PowerPhotonic

Enhancing Beam Performance

# Bessel Beam Generator

Scott Barrie

Sales Manager EMEA

PowerPhotonic
Enhancing Beam Performance

# Who we are

Patented laser machinging & smoothing process

50+ staff across UK and US

Secured contracts multiple US and UK Defense projects

Engineering and Design in house

Manufacturing sites in UK and US

# Markets & applications

Defence
Coherent Beam Combining

Material Processing
Laser welding & cutting

Datacomms
Anamorphic collimator arrays

Rings, tridents, axicons

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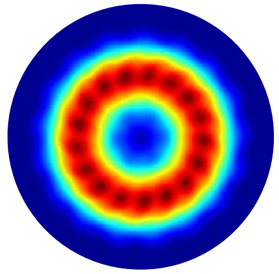
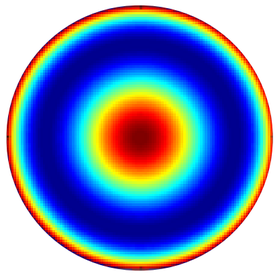
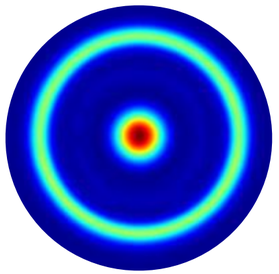
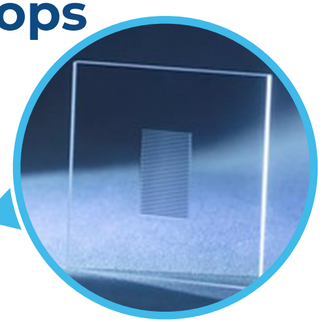






Flat tops



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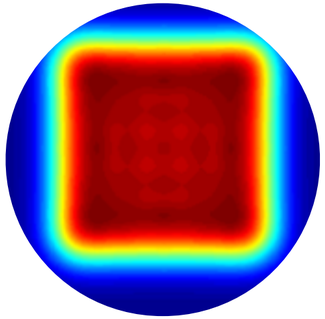

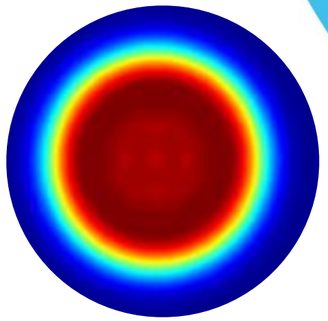

We make ultra-smooth, freeform optics

Coherent Beam Combiners

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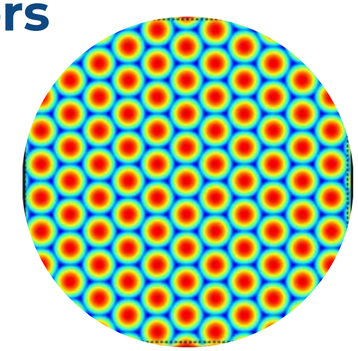

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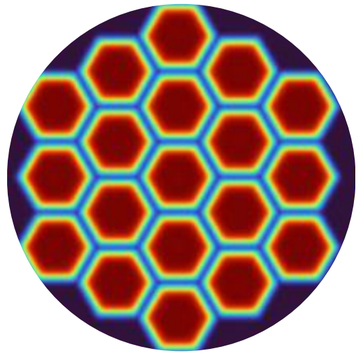
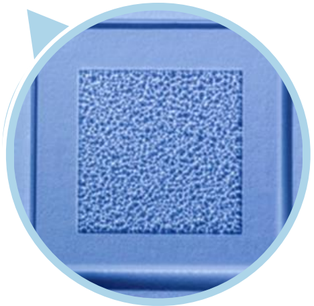


Custom, freeform outputs



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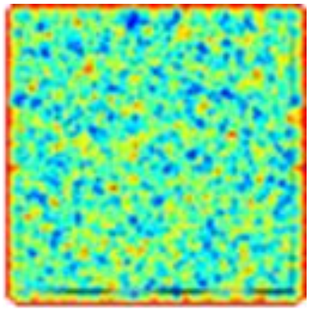

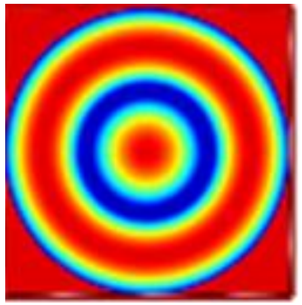

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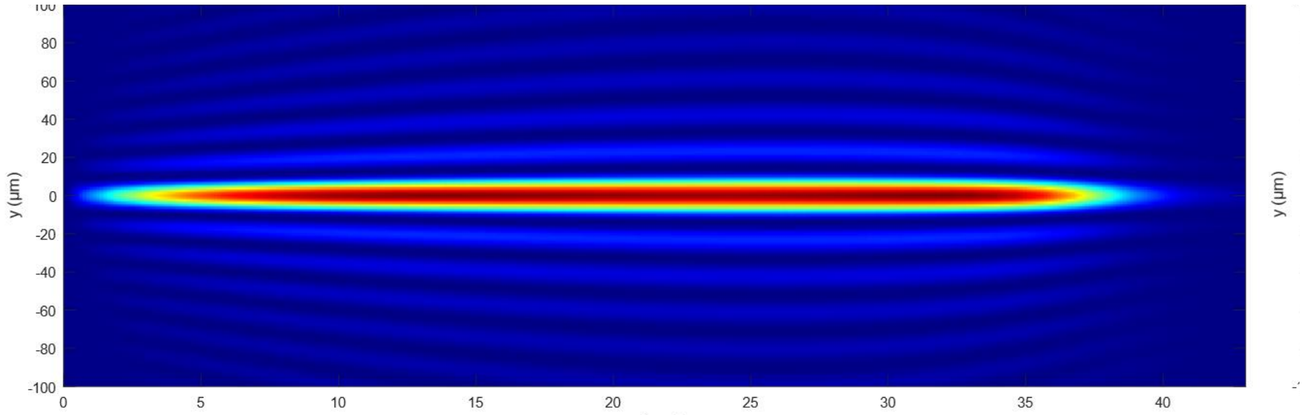
# Bessel Beam Generator




## Key Features

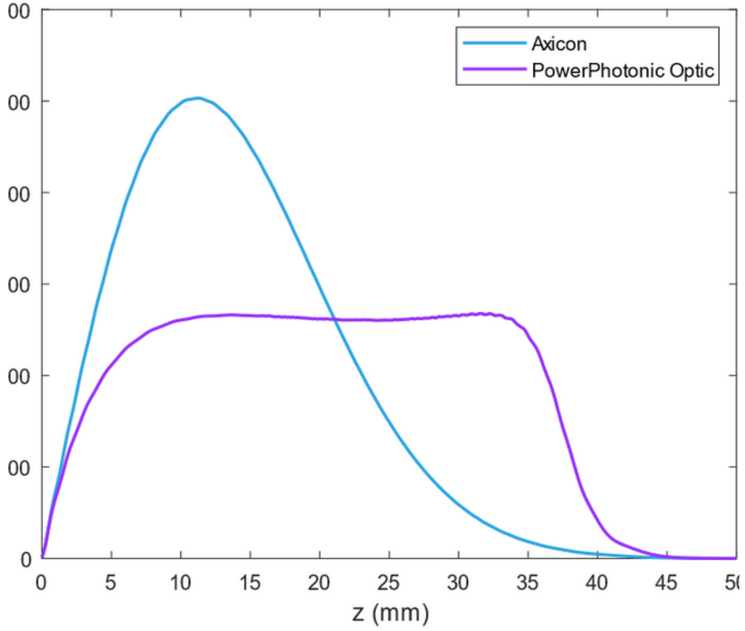
Flattened Intensity Profile along propagation direction
High Aspect Ratio of Central Lobe Size to Beam Length
High Power Handling Capabilities

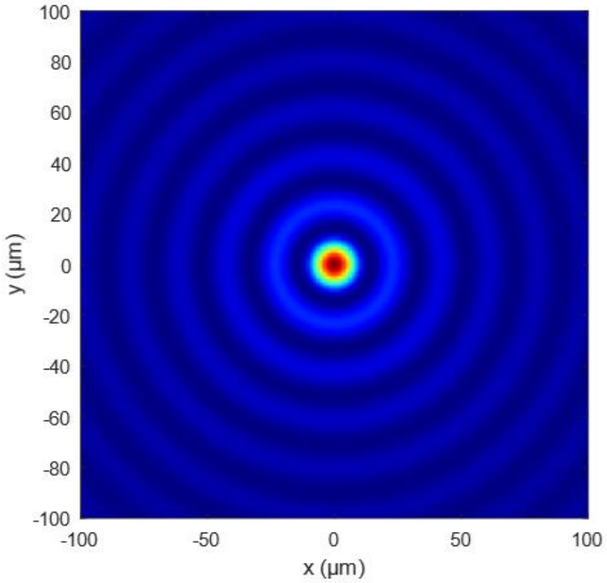
## Key Benefits

Alignment Insensitivity
Uniform Material Interaction along propagated beam
Wavelength Flexibility
Consistent Propagation Flat-Top Profile

## Applications

Glass Cutting/Cleaving
Transparent Material Processing
Medical Imaging
Optical Communications



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# Case study

**Key Points**

Freeform optics axicon design

Axicon written on 0.5 mm thick FS

**Aim**

Introduce Bessel beam shaper into femtosecond laser system and compare with picosecond process

**Outcomes**

Processing of transparent and hazy crystalized polymers without Heat Affected Zone (HAZ)

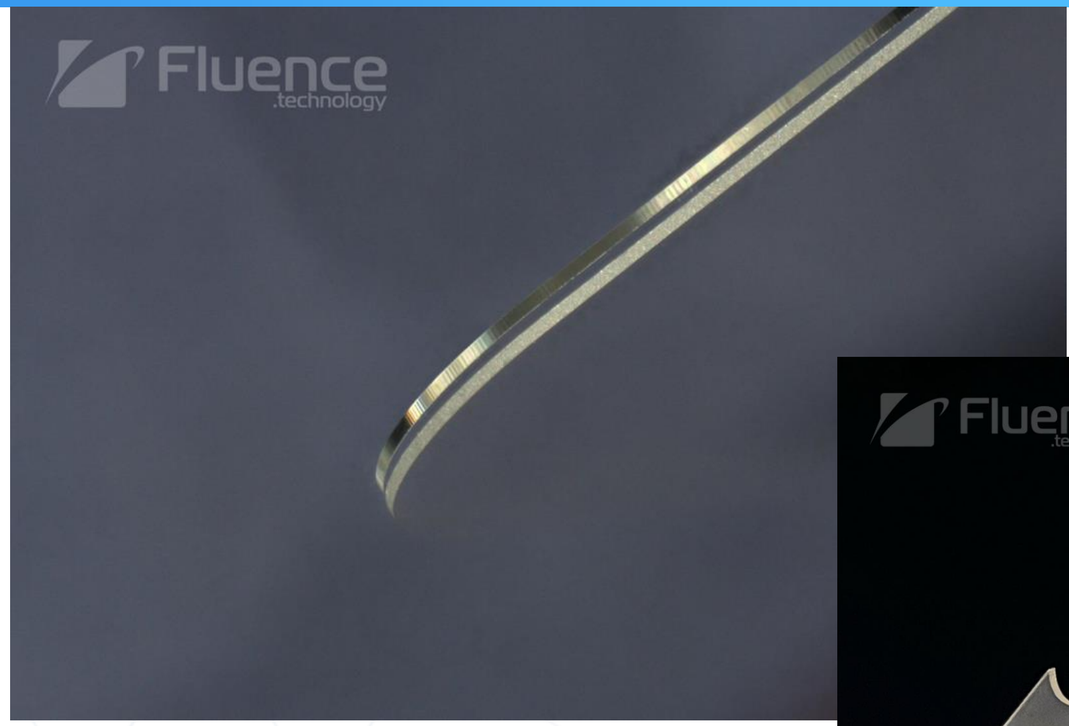
**Applications**

Glass Cutting/Cleaving

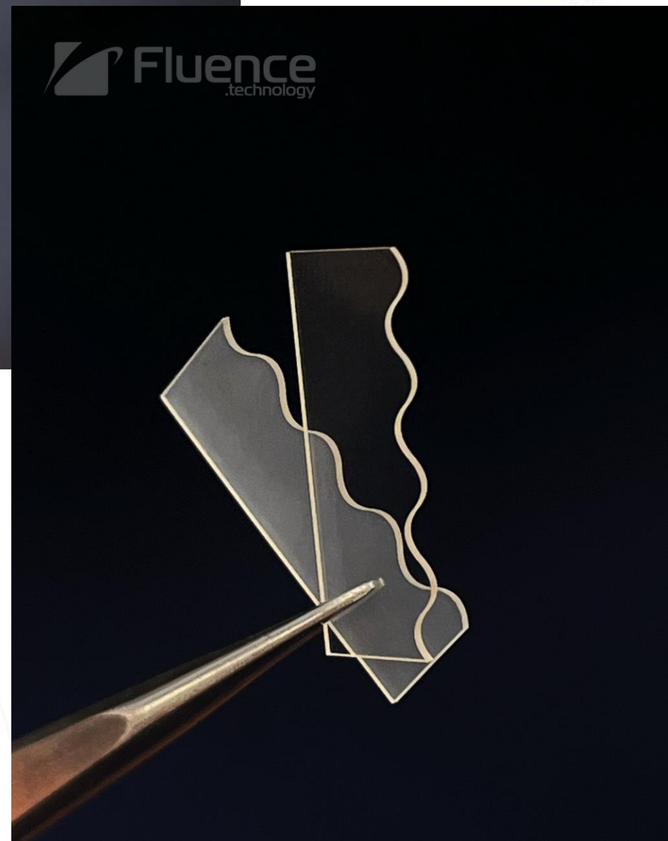
Material Processing

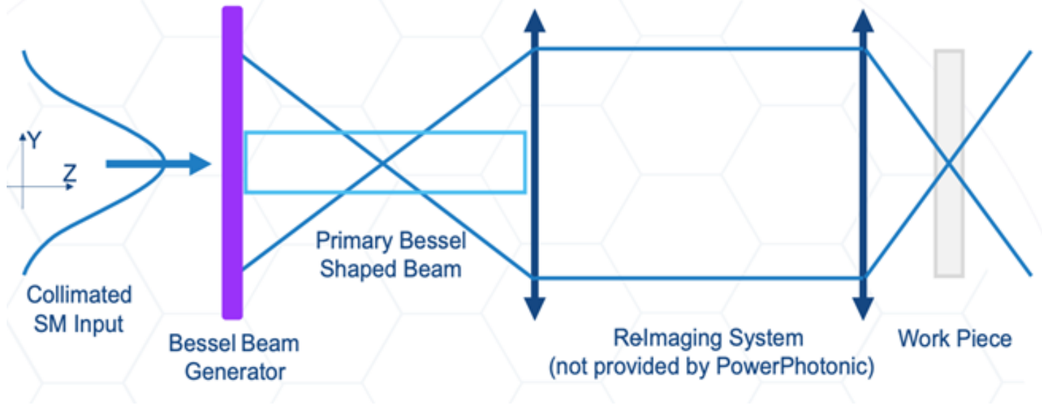
Medical Imaging

Optical Communications




Fluence
.technology



# EPIC questions

## who we are

Design and manufacture ultra-smooth, low scatter, freeform optics for high power applications

## how we can help

We can help with companies looking to:

- Optomize the efficiency of their laser system
- Achieve a specific output shape or profile
- Looking to improve the current performance of their process

## what we are looking for

We are looking to partner with companies:

- Using high power laser systems
- Manufacturing high power laser/laser processing systems
- Research institutes developing systems for high power laser applications
- Companies manufacturing high power lasers for defence applications

# Thank you

## Let’s connect


**Scott Barrie**

Sales Manager EMEA

+44 7909 087 888

scott.barrie@powerphotonic.com

https://www.powerphotonic.com/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