



**The Szewalski Institute of Fluid Flow Machinery P.A.Sci
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**LASER SYSTEM FOR MATERIAL
PROCESSING**

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Introduction:

Laser micromachining of the materials

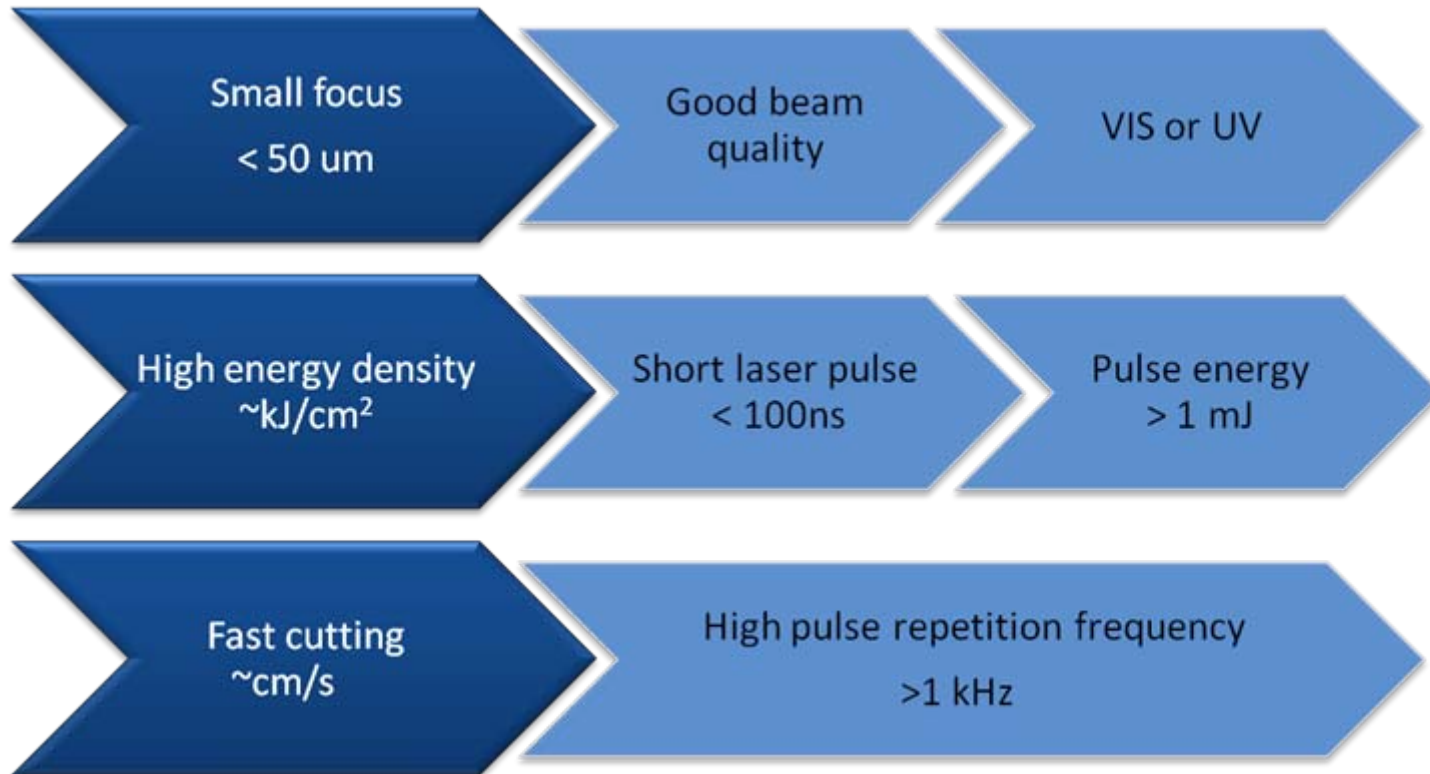
Design overview

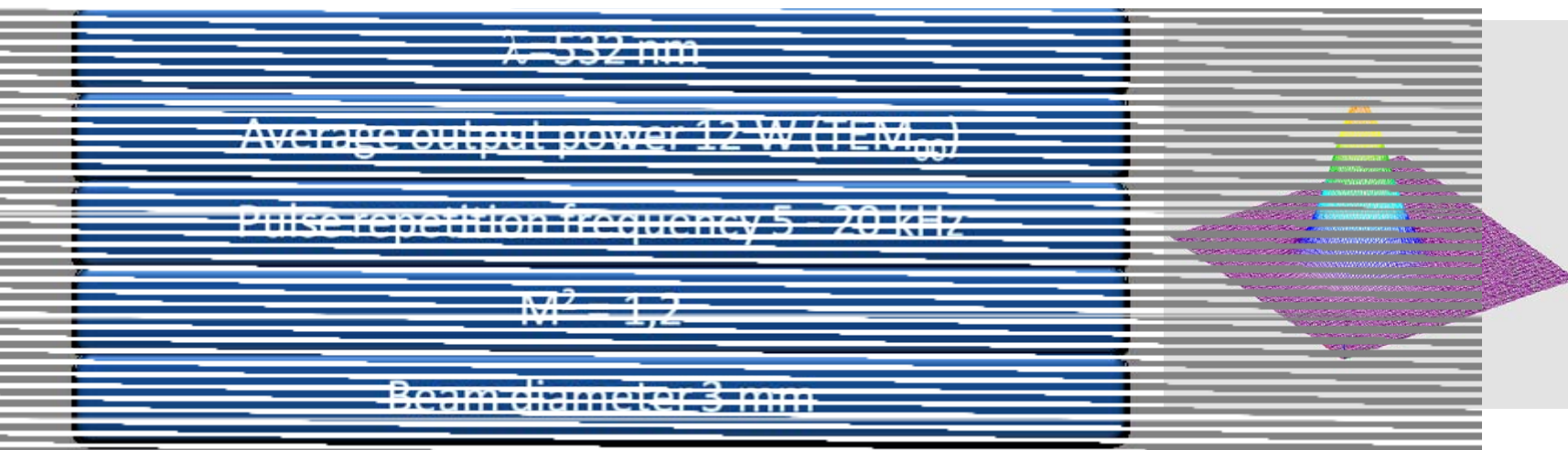
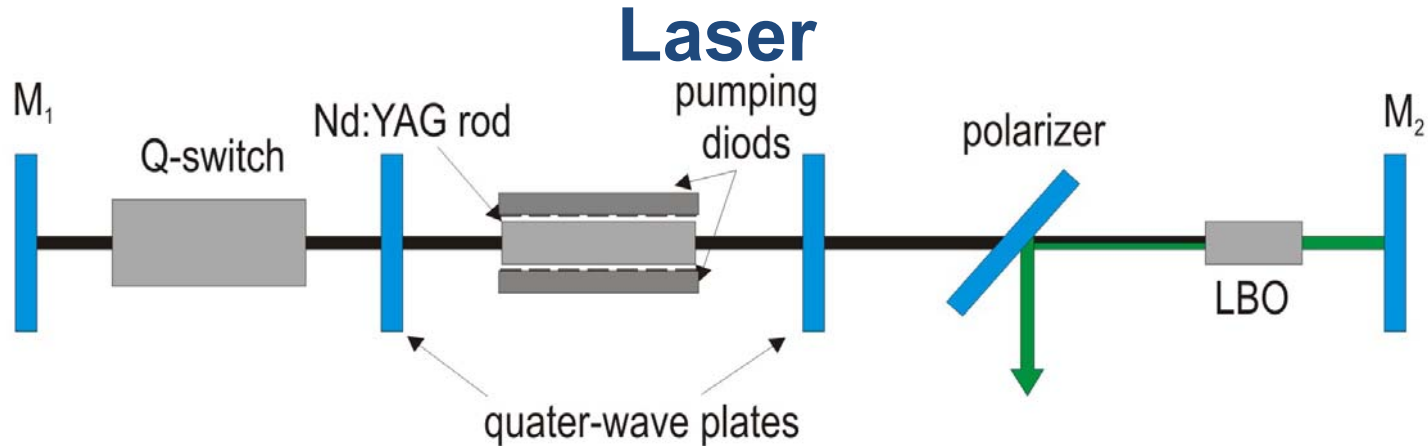
What can be machined?

Examples of application

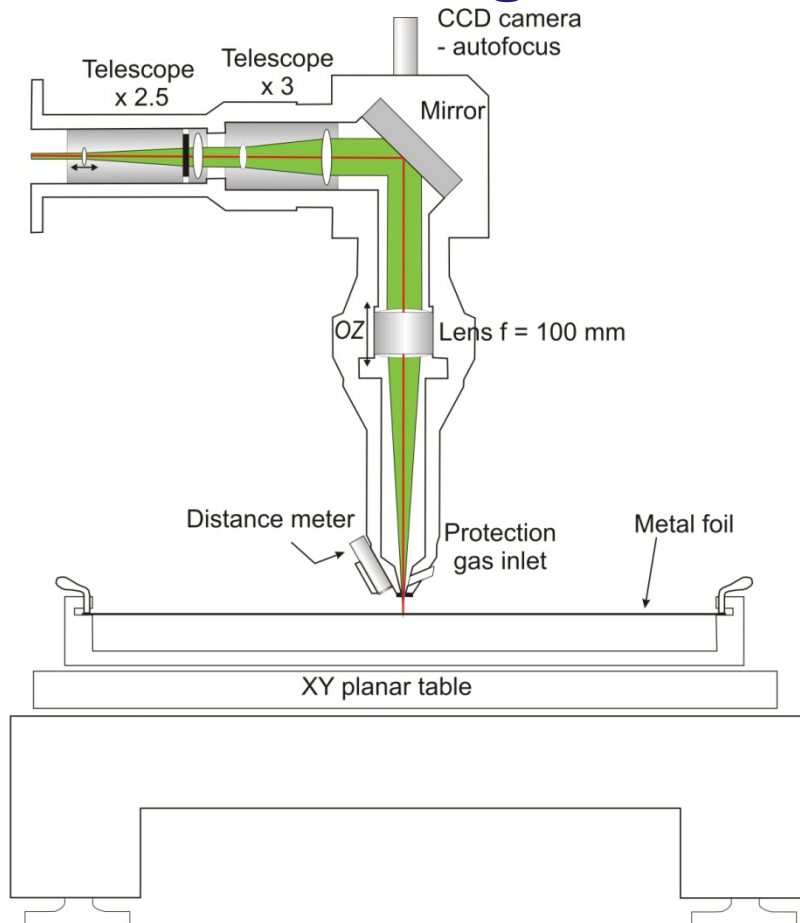
Conclusion

Laser micromachining





Cutting head and XY planar table



Working field of 60x40 cm

Cutting speed of 20 cm/s

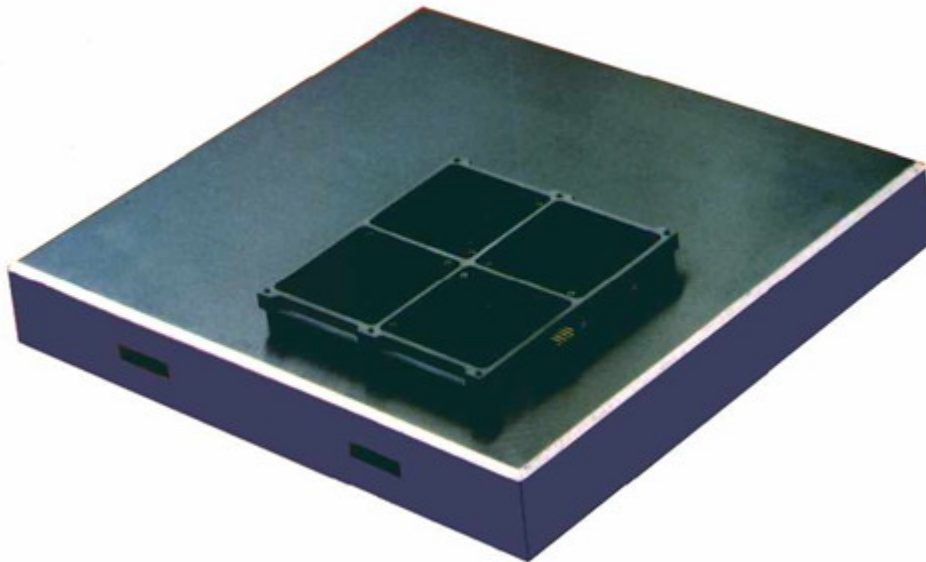
Focus diameter of 20 μm

Precision of 2 μm

Repeatability of 20 μm

Real time focusing

Cutting head and XY planar table



Working field of 60x40 cm

Cutting speed of 20 cm/s

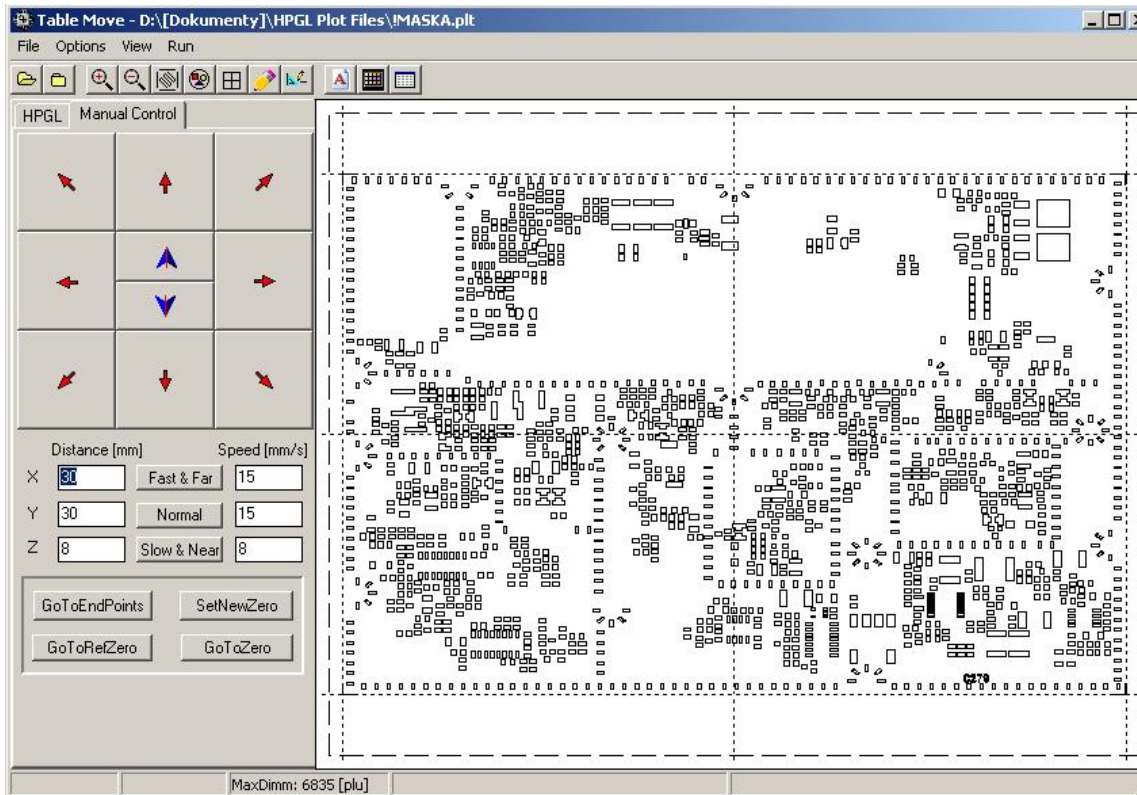
Focus diameter of 20 μm

Precision of 2 μm

Repeatability of 20 μm

Real time focusing

Control software and electronics



Real time control of cutting parameters

Control of laser beam parameters

Support of BMP and HPGL formats

Basic graphic editor included

8 MHz CNC controller

What can be machined?

Thin metal foils cutting (copper, steel, brass, bronze, aluminum), thickness up to 200 μm

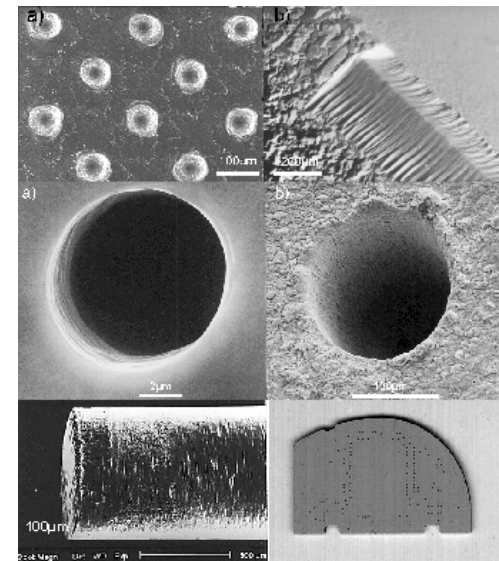
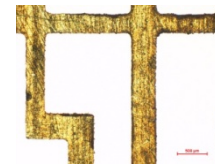
Surface structuring

Cutting and structuring of graphite and ceramics

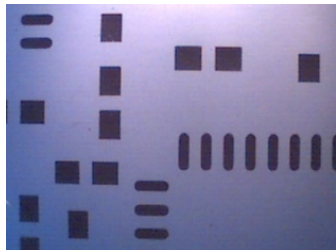
Microcutting of wires

Drilling and trepanning of holes

Engraving

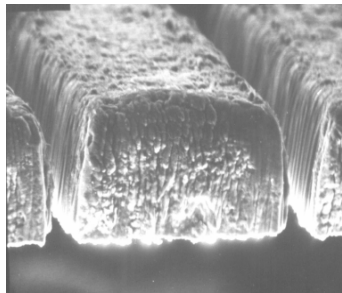


Examples of application



PCB stencils for soldering paste spread in SMT

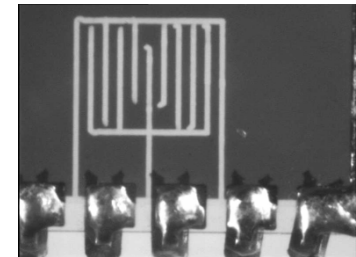
Thin – and thick layer resistors trimming



Thyristor graphite grids

Surface structuring of medical implants

Calibration mask for thermovision cameras



Conclusion



First Polish device for laser
micromachining



Modular construction enables
development



Easily can be adapted for customer
needs



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Conclusion

Very good performance to cost ratio

IP rights for all control software and
electronics

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