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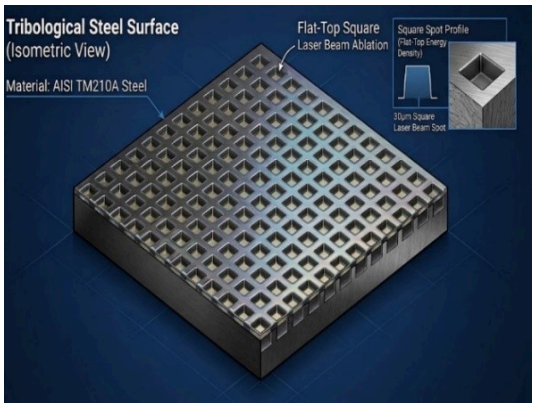
THE EXPERTS IN DIFFRACTIVE & MICRO-OPTICS

Holo/Or Newsletter – Q3 2026

Holo/Or Publications and Conferences

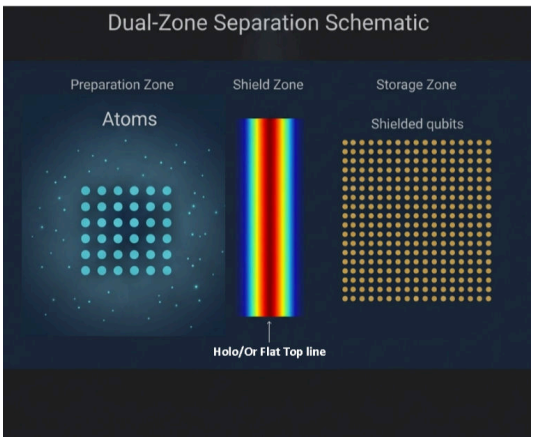
Less Friction, More Flow: Beam shapers optimize aviation steel laser texturing

In a recent study, a researcher from Beijing Institute of Technology has used Holo/Or's ST-234-I-Y-A flat top beam shaper to texture TM210A martensitic steel used in heavy duty aviation components. The 30 µm flat-top spot generated by our shaper enabled precise textures that improved the surface tribological properties, including friction and wear reduction. Interested in our beam shapers for your laser application?



Take a look at our catalogue page or read more about them here.

No Room for Error: Flat-Top Shapers Bring Mature Scale to Quantum Architecture



The newly published 2026 Strategic Plan for Neutral Atom Quantum Computation highlights the increasing need for strict spatial shielding. To build large, fault-tolerant processors, next-generation QC architectures must physically isolate active computing qubits from the stray, resonant laser light used to cool and image neighboring reservoir atoms.

A proven effective method to achieve this isolation was demonstrated in a landmark 2025 paper. In the paper, researchers successfully used a Holo/Or Flat-Top beam line shaper (ST-356-2-Y-A) to shape their protective 1529.6 nm shielding beam with excellent results.

Our beam shapers have been proven in the scaling up of multiple laser-based precise systems across many industries, and we are happy to see quantum computing integrators joining our customer base.

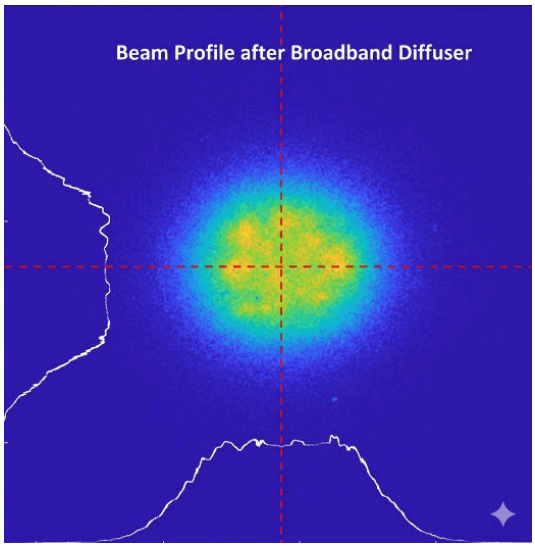
Interested in beam shaping for shielding or parallel trapping- contact us!

Holo/Or Products and Applications

Shaping the Full Spectrum for Multi-Wavelength Aesthetics

Multi-wavelength laser platforms combining Alexandrite, Nd:YAG, and Er:YAG lasers are the modern standard for state-of-the-art dermatology. These diverse treatments on a single machine require an identical, uniform energy distribution over the target area on the patient's skin, regardless of the laser wavelength used.

Since the different laser wavelengths have different beam characteristics, beam shaping diffusers are the standard solution to achieve uniform treatment at all wavelengths.

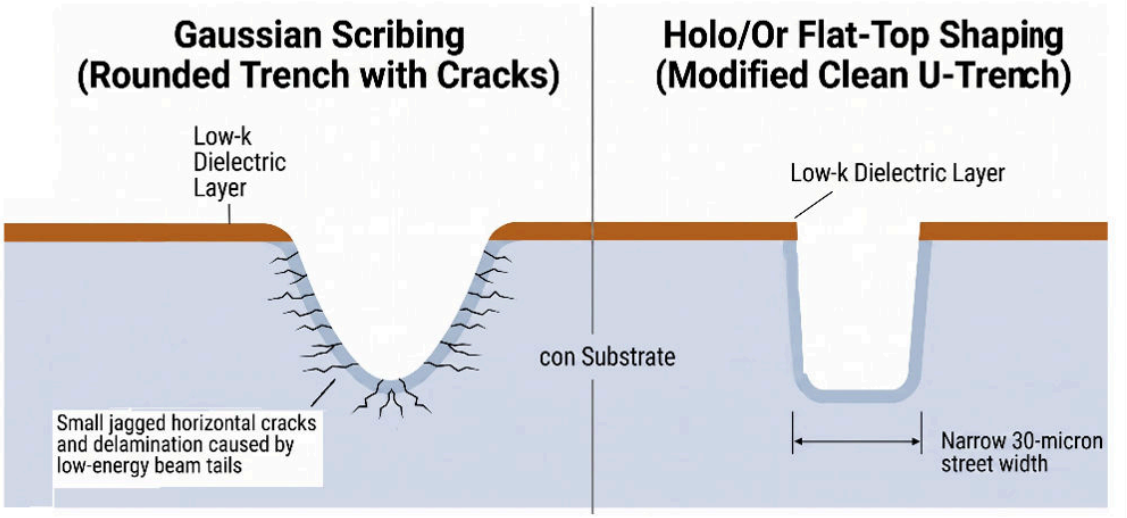


To meet this demand, Holo/Or's Broadband Diffusers utilize wavelength-independent randomized micro-lens structures to flatten and homogenize the energy profile. Recent design innovations allow Holo/Or to tailor illumination profiles to have an M-shape or a more flat-top shape, offering excellent uniformity.

Interested in developing a multi-wavelength skin treatment? Visit the BD product page for a quote or contact us for custom specifications.

Narrow Streets, Sharp Edges: multi-function DOEs for Silicon Wafer Grooving

As advanced packaging requirements drive street widths down from 120 µm to a bufferless 30 µm, wafer singulation has become a major bottleneck for laser machine integrators. To overcome this challenge, Holo/Or offers a compact, single-element integrated optics design that combines a Multi-Spot Splitter with a Top-Hat Shaper. Designed for any specific single wavelength (UV, Green, or IR), this solution features a high laser damage threshold optimized for high-power industrial Ultra-Short Pulse (USP) lasers.



By splitting the laser into a precise matrix of sub-beams and converting each into a flat-top profile, the optical system eliminates low-energy Gaussian tails. This allows machine builders to scribe crisp, sharp-edged U-trenches that reduce micro-crack propagation and edge delamination while multiplying grooving speeds using existing scan mechanics.

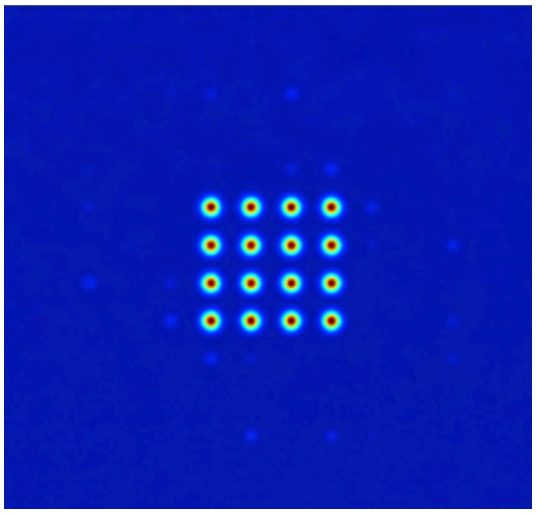
Contact us for a custom beam splitter + flat top shaper quote.

Holo/Or Technical Tips

Efficiency explained - where does the energy not within the pattern go

All Holo/Or components have an efficiency specification, defining what fraction of the incoming energy is transformed into the desired illumination pattern. This occasionally raises concerns when used in high power laser systems, as customers mistakenly believe energy not in the pattern is absorbed or reflected.

In practice, nearly 100% of the energy is transmitted forward.



The losses that define efficiency are to undesired orders – a weak aura at higher angles, outside the desired shape, that typically hits the workpiece and is below the process threshold. The DOE absorbs no significant fraction of energy, nor does it reflect it (assuming our standard AR/AR coating is used).

Our DOEs have been successfully used with Peta-Watt systems such as in ELI and other extreme power femtosecond systems. You can feel safe when integrating them into your high-power laser setup.

Have more questions on our products and specifications? Check out the FAQ here.

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