

LIDE Technology Used in Series Production of Glass Wafers

LPKF supplies further systems to chip manufacturer

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The technology company LPKF has received a follow-up order from the semiconductor industry. A leading global chip manufacturer had installed a first LIDE system at the beginning of 2020 and, after a qualification phase, initially used it for its own product development. Further LIDE systems have now been ordered so that volume production of electronic components with chip housings made of glass can get underway. The parties agreed not to disclose any details.

With the LIDE (Laser Induced Deep Etching) process developed by LPKF, thin glass can be processed quickly, precisely, and without any damage such as microcracks or surface defects. This makes LIDE a basic technology for many microsystems technology applications, including the production of microchips, displays, sensors, or MEMS.

The technology involves a two-step process. With LIDE, structures can be generated with a high depth and a high aspect ratio in the range of >1:10 in thin glass with a previously unknown highly economical machining speed. Structures <5 µm in size can be generated. In the first step, the glass is modified locally through laser pulses according to the desired layout. In the second process step, the wet chemical etching step, the modified regions of the glass are ablated much more quickly than the nonmodified material is. As a result, extremely stable and precise microstructures are produced. In addition, the high speed makes the process suitable for high-volume production.

Dr. Roman Ostholt, head of the Electronics Business Unit at LPKF, is pleased that the chip manufacturer has achieved an important innovation goal in a short time by using LIDE technology. "Starting next year, our customer will be a big step ahead of its competitors with its new products," says Ostholt. At the same time, the manager is aware of the signaling effect that this order will have. "LIDE can now demonstrably meet the extremely high standards of the semiconductor industry. This also qualifies the technology for mass production in other relevant industries."

At the company headquarters in Garbsen, LPKF operates its own LIDE production facility for glass components under cleanroom conditions under the Vitron brand. From here, the company supplies customers around

the world with high-precision components made of glass for a wide range of applications.

For more information about LIDE technology and Vitrion's services, please visit <https://www.lpkf.com/en/industries-technologies/thin-glass-precision-processing-lide>



Fig. 1: Example of a Vitrion laser machine for laser modification of thin glass.



Fig. 2: In LPKF's LIDE fab, thin glass is processed for applications in heterogeneous integration, wafer level packaging, microfluidics, and display production.

About LPKF

LPKF Laser & Electronics AG is a leading provider of laser-based solutions for the technology industry. Laser systems from LPKF are key elements in the manufacturing of printed circuit boards, microchips, automotive parts, solar modules, and many other components. Founded in 1976, the company is headquartered in Garbsen, near Hannover, Germany, and has subsidiaries and representative offices throughout the world. Around 20 percent of the workforce is engaged in research and development.