Navicut

HIGH-SPEED **METAL CUTTING COMPLEXES** WITH FIBER LASER AND LINEAR MOTORS

Navicut produces complexes for **high-speed metal cutting with a fiber laser and linear motors**. The Navicut machines are leaders in such parameters as productivity, price/quality ratio, processing cost of parts to be cut. We supply machines to the European Union and the USA, where we successfully compete with the best models.

HISTORY OF COMPANY

2001

The Navicut company began its activities in the production of metal laser cutting machines. During the first two years, a team of graduates from top technical universities conducted research and development.

2003

The experimental unit for laser cutting of sheet metal with a CO2 laser was made.

2004

A direction is being opened to adapt fiber lasers to machine design. As a result of numerous experiments, it was found that it is significantly superior to the CO2 laser in the most important technological and technical and economic parameters, and is capable of ensuring stable operation of the machine and high-quality metal cutting.

2005

As a result of comprehensive tests and improvements of the experimental sample, the first industrial unit appeared with a unique coordinate table on linear drives; the unit is protected by a patent of invention.

2007

Serial production of industrial complexes with fiber lasers has begun. Navicut makes large R&D investments and carries out a lot of experimental work. As a result, dynamic parameters are constantly improved, and the productivity of rolled metal processing increases.

2012

The first machine with fully independent cutting heads ("doublebeam" machine).

2014

Opening production in Estonia

2015

Development, production, and delivery of a unique solution: a double-beam machine with a processing area of 3050x4050.

2016

The Navicut model range includes 25 models of machines with a processing area from 1100x1250 (mm) to 2550x12250 (mm).

2017

The first unit with a 6 kW laser source.

2018

The first unit with a 12 kW laser source.

2019

Two customers have upgraded their machines by installing 15kW laser sources and Precitec Procutter laser heads. This significantly increased cutting speed and productivity when working with metals 4-16 mm thick. The cutting speed of 12 mm steel has increased to 8 m/min.

2023

Opening production in Serbia

DESIGN ADVANTAGES

Patented "wing" system - one synchronous linear electric drive is used for movement on each axis, unlike functional analogues with two or more motors per axis. This eliminates the need for synchronization and, as a result, significantly increases reliability of the equipment

Models with a working area up to 4950x2050 **do not require a special foundation**

Cabinet system with sensors for monitoring the position of doors and observation windows made of special glass ensures safe operation of the unit and protects the operator from laser radiation

High rigidity and vibration resistance of the machine ensure good quality and accuracy of processing in the entire range of dynamic parameters

Composite Y-beam is much lighter and, at the same time, stronger than metal beam of the functional analogues, which allows to reduce vibrations and increase the dynamics of processing

Availability of replaceable **shuttle-type pallets** without lifting the lower pallet (cutting is carried out on two levels) allows for quick replacement of workpieces, with the pallet rewinding time not exceeding 15 seconds

Patented collimator allows the use of a standard QBH connector at high accelerations. Vacuum-tight design with a double-loop seal prevents air exchange with the surrounding space and dust ingress into the collimator

Since 2015, Navicut has been equipping its systems with **Precitec laser heads** (for systems with powerful fiber lasers - 3 kW and more)

TECHNICAL ADVANTAGES

Z-axis acceleration is up to 3g.
It is important for maintaining a constant distance between the nozzle and the metal sheet at high speeds.

The X-axis in Navicut machines is located on top, unlike other machines.
Allows you to avoid sparks on cable routes during cutting.

The acceleration set parameter is 28 ms, one of the best values among all manufacturers.
Gives an advantage in the cutting speed of complex parts when many braking-acceleration cycles are required.

CNC from B&R, one of the world leaders in industrial automation.
These are real-time CNCs that track the position parameters of moving parts up to the 5th derivative. Affects the speed and accuracy of data processing.

We provide training, commissioning, service support 24/7. It's free for our customers.
We can identify and eliminate more than 90% of emergency situations remotely. Our engineers are certified by Precitec and can repair laser heads from this manufacturer.

Linear motors in three axes.
It improves the accuracy and speed of cutting parts. We guarantee the performance of our machines and confirm this in practice.

Due to technical know-how, we use 1 linear motor in X-axis.
It avoids delays when synchronizing with the second motor.

4 opening doors on both sides of the machine.
Facilitates the work of the operator in case of need for access to the working field. Possibility of location of the machine anywhere in the production area.

The Navicut machine control software is supplied by the world leader in this field, Metalix.
Increases the convenience of the operator, and also allows you to use all the features of the machine.

Metalworking expirience
Our Estonian factory not only assembles machines, but also provides laser cutting services on our machines. We not only sell laser cutting machines, but also work for them, so we know all aspects of laser cutting and make our machines even better every year, more than 20 years.

COMPETITIVE ADVANTAGES

Productivity

Navicut laser cutting machines provide high-quality metal cutting at high speeds. Fiber lasers up to 30 kW, processing up to 1000 tons of sheet metal per machine monthly.

Reliability

Modern, reliable, expensive components of the best global manufacturers are used for the production of machines.

Usability

Easy to buy, easy to maintain. We are a European manufacturer with 24/7 support.

Cost-effectiveness

The cost of similar machines from leading manufacturers is 30-60% higher. The cost of consumables and maintenance is lower than similar machines from competitors.

Plainness

The Navicut unit does not require maintaining a “medical cleanliness” of the facility. The laser is resistant to humidity and vibrations in production.

Ease of use

No special training is required to operate and maintain the Navicut unit. The staff is trained to work with the machine within 5 days.

TECHNICAL PARAMETERS

Accuracy

- resolution of the measuring system along the X/Y axes 0.5 µm
- positioning accuracy ±50 µm/m
- re-positioning error 10 µm
- accuracy class 1 according to the standard ISO 9013
- taper with a thickness of up to 6 mm - 1 margin, with a thickness of more than 6 mm - 2 margin according to the standard ISO 9013

Average power consumption

excluding compressor and filtration unit with 1 kW laser - 8 kW, with 2 kW laser - 12 kW, with 3 kW laser - 16 kW, with 4 kW laser - 20 kW, with 6 kW laser - 30 kW, with 12 kW laser - 65 kW, with 20 kW laser - 91,5 kW, with 30 kW laser - 167 kW.

Speed

The maximum speed of idle movements in the X/Y plane is 210 m/min. The maximum speed of idle movements along the Z axis is 60 m/min.

Maximum thicknesses of processed metals

Metal Output power	1 kW	2 kW	3 kW	4 kW	6 kW	15 kW
Carbon Steels	12 mm	18 mm	22 mm	24 mm	36 mm	45 mm
Alloy Steels	4 mm	10 mm	12 mm	14 mm	25 mm	40 mm
Aluminum alloys	4 mm	6.5 mm	10 mm	12 mm	14 mm	36 mm
Copper-containing alloys	3 mm	7 mm	8 mm	8 mm	12 mm	24 mm
Copper		4 mm	6 mm	8 mm	10 mm	14 mm

Flexibility of equipment arrangement

Arrangement plan has great flexibility and is coordinated individually, taking into account the size of the working space of the customer. Compact multi-tiered arrangement is possible.

TECHNICAL PARAMETERS

Advantages of linear motors

- speed of movement is 2-2.5 times higher;
- higher positioning accuracy;
- no rubbing elements, as a result there is no wear, which ensures stable accuracy of metal cutting (run-length claimed by the manufacturer is 100 000 km).

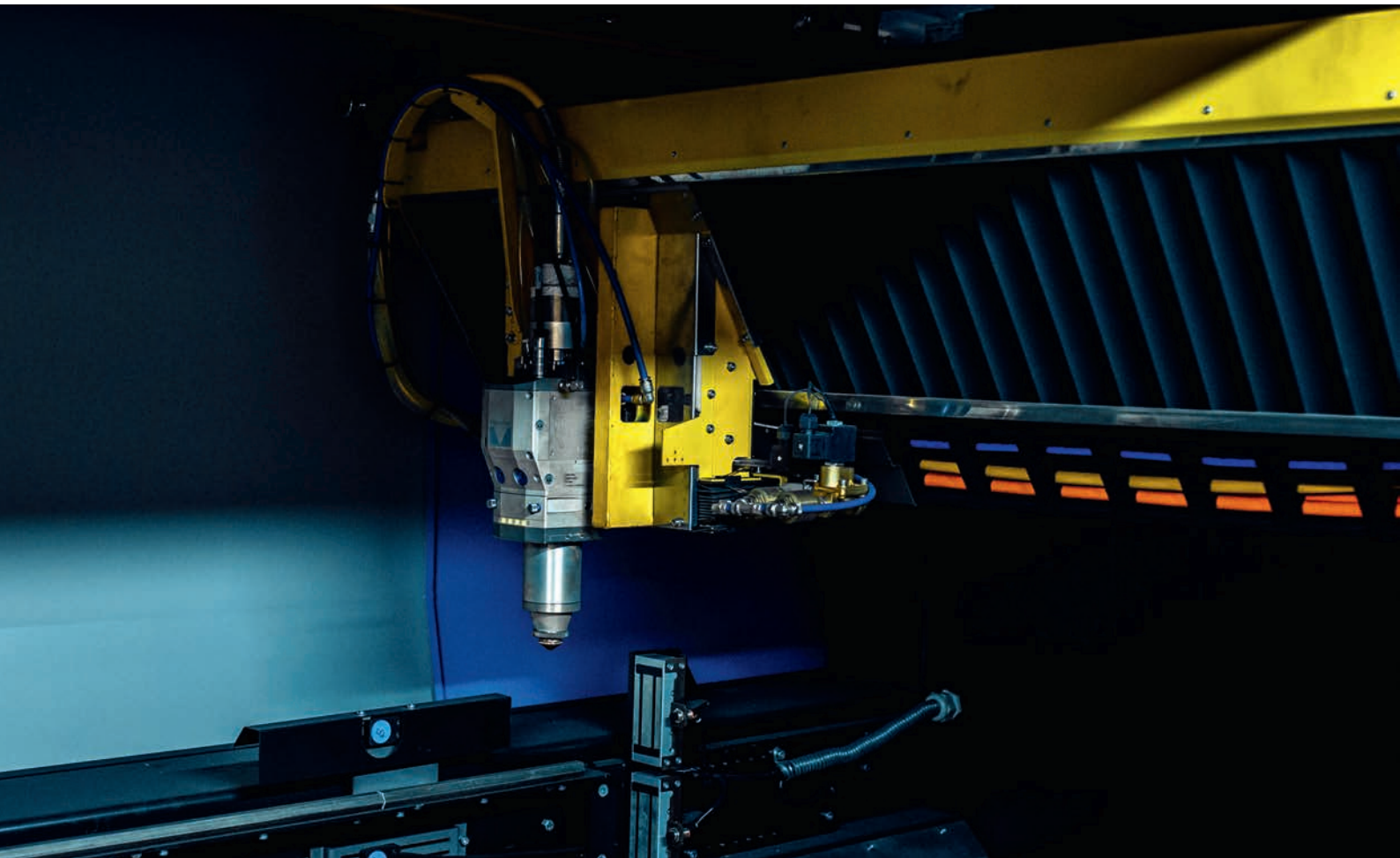
The linear motor has none of the disadvantages of mechanical transmissions such as ball screws or pinion rail

- a large number of intermediate elements from the energy source to the operating element (laser head);
- high inertia of these elements;
- gaps in the transmitting devices;
- friction in multiple mating parts (changing sharply during the transition of the system from idle state to a state of motion);
- temperature and elastic deformations of almost all transmission links;
- errors in the step of the running element and the accumulated error along the length.

TECHNICAL PARAMETERS

Only expensive components from the world's leaders are installed in the Navicut machines:

- linear synchronous motors from SIEMENS (Germany);
- precision guides INA (Germany) and TNK (Japan);
- IGUS flexible cable channels (Germany);
- RENISHAW linear encoders (Great Britain);
- Omgop CNC controller (Japan) (DELTA TAU);
- safety shock absorbers and pneumatic system FESTO (Germany) and CAMOZZI (Italy);
- using PRECITEC heads.



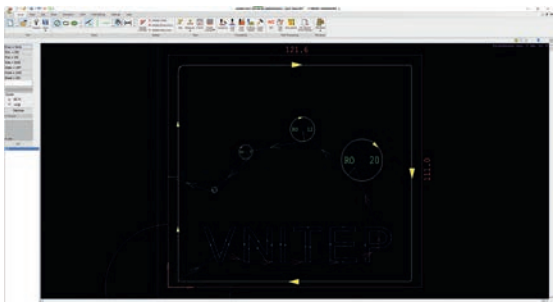
SOFTWARE

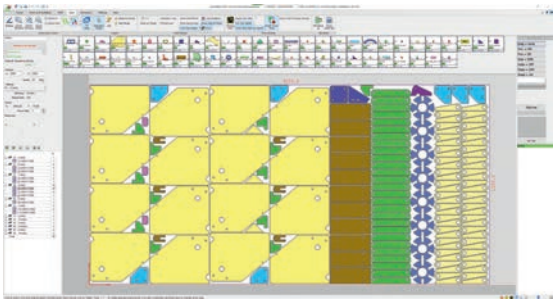
The software package of the process unit Metalix-Navicut enables performing the following operations

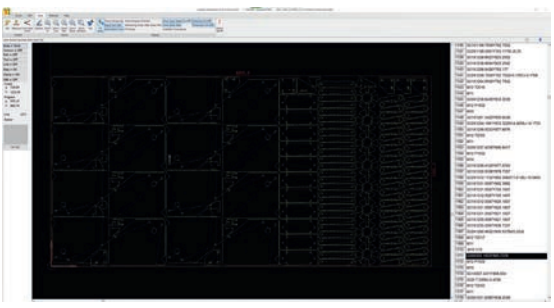
- cutting with a common cut, while automatically following a set cutting width, which improves productivity and reduces metal usage;
- optimizing the cutting of parts by reducing pre-production time and metal waste;
- optimizing idle transitions to save time;
- keeping records of produced parts and production waste;
- automatic installation of micro-junctions in the cutting contour;
- uploading and editing drawings of .dwg, .dxf formats and other formats supported by CAD.

The total memory for storing process programs on the machine is 300 GB. The size of a separate process program is up to 20 MB.

The software is compatible with all the world's leading equipment and is also suitable for plasma, bending, and coordinate punching machines.



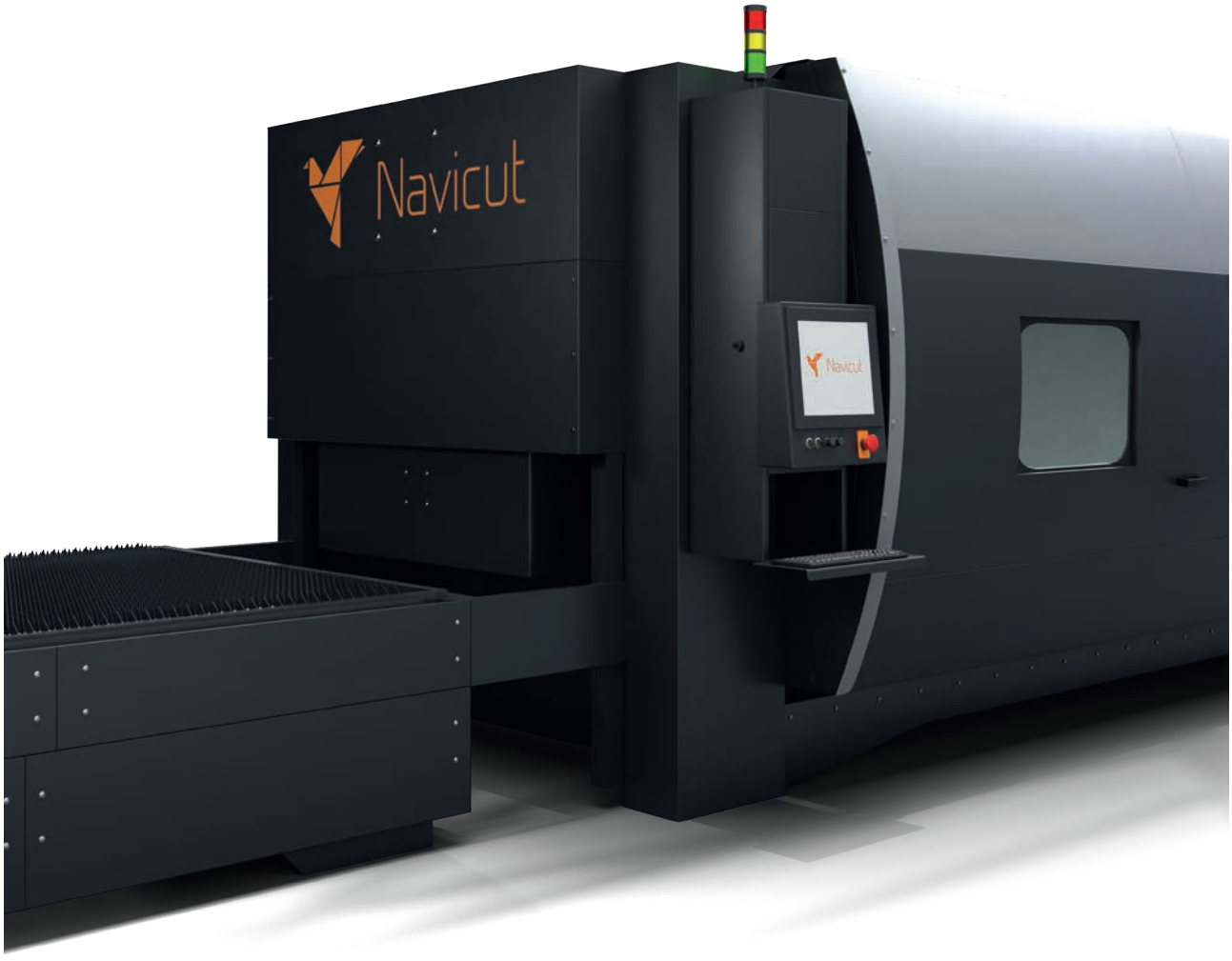




MODEL RANGE

Specifications for all top-class Navicut machines

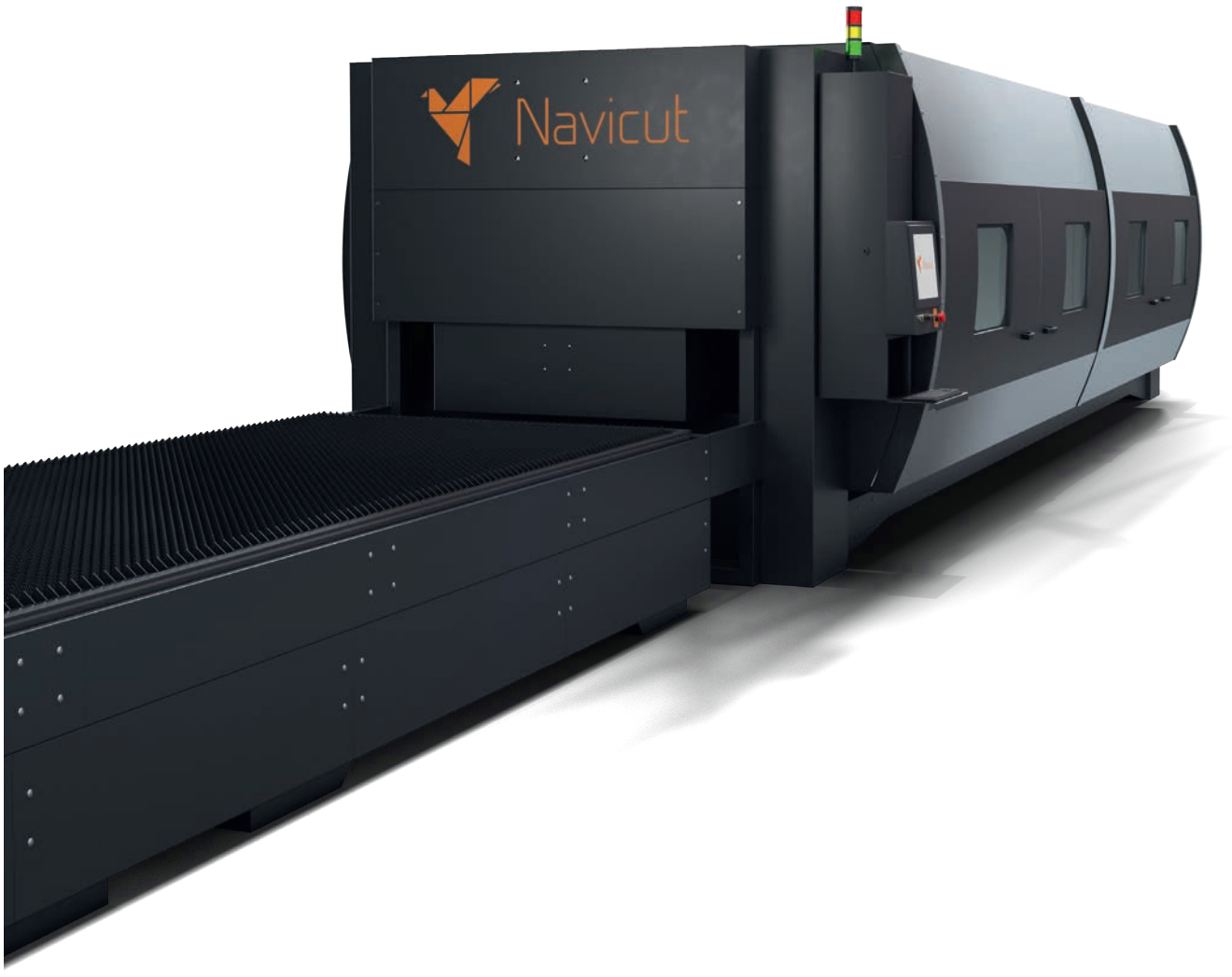
Resolution of the measuring system along the X/Y/Z axes	0.5 µm
Positioning accuracy	± 50 µm/m
Re-positioning error	10 µm
Maximum speed of idle movements along the X/Y	210 m/min
Maximum speed of idle movements along the X/Y/Z axes provided by the tracking system	60/60/60 m/min
Maximum accelerations along the X/Y/Z axes	20/25/25 m/s^2
Z-axis stroke	200 mm
Power supply of the coordinate table	380VAC(±5%)/3p-50 Hz



MODEL RANGE

Models of Navicut machines equipped with a single cutting head and linear motors

MODEL	NAVICUT NC-315 LM	NAVICUT NC-420 LM	NAVICUT NC-615 LM	NAVICUT NC-620 LM
X, mm	3050	4050	6050	6050
Y, mm	1550	2050	1550	2050
Weight, tons	12	18	19	22
Available power, kW	1, 2, 3, 4, 6, 8, 12, 15, 20, 30			

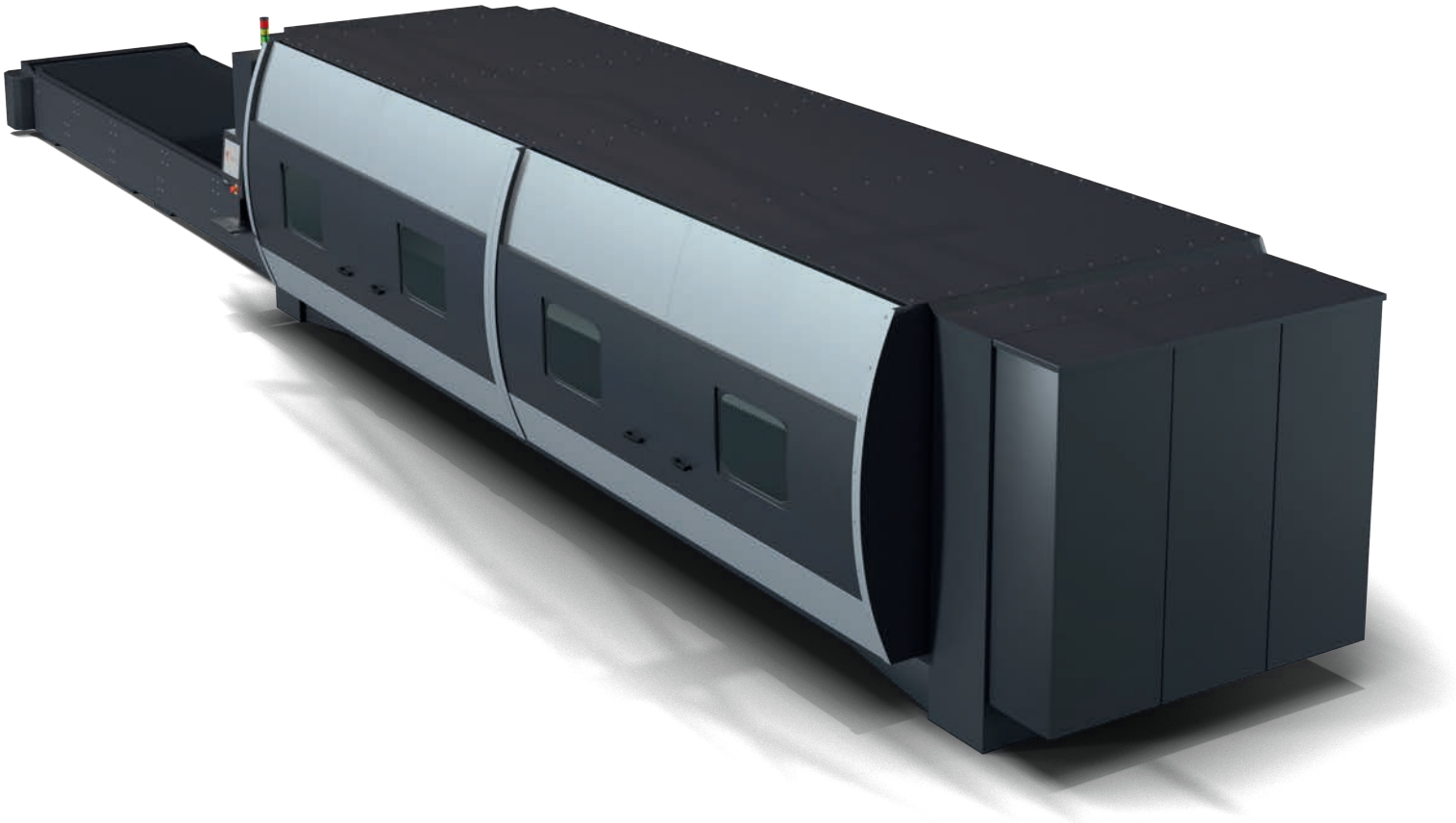


ADDITIONAL FEATURES

We provide additional features

For complex tasks, we can equip our machines with the following options:

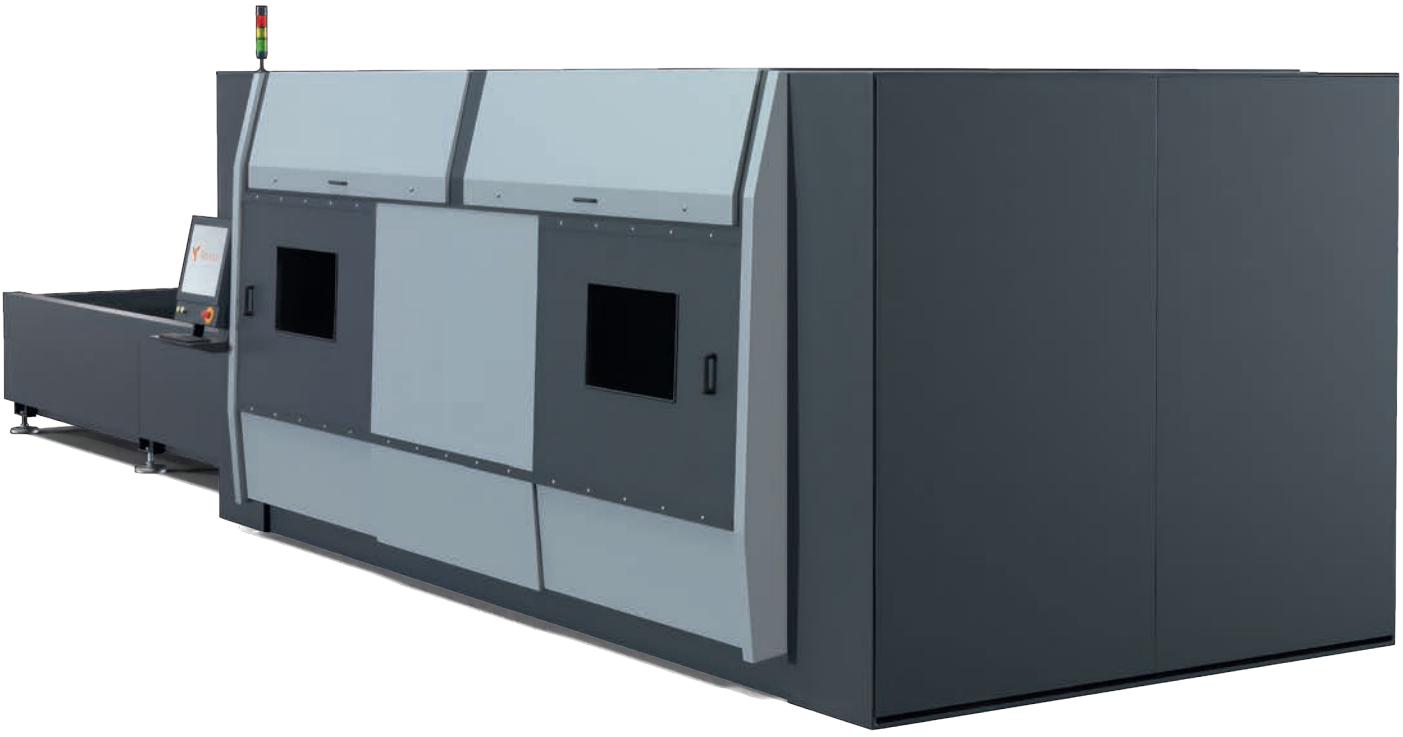
- Conveyor for collecting technological waste;
- swivel laser head;
- 4 opening doors for quick access to work desks;
- design and manufacture equipment according to your requirements;
- remote monitoring system;
- tube cutting module.



SERIES OF BUDGET UNITS NAVICUT

Series of budget units Navicut

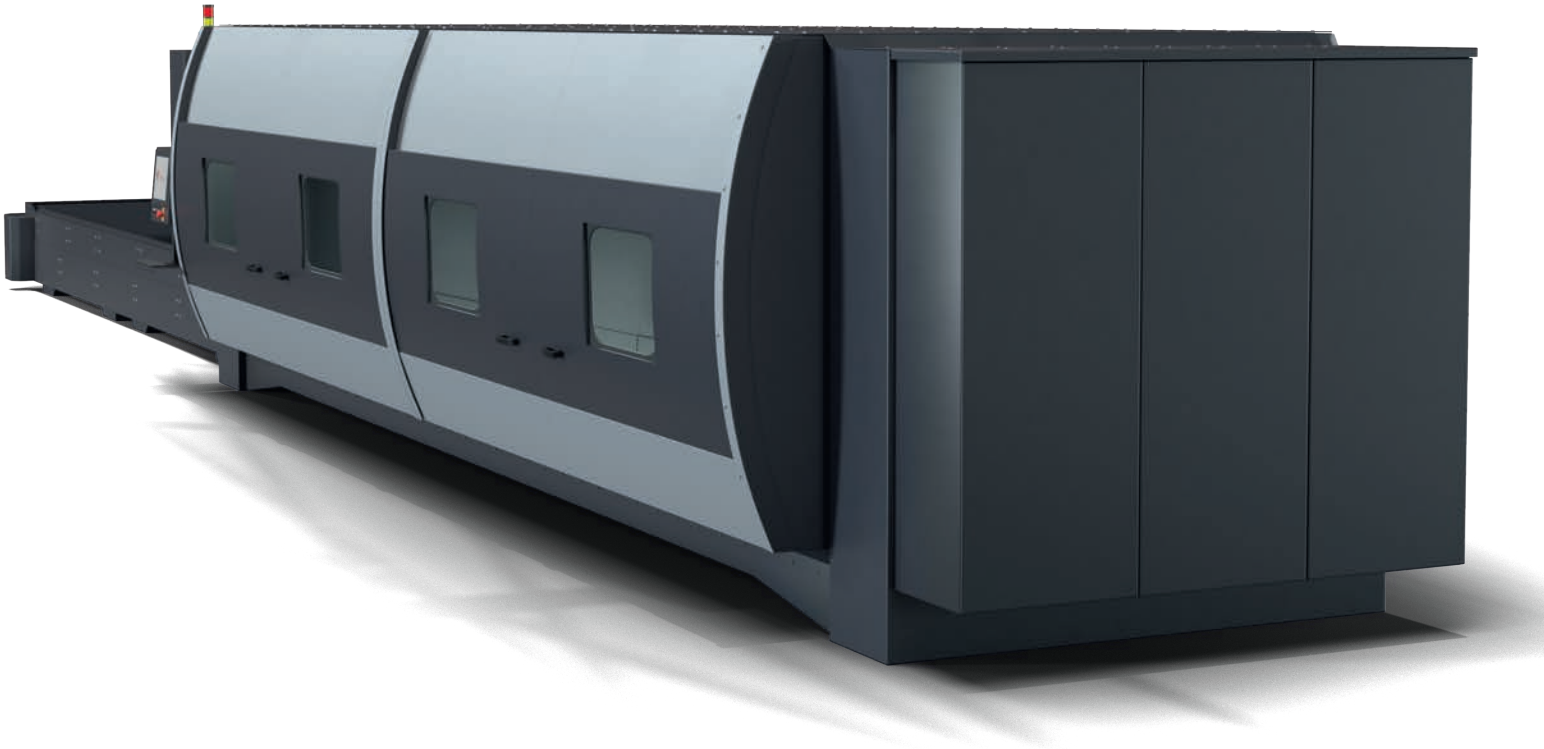
MODEL	NAVICUT NC-315 PR	NAVICUT NC-315 PRS
Maximum speeds of movement in the x/y plane	110 m/min	110 m/min
Positioning accuracy	± 100 µm/m	±50 µm/m
X, mm	3050	3050
Y, mm	1550	1550
Weight, tons	12	12
U-beam design	Steel	Steel
Z-axis drive	Pinion rack	Pinion rack
X and Y axis drive	Pinion rack	Pinion rack



MODEL RANGE

Process unit for cutting and perforating pipes

Maximum length of processed pipes	12 m (can be increased optionally)
Diameter of processed pipes	according to customers request
Processing zone along the U axis (movement of the laser head along the pipe)	1000 mm
Maximum speed of movement along the r1/r2 axes	50/19 rad/s



SERVICE AND WARRANTY

SERVICE

Navicut company provides warranty and post-warranty service

Hotline

Remote monitoring and diagnostics of the unit condition

The technician arrives within 1-2 working days

Navicut service network is expanding

Permanent stock of spare parts

WARRANTY

Warranty period for the coordinate table, filter ventilation unit and ytterbium fiber laser is up to 36 months from the date of signing the commissioning completion certificate, without limitation of motor life.

Warranty period for compressors and cutting head with autofocus is 12 months. Possibility of extending the warranty.

Navicut

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