

# AKONEER



## APPLICATIONS

We develop laser micromachining applications for our customers to be implemented in AKONEER machines.

- SSAIL
- Drilling
- Cutting
- Marking
- Engraving
- Selective laser ablation

**50+**

Application tests per year

## SSAIL

High resolution conductive traces can be formed on polymers, glass, ceramics and other dielectric materials. Trace width can go below 5  $\mu\text{m}$ .

Using SSAIL technology electrical traces can be used on different types of parts and materials:

- 3D surfaces
- Thin films
- Flexible materials
- Through via plating



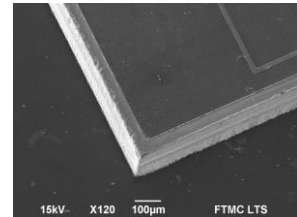
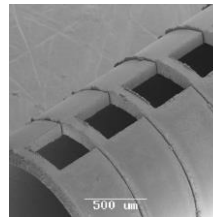
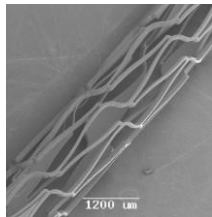
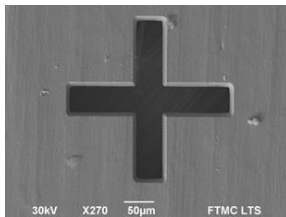
SSAIL technology works on standard dielectric materials: various polymers, glass, silicon, ceramics.

**No metal additives are needed**

## Cutting

AKONEER provides machines for laser cutting of various materials with micron level accuracy. Depending on the requirements of the surface quality and speed of the cut, we select a suiting femtosecond or nanosecond laser source and cutting technology.

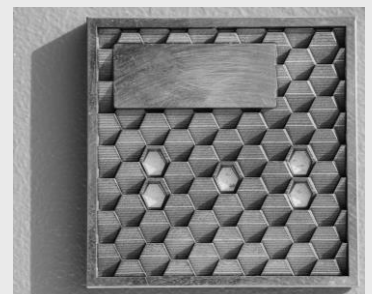
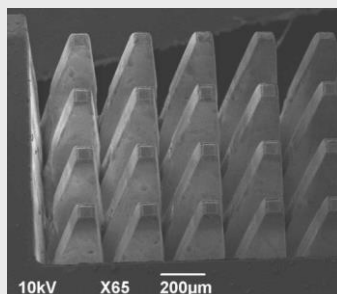
- Glass (up to 20 mm thickness non tempered glass)
- Si and SiC
- Metal and polymer foils
- PCD and composite materials
- Ceramics
- Sapphire
- Various polymers



## Engraving

Engraving with low roughness is key important in automotive, military, optical component manufacturing and many other applications.

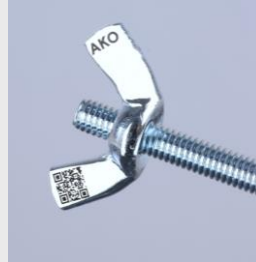
- Metals
- Semiconductors
- Ceramics
- Glass
- Polymers



## Marking

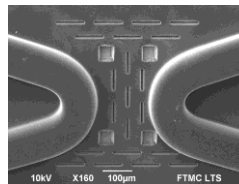
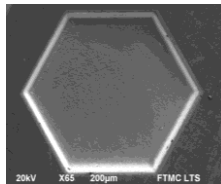
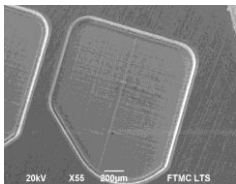
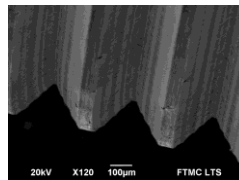
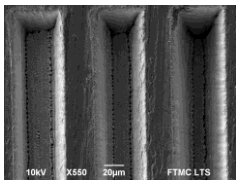
AKO ultrafast laser equipped machines are used for precision marking of multiple materials. From corrosion resistant black marking of stainless steel to micro marking of glass and polymers. AKONEER also develops a multi-color marking technology for metals and ceramics.

- Stainless steel
- Ceramics
- Glass
- Polymers



## Selective Laser Ablation

Ultrafast lasers are a great tool for selective material etching with low surface roughness. Using cold ablation, the melting and burning of the material is minimized, achieving an unmatched surface quality. High absorption of ultrashort laser pulses allows a selective ablation of thin material layers.

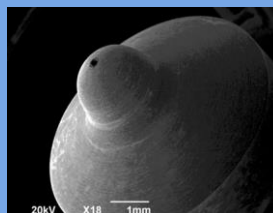
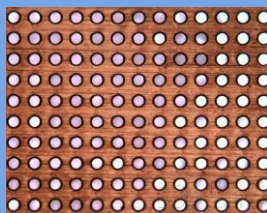
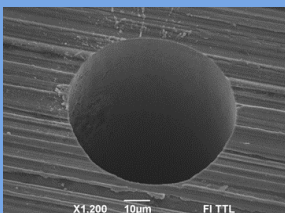


- Glass
- Sapphire
- Various polymers
- Copper
- PCD, Tungsten Carbide
- Ceramics
- CERMET
- Polycrystalline diamond

## Drilling

Akoneer provides machines for precise drilling holes in a variety of materials, ranging from glass and plastics to metals and ceramics.

Fuel injector nozzles drilling with laser-based AKO machines is an attractive alternative to older methods. High accuracy drilling, processing speed, flexible hole shaping make laser micromachining technology the best choice for fuel injector nozzles production.



- Glass
- Metals
- Ceramics
- Plastic materials
- Polymers

# FEATURES achieved with AKO machines:

- SSAIL: 1  $\mu\text{m}$  width traces to large conductive areas
- Metal marking: corrosion resistant method
- Glass cutting: thickness 19 mm
- Metal, alumina ceramics drilling: 100  $\mu\text{m}$  holes
- Ultra-hard materials ablation: removing rates achieved 0.3 – 18  $\mu\text{m}/\text{layer}$  /  
The minimal surface roughness was measured ~ 300 nm
- 125  $\mu\text{m}$  thick polyamide foil cutting: processing speed 50 m/s
- CERMET ablation: Depth control +/- 10  $\mu\text{m}$

„The cost performance of Akoneer’s laser workstations is excellent. We always enjoy working with friendly and kind Akoneer’s team members.“

**Akimi Watanabe**  
Hikali KK, Japan

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