Light Tunnel Generator

Overview:

The Light Tunnel Generator (LTG) is a new beam shaping technology to significantly improve the efficiency and quality of macro materials processing.

The LTG is a thin wafer of fused silica glass with a unique freeform surface. When added to the optics of a process head, it creates a ring-shaped spot that is maintained over a long optical working distance, creating a "light tunnel".

Under appropriate conditions, this long depth of focus light tunnel provides a new process parameter space for laser cutting and welding of thick metals. It can produce laser cut edges with a roughness and dross quality that rivals the most sophisticated systems available today – with no loss of process speed and a less sensitive process window. More significant still, this process speed and quality can be achieved using approximately half the laser power of current state-of-the-art systems.

The LTG is compatible with a wide range of lasers and processes, but the most notable gains and benefits arise when processing metal greater than 15mm thick. If you are considering using lasers for cutting thick metal, we recommend that you consider using the LTG. It can help improve the productivity, efficiency, effectiveness, and quality of your laser cutting operations.

The PowerPhotonic Effect:

~50%

Improved Laser Productivity

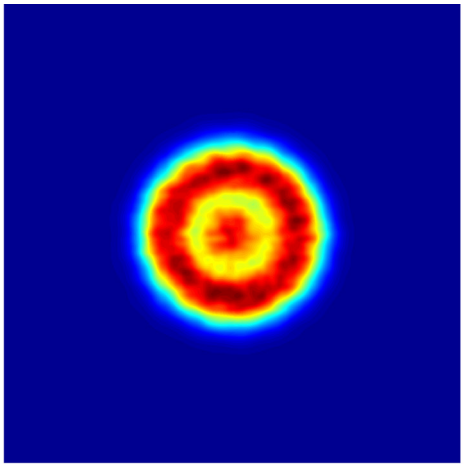
15mm

Through Focus Range

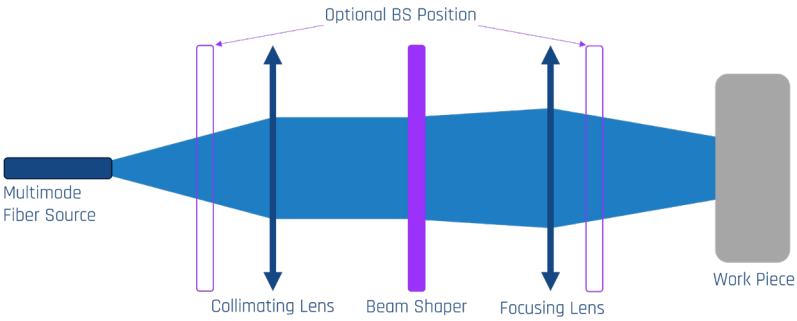
>100kW

CW Power Handling Capability

Output Profile:



Optical Layout:



Key Features:

- Increase Laser Effectiveness
- Excellent Roughness
- Excellent Cut Burr
- High Power Handling

Target Applications:

- Laser Cutting
- Laser Welding
- Laser Drilling

Light Tunnel Generator

Standard Part List:

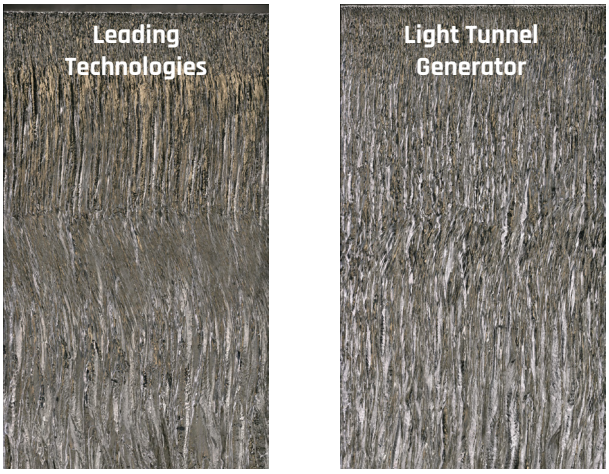
Part Number	Output Ring Diameter (µm)	Output Ring Thickness (µm)
PP-MM-LTG-RD500-1064-AR	500	200
PP-MM-LTG-RD600-1064-AR	600	200
PP-MM-LTG-RD1000-1064-AR	1000	200

Designed for 1070-1080nm Wavelength
Coated for 1025-1100nm
Output Ring Diameter Defined in Standard Optic Layout

General Specifications:

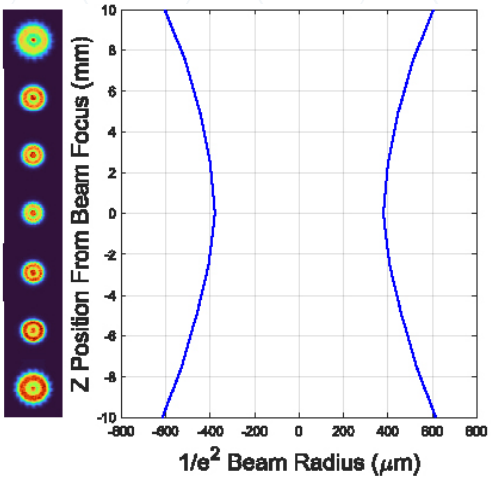
Parameter	Value
Part Diameter (mm)	30+0/-0.1
Part Thickness (mm)	3±0.05
Part Clear Aperture Diameter (mm)	25
Coating Reflectance (%)	<0.5

Thick Metal Comparison:



20mm Stainless Steel Sample (IWS Fraunhofer)

Through Focus Profile:



PP-LTG-1064-1000-AR

Custom Options:

PowerPhotonic Light Tunnel Generators can be readily modified for specific laser systems and applications upon request.

Custom options include: Different input beam diameter, different wavelength (in the window between 350nm and 2µm), larger flat top spot, different spot shape and profile and different optic diameter & thickness.

Sales and Technical:

United Kingdom
PowerPhotonic Ltd.
5A St. David's Drive
Dalgety Bay
Fife
KY11 9PF
+44 1383 825 910

North America
PowerPhotonic Inc.
16220 S. La Cañada Drive
Sahaurita
AZ 85629
United States
+1 571 866 0551

Japan
yoshiyuki.mori@powerphotonic.com
+81 80 1398 0331

sales@powerphotonic.com
www.powerphotonic.com

PowerPhotonic
Enhancing Beam Performance