



## LASER FINE CUTTING

contact person  
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As laser application center with more than 25 years of experience, we are a reliable supplier for customers out of fields like precise apparatus engineering, electronics industry, especially hybrid electronics production, medical technology and aerospace sectors.

### FEATURES OF PERFORMANCE

- fiber and disk lasers of various types, performance classes and modulation options
- pulsed (lamp-pumped) or Q-switched solid state lasers either as stationary optics and gas support or as galvo systems (adjustable mirror optics)
- CO<sub>2</sub> laser (slowly streamed or slab systems)
- ultrashort pulsed lasers for quasi cold working found their way from labs of research institutions into particular industrial applications
- layout alignment on present minted folds, register/ print marks, positioning holes etc. comes standard with image processing systems
- we realize
  - > Laser beam flame cutting
  - > Laser beam fusion cutting (oxide-free edges)
  - > Laser beam sublimation cutting (remote laser cutting) as well as
  - > Laser ablation
- production of prototypes from 1 pc. to 1 million pcs./year by automated serial production lines
- wide range of materials are in stock (e.g. foils and coils out of stainless steel and non-ferrous metals as well as various ceramics)
- special materials with characteristic properties are on short call even in minimum quantities
- technical advice and customer driven technology development
- extremely short and dependable delivery times even for prototypes and samples

### POSSIBILITIES OF PROCESSING

- focus is on special materials with following thicknesses
  - > metal and ceramic foils up to 0,005 – 0,5 mm
  - > alumina / nitrides of aluminum and silicon / silicon carbide / mono- or polycrystalline silicon up to approx. 3,0 mm
  - > stainless steel, non-ferrous and refractory metals as well as noble metals up to approx. 4,0 mm
  - > Light metals like Titanium up to 3,0 mm and Aluminum and its alloys up to 6,0 mm

- typical properties are dependent on type and thickness of material as well as layout characteristics
  - > processing tolerances for material thicknesses  $\leq 2,5$  mm:  
+ / -0,05 mm
  - > processing tolerances for material thicknesses  $\leq 1,0$  mm:  
+ / -0,025 mm
  - > absolute accuracy: 15  $\mu$ m
  - > typical web width-material thickness-ratio: 1:4  
(in individual case 1:10 possible)
  - > typical chamfer of cutting edges: e.g. 0,5 mm thick stainless steel approx. 30  $\mu$ m (till 10  $\mu$ m possible)
  - > min. focus diameter of laser beam: 20-25  $\mu$ m  
(for material thicknesses  $\leq 0,2$  mm)
  - > achievable roughness at 1,0 mm stainless steel: Ra: 1,6  $\mu$ m Rz: 10  $\mu$ m
  - > max. processing area: 1000 x 1000 mm
  - > typical piece sizes: from 3 x 3 mm<sup>2</sup> to 500 x 500 mm<sup>2</sup>
  - > max. diameters for cylindrical workpieces: 150 mm for individual parts, 78 mm for bar stock (automatized till 35 mm)

### TYPICAL APPLICATIONS

- masks, covers and stencils like sputtering and evaporation masks, shadow masks, SMD stencils
- foils and coils for gauge straps, shims, distance and equalizing sheets, spacer plates, solder foils, ceramic foils
- batch substrates and ceramic panels out of Al<sub>2</sub>O<sub>3</sub> or AlN for thick and thin film applications
- form ceramics, single ceramic components for electronics industry, apparatus engineering and chemical industry
- lead frames, punch scraps, boards and injection molding depositors
- rotor and stator components out of magnetic sheets for electrical motor technologies
- busbars, contact bridges, flat plugs, battery contacts
- workpiece carriers, lap and grinding cages, suction and sustain masks
- cutting in tubes and needles
- springs, flat springs, circlips
- housings, covers and casings with electromagnetic compatibility
- grids, sieves and filters
- clock and toy parts as well as design parts and ornaments

*We also process materials and components that are hydrophobic or get damaged by mechanical treatment e.g. from micro water jet cutting.*