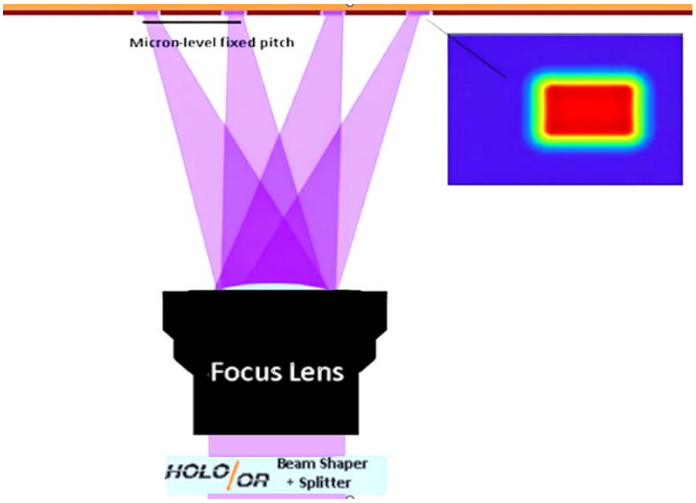
Holo/Or Newsletter – Q2 2026

Publications and conferences

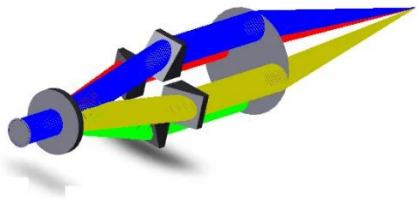
Holo/Or presents beam shaping for semiconductor laser-based manufacturing at EPIC workshop

The explosive demand for AI data centers is pushing the semiconductor industry toward new materials such as glass core substrates, posing manufacturing challenges that often require advanced laser beam shaping to solve. In a recent online workshop on semiconductor laser processing, Holo/Or CTO Natan Kaplan presented our solutions for advanced semiconductor packaging and laser inspection enabling high-yield and enhancing throughput. From bare glass TGV formation through multi-layer panel singulation to high-speed wafer metrology, Holo/Or offers a variety of beam shaping solutions tailored to the semiconductor industry needs.



Contact us with your packaging or inspection laser system beam shaping requirements.

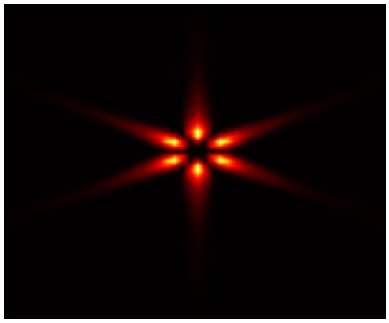
UV based direct interference setup for submicron surface structuring in polyamide films



In a recent article , researchers from Fraunhoffer ILT have used Holo/Or's MS-860-1-Y-A 2X2 diffractive beam splitter to achieve direct interference patterning (DLIP) with a sub-micron feature size. Our Beam Splitter generated four uniform laser beams that were then overlapped using a special prism to create the structures in polyamide film. Holo/Or has much experience with DLIP setups, and we have published a Zemax Model for a similar 2X2 DLIP setup- feel free to download it in the link. Kudos to the authors for such outstanding work!

Breaking through the air barrier with high order lauggure mode laser beams

A group of researchers from Paris has used a custom Holo/Or mode converter phase plate to create a special LG03 mode high power laser beam in and managed to show self-focusing prorogation of more than 20m distance with picosecond 1030nm pulses. This is highly interesting for many high power laser applications including laser based defense and atmospheric sensing, with our DOEs playing a critical role. Interested in converting you beam to a higher mode? Holo/Or offers a selection of standard Mode Converters , and we can design and produce custom mode converters as per your request.



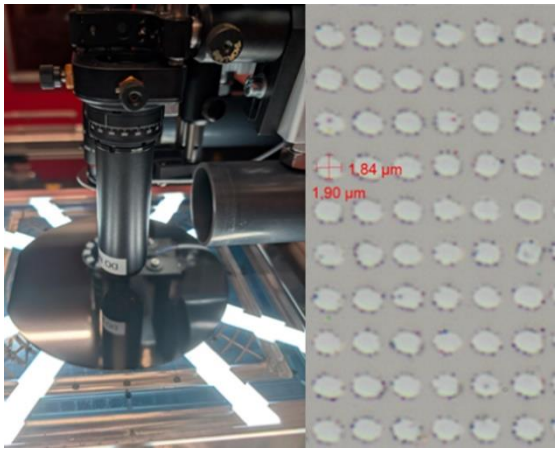
Products and Applications

VB module for glass interposer and glass core substrate dicing

Holo/Or's Variable DOF Bessel Objective (VB Module) enables simple mechanical adjustment of the Depth of Focus from 0.08 mm to 1.5 mm , allowing a single optical head to handle diverse glass thicknesses in advanced packaging. This is useful for high-mix applications such as Through Glass Via (TGV) drilling, glass interposer dicing, and micro-fluidic device prototyping. By reducing the machine switching time between different product lines, VB module offers superior flexibility for machine builders and system integrators, all the while maintaining a stable spot size of 2µm for all DOF ranges .

Building a flexible glass processing machine? visit the VB product page for a quote

Bursting Through Wet Chemical Etching Constraints in Thin-Wafer PV



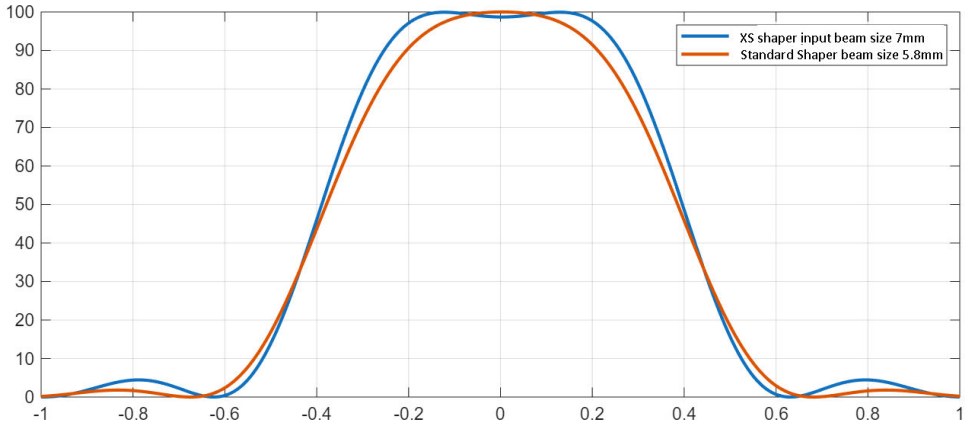
In the manufacturing of thin silicon solar cells, traditional wet chemical texturing introduces severe wafer breakage risks, while carrier wafer alternatives add prohibitive process costs. As part of the European BURST project consortium, our collaborative work with ISFH demonstrated a dry, contact-free alternative: achieving an oxide etch mask patterning rate of 0.06 m²/min.

By utilizing Holo/Or's multi-beam module to pattern the protective oxide layer, the system enables subsequent single-sided texturing via Nines PV's Atmospheric Dry Etching (ADE) plasma or other dry etching processes.

Developing an advanced laser patterning or selective masking setup? Explore our diffractive beam splitters

Technical Tips

Integrating beam shapers in Galvo based laser systems

One of the main challenges in integrating Top-Hat beam shapers into galvo-based laser systems is the clear aperture (CA) requirement. For standard beam shapers, a CA-to-beam ratio of 2.2× to 2.5× is often necessary to avoid clipping distortions when scanning across large fields, which inherently limits the smallest achievable spot size. into galvo-based laser systems is the clear aperture requirements.
Our XS Beam Shapers family addresses these constraints by allowing a tight 1.45× CA-to-beam ratio, enabling significantly larger input beams to utilize the same aperture space (e.g., a 7 mm beam in a 10 mm aperture).

While our standard XS products are optimized for 10 mm scanner apertures, Holo/Or can design custom XS configurations for 14 mm and 20 mm CA galvo systems. Contact us with your scanning system and shaping requirements and we will find the best shaping solution within your system constraint.