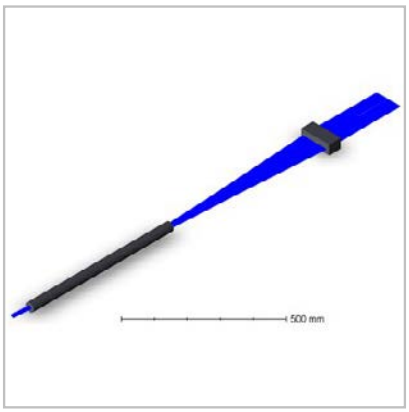
Optics

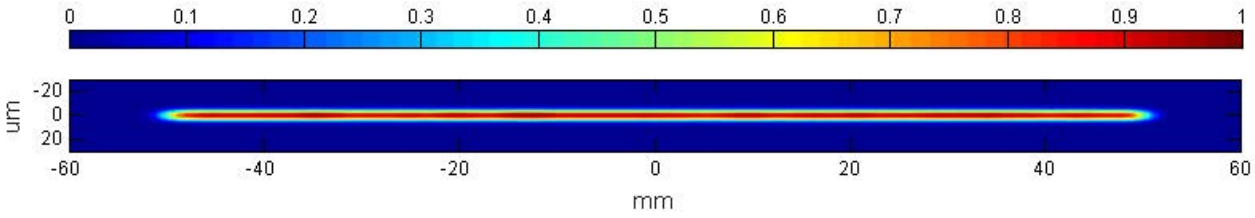
LeanLine™ Laser Beam Quality Transformation and Narrow Line Beam Shaping

LeanLine™ is HOLO/OR's innovative solution for transformation of a round input beam into a narrow laser line, useful in various high power applications, especially with UV and green wavelengths (343, 355, and 532 nm). These applications include laser lift off, flexible display production, solar cell processing and polymer welding.



HOLO/OR offers a robust 2-module system that converts a low coherence, round input into a narrow line with a user determined length (100 mm – 750 mm).

Our solution is based on proprietary diffractive beam shaping concepts and can be tailored to any wavelength from 193 nm deep UV to 1600 nm IR lasers. By utilizing our solution, you can use lower power, lower cost lasers to achieve the same power density in a thin line, allowing major savings.



Diffractive Solution Advantages

- Easy alignment and installation
- Extremely high precision for beam quality transformation, achieved by the lithography production process
- A fully transmissive (no reflection), on-axis system
- Aberration free
- Can be easily modified to produce different line lengths and widths
- No internal focus points
- Available in a wide spectral range from DUV to NIR

The Solution Includes Two Modules

- The first module is used for beam quality transformation and thin line beam shaping.
- The second module is used for line length control and focusing in the narrow axis.

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Applications

Laser annealing to improve process quality in a variety of industries:

- Lift off process for manufacturing flexible displays
- OLED displays
- Semiconductor devices
- Thin-film solar cell production
- Sensor production

Materials

Processing of a broad range of materials including:

- Silicon
- Silicon on glass
- Polymers
- ITO on glass

Specifications

Wavelength	193 – 1600 [nm] [1]
Input M^2	15 – 25
Field size at working distance (FW 95%) – long axis	100 ± 0.5 [mm] [2]
Long axis profile	Flat-Top
Long axis inhomogeneity	= 5%
Field size at working distance (FWHM) – short axis (Gaussian profile)	< 10 [µm] [3]
Efficiency	= 75 %
Working distance	125 [mm] [4]
Energy density at sample	laser power dependent
Dimensions	Module 1: 30 mm diameter, 600 mm length Module 2: 30 mm x 20 mm x 110 mm
Full system length	1200 [mm]

1. One wavelength per system, max spectral width 2% of input wavelength
2. Can be changed to other line widths up to 750 mm. contact us for details.
3. Dependent on wavelength, working distance & M^2. This value is for 355 nm, working distance 125 mm and M^2 = 25.
4. Can be changed according to customer requirements

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