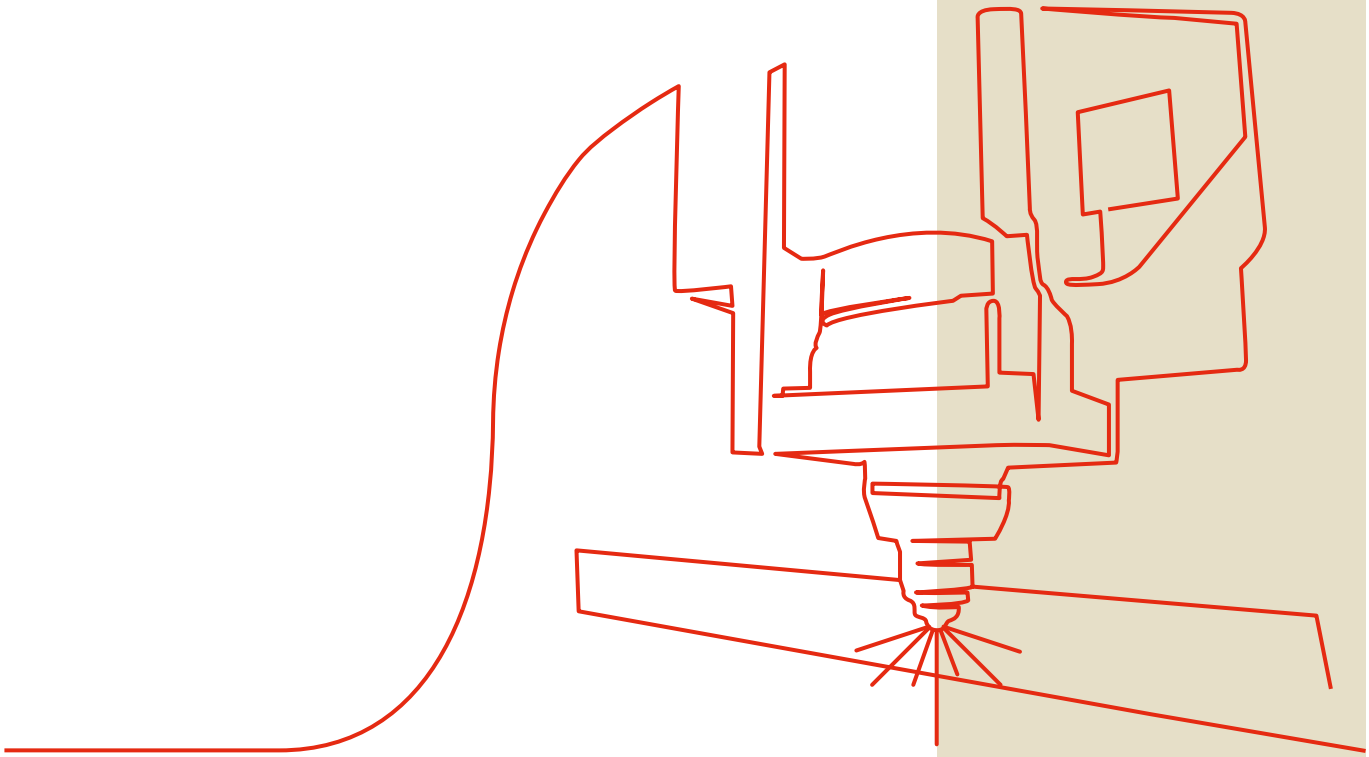
Bystronic



Laser Cutting

Your best choice.

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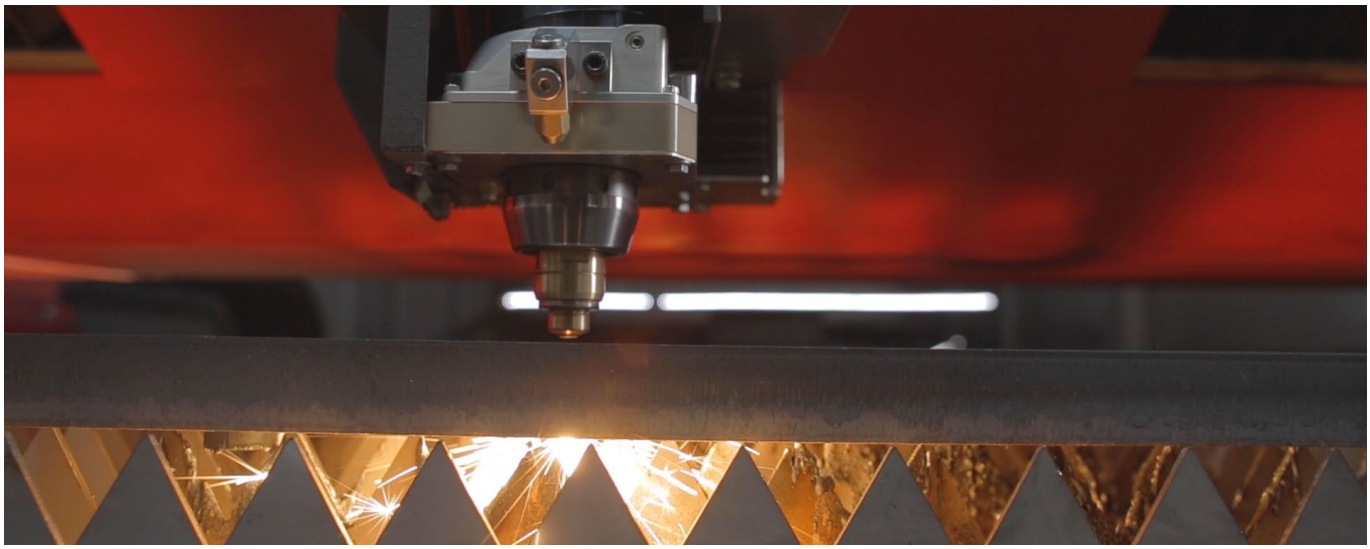
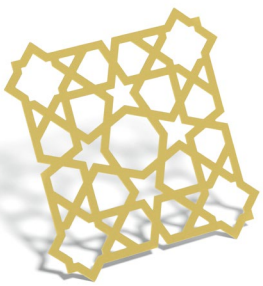
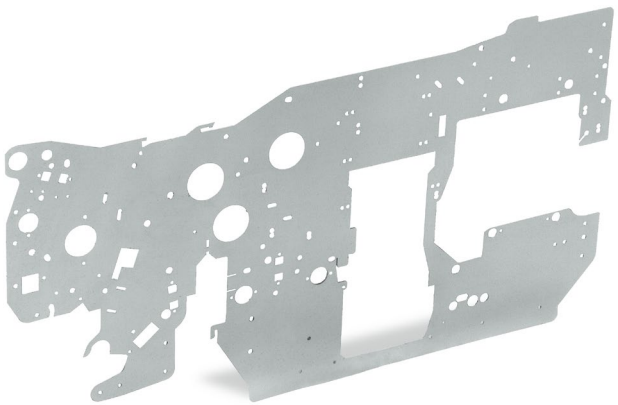


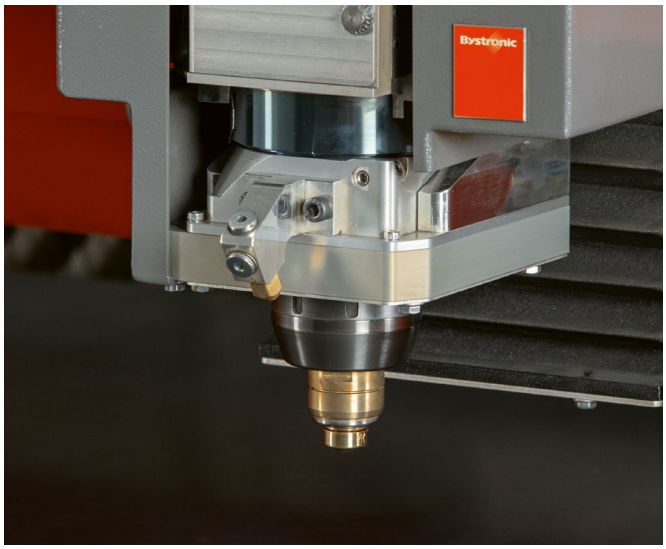
Laser cutting

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.





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 60 mm.



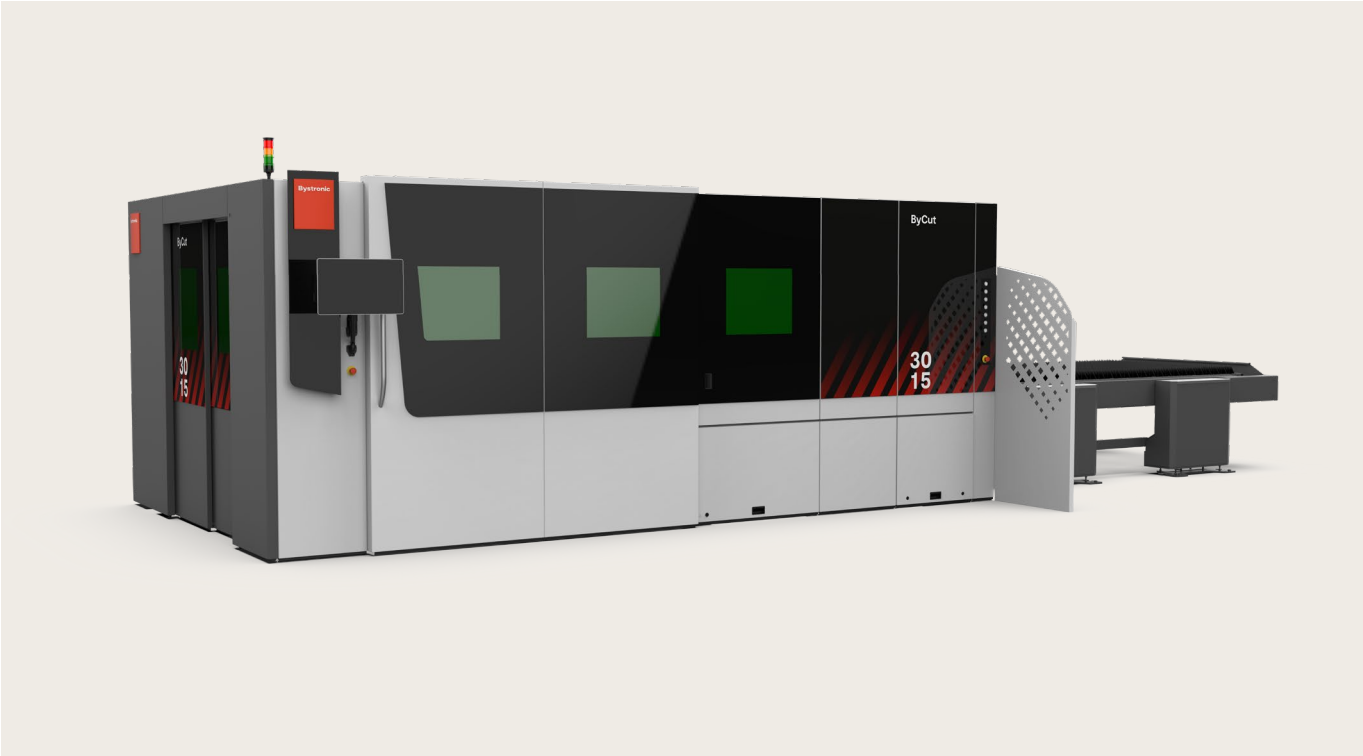
Fiber laser
Fiber lasers are the most efficient way in laser cutting. The laser beam is created by an active fiber and transmitted over a transport fiber to the machine cutting head. Fiber lasers are significantly smaller than CO_2 lasers and generate several times the power from the same amount of current. 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.



ByCut 3015/4020

Highly efficient laser cutting thanks to high power and laser packages configurable to your needs

Customer benefits

- High-power ready: From 3 to 30 kilowatts – the ByCut 3015/4020 accommodates the full laser-power range, perfectly tailored to your needs.

According to the requirements of your production as well as the corresponding laser package:

- High speed: Cuts mild steel twice as fast compared to 15 kW and MixGas with sheet thicknesses between 6 mm and 15 mm, and more than twice as fast with thicknesses starting at 20 mm. Piercing times are shorter for sheet thicknesses of 15 mm and above.
- Intelligent cutting process: Smart functions such as the Intelligent Cutting Process (ICP), Fast Piercing, and the Parameter Wizard optimize your entire cutting process.
- Fast configuration: In just a few minutes, the Parameter Wizard option determines the perfect parameters with N_2 and MixGas for steel from 4 to 15 mm in thickness.
- Broad spectrum: Be it mild steel, stainless steel, aluminum, or non-ferrous metals – with a broad production range, you can process sheet thicknesses of up to 50 mm (excluding non-ferrous metals).
- High process reliability: Bystronic's automation solutions guarantee optimum utilization and maximum reliability in unmanned operation.
- Simple operation: Via a 21.5-inch touchscreen, operate the BySoft Cell Control Cut software as easily as your smartphone.

Pick your ByCut machine basics

System size:
3000 × 1500 mm /
4000 × 2000 mm

Laser power:
3 – 30 kW

Layout:
Access door configuration
Position laser & cooling unit
Cutting grate type

Add your laser packages

Autonomy Package
Increase your system's autonomy and reduce setup time by up to 50%.

Includes:
- Automatic Nozzle Changer
- Detection Eye
- Nozzle Control Tool
- Intelligent Cutting Process

Power Package
Get the most out of your high laser power. Add advanced cutting technologies to economically process thick materials.

Includes:
- MixGas Technology

Dynamic Package
Optimally tune your system for thin sheet processing. Achieve the highest acceleration for complex geometries.

Includes:
- Linear drive technology

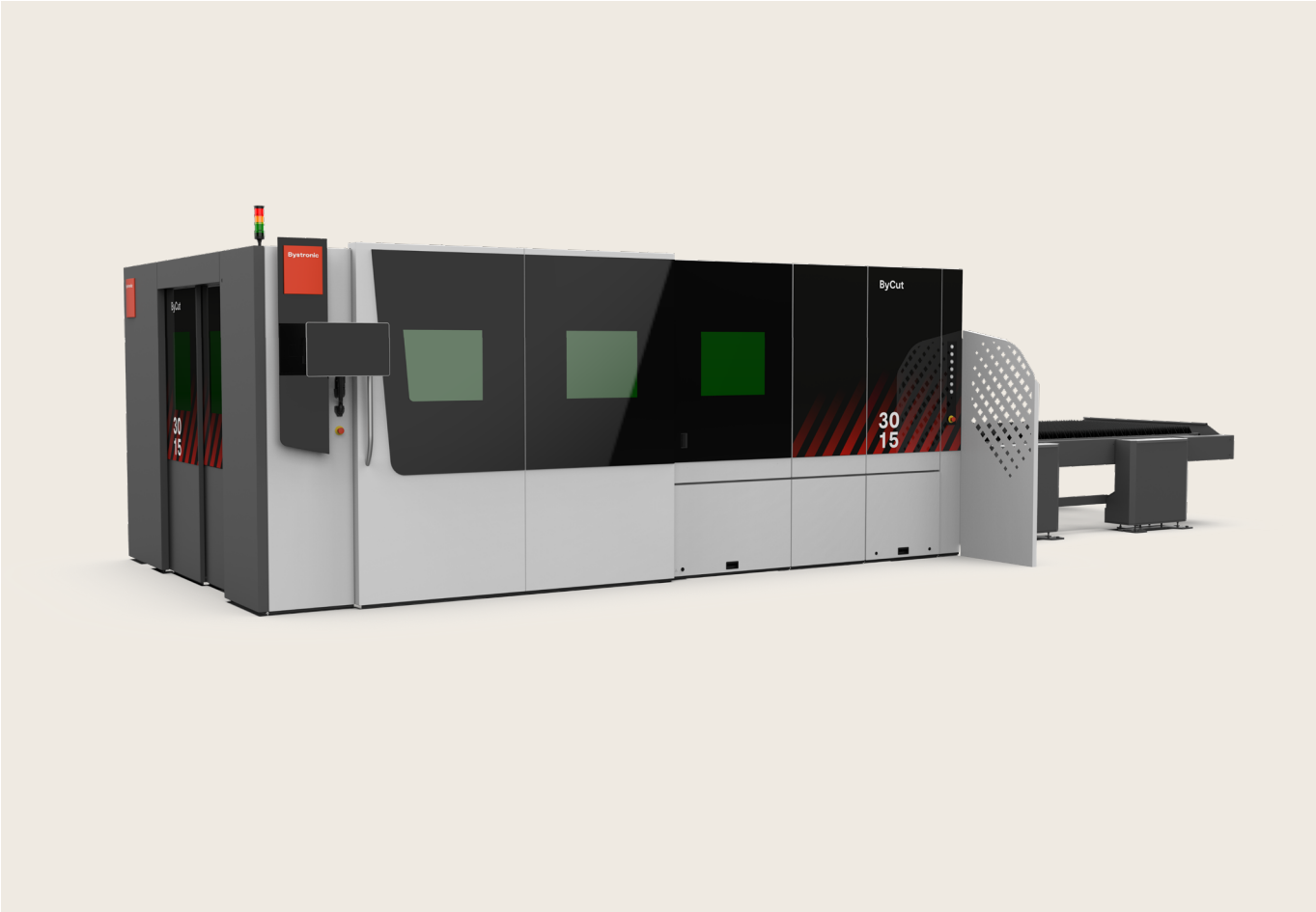
Quality Cut Package
Increase the cutting quality of medium and thick mild steel. Achieve near burr-free cuts.

Includes:
- Automatic BeamShaper technology

Convenience Package
Simplify every step of your cutting process and elevate your experience with effortless ease.

Includes:
- Parameter Wizard
- Observer
- Additional small access door
- And more

ByCut 3015/4020
Technical Data



	ByCut 3015	ByCut 4020
Length	10,800 mm	14,000 mm
Width	5,100 mm	5,700 mm
Height	2,300 mm	2,600 mm
Nominal sheet size (X)	3,000 mm	4,000 mm
Nominal sheet size (Y)	1,500 mm	2,000 mm
Cutting area (X)	3,126 mm	4,112 mm
Cutting area (Y)	1,600 mm	2,100 mm
Cutting area (Z)	150 mm	150 mm
Max. positioning speed parallel axis X/Y	120 m/min	120 m/min
Max. simultaneous positioning speed	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
Averaged, bilateralposition deviation of one axis M (following ISO 230-2:2014(E))	0.05 mm	0.05 mm
Edge detection accurancy (±)	0.5 mm	0.5 mm
Max. workpiece weight	1,550 kg	1,900 kg
Maximum allowed workpiece weight on both shuttle tables	3,100 kg	3,200 kg
Machine weight (without exhaust, chiller and conveyor)	10,800 kg	12,800 kg
Table changeover time	28 s	28 s
Operation	BySoft Cell Control Cut	

Laser source	Fiber 3000	Fiber 4000	Fiber 6000	Fiber 10000
Power	3,000 W	4,000 W	6,000 W	10,000 W
Range of adjustment	300–3,000 W	400–4,000 W	600–6,000 W	1,000–10,000 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	15 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 (with exhaust, chiller)	17 kW	18 kW	20 kW	21 kW

Laser source	Fiber 12000	Fiber 15000	Fiber 20000	Fiber 30000
Power	12,000 W	15,000 W	20,000 W	30,000 W
Range of adjustment	1,200–12,000 W	400–15,000 W	400–20,000 W	400–30,000 W
Wavelength	Fiber	Fiber	Fiber	Fiber
Steel (max. cutting sheet thickness) *	25 mm	25 mm	25 mm	25 mm
Steel (with option BeamShaper) *	30 mm	30 mm	30 mm	
Steel (option «Advanced Applications») *		50 mm	50 mm	50 mm
Stainless steel (max. cutting sheet thickness) *	30 mm	40 mm	40 mm	40 mm
Stainless steel (option «Advanced Applications») *		50 mm	50 mm	50 mm
Aluminum (max. cutting sheet thickness) *	30 mm	40 mm	40 mm	40 mm
Aluminum (option «Advanced Applications») *		50 mm	50 mm	50 mm
Brass (max. sheet thickness) *	15 mm	20 mm	20 mm	20 mm
Copper (max. sheet thickness) *	12 mm	20 mm	20 mm	20 mm
Total electric consumption of system (with exhaust, chiller)	21 kW	22 kW	22 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)

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.