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BLS-NEO:
Servo Drive Fiber Laser Cutting Machine.

Baykal
MACHINE TOOLS





BLS-NEO:
Maximum productivity – Precision capability.

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64 years – 64 thousand machines:

We feel right proud of 64 thousandth machines, which we product for the 110 countries in 5 continents as a leading firm of Turkish machinery industry.

Our mission:

To produce products and services, which fully meet the expectations of customers, as a leading company that represents Turkish machinery sector in the world market.

Our vision:

To be a world leading brand that puts advanced technological machines on market and adopts a product and service perspective with high customer delight in sheet metal processing machinery.

64 years high experience:

Baykal Machinery, which has largest manufacturing facilities of Europe with a total of 70.000 square meters manufacturing area in three different factories, has been providing service for sheet metal processing machinery for 64 years with annual 3.000 pieces machine production capacity.



With a foundation history going back to early 1950s, Baykal today is placed as a leading manufacturer and global supplier of sheet metal working machinery specialising in the production of press brakes, shears, punching machines, laser cutting systems, plasma cutting machines and waterjet cutting machines.

For its manufacturing operations Baykal utilises three factories which together combine a production area of 70,000 square meters, making it one of Europe's largest facility for sheet metal working and fabricating machinery. The total workforce at Baykal is currently numbered at 650 employees and is composed of highly trained and qualified machine operators and assembly technicians supported by a staff of 80 engineers. All the machines offered by Baykal are designed, manufactured, assembled and finished wholly at Baykal's purpose-built plants in a CAD environment with extensive use of CNC machining and modern workshop equipment.

Baykal company is accredited for the ISO 9001 Certification issued by the German TÜV institution. Also, since

1995, Baykal has been building machines in conformity with the European CE regulations for safety, being the first Turkish machine-tool manufacturer certified eligible to bear the CE Mark on its products. In addition, all Baykal products are manufactured with the TSE and TSEK quality certificates issued by the Turkish Standards Institution.

Since the last 30 years Baykal has progressed to become a major exporter of sheet metal working machines to the world markets with customers located in all the machine-tool consuming countries of the global geography from Americas to Australasia. Baykal is currently represented in over 110 countries worldwide through appointed dealers. In the base market of Turkey, Baykal sheet metal working machines have traditionally commanded a leading market share thanks to the company's pioneering role in the development of Turkey's machine industry and its never-lessening emphasis on quality and service.

With a long engineering experience behind, Baykal wishes to present itself as a quality-conscious, professional machine-building company serving the industry.



Fiber laser technology:

BLS-NEO fiber laser cutting machine uses two-dimensional drawings over the flat plate by moving the focused infrared light along the programmed pathways to cut. The system moves the laser light with fiber optic cable to the focuser cutting head, which moves on the fixed sheet metal. The cutting process occurs by melting the material in the area, where high-power laser light focused in very small diameters allows this to occur. Different gases are used to eject melted material from the surface of plate, according to type of materials. These gases exit from the nozzle, where the laser light exists and control the quality of process.

Unique features:

- Precise and ease of processing both large and small size formats.
- High speed and high precision servo motion system.
- No repositioning of plate ensures optimum accuracy.
- Fiber optic laser delivery system.
- Simple operator interface and cutting database.
- CNC controlled hydraulic lift-up dual shuttle table.
- Easy accessible remote diagnostic functions.
- Long lens life because of lens protection.

Cost-efficient manufacturing:

BLS-NEO can be used with perfect precision that is provided by rack and pinion movement and also operate with a greater speed as compared to CO² lasers. In addition, this laser technology offers low costs compared to a CO² laser which is brought about by fiber technology.

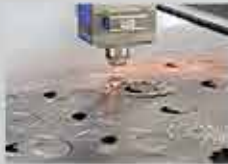


Impressive cutting solutions:

BLS-NEO fiber laser cutting offers the best solution to the user for cutting quality, precision, high cutting speed and low cost in cutting of fine material. It is possible to obtain these features at all high cutting speeds. BLS-NEO makes it possible to cut big or special size plates and offers competitive performances against similar fiber laser cutting machines in the industry.

Benefits at a glance:

- High speed low cutting cost in thin sheet metal cutting.
- Easy processing of copper, titanium and brass.
- Low cooling capacity need, due to fiber optic delivery system, reducing energy consumption and consumable price.
- Perfect beam quality and long term power stability.
- Long cutting lens life, thanks to protective windows.
- More than 100.000 hours diode module life.
- Long life rigid machine design.



BLS-NEO:
Maximum productivity – Precision capability.



Unique features:

- Low investment and operating costs.
- The most cost-efficient solution for every requirement.
- Very easy to operate.
- Quick and easy installation.

BLS-NEO: The best fiber laser for you.

BLS-NEO offers the optimum solution for all your needs with economic investment and low operating costs. Besides, extraordinary robustness, it guarantees to get results in accuracy beyond your expectations via supply rigidity, which was created by using innovative concepts and designed as one piece.

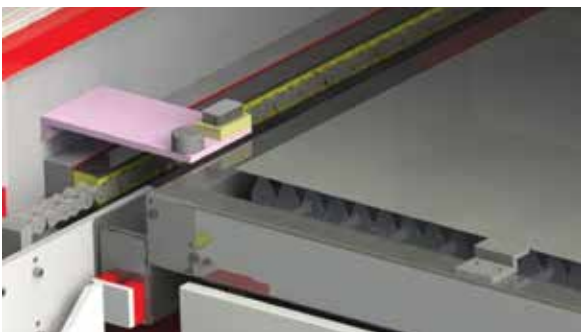




Maximum productivity – High acceleration:

BLS-NEO fiber laser cutting machine was designed as a bridge type, which is driven from both sides. Machine body, rigid and supply voltage are taken and offers high cutting accuracy and repeatability due to the very precision processed structure.

Besides extraordinary robustness, it provides vibration-free cutting due to the supply rigidity, which was created by using innovative concepts and designed as one piece. High acceleration offers more precision while processing especially small diameter holes and sharp corners at high speeds.



Automatic nozzle cleaning:

BLS-NEO carries out this process automatically according to the number of holes produced, which are determined by the CNC controlled nozzle cleaning and calibration feature. In this way, molten material that adheres to the nozzle end can be cleaned and thus cutting height of nozzle to the sheet plate can be kept constant. This directly affects the quality of cutting.

High capacity utility:

BLS-NEO, which is equipped with high dynamic bridge and rack and pinion technology that has been processed with high precision, has ended your loss of time that occurs in your company while guarantees your gains by enabling to work with full capacity.



High performance and high precision rack and pinion system:

BLS-NEO axis motion system uses new generation high precision and high performance rack and pinion system. This system is ideal for high speed and acceleration; also it is ideal for high cutting speeds, which require performance and accuracy.

Unique features:

- High cut speed.
- High axis optimization.
- Dynamic axis movements.
- Easy to maintain.
- Low energy consumption.
- No need of laser maintenance.
- Automatic cleaning.



User-friendly and reliable controller:

The multi-touch panel series from Beckhoff offers the greatest possible flexibility. The Beckhoff multi-touch panels with projective capacitive touch screen (PCT) technology feature a high touch-point density, which enables accurate, safe and jerk-free operation even in minute steps. The front of the display is a glass pane with an anti-reflection coating; operation with thin work gloves (e.g. latex gloves) is also possible. Five-finger touch and automation solutions with 2-hand operation are equally possible. Familiar functions from the world of smartphones and touchpads, such as zooming, scrolling, object turning, flicks etc. are now also usable for industrial applications with the multi-touch devices. Single-touch mode can be set via the windows operating system for applications where multi-touch is not required.



Flexible and rigid:

HP SSL 1.5 "M cutting head is used in fiber laser cutting machines and pipe cutting systems. HP SSL is equipped with different operation sensor systems for cutting. As well as HP series are equipped with cartridge replacement systems as other models.



Unique features:

- BLS-NEO is equipped with globally known PRECITEC cutting head, which provides best cutting quality, best performance in the industry.
- Capacitive distance sensor keeps constant the distance between the sheet metal and nozzle edge.
- The cutting head uses a cartridge system to change lenses. The operator only changes the cartridge, where the lens is attached.
- The cutting head also has a protective glass lens. This keeps the lens from being damaged. In addition, it provides a long-lasting lens with easy interchangeable protective glass.
- The cutting head has a crash protection system. In case of any crash situation, the head is displaced and stops automatically the CNC laser light and movement.

Compact, easy to operate, reliable and precise:

BLS-NEO has an economic investment and low operating costs. In addition, it offers the best solution with its compact structure to customers, who have a lack of space. BLS-NEO impresses you with a unique cutting quality within the first minute of cutting process.



Flexible – Perfect software:

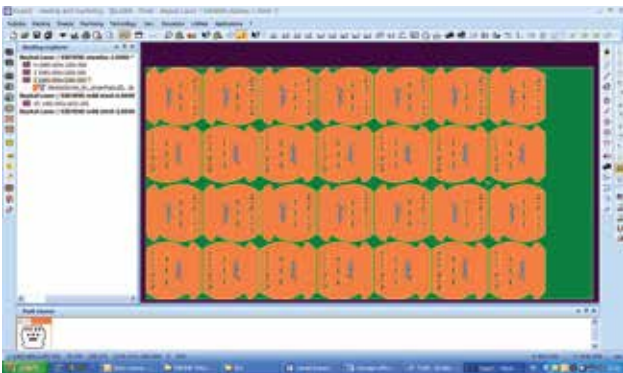
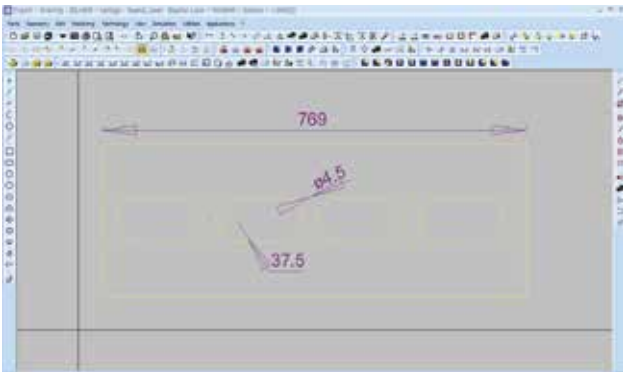
Expert Cut is CAD/CAM system, which was designed specifically to automate the programming of sheet metal cutting machines (oxy-cut, plasma, laser, water jet). It is the product of 20 years experience in close cooperation with manufacturers and users. It perfectly combines the machine technology with programming and management requirements of customers.

Lantek Expert Cut has a design, which is sufficient for users to follow the steps that system shows. System provides easy and efficient working capability for users via this software.



Unique features:

- Easy to learn. Tutorial guide.
- All the options of Lantek Expert are fully integrated in one single program: designing a part, importing, nesting (automatic or manual), generating the cut (automatic or manual), generating the CNC etc. will be achieved from the same program without switching.
- Production Management Processes: Lantek Expert is ready for connection to production management systems (ERP) by means of automatic processes.
- Teamwork: Available for operation as a standalone productivity cell, or as part of a network system.
- Part Management and sheet store with open databases: All part info is saved and organized in databases so that users can easily locate the part and sheet required. The remnant automatically generated by the system is saved in the sheet inventory like any other sheet metal and can be used for future jobs.
- Large library of parametric parts.
- Calculation of real time and cost: Lantek Expert calculates cutting time and cost of the entire sheet. Taking into account the number of piercings, the cut length, the mark length, the material costs, the hourly machine rate, the cost of consumables are based on the machine data.
- 2D design. Lantek Expert includes advanced options for geometry and editing.
- 3D design. Unfolding. (Optional). Lantek Flex3D is a 3D design module which enables to design three dimensional parts and then unfold them automatically. The result is a part unfolded in 2D, which goes directly to the Lantek Expert database, ready for machining.
- HVAC and DUCT (Optional). Lantek Expert has a module for calculating HVAC and DUCT parts. An extensive library of figures is available.



CAD design:

It is drawing module, which is strong and capable to make 2D dimensional part drawing. This module offers a wide range of technical drawing skills to the user. There are 10 different ways of drawing even a simple circle. It can easily perform special applications, which are ready for complex shaped parts as sheet metal manufacturing based CAD module.

The most efficient production:

This module is the module where the last part of the program prepared directly. This module provides accurate and efficient placement on the plate and guarantees the most appropriate processing order. The part, where final CNC code is created, located in this module.

Automatic nesting:

- Perfect flexibility and maximum performance of manual and automatic placement.
- Perfect combination of automatic and semi-automatic placement process with powerful manual placement process such as copy, move, rotate, align, etc.
- Lantek Expert places automatic placement process parts on plate in the best possible way.
- Also, Lantek Expert makes placement on discards. Borders can be defined for discards, as for the plates.

High technology:

- Lantek Expert Cut makes it possible to configure and manage the entry exist types for different internal and external contours.
- Common cutting can be done between different parts or between two parts with micro connection and pre-cutting.
- Detects errors in the design and processing.
- Lantek Expert Cut has features of automatic entry-exit for any kind of machine, manual and automatic cutting, cutting copy, customized configuration of the machine and separate post processing for each machine.





Unique features:

- Fast loading and unloading.
- Optional flexible shuttle table sizes.
- High-position control.
- Continuous cutting with moving shuttle table.

Continuous cutting solutions:

BLS-NEO has double cutting table, which has automatic action that hydraulically moves up and down. Loading and unloading time has minimal effect on cutting process of machine and unloading process can be done during cutting process. So, the production time can be considerably reduced.



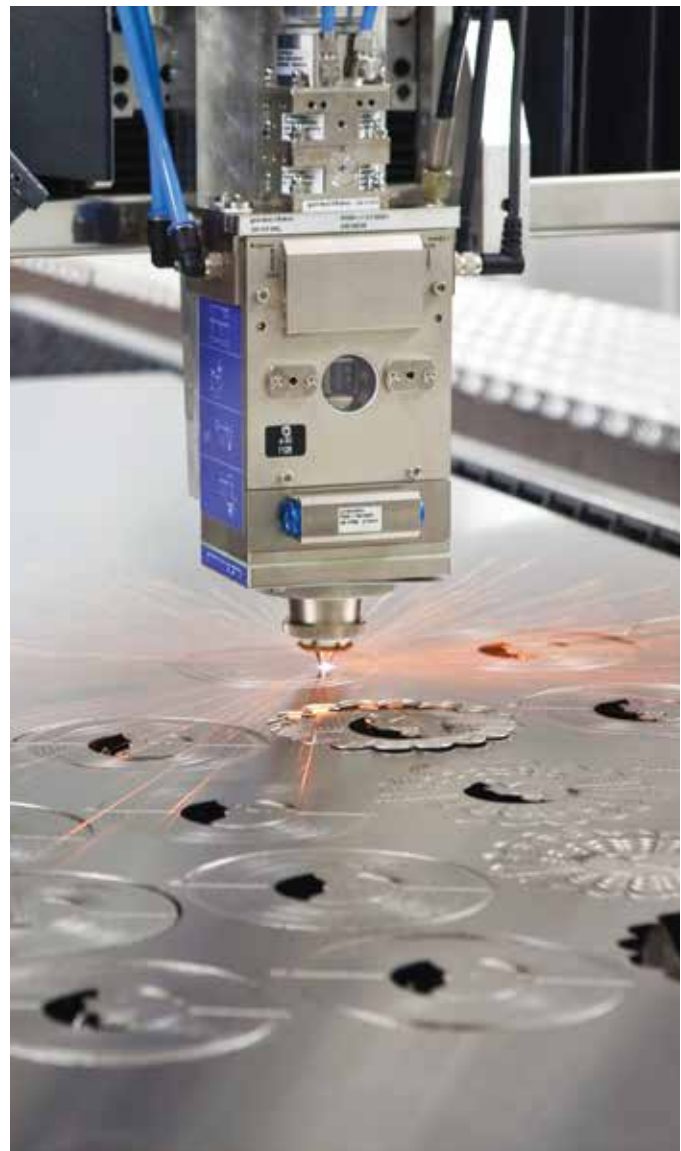
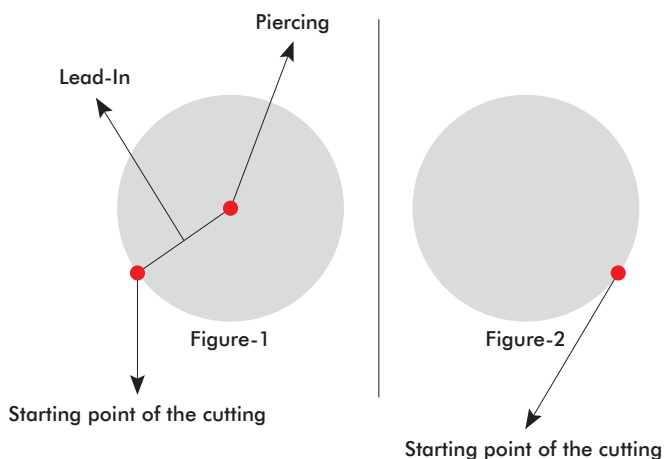
Everything is under control in the first entry:

No-Pierce not only controls first entry process but also works with this principle: To process fine materials as soon as possible with more possible laser power.

The average laser power remains always under the foaming limit to prevent uncontrolled burning of material due to the No-Pierce. Consequently, the entrance holes are obtained by preventing the formation of craters.

You will save time more than 50 % per each first hole entries in thick materials with No-Pierce. Total processing time is shortened significantly when there is wide range of first entry process.

- Cutting with Piercing and Lead-In. (Figure-1)
- Cutting with No-Piercing and No-Lead-In. (Figure-2)

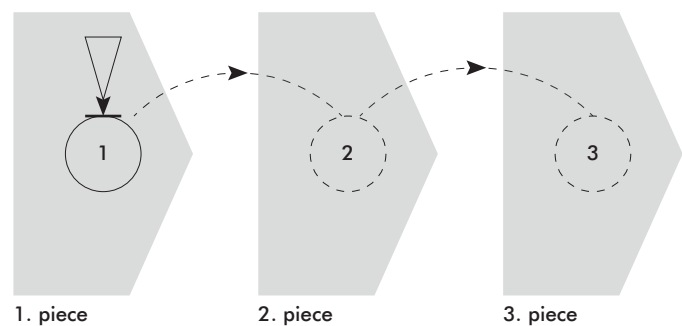


Fly-Cut: Faster processing – High acceleration.

If multiple holes drilling in thin sheet metals takes a long time, we recommend you the Fly-Cut technology. Take advantage of the Fly-Cut technology, because you can process faster in thin sheet metals up to 1.5 mm thickness with this strategy. You can have 50% time saving with high acceleration in circular and equilateral parts.

Unique features:

- Opening and closing of laser beam in fixed-height with high positioning accuracy without stopping axis and being stopped.
- The blasting of right-angled separated contours, which are located on plane, to avoid corner processing.
- Speed is reduced in only a very small number of changes in direction.



High level protection:

All fiber lasers are enclosed in compliance with CE rules. Thus people, who are working around machines are, protected from laser reflections. This protection is needed on all fiber lasers due to the fiber beam.

Low cost, ergonomic design, flexible processing:

BLS-NEO is moving the 2D plate cutting to the new levels. Large-sized plates, can be processed in high speeds accurately now.

The machine is available in models from 1500 mm x 3000 mm to 3000 mm x 15.000 mm due to the modular structure of BLS-NEO. High efficiency can be improved with double-tray loading and unloading systems.

Efficient in all aspects:

If you want to cut sheet metal up to 4 mm thickness, the BLS-NEO makes it possible with high speed cutting. You can reach up to 50 m/min cutting speed. This capability can save you time and money while maximizing your production.

High pressure – Perfect contour:

If you are working with stainless steel and aluminum we recommend you use high pressure nitrogen cutting. Cutting with nitrogen at a maximum 25 bar cutting gas pressure will remove the material quickly. It guarantees not only fast cutting but also the clean one without any oxidation no matter how thick your material is.

Auto focusing:

There is no need to adjust laser focus point manually in a laborious way. Auto-focus that you preferred as an optional in BLS-NEO, keeps stable the focus position of the laser and adjusts it automatically according to material type of focus position and thickness. It provides automatic motorized lens system, which is adjusted from machine controller and thus providing best cutting results. So you will save time without having to adjust it manually.





Perfect and safe extraction:

The fume and dust suction system is a self-cleaning type by mean of compressed air pulse. The dust air enters the filter chamber, in which the heaviest particles fall to the floor and the lighter ones are retained by the external surfaces of the filter cartridge. The air is cleaned as it passes into the cartridge, is sent to the plenum chamber at the top of the filter, through the extraction unit and out to the atmosphere.

An air pulse extraction system is fitted to provide fast, efficient cleaning of the cells. The system generates a pressure front which runs through the interior of the cell, thus detaching the dust which falls to the floor of the chamber. The machine is equipped with the ducts for connection between the extraction chambers and the fumes and dust extraction circuit.

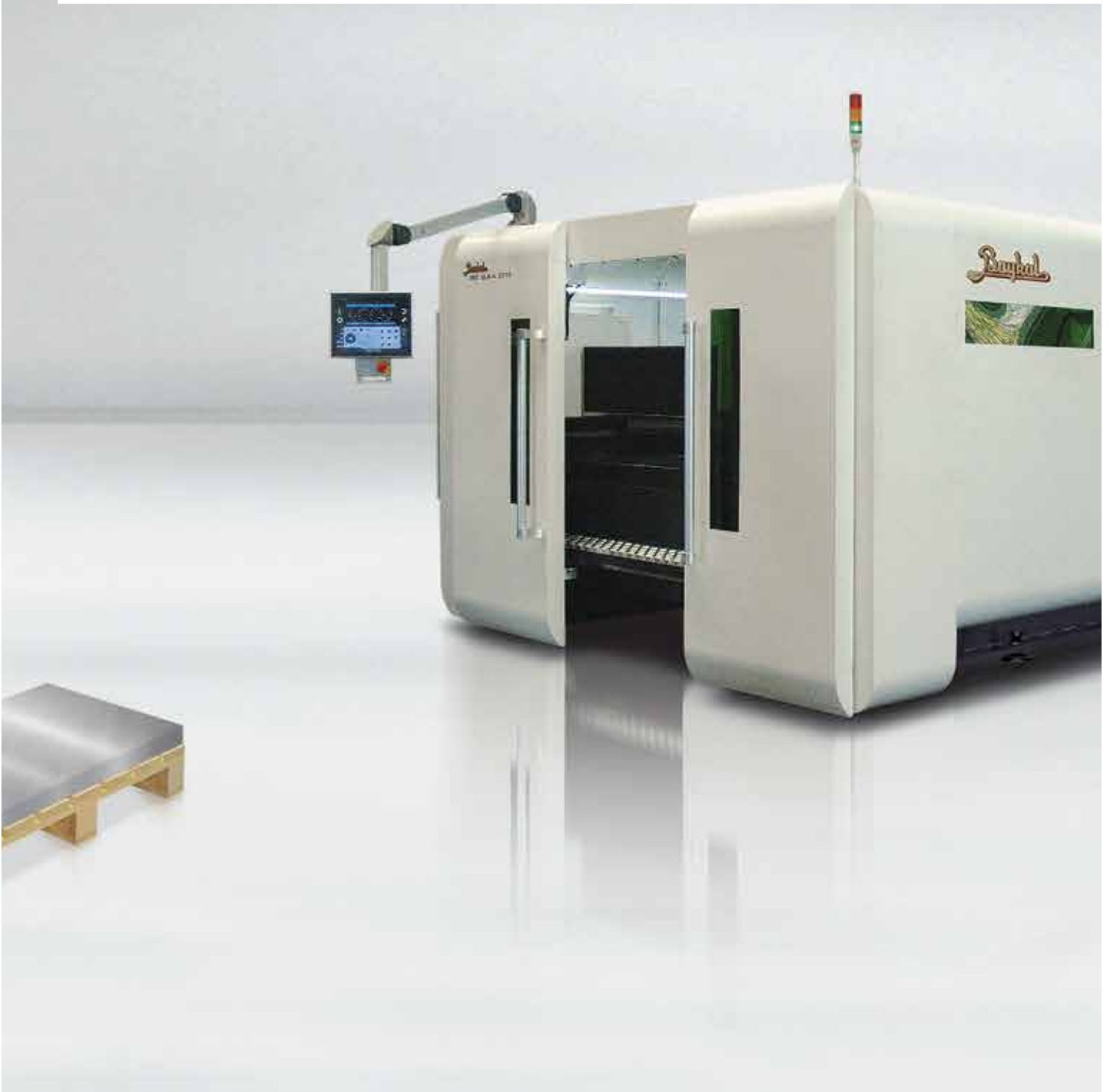
Unique features:

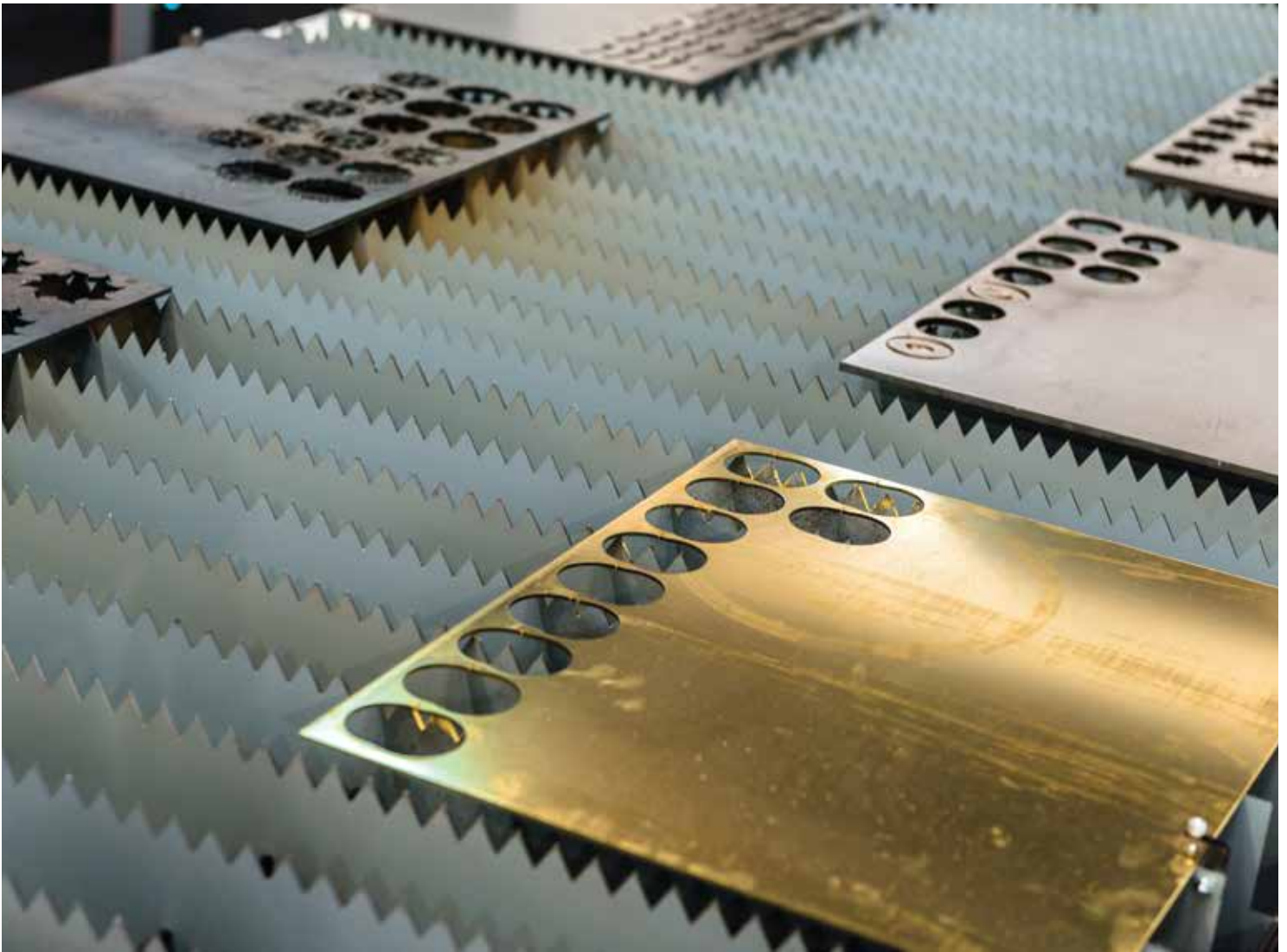
- Provides a healthy working environment by absorbing small particles and smoke generated during cutting.
- For a higher suction performance systems controls area and activates only partition where laser cutting head is active.



Do not waste time to start cutting:

BLS-NEO comes into prominence with not only the efficiency and compactness, but also the due diligence for the material to be processed. Laser source provides countless opportunities for automation process to the user besides its simple usage and functionality. All you need is to begin cutting immediately.





The flexibility of different materials:

You can process different types of materials such as copper, brass with BLS-NEO. You can cut hard materials as you are cutting aluminum, as well as 20 mm thickness in carbon steel can be processed as burr-free and in good quality.



Perfect combination:

High technology laser quality components, which has proved its quality in worldwide, are used in BLS-NEO. Machine offers confidence to the user with high cutting quality and extensive spare part supply. BLS-NEO is a unique harmony of the perfect combination.



High productivity and flexibility:

Fiber lasers produce a beam in 1070 nm wavelength, which is an excellent light quality for laser cutting. Wavelength, high power capacity, good light quality, a wide range of cutting, stable power output and small focus thickness provide optimal laser light for many cutting applications.

Unique features:

- Extremely reliable.
- High efficiency and flexibility.
- Minimum operating expenses.
- Simple and safe operation.
- Low power consumption.
- Modular design with ergonomic use of space.
- Long operating life.

Chiller: Water cooler.

It helps to cool components between the laser unit and cutting head. It works with a water-based cooler. It collects heated water in the cutting head and laser unit with recirculation and cools water up to 22° and sends it back again to the cutting head and laser unit.

Unique features:

- Extremely reliable.
- Easy integration.
- Simple and safe operation.
- Modular design with ergonomic use of space.
- Long operating life.

Customized to meet your individual needs:

Please upgrade the hardware options to the next level as an optional in BLS-NEO. You will get more efficiency and more time while making more efficient cuttings with the choice of 500 W, 1 kW, 2 kW, 3 kW, 4 kW and 6 kW resonators. In addition you can also reduce production costs by benefiting from automation solutions.

Type	Maximum cutting capacity				
	1 kW	2 kW	3 kW	4 kW	6 kW
Mild steel	12 mm	15 mm	18 mm	20 mm	25 mm
Stainless steel	4 mm	8 mm	10 mm	12 mm	15 mm
Aluminyum	3 mm	6 mm	8 mm	10 mm	15 mm
Copper	2 mm	3 mm	4 mm	6 mm	8 mm
Brass	2 mm	3 mm	4 mm	4 mm	8 mm

BLS-NEO: Standard equipment.

- High performance and high accuracy rack and pinion system.
- Beckhoff CNC.
- Motion system 1525 x 3050 x 100mm
- 2 kW fiber laser.
- Water chiller.
- Fiber optic beam delivery system.
- Windows 7 operating system.
- 360 degree rotating ergonomic machine control panel.
- 19" TFT color monitor.
- 80 GB Program data storage.
- Transfer tables (dual palette) hydraulic lift (integrated drive system).
- Programmable high pressure air / Nitrogen gas selection 1.. 25 bar.
- Advanced precitec cutting head (with air cross blast).
- 5" & 7.5" lenses.
- Lens protective window.
- Auto nozzle cleaning and calibration.
- Standard fume extraction system.
- Parts debris drawers.
- Lantek CAD/CAM system.
- In built safety systems (light guards & full enclosure as standard).
- CE Compliance.

Type	Width	Length	Height	Cutting Width	Cutting Length
	mm	mm	mm	mm	mm
BLS-NEO 3015	6550	10500	2250	1500	3000
BLS-NEO 4020	7050	12500	2250	2000	4000
BLS-NEO 6020	7050	16500	2250	2000	6000
BLS-NEO 4030	8050	12500	2250	3000	4000
BLS-NEO 6030	8050	16500	2250	3000	6000
BLS-NEO 8030	8050	20500	2250	3000	8000

Model	BLS-NEO 3015 / 2kW
CNC Control Unit	Beckhoff CNC
X axis (Rack & Pinion)	3000 mm
Y axis (Rack & Pinion)	1500 mm
Z axis (Ball Screw)	100 mm
Work piece dimensions	1525 x 3050 mm
Rapid traverse (X and Y axis)	105 m/min
Acceleration	1.5G (15m/s ²)
Vector speed	148 m/min
Absolute positioning accuracy	± 0.08 mm
Repeatability (X and Y axis)	± 0.03 mm
Feed rate	Programmable up to 50 m/min. Actual feedrate depends on material and thickness.
Programmable assist gases	Closed loop CNC control of the following gases
	Air 0-6 Bar
	Oxygen 0-6 Bar
	High Pressure (Typically Nitrogen) 0-25 Bar
Focusing lenses	5" ve 7.5"
Transfer table	Motorized - Automatic Exchange
Max. load capacity	2450 kg
Fume extractor	4000 m ³ /hour
Laser power	2 kW

We are Baykal:

Baykal Machinery continues to improve production process with modern production facilities, the latest technology in machinery, computer supported production control systems and qualified workforce.

Our management is implementing experience and innovative ideas for more than 64 years. Baykal Machinery has maintained being a leader as the first company, which completes computer supported production-management system integration.

The ability to transform to the work orders, which deliver customer requests to the bottom unit of production quickly and operate auto-control mechanism in each production unit, continues to create satisfied customers in 5 continents to Baykal Machinery.



The parts, which are not belong to standard equipment but can be supplied as an optional, may be showed in this brochure. Security equipments in pictures were partially opened or removed for machine details to be seen better. Baykal Machinery reserves to make changes in the products, which are listed in this brochure.

TS EN ISO 9001:2008 certificated.





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