

MULTI BEAM SCANNER MBS

LASER DRILLING
WITH UP TO
**14.000
HOLES**
PER SECOND

**PARALLEL
PROCESSING
OF
MULTIPLE
PARTS**

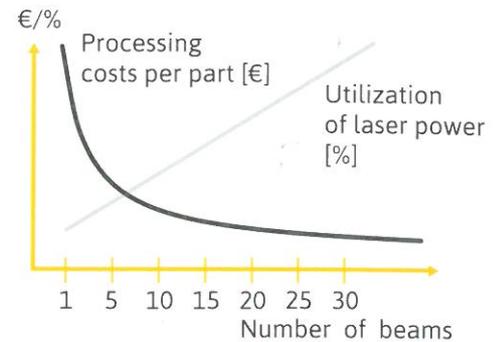
UP TO
**100 TIMES
FASTER**
THAN WORKING
WITH A SINGLE
BEAM

**BOOST YOUR LASER MICRO
PROCESSING SPEED**

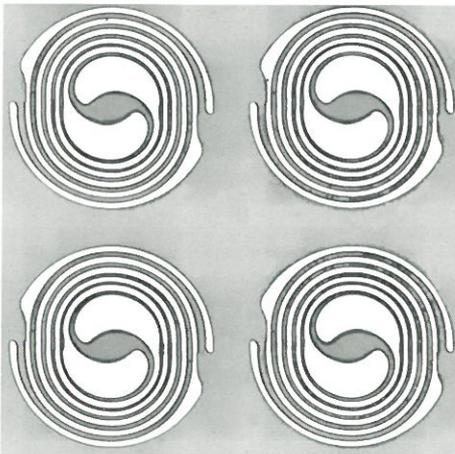
PULSAR
PHOTONICS

COST REDUCTION BY PARALLEL PROCESSING

Today multiple applications of ultra-short pulsed laser sources (USP-laser) in micro technology have been demonstrated. However, just few applications are currently running in industrial scales. The main reason for this is the lack of efficiency and productivity of ultra-short pulse laser processes which keep production costs high and thus make USP-processing simply uneconomical for a large number of applications. Having high power laser sources available the productivity of USP-processes is today mostly limited by current standard scanning systems like galvanometer scanners which cannot distribute the laser power fast enough over the work piece to prevent heat accumulation or quality reducing melt effects. The key to increase average laser power in USP-processes and thus increase productivity are new scanning systems. With the MultiBeamScanner Pulsar Photonics presents a scanning solution which can increase the productivity of laser drilling, laser cutting and laser structuring by factors of up to 100. Using a parallel processing approach the processing costs per workpiece can be significantly reduced.

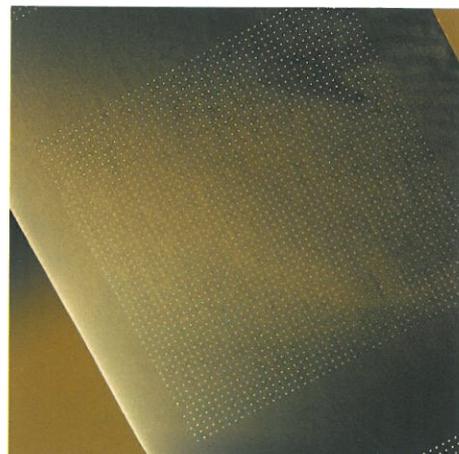


APPLICATIONS



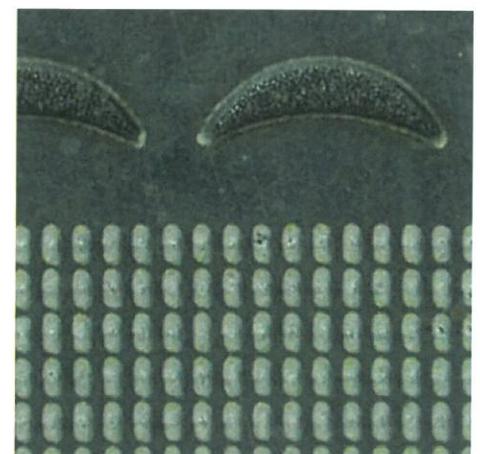
A.
**PARALLEL PROCESSING
OF MULTIPLE PARTS**

The unique combination of a precise galvanometric scanning system and beam splitting in one system allows to multiply laser cutting, drilling or ablation processes without losing the freedom of geometry of the scanner. This way multiple parts can be processed in parallel or for example complex cut patterns can be realized while multiplying the production output.



B.
**HIGH SPEED
LASER DRILLING**

Multi beam laser processing is the perfect solution for drilling or trepanning large numbers of precise holes into metal or ceramic foils by multiplying the the speed of drilling processes. With drilling rates in the multi kHz-range the system is well suited for large area applications. Drilling rates of up to 14 kHz have been demonstrated.



C.
**SURFACE
FUNCTIONALIZATION**

Micro- or nanostructured surfaces can extend the functions of a work piece by additional optical, hydrodynamic or wetting properties. These functional surfaces often consist of periodic structures (e.g. dimples), that are distributed over the surface of the work piece. Especially in production environments with short cycle times the MultiBeamScanner can reduce processing times and thus to enable economical ways for high quality laser ablation.

TECHNICAL DATA

Specifications	MultiBeamScanner MBS-R2	MultiBeamScanner Custom Solutions
Aperture	6mm	Customized aperture on request
Beam splitter		
Optical efficiency	> 70 % typically	
Spot configuration	1 dimensional (e.g. 1 x 4 spots)  2 dimensional (e.g. 3 x 3 spots) 	Customized distribution (e.g. hexagonal, square, circle)
Spot period	typically 0.3 - 6mm	other spot periods on request
Spot uniformity	typically <7%, high end <3.5%	
Variation of spot configuration	fixed spot pattern, change of pattern by exchange of beam splitter	adjustable scaling of spot period
Wavelength range	355nm, 532nm or 1064 nm, designed for one wavelength	customized wavelengths on request
Automation		
Beam splitter	motorized rotation	motorized rotation
Internal optics	motorized fine adjustment	motorized fine adjustment
Mask adjustment	manual	motorized
Beam splitter exchange	manual	motorized
Galvo Scanner manufacturer	Scanlab, Newson, Raylase, others on request Aperture \geq 15 mm	
Working area addressable with beam splitter		
Objective f = 100 mm	up to 6 x 6 mm ²	Customized on request
Objective f = 163 mm	up to 9 x 9 mm ²	Customized on request
Objective f = 256 mm	up to 15 x 15 mm ²	Customized on request

MULTIBEAMSCANNER PRINCIPLE

The MultiBeamScanner is a hybrid laser scanning system for parallel-processing with multiple laser spots in the work plane. The working principle of the system is based on a combination of diffractive beam splitting and laser scanning using a galvanometric scanner.

The MultiBeamScanner creates a defined spot pattern in the work plane, which can be adapted to the demands of the laser process.

By moving the spot pattern with the scanner, arbitrary shapes can be created with every laser spot. Thereby every sub-beam creates the same pattern which leads to a number of identical patterns on the work piece.

This new scanning concept boosts your processing speed, especially with ultra-short pulsed lasers by allowing you to use higher average laser powers without heat accumulation effects.

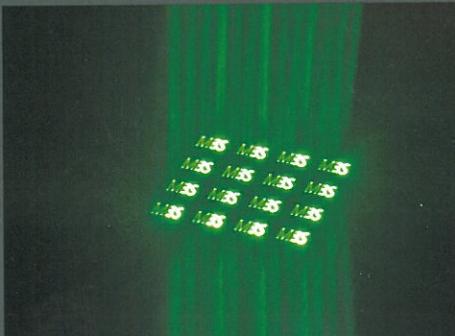
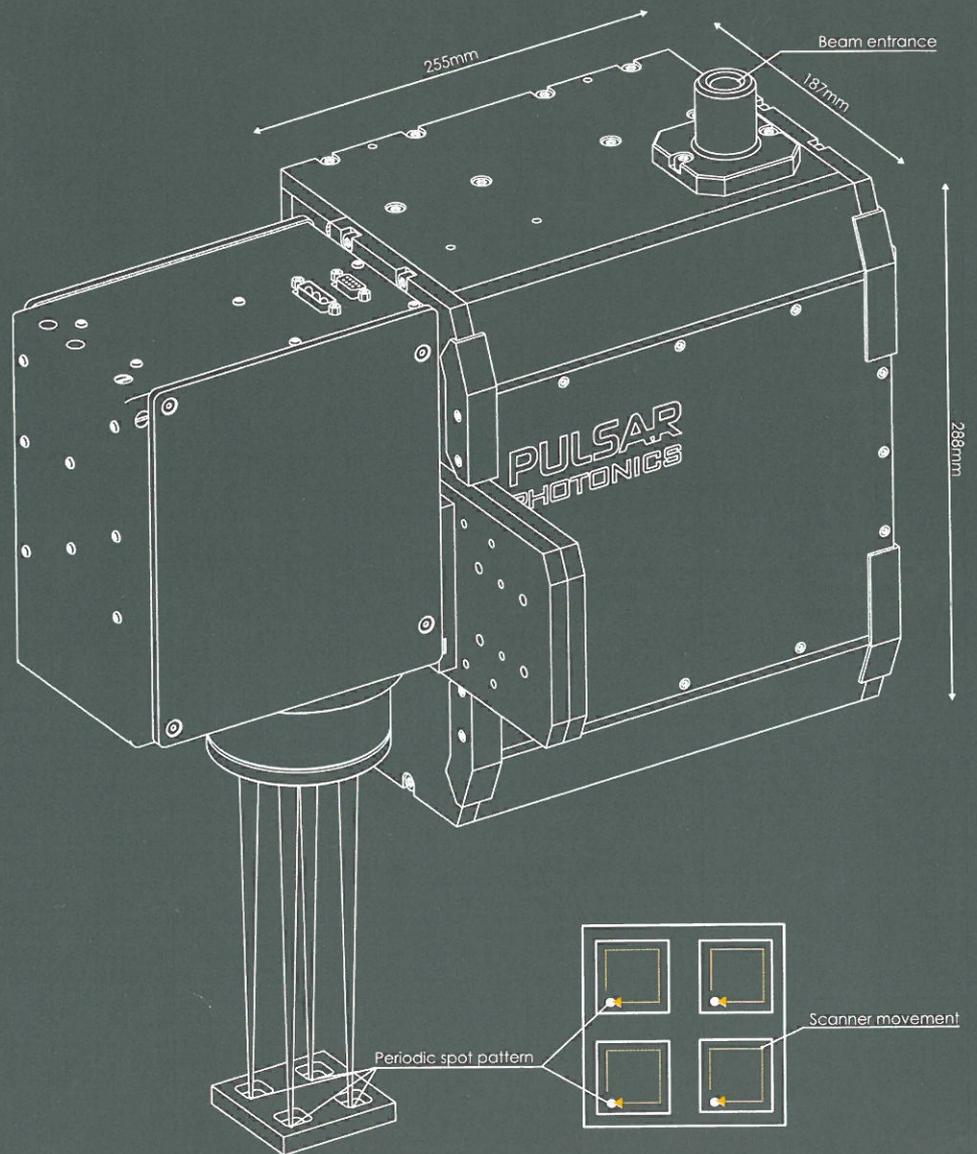


Foto © Volker Lannert

CONTACT

Pulsar Photonics GmbH
Steinbachstraße 15
52074 Aachen
GERMANY

+49 241 8906 - 8079

info@pulsar-photonics.de
www.pulsar-photonics.de

PULSAR
PHOTONICS