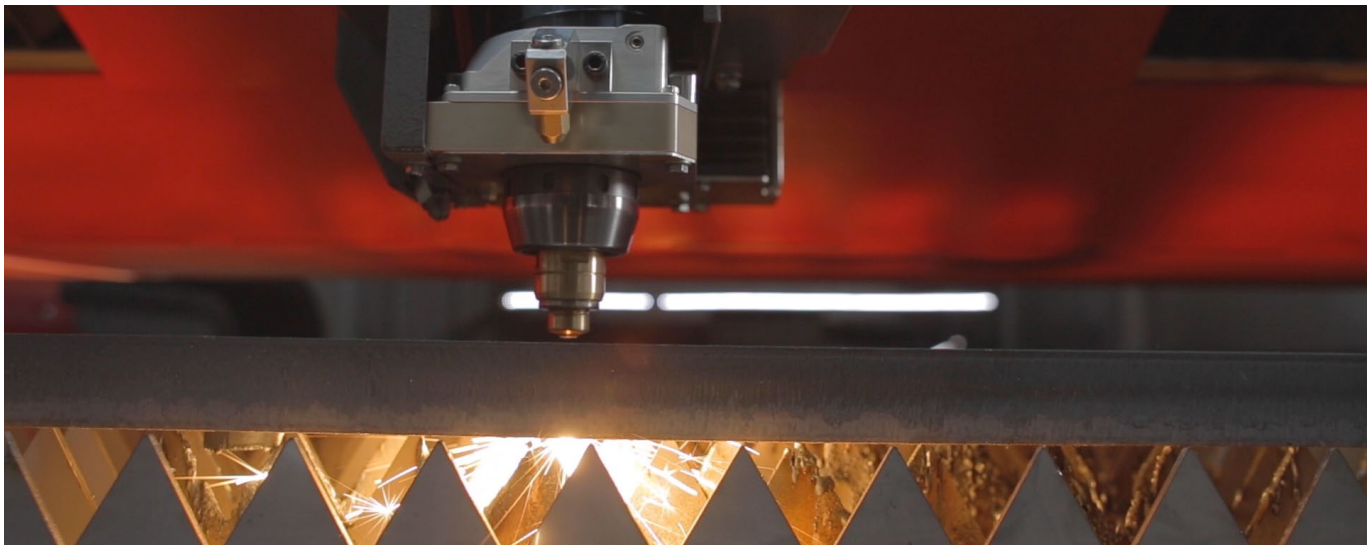
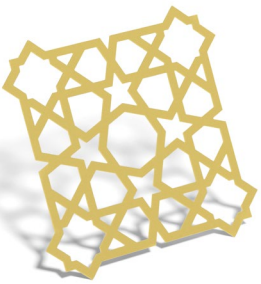
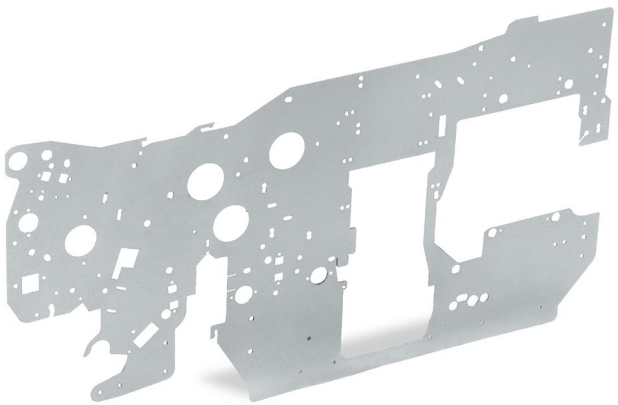


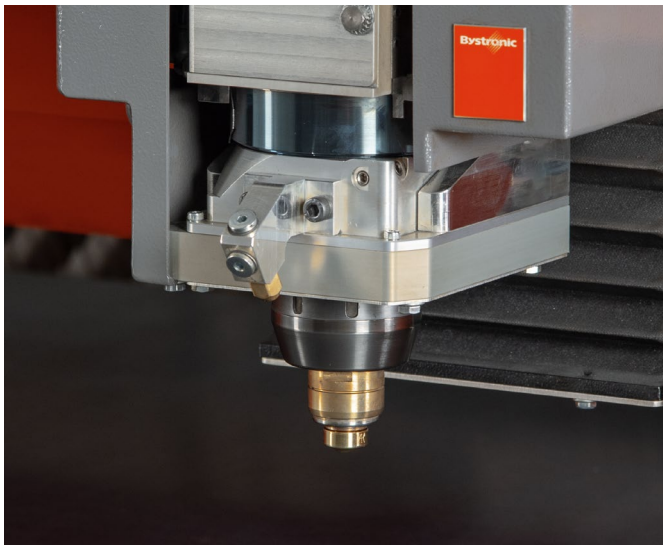
Laser cutting

Laser cutting is a thermal cutting process for processing sheet metal. The laser beam is created by the laser source (resonator), conducted by a transport fiber or mirrors in the machine cutting head where a lens focuses it at very high power on a very small diameter. This focused laser beam meets the sheet metal and melts it. Bystronic uses two types of laser sources: Fiber laser and CO_2 laser.





Versatile
Laser cutting is extremely versatile. In addition to flat materials, tubes and profiles can also be processed by laser cutting systems. Primarily steel, stainless steel, aluminum and also other nonferrous metals are cut. The thickness of the processed sheet metal ranges from 0.8 to 30 mm.



Fiber laser
Fiber lasers are the most efficient way in laser cutting. The laser beam is created by an active fiber and transmitted over a transport fiber to the machine cutting head. Fiber lasers are significantly smaller than CO_2 lasers and generate several times the power from the same amount of current. A fiber cutting system is primarily suited for processing thin to thick sheet metal from steel, stainless steel, aluminium and also other nonferrous metals (copper and brass).

Cutting techniques
Depending on the cutting technique employed, different process gases are used, and these are forced through the kerf at different pressures. The various techniques differ primarily in respect to cutting speed and the quality of the cutting edges.

Flame cutting
During flame cutting, the material is heated to ignition temperature by the laser beam, burnt by introducing oxygen, and blown out of the kerf using gas pressures of between 0.4 and 10 bar. Flame cutting permits the cutting of thick steel sheets up to 50 millimeters.

Fusion cutting
During fusion cutting, the material in the kerf is fused by the laser beam. The cutting gas used is nitrogen or argon. The cutting gas expels the fused metal from the kerf at pressures of up to 20 bar. Since the cutting gases do not react with the material, oxide-free cutting edges are produced that do not require reworking.

Cutting gas
The laser beam is focused by the lens in the cutting head and directed onto the workpiece by a nozzle. The cutting gas also flows through this nozzle. Depending on the application, oxygen, nitrogen or compressed air are used as the cutting gas.

Bystronic laser sources

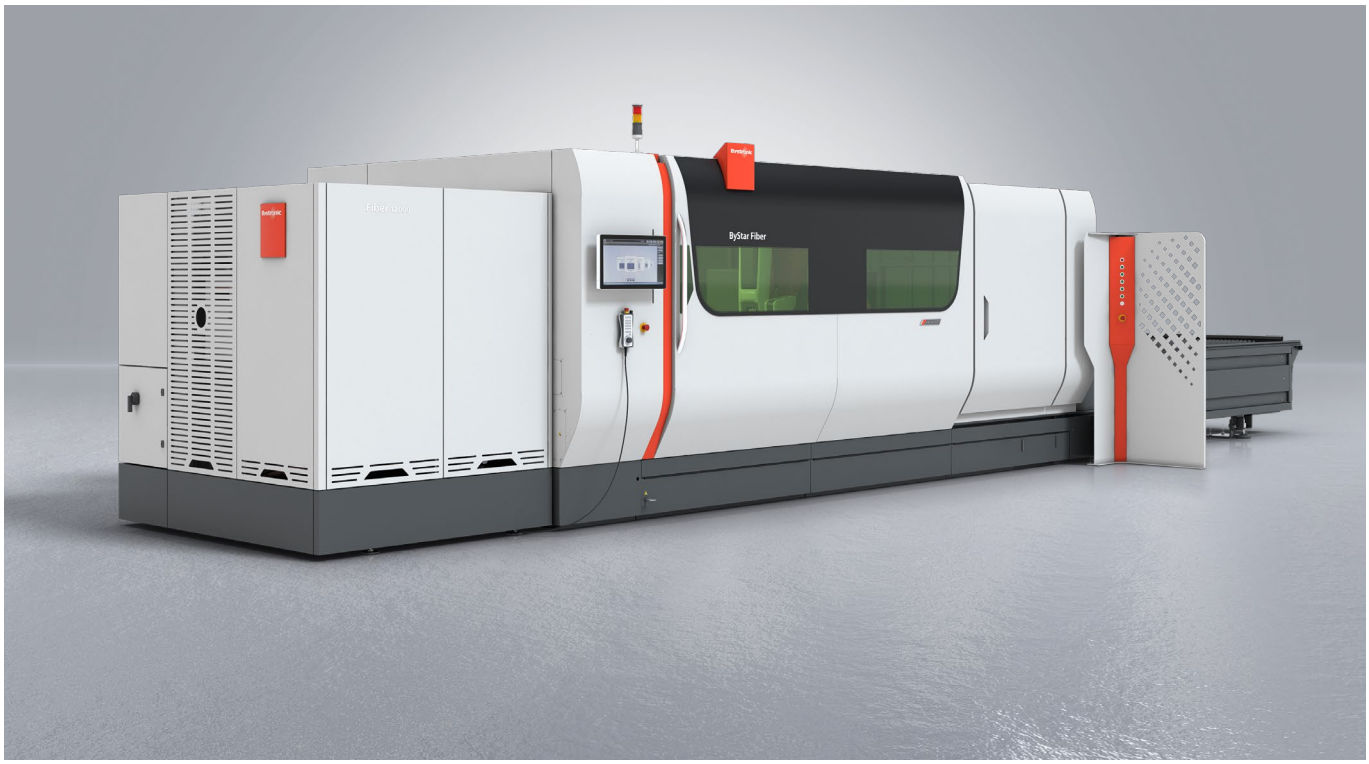
A wide selection of various, powerful laser sources is one of Bystronic's trademarks. All lasers are high-quality and highly energy efficient, not least because of their high efficiency. The portfolio contains both fiber and CO_2 lasers.

	Fiber laser								CO_2-Laser
Type of machine	Laser sources								
	Fiber 2000	Fiber 3000	Fiber 4000	Fiber 6000	Fiber 8000	Fiber 10000	Fiber 12000	Fiber 15000	ByLaser 4400
ByStar Fiber 3015		■	■	■	■	■	■	■	
ByStar Fiber 4020		■	■	■	■	■	■	■	
ByStar Fiber 6225		■	■	■	■	■	■		
ByStar Fiber 8025		■	■	■	■	■	■		
BySprint Fiber 6225		■	■	■	■	■			
BySprint Fiber 12020		■	■	■					
BySmart Fiber 3015	■	■	■	■	■	■			
BySmart Fiber 4020		■	■	■	■	■			
BySprint Pro 3015									■
BySprint Pro 4020									■

Material type	Cutting thicknesses								
	Fiber 2000	Fiber 3000	Fiber 4000	Fiber 6000	Fiber 8000	Fiber 10000	Fiber 12000	Fiber 15000	ByLaser 4400
Steel (max. cutting sheet thickness)	12 mm	20 mm	20 mm	25 mm	25 mm	25 mm	25 mm	25 mm	25 mm
Steel (with option BeamShaper)		20 mm	25 mm	30 mm	30 mm	30 mm	30 mm	30 mm	
Steel (advanced applications)								50 mm	
Stainless steel (max. cutting sheet thickness)	6 mm	12 mm	15 mm	30 mm	30 mm	30 mm	30 mm	40 mm	20 mm
Stainless steel (advanced applications)								50 mm	
Aluminum (max. cutting sheet thickness)	8 mm	12 mm	20 mm	30 mm	30 mm	30 mm	30 mm	40 mm	12 mm
Aluminum (advanced applications)								50 mm	
Brass (max. sheet thickness)	4 mm	6 mm	8 mm	15 mm	15 mm	15 mm	15 mm	20 mm	
Copper (max. sheet thickness)	3 mm	6 mm	8 mm	12 mm	12 mm	12 mm	12 mm	20 mm	

Fiber Warranty Premium
The exclusive service for all fiber laser cutting systems. 5 years comprehensive protection for the replacement of parts of the fiber laser source. During the warranty period, the cutting hours are unlimited.

Fiber Warranty Premium

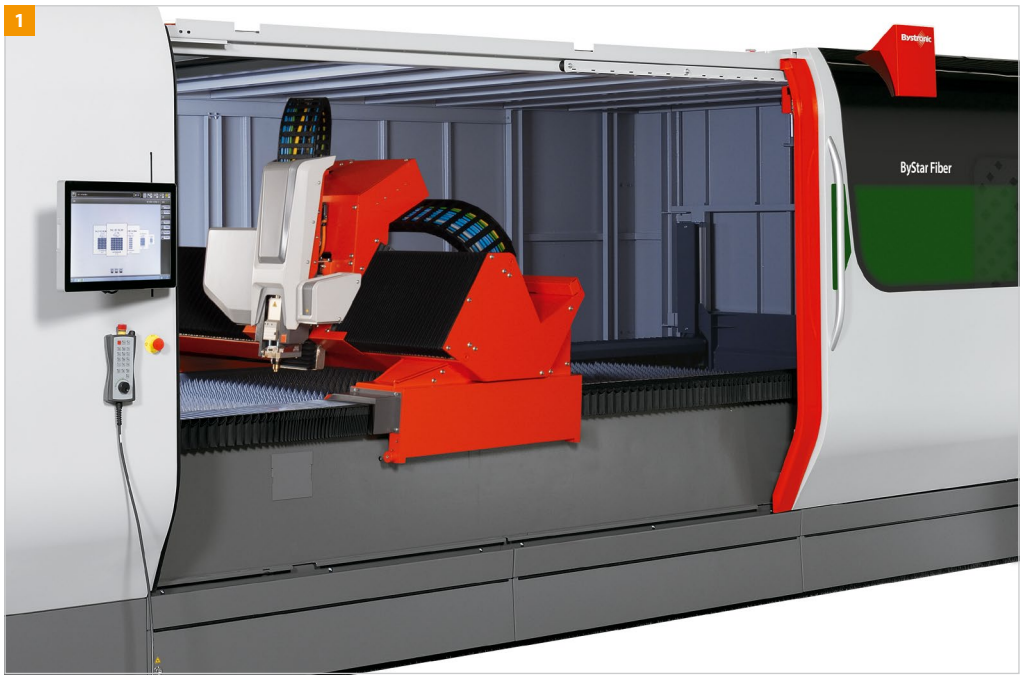


ByStar Fiber

Fiber laser cutting for the highest performance

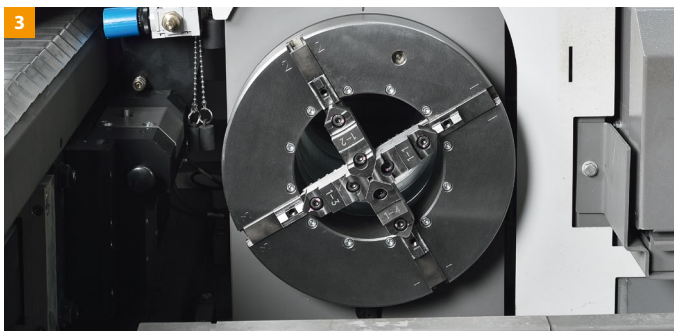
Customer benefits

- High-speed cutting in a class of its own, with up to 15 kilowatts of laser power. For unbeatable productivity in 3 to 15 millimeter thick mild steel with an average 50 percent speed advantage over 10 kilowatts
- Maximum flexibility for large series and spontaneous customer orders. Regardless of whether aluminum, non-ferrous metals, or steel, the high-performance Bystronic cutting head excels with maximum precision in both thin and thick sheets and profiles
- Clean cutting edges and high operational reliability in a wide variety of steel sheet qualities thanks to the unique BeamShaper option (up to 30 millimeter)
- With the "Advanced Applications" option, 15 kilowatts of laser power now also enables expanded applications in steel and aluminum of up to 50 millimeters
- Using a 21.5-inch touch screen, Bystronic's ByVision Cutting software is operated just as simply as a smartphone
- A wide range of automation solutions guarantees maximum machine utilization and process reliability even during unmanned operation



1 Unlimited accessibility
2 Cutting head
3 Rotary axis*
4 Nozzle changer
5 Detection Eye

* For 3015 and 4020 format only



	ByStar Fiber 3015	ByStar Fiber 4020	ByStar Fiber 6225	ByStar Fiber 8025
Nominal sheet size	3,000 × 1,500 mm	4,000 × 2,000 mm	6,200 × 2,500 mm	8,000 × 2,500 mm
Max. simultaneous positioning speed	170 m/min	170 m/min	170 m/min	170 m/min
ByVision Cutting operation and manual control unit	■	■	■	■
Circumscribed circle diameter of the rotary axis	30–315 mm	30–315 mm		

ByStar Fiber
Technical Data

	ByStar Fiber 3015	ByStar Fiber 4020	ByStar Fiber 6225	ByStar Fiber 8025
Length	11,900 mm	14,200 mm	20,200 mm	23,800 mm
Width	5,700 mm	6,300 mm	6,900 mm	6,900 mm
Height	3,200 mm	3,200 mm	3,200 mm	3,200 mm
Nominal sheet size (X)	3,000 mm	4,000 mm	6,200 mm	8,000 mm
Nominal sheet size (Y)	1,500 mm	2,000 mm	2,500 mm	2,500 mm
Cutting area (X)	3,100 mm	4,105 mm	6,250 mm	8,150 mm
Cutting area (Y)	1,580 mm	2,100 mm	2,600 mm	2,600 mm
Cutting area (Z)	100 mm	100 mm	150 mm	150 mm
Max. positioning speed parallel axis X/Y	120 m/min	120 m/min	120 m/min	120 m/min
Max. simultaneous positioning speed	170 m/min	170 m/min	170 m/min	170 m/min
Bilateral repeatability of positioning of one axis R (following ISO 230-2:2014(E))	0.025 mm	0.025 mm	0.025 mm	0.025 mm
Averaged, bilateralposition deviation of one axis M (following ISO 230-2:2014(E))	0.05 mm	0.05 mm	0.1 mm	0.1 mm
Edge detection accurancy (±)	0.5 mm	0.5 mm	0.5 mm	0.5 mm
Max. workpiece weight	1,100 kg	1,900 kg	3,650 kg	4,710 kg
Maximum allowed workpiece weight on both shuttle tables	1,850 kg	3,200 kg	7,300 kg	9,420 kg
Machine weight (without exhaust, chiller and conveyor)	11,000 kg	14,500 kg	22,000 kg	27,000 kg
Table changeover time	25 s	28 s	56 s	64 s
Operation	ByVision Cutting Touchscreen and manual control unit			

Laser source	Fiber 3000	Fiber 4000	Fiber 6000	Fiber 8000
Power	3,000 W	4,000 W	6,000 W	8,000 W
Range of adjustment	300–3,000 W	400–4,000 W	600–6,000 W	800–8,000 W
Wavelength	Fiber	Fiber	Fiber	Fiber
Steel (max. cutting sheet thickness) *	20 mm	20 mm	25 mm	25 mm
Steel (with option BeamShaper) *	20 mm	25 mm	30 mm	30 mm
Steel (Option «Advanced Applications») *				
Stainless steel (max. cutting sheet thickness) *	12 mm	15 mm	30 mm	30 mm
Stainless steel (Option «Advanced Applications») *				
Aluminum (max. cutting sheet thickness) *	12 mm	20 mm	30 mm	30 mm
Aluminum (Option «Advanced Applications») *				
Brass (max. sheet thickness) *	6 mm	8 mm	15 mm	15 mm
Copper (max. sheet thickness) *	6 mm	8 mm	12 mm	12 mm
Total electric consumption of system ByStar Fiber 3015 **	20 kW	21 kW	22 kW	24 kW
Total electric consumption of system ByStar Fiber 4020 **	20 kW	21 kW	22 kW	27 kW
Total electric consumption of system ByStar Fiber 6225 **	21 kW	22 kW	23 kW	26 kW
Total electric consumption of system ByStar Fiber 8025 **	21 kW	23 kW	23 kW	26 kW

Laser source	Fiber 10000	Fiber 12000	Fiber 15000
Power	10,000 W	12,000 W	15,000 W
Range of adjustment	1,000–10,000 W	1,200–12,000 W	400–15,000 W
Wavelength	Fiber	Fiber	Fiber
Steel (max. cutting sheet thickness) *	25 mm	25 mm	25 mm
Steel (with option BeamShaper) *	30 mm	30 mm	30 mm
Steel (Option «Advanced Applications») *			50 mm
Stainless steel (max. cutting sheet thickness) *	30 mm	30 mm	40 mm
Stainless steel (Option «Advanced Applications») *			50 mm
Aluminum (max. cutting sheet thickness) *	30 mm	30 mm	40 mm
Aluminum (Option «Advanced Applications») *			50 mm
Brass (max. sheet thickness) *	15 mm	15 mm	20 mm
Copper (max. sheet thickness) *	12 mm	12 mm	20 mm
Total electric consumption of system ByStar Fiber 3015 **	25 kW	27 kW	27 kW
Total electric consumption of system ByStar Fiber 4020 **	28 kW	27 kW	27 kW
Total electric consumption of system ByStar Fiber 6225 **	27 kW	27 kW	27 kW
Total electric consumption of system ByStar Fiber 8025 **	27 kW	27 kW	27 kW

* In order to cut the maximum thicknesses, the following conditions must be met:
- optimally maintained and adjusted laser cutting systems
- the materials must be of the quality specified by Bystronic (laser materials)

** Entire system with exhaust and chiller: Electrical consumption data shows an average value based on 4 reference cutting plans of mild steel between 1–10 mm thickness

The right to make changes to dimensions, construction, and equipment is reserved. ISO-9001-certified.

The technical data can vary in the different countries, according to local security rules and configuration of the machine.