

The EVG770 is available immediately for purchase. For more information or to learn more about the EVG770 and other EVG NIL solutions, please visit www.evgroup.com.

About EV Group

EV Group (EVG) is a world leader in wafer-processing solutions for semiconductor, MEMS and nanotechnology applications. Through close collaboration with its global customers, the company implements its flexible manufacturing model to develop reliable, high-quality, low-cost-of-ownership systems that are easily integrated into customers' fab lines. Key products include wafer bonding, lithography/nanoimprint lithography (NIL) and metrology equipment, as well as photoresist coaters, cleaners and inspection systems.

In addition to its dominant share of the market for wafer bonders, EVG holds a leading position in NIL and lithography for advanced packaging and MEMS. Along these lines, the company co-founded the EMC-3D consortium in 2006 to create and help drive implementation of a cost-effective through-silicon via (TSV) process for major ICs and MEMS/sensors. Other target semiconductor-related markets include silicon-on-insulator (SOI), compound semiconductor and silicon-based power-device solutions.

Founded in 1980, EVG is headquartered in St. Florian, Austria, and operates via a global customer support network, with subsidiaries in Tempe, Ariz.; Albany, NY; Yokohama and Fukuoka, Japan; Seoul, Korea and Chung-Li, Taiwan. The company's unique Triple i-approach (invent - innovate - implement) is supported by a vertical integration, allowing EVG to respond quickly to new technology developments, apply the technology to manufacturing challenges and expedite device manufacturing in high volume. More information is available at www.EVGroup.com

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