LASER MICROPROCESSING SYSTEM
RDX1000 FBS

PHOTONICS 4.0:
THE NEXT GENERATION OF LASER MICROMACHINING
**FLEXIBLE BEAM SHAPER - FBS**

The FBS is a machine integrable beam shaping system for micro processing, that can generate almost any beam distribution using a spatial light modulator. The integrated scanner allows to scan the distributions over the workpiece. The FBS is a digital laser processing tool that enables an easy adaption to the individual laser process. Learn more at www.pulsar-photonics.de

**RDX1000 - LASER MICROMACHINING MEETS INDUSTRY 4.0**

The laser machine RDX1000 FBS expands the portfolio of Pulsar Photonics' RDX series with a system that fulfills even the highest requirements for laser microprocessing. The outstanding property of the laser machine is the integration of a flexible beam shaping head and the use of measurement technology for an increased stability of laser processes. By the measurement of process parameters such as laser power, beam location and temperature, the condition of the machine can be monitored and if necessary corrected at any time (Condition monitoring).

**PhotonicVectors**

PhotonicVectors is a CAM-solution adapted to the needs of ultra-short pulse processing with the following key features:

- CAM Data generation based on CAD Data (STL, DXF, GerberX)
- Comparison of topography and CAD data for correction processing
- Scan time optimization, thermal process management

**Metrology**

Machine-integrated measurement technology creates advantages where quality work pieces shall be processed and a documentation of processing quality is required. The RDX1000 FBS uses a 3D topography sensor to measure the processed workpiece in the machine. This allows new ways in process management like correction processing and quality control in the machine.

**PhotonicElements**

The machine software integrates all hardware components of the machine and covers all steps from process development up to component qualification, without loosing information on interfaces.

**Machine Design**

- Rigid double C-frame construction with external control cabinet
- Machine bed made of granite
- Motorized machine axes: XY crosstable, Z axis
- Working area (standard): 450 mm x 600 mm x 300 mm

Topography sensors allow to examine the results of the laser processing directly in the machine and thus to correct the processing or to carry out a qualification of the workpieces directly in the machine. The flexible beam shaping system in the machine is a digital tool that can be configured by software to meet the demands of different laser processes. With the tool machine of the series RDX 1000, Pulsar Photonics addresses demanding applications from research and development as well as from the industrial component and small batch production.
FLEXIBLE BEAM SHAPER

in action (RDX1000 FBS interior view)

TECHNICAL DATA

Machine frame
- Rigid double C-frame construction with external control cabinet
- Machine bed made of granite for the integration of core components such as laser, beam guiding & axis system
- Superior accessibility: sliding and swing door
- Laser class 1 system

Machine axis system
- Motorized machine axes: XY crossstable, Z axis (vertical mounted, brake)
- Working area (standard): 450 mm x 600 mm x 300mm
- Repeatability: ± 0.02 mm to ± 1 micron
- Speed: up to 500 mm/s
- Type: linear direct drive or ball screw

Optical scanner
- Galvanometer-scanner, focusing objective f=60-255 mm
- Wavelengths: 355 nm, 532 nm and/or 1064 nm
- Options: Flexible Beam Shaper, Multi Beam Scanner, Drilling Head

Laser beam sources
- Pulse duration: nanosecond - picosecond - femtosecond
- Laser power: typical up to 100 W, higher on request
- Beam guidance: encapsulated free-beam guidance

Software / CAD-CAM
- Machine control: Software PhotonicElements
- CAD: rhinoceros® rhino 3D
- CAM: Software PhotonicVectors
- Topography: Software PhotonicSurfaces
- Script-based control, Auto-reporting, Fiducial recognition

Hardware-control
- Field bus system (e.g. Ethernet, RS 232 / 485, Analog I/O, Digital I/O, USB)

Measurement technology
- Camera System CM-R3 (coaxial laser pointer, LED-illumination)
- Tactile probe sensor
- Topography measurement: 3D sensor TM-R2
- Sensors: Beam profiling, Machine condition

Accessories
- Vacuum chuck, Work piece carriers, Turn/tilt unit,
- Filter systems, Zero point clamping system, Process gas system,
- CCTV, Automation

Services
- Feasibility studies, application development,
- CAD/CAM training, USP laser training, remote maintenance,
- Remote process support, software development
DIMENSIONS
(OF BASIC CONFIGURATION)

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