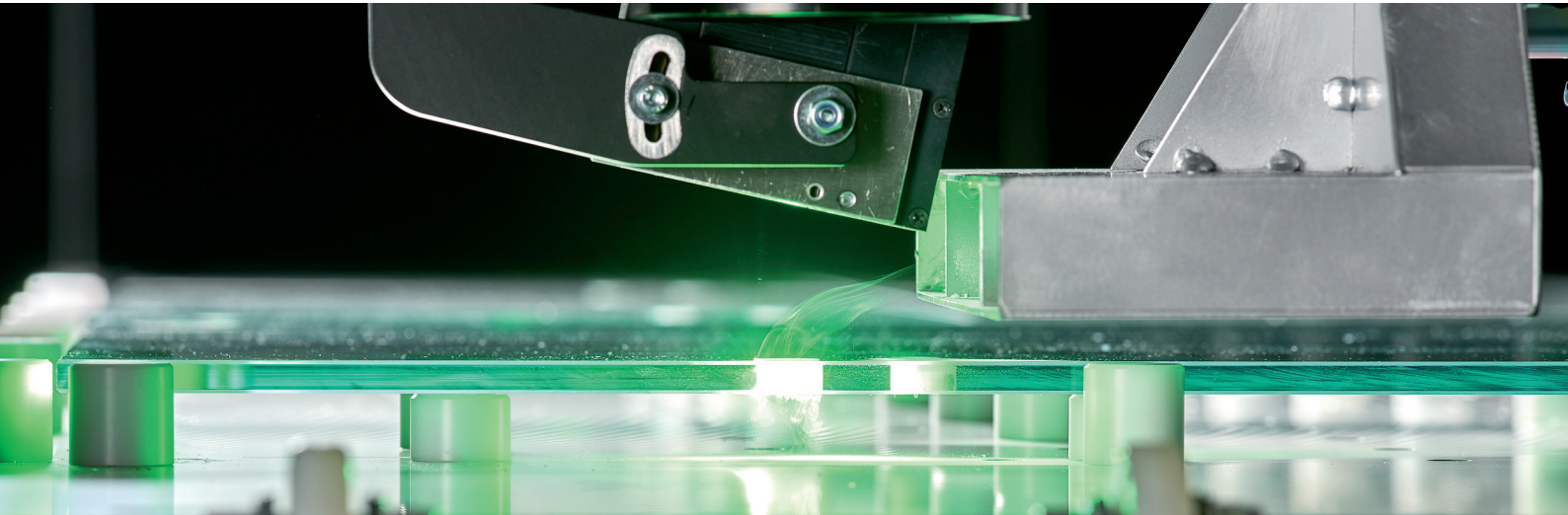


c-cut 300/300

LASER GLASS DRILLING/MILLING MACHINE



Features:

- "Dry" process
- High hole aspect ratio
- Small processing features > 0.2 mm
- High precision and standard versions
- Integration in production lines

Applications:

- Microelectronics
- Sensors
- Microfluidics

c-cut is a machine designed for laser cutting, drilling and milling of optically transparent brittle materials, primarily for laser processing of glass.

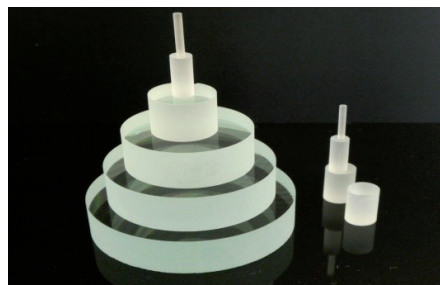
This machine enables high precision cutting and drilling of glass within a processing area of 100 x 100 mm² along arbitrary 2D or 3D curves (based on drawings). Now, it is not only possible to cut materials with thicknesses of 20 mm and more but also to drill holes with diameters down to 200 µm and achieve aspect ratios larger than 1:25.

The drilling and cutting and milling processes are completely "dry". Therefore the laser processes do neither require any water nor the accompanying water recycling systems.

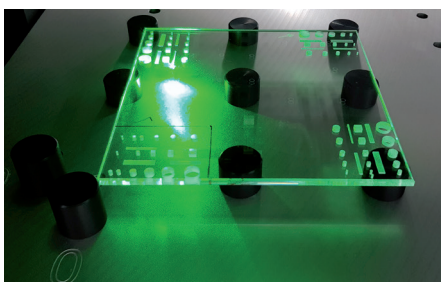
Applications



Laser cut glass in different sizes and shapes (glass thickness 4 mm)



Laser cut circles with increasing diameter from top to bottom (6 mm float glass)



Green laser radiation used for high precision drilling and cutting



Typical 'Mickey Mouse' cut-out required for pivot and hinges of glass doors

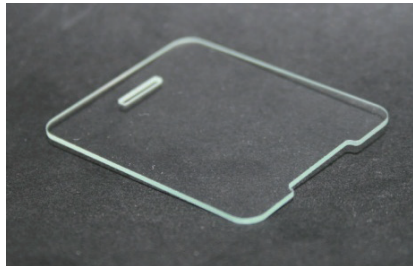


c-cut 300/300: Compact design saves space

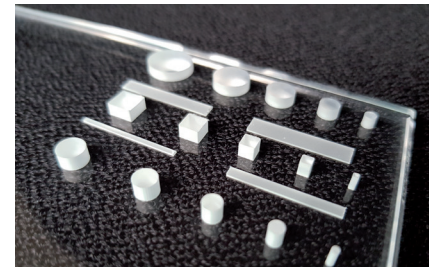
Extremely accurate

A very narrow kerf width combined with high accuracy and resolution enables cuts that are currently not possible with any conventional glass processing technology.

For the first time, the laser-based process used in the c-cut machine enables an effective way for laser milling of glass. For example, counter-sunk holes, tapered holes and other virtually arbitrary 3D structures can be milled into the glass surface with ease and precision.



Free outer contour cut and inner contour cut of 1.5 mm glass



High precision cut-outs in various small sizes and shapes

Specification

Parameter	c-cut	
	High precision <i>c-cut 300/300-60</i>	Standard <i>c-cut 300/300-100</i>
Laser source		
Laser source	fiber laser	
Laser wavelength	515 nm	
Average power	50 W	
Optical system		
Beam delivery system	optical fiber, 3 m	
Process		
Shape	Arbitrary (cut according to drawing)	
Material	Glass, brittle materials transparent for visible spectrum	
Material thickness	0.7...20 mm	
Maximum work piece size	300 x 300 mm	
Minimum hole size, Ø(4)	Ø 0.5 mm	Ø 0.7 mm
Maximum cut area	60 x 60 mm	100 x 100 mm
Drilling/cutting speed(4) (5) (6)	15 mm/s*mmt	12 mm/s*mmt
Aspect ratio (hole diameter: drill depth)	1:25	1:18
Accuracy(7)	±25 µm	±30 µm
Taper	< 2°	< 2°
Minimum kerf width(4)	200 µm	250 µm
General		
Control system	full numerical control, built-in industrial computer with OS Windows	
Cooling	water cooling, built-in chiller (8)	
Power supply	single phase, 220-240 VAC, 50 Hz	
Power consumption (Laser, built-in chiller, without suction system)	Max 2000 W	
Dimensions (W x D x H) (9)	1300 x 810 x 2000	
Weight	380 kg	
Operating conditions	ambient temperature: 20..30°C humidity: < 80% (without condensation)	

(1) - from the lower surface of the lens.

(2) - before the scanner

(3) - diffraction limited, $1/e^2$

(4) - depends on material, thickness, part size, shape, processing speed

(5) - speed is given in mm/s per 1 mm of material thickness

(6) - calculation passed on the processing time of Ø 20 mm hole in 4.0T soda lime glass

(7) - standard configuration, ambient temperature in the range of 20..30°C, can be improved on special request.

(8) - if required, the chiller can be installed separately, maximum coolant hoses length 3 m

(9) - without monitor