Focal-πShaper_9_HP

Series of high efficient beam shapers for focused laser beams transforming Gaussian to Flat-top or Doughnut spots for high power ps and fs lasers: UV, visible, near- and mid-IR

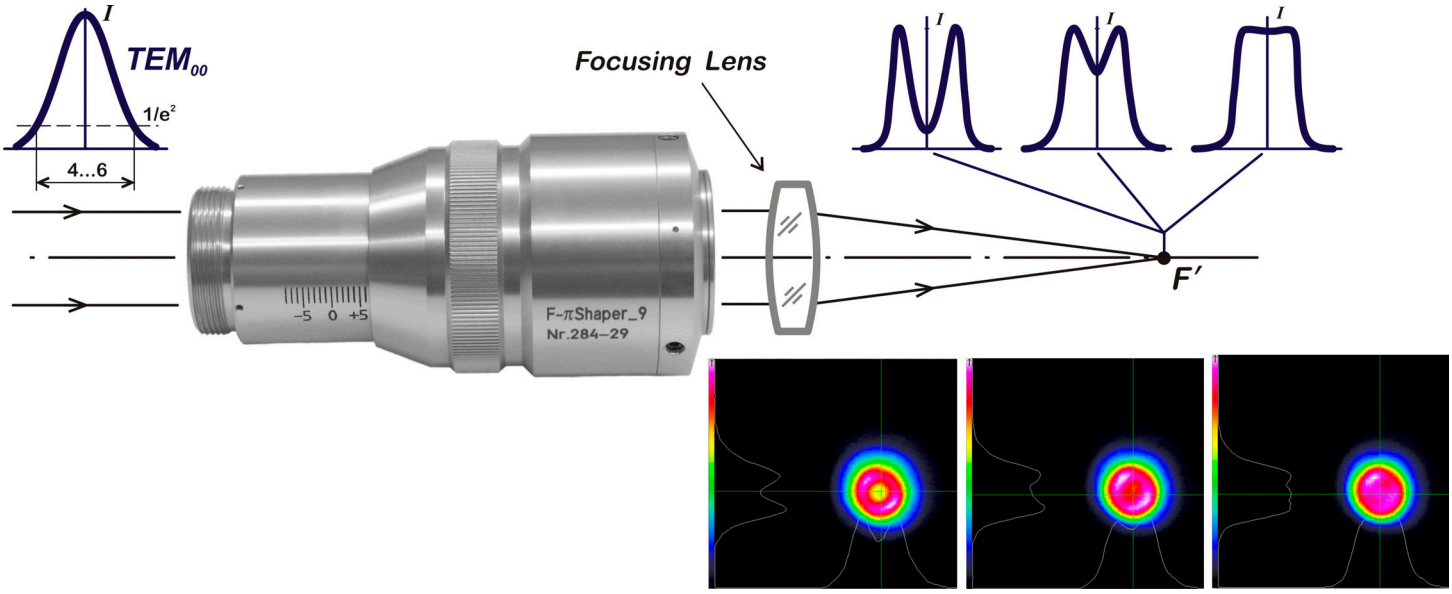
Applications:

- **3D Printing (Selective Laser Melting)**
- **Micromachining**
- **Drilling**
- **Scribing**
- **Cutting**
- **Microwelding**
- **Solar Cell processing techniques**
- **Laser heating in Geophysics research**

With these unique tools the flexible manipulating the intensity distribution of focused spots becomes a reality.

With nearly 100% efficiency and without side-lobes ***Focal-πShaper_9_HP*** produces the optimal in the microprocessing focused spots:

- Flat-top
- “inverse Gauss”
- “Doughnut”



Beam Shaping never was so easy!

No more energy loss!

Specifications

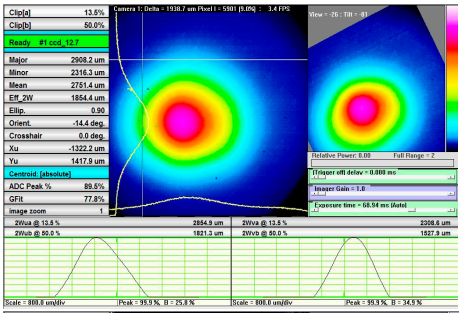
Common for all Focal-πShaper 9_HP models	
Type	Telescope of Galilean type, without internal focus
Input beam	- TEM_{00}, collimated or low divergent / convergent, full divergence angle in range ±5 mrad - Full diameter < 16 mm - Optimum 2ω diameter for the Gaussian beam 4…6 mm ($1/e^2$)
Output beam	- Collimated or low divergent / convergent - Optimized for manipulating the spot intensity distribution in zone of focus of a diffraction limited lens - Full diameter < 16 mm
Focused Spot	- Round shape - Variable profiles: Flat-top, “inverse Gauss”, “Doughnut” with the same beam shaper
Transmission	> 97% in working spectral band
Other features	- Easy integration in equipment - Compact design suitable for scientific and industrial applications - Operation with diffraction limited focusing lenses of any type - Easy alignment - Flexible distance to a lens in range 20…500 mm, other distances to be discussed with a supplier - Optimized to operate with scanning optics: mirror and polygon scanners, F-Θ lenses
Overall dimensions	- Diameter 44 mm - Length 93 mm
Mounting	Outer M27x1 thread, at entrance
Weight	< 220 g

Features

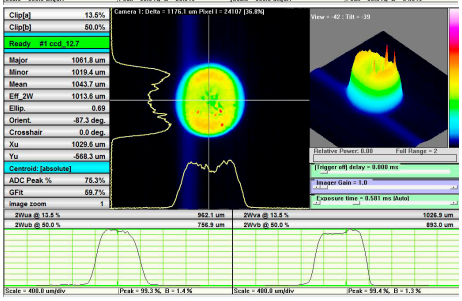
Focal-πShaper 9	Spectral band, nm	Design λ, nm	Feature	Applications based on lasers
_1940_HP	1850 - 2050	1940		mid-IR
_1550_HP	1450 - 1650	1550		near-IR
_1064_HP	1020 - 1100	1064	Diameter 39 mm Length 104 mm	Nd:YAG, Fiber, other near-IR
_TiS_HP	750 - 850	800		Ti:Sapphire, near-IR
_532_HP	510 - 550	532		2nd Harmonics Nd:YAG, similar lasers
_355_HP	340 - 370	355		3rd Harmonics Nd:YAG, similar lasers
_266_HP	255 - 275	266		4th Harmonics Nd:YAG, similar lasers

Specifications are subject to change without notice

Profile of UV laser



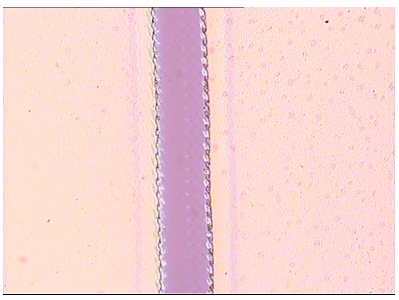
Flat-top spot



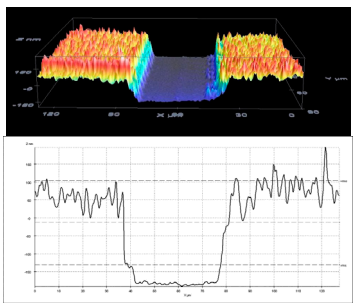
Example:
Scribing of 210 nm thin film of photovoltaic material using TEM_{00} UV laser, λ=343 nm, pulse duration 500 fs, Focal-πShaper 9_355 ahead of the F-Θ lens.

Courtesy of ALPhANOV

Trench view, 40µm width



Confocal microscopy, 100x



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