

## Glaser™FS glass cutting and chamfering machine

### Applications:

- cutting
- chamfering
- de-coating

### Features:

- speed up to 1 m/s
- glass thickness up to 12 mm

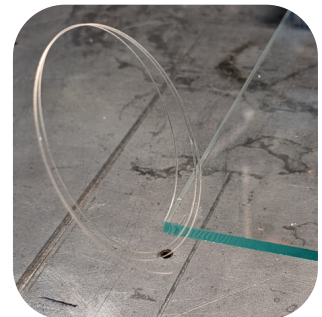
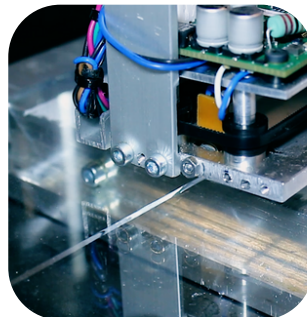
### Benefits:

- single-pass process
- self-separation
- transparent stress-free edge

The Glaser™FS machine is an advanced state-of-the-art laser CNC equipment specifically designed for glass processing operations such as cutting and chamfering within a working area of 1000 x 600 mm<sup>2</sup> along arbitrary shapes, based on drawings.

With its precise lens adjustment and accurate motion control, it offers exceptional performance, reliability, and versatility for industrial and scientific purposes.

The system incorporates a water mist nozzle to facilitate optimal conditions during laser processing. The cooling can be independently activated along the X and Y axes for precise thermal management.



### Main laser features:

- pulse duration: 250 ns
- pulse repetition rate: 33 kHz
- average power: 100 W
- peak power: up to 20 kW

The setup is equipped with Hypermemo's proprietary patented Glaser™ ns-18000 Q-switched high-power ns-pulsed CO<sub>2</sub> laser.

The laser demonstrates exceptional two-orders-of-magnitude average-to-peak power conversion, which makes it ideally fitted for industrial glass processing.

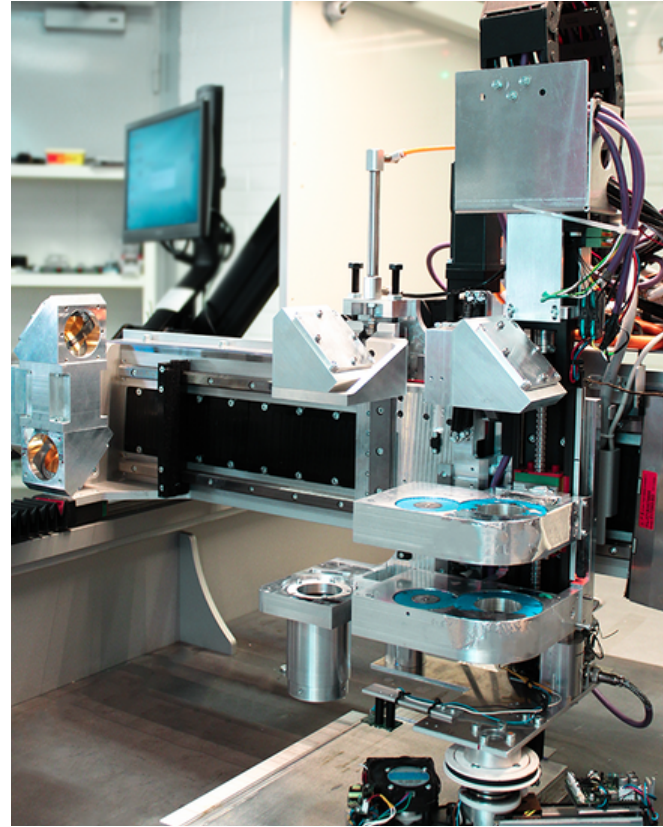
# Optical system

The optical head of the system comprises seven mirrors, which are used for guiding and shaping the laser beam.

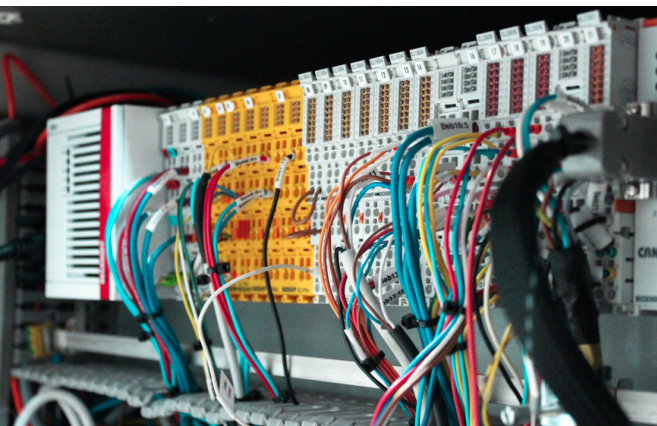
The system incorporates a combination of spherical and cylindrical lenses for focusing and shaping the laser beam. The cylindrical lenses, along the z-axis, allow for the manipulation of the beam shape, while the spherical lens can transform the laser beam into a point or a circular pattern.

The optical system enables sequential operation of the cylindrical and spherical lenses. By adjusting the distance between the lenses and their position along the z-axis, the beam shape and length can be modified to meet specific processing requirements.

Positioning of the lenses is achieved through capacitive sensors, ensuring accurate and precise control.



# Automation and Control



**Hardware platform:** Beckhoff.

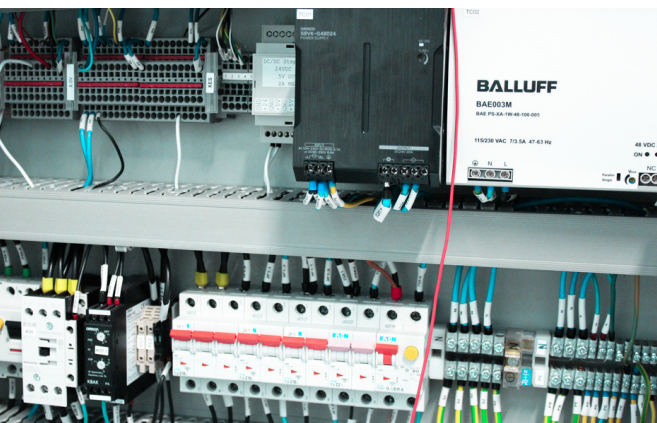
**Software:** Glaser FlatMH on top of Beckhoff TwinCat.

**Motion control:** The machine utilizes linear motors for smooth and precise motion along X and Y axes. The jogging speed can be adjusted to achieve the desired processing speed and accuracy. G-code is used to transform arbitrary shapes provided through the UI into the accurate motion trajectory.

**Home positioning:** The system allows for quick and accurate lens positioning through the Q1 Home function, which returns the lenses to their default position for ease of setup and calibration.

**Laser pulse control:** The system's custom software allows for precise control of the laser pulse duration, enabling customization of the process parameters and optimization of results.

**User interface:** The system features an advanced UI for real-time control of various process parameters.





# Technical specification

## Laser

Rated power, W	20-180
Effective peak power, kW	2-18
Power stability (long-term), %	5
Wavelength, $\mu\text{m}$	10,6
Polarization	linear
Maximum pulse frequency, kHz	50
Pulse width range, ns	300-400
Maximum duty cycle	0,015-0,02
Optical pulse rise/fall time, ns	~20
Operating ambient temperature range, $^{\circ}\text{C}$	15-50
Maximum humidity, %	70

## Cooling

Coolant	water
Coolant temperature, $^{\circ}\text{C}$	17-20
Water cooling input pressure, bar	1-2
Water cooling flow rate, L/min	40
Heat load, kW	2

## General

Control system	Beckhoff TwinCat
Total number of axes	8
Power supply	3-phase, 220-240 VAC, 50 Hz
Peak power consumption, kW	7
Dimensions (LxWxH), mm3	1800 x 1150 x 2000
Weight, kg	900

