

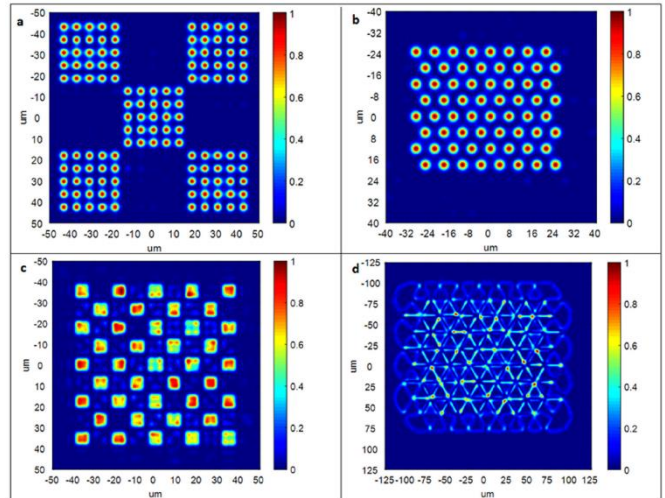
Conferences and publications

Laser surface texturing workshop at AILU

Our CTO, Mr. Natan Kaplan, presented the various beam shaping approaches used for laser beam texturing during a dedicated [AILU workshop](#). All approaches benefit by utilizing DOEs, including multi-beam writing, direct laser interference texturing and Holo/Or's own [DLITE](#). For more details, read our partner's [article](#) on the subject.

Beam Shaping the Direct Laser Interference Patterning spot

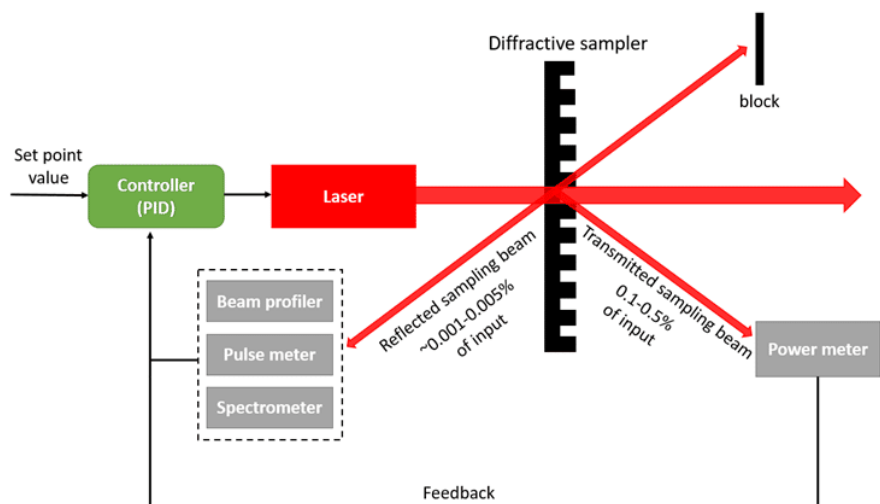
A recently published article by Fraunhofer ILT researchers Ludwig Pongratz and Kai Vannahme demonstrates the usefulness of Holo/Or [Top Hat beam shapers](#) for laser surface texturing. In this work, the researchers showed improved uniformity of direct laser interference textured steel surface when the beam is shaped to a square flat top. Our Top hat element are widely used in various micro-machining application in the microelectronics, solar panels and semi-conductor industries, and can contribute to newer applications such as surface texturing, laser shot peening and others. [Contact us](#) with your beam shaping needs



Applications

Application spotlight: Laser welding & cutting with real time feedback, using diffractive beam samplers

High power laser processing requires constant control and metrology to ensure process stability- in modern welding heads, the cost of optics and metrology systems can be of the order of half the laser cost! Power meters and beam profiler cameras are used often used to monitor laser beam characteristics, but with KW lasers becoming common, some method of attenuation is needed to sample a fraction of the beam.



[Diffractive laser beam samplers](#) are a highly suitable solution for these monitoring applications – The direct sampled beam can have sampling ratios as low as 0.1% of the beam, while the reflected sampled beam can sample at ratios as low as 0.001% of input, or 100mW sampled from a 10KW input. Diffractive beam samplers do not distort the beam, thus enabling real time profiling of the beam shape, and can be placed after the last lens in the system to sample the beam shape after all distortions and thermal effects generated by the full optical system. You can [get a quote here](#) or [contact us](#) for a custom element.

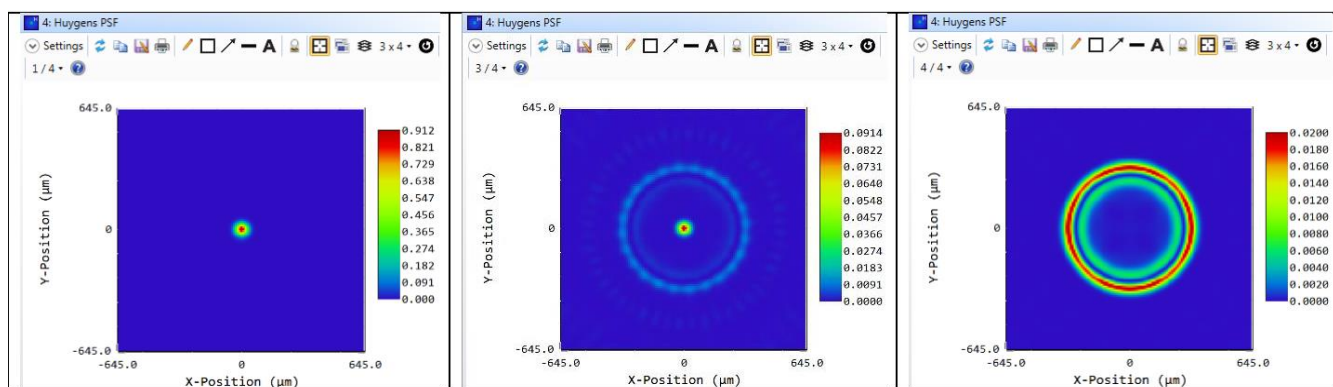
Application spotlight: Flexishaper ring + spot shaping module for laser welding



Laser welding is a fast growing field, with requirement for high speed welding increasing due to processes such as battery tab welding, vital for the growing e-mobility industry. A major obstacle to increasing welding speed are physical processes such as humping, caused by liquid metal surface tension creating beads on cold resolidified metal once the laser beam passes a point on the weld seam. One common approach is to use an intensity distribution of a ring with central spot, to create pre and post heating of the weld, eliminating humping. While such distributions are available from ring-mode fiber lasers, this requires handling higher NA's in the welding system optics (i.e., larger mirrors, lenses etc). An alternative solution is Holo/Or's [Flexishaper](#)- a simple, compact module that turns any laser spot into a tunable ring+ spot distribution.

Technical tips

Zemax integration of Flexishaper Modules



Due to the ongoing interest in our innovative Flexishaper welding solution, we are often asked to help customers model Flexishaper behaviour in their optical setup, using Opticstudio Zemax. To better support you, our esteemed customers, we have recently added a zemax tutorial, including examples, for integrating Flexishapers into Zemax models of your optical setup.

You can [download it here](#), and if anything is unclear- feel free to [Contact us](#) and we will be happy to support you with Flexishaper modelling and integration.

Upcoming: Beam Shaping FAQ's

The world of beam shaping offers rich, detailed and sometimes confusing options. While you can learn what our products do in our [application pages](#), and in pages such as our “[DOE Myth or Fact](#)” page we noticed that there are some common questions that we often encounter. To better support you, we have started compiling an FAQ section in our webpage- look out for it to appear soon under our “[Publication](#)” tab.



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13B Einstein Street

Ness Ziona, Israel

<https://holoor.co.il/>

holoor@holoor.co.il

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