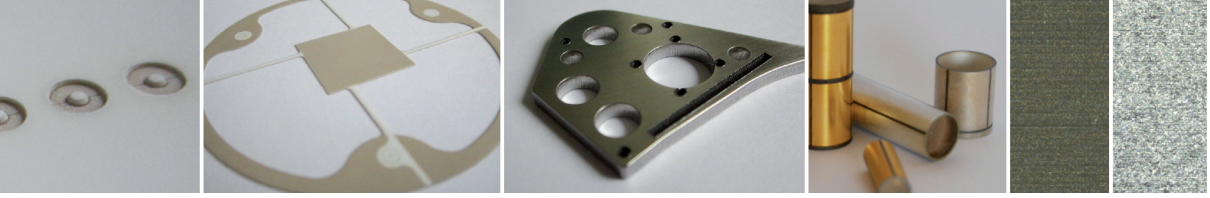

LASER ABLATION (SELECTIVE ABLATION)

contact person
Antje Oßmann

FEATURES OF PERFORMANCE

- intact surfaces (color and structural changes) or extreme deep ablation of several millimeters
- edge leaning: › 11° optional adjustable (depends on material); ≤ 11° possible (depends on material and process effort)
- heat effected zone depends on material and process effort
- minimal layer ablation in sub-micrometer range
- typical finish qualities (Ra):
  - › ablated: 1,5 µm silicon; 3,0 µm stainless steel; 7 µm Al_2O_3
  - › polished: 1,0 µm silicon; 0,6 µm stainless steel; 4 µm Al_2O_3

POSSIBILITIES OF PROCESSING

- typical subject sizes: ‹ 100 x 100 mm^2, max. 180 x 180 mm^2
- assembling of motifs possible, depends on application
- rotational axis processing possible
  - › internal diameter from 1,0 mm and external diameter to 120 mm clampable
  - › circumferential deep engraving possible
- height of components up to 60 cm, depends on application
- typical spot size for laser ablation approx. 60 µm, depends on application
- available laser sources:
  - › nano second laser 1064 nm
  - › pico second laser 1070 nm

TOLERANCES

- positioning tolerance of motif: ±100 µm, ± 50 µm on request
- by measuring of components and structures better positioning tolerances as well as an aligned double-sided processing is possible
- contour fidelity: better than 20 µm (depends on scanner and size)
- general tolerances: ± 50 µm, higher accuracy on request
- extreme high repeatability

TYPICAL APPLICATIONS

- generating defined surface patterns for special mold or adhesive and frictional properties
  - › patterning of quenched and tempered functional surfaces on die casting tools
  - › modification of optical surfaces
  - › functional surfaces on clamping claws
- generating micro structures in hardly etchable or machinable materials
  - › cavities in ceramic substrates for bare dices
  - › canal system for microfluidic applications (reactors)
  - › pre-structuring of silicon for step coating
- purification/ polishing of mechanically sensitive surfaces (removing of adhesives and other residuals)
- patterning of coated components (decoating)
  - › electrical separation of layers on completely with gold sputter-coated ceramic hollow cylinders
  - › electrical and mechanical isolation of electrolytic or galvanic applied copper layers on ceramic or polymers
  - › selective ablation of sealing and protective layers on circuit carriers
  - › trimming of track resistances
- grinding or polishing of barely machinable materials
- smoothening of milling grooves or eroded patterns
- deep structuring of metals (fine contours)

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LCP LASER CUT PROCESSING