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EAGLE INSPIRE 1530 F30.0

The above photo is a 3D model and may differ slightly from the actual appearance of the machine.

THE GAME-CHANGING CONCEPT OF THE MACHINE

COMPONENTS	BENEFITS FOR THE CUSTOMER
Innovative eVa cutting head	• 10 times less frequent glass replacement • Optics 4 times less sensitive to dirt • 100% serviceable at the production hall
Composite material machine body	• 100x higher coefficient of vibration damping than steel • Capacity to place traverse between the body shoulders • The best base for linear motors • High-temperature resistance with no thermal expansion (like that of steel bodies)
Carbon fiber traverse placed between body shoulders	• Lightweight construction to ensure the highest work rate • Ideal stiffness for accurate cutting • Placed between the body shoulders to ensure the lowest tension • Combined with four guides to guarantee maximum durability
Linear motors on all axes	• Highest acceleration • Highest performance • Highest precision and quality • Does not require referencing • Ready for immediate operation

Ultra-dynamic conveyor tables	• Continuous material flow
	• Cut “on the fly”
	• Separation of cut parts from skeleton “on the fly”
	• Cut parts ready for automatic sorting “on the fly”
	• No combs under the material which results in:
	  ○ no scratches on cut parts
	  ○ no need for comb exchange
	  ○ no contamination
	  ○ no slag underneath parts
	  ○ no micro welds below cut elements
	• Increased work comfort
	• Increased overall machine productivity

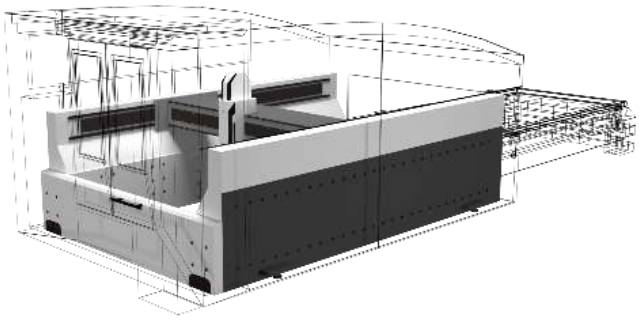
Absolute linear encoders	• Ready for immediate operation • The machine does not require referencing, it is ready to work after power-up • 100 % control over the cutting process, machine dynamics, and movement
Fiber laser source	• Low energy consumption • Low maintenance costs • Problem-free operation • Increased range of materials
MyESOFT software	• Intuitive programming • Fast cost calculation • Easy bidding • Full control over the machine performance in real-time
MyERSsoftware	• 3 types of dedicated reports for the owner, technologist, and operator • Increased efficiency • Full control over production operations • Enhanced workflow organization • Cloud-stored data available from anywhere in the world

I. STANDARD EQUIPMENT DELIVERED AND INCLUDED WITH iNspire SERIES

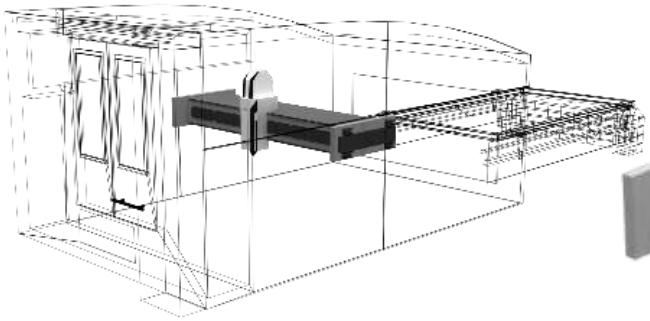
Machine body
The machine body is made of a composite material with unique features:

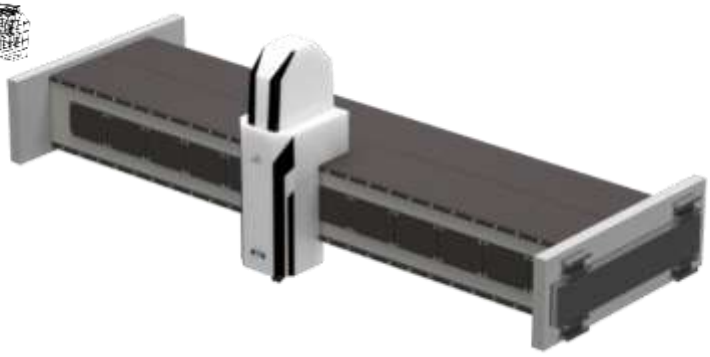
- 100x higher vibration damping than steel
- 10x lower temperature coefficient
- Weather-condition resistant
- High thermic capacity

The composite body damps vibrations and ensures precise processing which, until recently, were reserved for metering devices. The base is designed for ultra-fast and efficient linear motors, preventing vibrations during speedy direction changes of the cutting head. This is a perfect solution, especially when it comes to the production of thin steel parts such as spinners or rotors used in the electro sheet field where unparalleled precision and efficiency are required.
This one-of-a-kind machine is perfect for service companies that need the highest possible efficiency and performance.



Traverse
The Traverse is made of carbon fiber which reduces the weight of moving parts while ensuring ideal rigidity. This is the same high-tech material used in Formula 1 racecars and its application enables ultra-dynamic and precise cutting at the highest positioning speeds.





eVa cutting head

The cutting head is the most crucial component in a laser system, determining both the performance and reliability of the machine. Our patented eVa cutting head (nr P.418503) is uniquely constructed and was developed by Eagle engineers, especially for fiber laser technology, as our response to the highest market demands.

- ✓ **Purity** – eVa is the first cutting head in the world to offer automatic centering and focus diameter change of the laser beam without moving parts. The most common cause of cutting head failures is contamination produced by moving parts, so our solution eliminates this critical issue, significantly extending the lifetime of the optical parts and the entire cutting head.

- ✓ **Wearing parts** – The eVa has only three optical parts (2 lenses and 1 cover slide protecting the lenses against contamination). Having a minimal number of optical parts makes our cutting head non-failure, minimizes focus shift and guarantees low service cost.

- ✓ **Protective glass** – The glass is placed 355 mm over the cutting material. This distance is the most important parameter when it comes to replacement frequency. The larger the distance, the less frequent the need to replace the protective glass. The eVa cutting head boasts the greatest distance of all cutting heads on the market.

- ✓ **Service –** eVa is the only cutting head, which is fully serviceable while on the machine, in the production hall. Any head breakdown can be fixed during a service visit without the need to remove and reinstall it.

- ✓ **Protection –** Protection systems can prevent 90% breakdowns resulting from collisions. The eVa cutting head has a patented anti-collision protection, which shuts down the drives automatically. Its overload protection ensures an automatic stop, reducing the possibility of head damage.

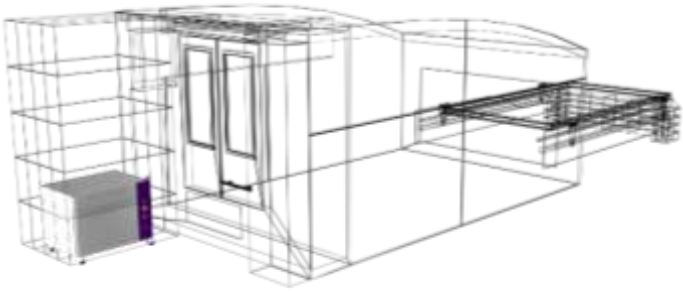
- ✓ **Auto Focus -** This function enables automatic focusing by the machine control system. In this way, it reduces the time needed for adjusting focal distance to a specific thickness and material type, facilitates the operator's work and significantly accelerates the melt-in process.

- ✓ **AC – fully automatic centering, anti-collision system –** Significantly increases efficiency and safety during machine operation and reduces collision-generated expenses.

- ✓ **ANC 36, ANC 72– automatic nozzle changer –** Increases machine production efficiency and allows it to work unsupervised for hours including night shifts or weekends. The system can be equipped with 36 or 72 nozzles which can be employed and stored to use again when needed. Nozzle-exchange time is only 25 seconds, the fastest on the market.

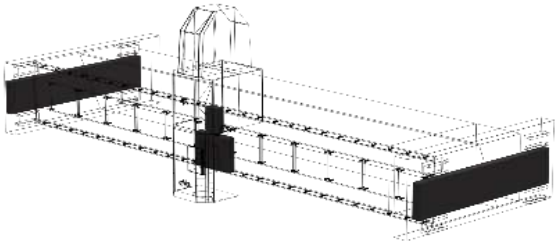
Fiber laser sources from 1 to 30 kW
We use an Ytterbium Fiber laser source from IPG, the undisputed world leader in high-power fiber lasers sources. IPG's innovative products are characterized by ultra-high energy efficiency – over 50% lower operating costs, are extremely reliable, easy to use and integrate, and have a compact structure.

Fiber lasers have a dynamic range of power which can be changed while maintaining the laser beam focused and in constant movement. Moreover, through optical configuration, it's possible to change the size of the of laser spot. These



functions allow the laser operator to choose the right power and density for different kinds of materials and thicknesses.

Linear motors
Linear motors are a standard component in all Eagle fiber laser cutting machines. They are installed in all axes, enabling ultra-high dynamics and positioning precision while maintaining operational parameters throughout the machine's entire lifetime. Linear motors are maintenance-free, and they do not wear out, resulting in the most reliable solution on the market.



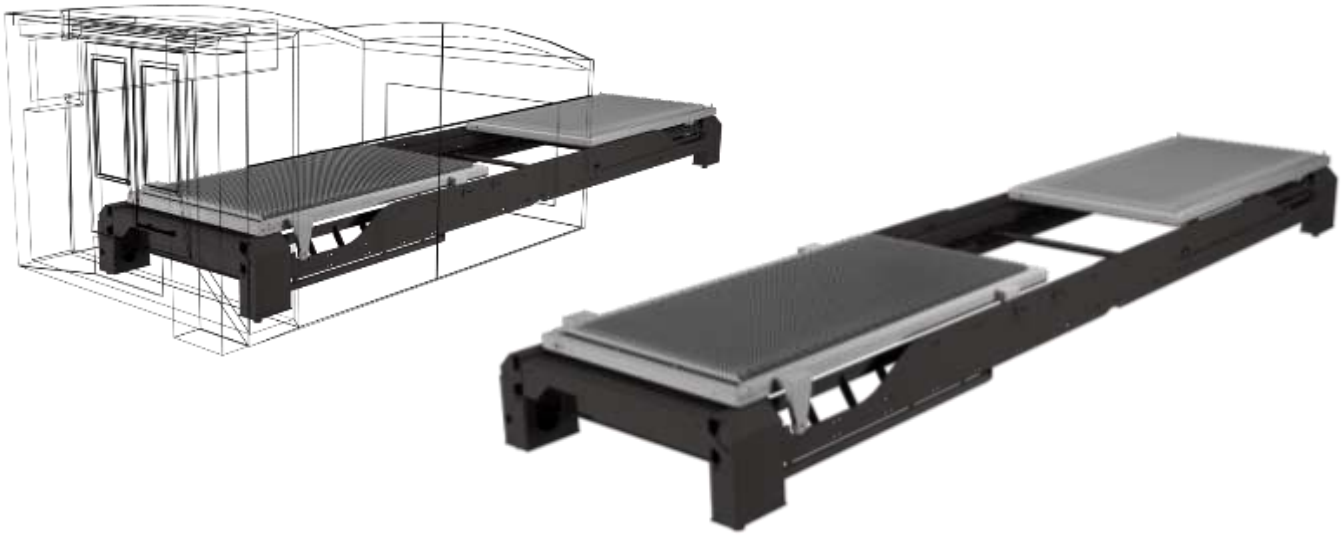
Control system
All Eagle laser machines are equipped with the highest quality control systems made by Beckhoff, and Eagle-developed software. Our MyERIS user interface was designed and implemented for full compatibility with industry automation, using the latest programing technology and user-friendly touchscreens. Work ergonomics, intuitive operation and revolutionary design guarantee comfort and efficiency for the operators and stable machine data exchange providing a whole new level of human-machine system interaction.

Absolute linear encoders
Absolute linear encoders set the location of working components in the machine. Due to a unique operation method, these devices enhance efficiency by eliminating machine referencing requirements. The machine is ready for operation immediately, reducing downtime to a minimum while keeping complete control over the cutting process, dynamics, and movement.

Automatic pallet changer

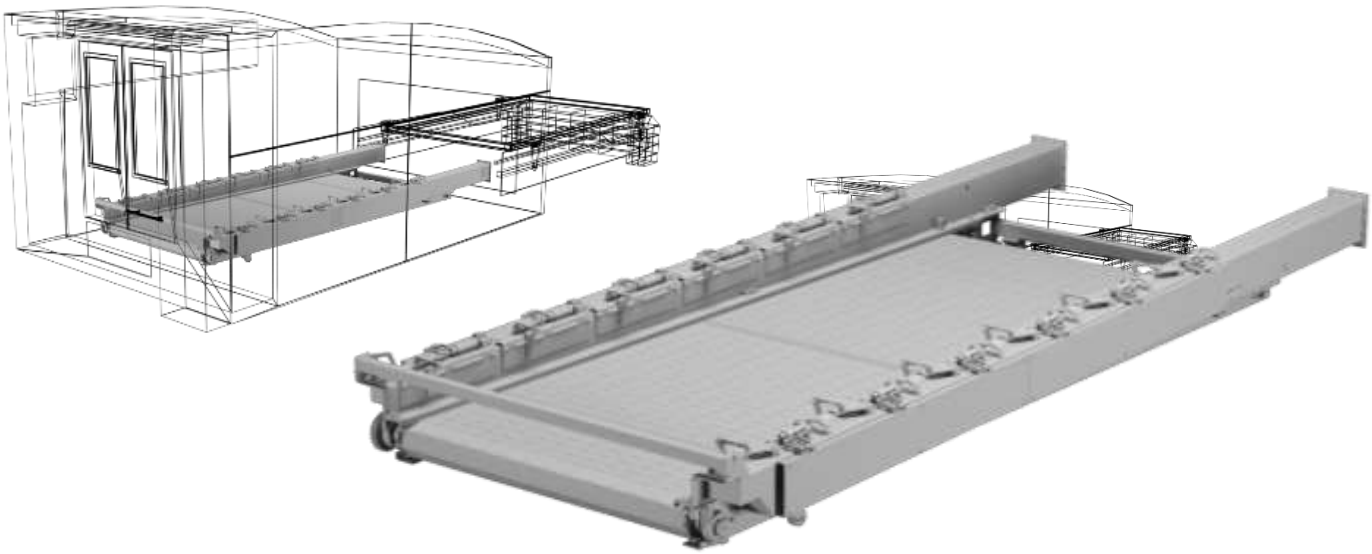
It enables loading metal sheets and unloading cut parts without stopping the cutting process. It increases the efficiency of the machine and makes the operator's work easier. The pallet changer is completely automatic. Access from three sides guarantees easy loading of material and unloading of cut parts. The pallet changer structure enables a complete exchange of tables in a very short time.

WORKING AREA	1530	2040	2060	2560	2580	3080	25120	30120	25160	30160
EXCHANGING TIME [s]	9	14	18	22	ON REQUEST	ON REQUEST	ON REQUEST	ON REQUEST	ON REQUEST	ON REQUEST

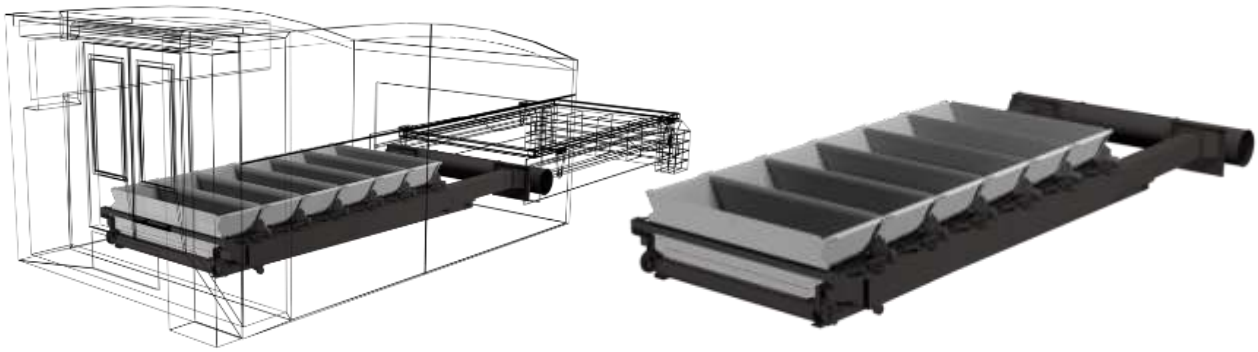


Conveyor – longitudinal belt transporter

The conveyor transports scrap and small parts from the working area to the machine end and channels them into a container. This enables programming the machine and cutting in a way that small parts (products) fall onto the conveyor without the risk of damaging or soiling them during the cutting of subsequent parts. It allows for the recovery of cut small parts and maintains tidiness under the machine, eliminating the need for using micro joints. The conveyor increases machine efficiency.



Multi-chamber extraction system
The multi-chamber extraction system ensures high power extraction through chambers opened only in the area where the cutting is being executed. Due to the use of the compact filters, small metal particles are dragged and filtered, while bigger particles are gathered in a container. The periodic shaking of the filters ensures they maintain optimal cleaning properties and results in the air exiting the extraction system being of such good quality, that it can be diverted back to the workshop. The filter is also equipped with a spark separator.



Cooling unit
Our laser sources need minimal cooling which is performed by IPG-manufactured chillers. Because IPG produces both the power source and the chillers, they are fully integrated and allow for online diagnostics of the chiller, the laser, and the cooperation between both.

Laser beam guidance
One of the greatest advantages of fiber lasers is beam guidance by fiber-optic cable, which is flexible, durable and needs no maintenance. The fiber-optic cable transports the beam from the source to the cutting head steadily and with minimum heat generation.

PCS – Piercing Control System
PCS was developed by Eagle's engineers to monitor the piercing process and inform the control system about finished processes or a failure within them, reducing piercing time to the absolute minimum. Only if and when the piercing process is successfully completed does the cutting process start, eliminating material waste that can result from the machine cutting even when the piercing process failed.
PCS technology significantly increases machine efficiency and work safety, reduces the wearing of protective glasses through the elimination of failed piercings and increases the lifetime of the conveyor working under the cutting table.

HRS – High Regulation System
This system keeps a fixed distance between the cutting head and the sheet (even if it's uneven or bends during cutting) which prevents collisions with the processed metal. HRS detects the metal sheet position on the table in a contactless manner and adapts the program to said position by shifting the coordinate system. This enables the operator to freely position the sheet and prevents scratches on the workpiece.

SCH – Smart Cutting Head
The Smart Cutting Head system is a novelty developed by our engineers. The control system, together with specialized software, analyzes the whole cutting process before even starting the program. It then optimizes the cutting head movements on the "Z" axis so that the machine positions itself, pierces, and cuts in the most efficient way possible. In certain cases, production efficiency can increase by up to 30% compared to that of machines not equipped with this system.

ESC – Eagle Smart Cutting
This is a state-of-the-art system developed by Eagle for a significant increase in machine efficiency and a drop in production costs. The specifics behind the system are classified. However, in short, ESC uses the latest machine control technology and advanced mathematics for real-time, unique cooperation that enhances overall productivity,

HPC – High Pressure Cutting
This system enables high-pressure cutting of stainless types of steel and aluminum alloys. Nitrogen is used as an assist gas to keep the edges oxide-free. The pressures of both nitrogen and oxygen are monitored, controlled, and switched for different materials and sheet thicknesses while simultaneously displayed on the machine's control panel.

FA – Fast Approach
Fast Approach enables the ultra-high-speed downward movement of the cutting head while controlling its position. This increases machine efficiency and piercing speed, resulting in optimized use of the "Z" axis linear motor.

MW – MicroJoint
This function joins cut parts with scrap material by means of micro joints. It's most useful when cutting small parts from thin sheets to prevent them from skewing or falling from the table.

Automatic switch-off system
After a specified time of inactivity, the machine will switch into sleep mode. This allows programs to run unattended and the certainty that, when finished, the machine will safely and automatically turn off.

Network connection
The machine can connect to the network via Windows OS for data transfer.

Machine and laser event log and diagnostic functions
The log function facilitates timely machine maintenance and the verification of its operation history, while the diagnostic functions analyzes failure causes and provides accurate guidance on how to solve them.

Know-how
All technological data and parameters are presented to the customer in the form of detailed tables developed by Eagle's engineers and are handed over together with the machine.

Installation
Within Polish territory, the machine will be installed by Eagle's assembly technicians within 2 weeks from the date of delivery. The attendance of the future machine operator and programmer during installation is crucial and mandatory.

On-machine training
Within Polish territory, after machine start-up and commissioning are concluded, we offer on-machine training for an operator for a maximum period of 5 days, included in the machine price.

In-software training
Within Polish territory, after machine start-up and commissioning are concluded, we offer an in-software training for a programmer for maximum period of 2 days, included in the machine price.

The ALL IN STADARD Warranty is included in the cost of the machine.

You cut, and we guarantee full machine efficiency throughout the warranty period.

The standard warranty includes:

- Free 5-year online support for the **cutting head and laser source.**
- Free 5-year online support for the **laser cutting machine, automation and storage systems.**
- Free 2-year warranty on **the cutting head (including optics), optical fiber cable, laser source, machine, automation and storage systems**.
- Unlimited number of working hours for **the cutting head, laser source, laser cutting machine automation and storage systems** during the warranty period.

- It is strongly recommended to sign the service contract with EAGLE.

II. ADDITIONAL AVAILABLE PAID OPTIONS

1. Paid options for the machine

MyERS - Eagle Reporting System

MyERS reporting system gives unlimited possibilities for creating real-time reports on the machine's operation. The system is fully customizable and allows access to key data in the form of static and dynamic reports available to all manufacturing stakeholders from any device with an internet connection. The reports cover all aspects of production processes from operator productivity and machine occupancy to maintenance history, wearing of parts, gas, energy and material consumption. This remote monitoring tool enables the visualization, evaluation, repeatability and improvement of machine processes and control expenses and allows for predictive maintenance, saving costs on all fronts.

MyEDROP

MyEDROP makes the most of waste materials to produce individual parts. The image from the camera inside the machine's cabinet is displayed on the control panel and with a few finger movements on the touchscreen, the operator can set up designs to be cut on material remnants regardless of their shape, and check if the details will fit on the remnant without having to measure or open the machine door. Designs can be freely rotated and safely cut without having to create a new program. The image from the camera can also be used as a preview while the machine is cutting

MyE2DROP

MyEDROP offers an identical functionality to that of MyEDROP, but on the outer pallet. While the machine is cutting a given program, the operator can set parts to be cut on the sheet metal remnants on the pallet outside without interfering with the ongoing program. After exchanging the pallets, the laser will start cutting the design set by the operator, increasing system performance, and minimizing downtime

MyEBOOST - Ultra-efficient cutting of thin and mid-thickness metal sheets.

This option has 2 functions

MyEFLY –

Allows the cutting head to remain at the same speed while piercing, instead of stopping, piercing, and then moving. The laser can cut "on the fly" by switching the beam on while over the cutting lines and off as it passes between contours. With no idle time and no wasted burn-in time, this function increases productivity by significantly reducing part cycle times for repetitive patterns on thin sheets up to 6mm, depending on the power source.

MyEFAST –

Allows super-fast cutting of thin and medium sheets, which reduces the piercing time to an absolute minimum. With this system, the head moves at an appropriate rate to decrease piercing time and resumes full speed as soon as possible. This, in combination with high machine dynamics, results in an unprecedented performance which increases the cutting efficiency of thin and medium sheets by up to 30%.

MyECAT –
Designed to improve edge quality on plates thicker than 8mm, this technology enhances accuracy for piercing and cutting small contours on high thicknesses in any position. MyECAT reduces sheet cycle time in half and delivers up to 80% less burr on aluminum and stainless steel, improving overall edge quality by 40% while allowing for exceptionally quick burns on all sheets. With MyECAT you can increase material thickness by 20% while using the same laser power, burn time in thick sheets is reduced by 50% and the whole cutting process is stabilized for consistent results. Small openings that were reserved for drilling, can be now cut with a fiber laser, plus, corrected tie-ins eliminate flash even for small bores.

MyESPOT
An innovative system designed for rapid edge finding which reduces sheet location process by up to 4 times. The entire edge-finding process takes 5 seconds and is performed by an additional laser device, not by a sensor on the cutting head. Thanks to this, the cutting head remains retracted during the edge-finding cycle, which enables the machine to move at ultra-high speeds without risking collision or sheet damage.

MyECOCUT
This technology, based on a unique nozzle designed at Eagle, reduces gas consumption by up to 75%, allowing for improved edge quality, minimized burrs, and the maintenance of maximum cutting speeds even when processing uneven materials.

MyEMIX
Increases the quality and cutting speed of medium thickness mild steel and aluminum sheets by automatically changing between 3 gases. Thanks to a peripheral device consisting of a gas mixer and tank, MyEMIX switches between oxygen, nitrogen and an oxygen/nitrogen mixture. The result is an increased throughput, higher speed, and reduced burr on medium thicknesses for many materials, but it is especially effective for mild steel and aluminum.

AC – Fully automatic centering, anti-collision system
The automatic centering system and anti-collision system increase both the efficiency and work safety of the machine and reduce costs caused by collision-generated damage. The patented modular solution below the optical system in the laser head consists of related moving parts. The sensors and nozzle recognize the collision immediately and, if it took place at a speed of less than 50m/min, the cutting head automatically centers and continues to work without the need for operator intervention. This solution is especially recommended for companies running unattended shifts at night or during weekends.
The AC system does not allow the laser beam to be emitted if it is not centered, hence extending the lifetime of the cutting head and its elements, like nozzle or sensor while reducing the replacement frequency of costly wear parts such as ceramic rings or adapters.

ANC 36, ANC 72– automatic nozzle changer
Increases machine production efficiency and allows it to work unattended for hours during night shifts or weekends. The system can be equipped with 36 or 72 nozzles which can be repeatedly stored and used again when needed. The nozzle-exchange time is only 25 seconds - the fastest on the market.

Preparing the machine for automation
It allows for the possibility of an already installed fiber laser cutting machine to be fully integrated with an automation system in the future.

Aluminum safety cutting system
Aluminum dust mixed with dust resulting from other materials can be explosive and poses a fire threat. This option allows you to cut aluminum alternately with other materials in the safest way.

Filter unit up to 10 meters from the machine
This option allows placing the filter at a larger-than-standard distance from the machine (up to 10 meters).

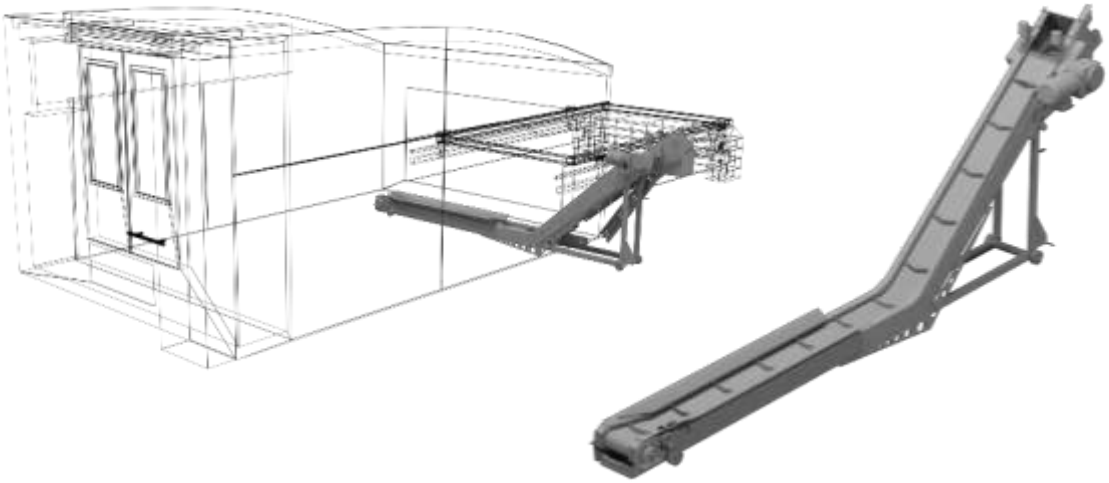
Machines in tropical version
This option especially prepares machines for demanding tropical climates (high humidity, high temperatures, and dust).

The laser source not integrated with the machine
In this case the laser source and the cooling unit stand at the side of the machine.

Additional control panel at the pallet changer's side
There is a possibility to install an additional control panel. This option significantly increases work efficiency and comfort. The operator doesn't have to go in front of the machine to control the cutting process or run the program. On the nal control panel, the whole cutting process is visible thanks to the camera installed inside the machine.

Traverse Conveyor

The conveyor transports scrap and small parts to a container next to the laser. This enables you to recover small cut parts and to keep the bottom of the machine tidy.



Scrap container under the pallet changer
It is equipped with wheels and placed under the pallet changer. All scraps coming from small contour cutting can easily fall into it, helping to keep the area around the machine clean.

Larger dust tank in the filter unit
A larger dust collector is placed under the filter unit to reduce dust-emptying frequency. This option is especially recommended for companies cutting high volumes of mild steel at higher thicknesses and working at least two shifts.

Compressed air cutting
This system allows the use of compressed air as an assist gas as well as automatic switching between oxygen, nitrogen, and air. It also includes all cutting parameters necessary for compressed-air cutting.

Fast comb replacement
The combs are placed one by one in a pallet frame. Thanks to this option it is possible to use modules which can be taken out of the frame for cleaning. In their place, new modules can be put in without downtimes facilitating maintenance work for operators.

HeavyDutyPackage

This option allows to cut sheets with thickness up to 60mm. The Heavy Duty Package includes:

- reinforced lower pallet,
- reinforced pallet changer - possibility to load a pallet with metal sheets of up to 60mm thickness
- extended "Z" axis stroke
- unique cutting technology developed by Eagle's engineers.

Stainless steel combs
The cutting table can be equipped with stainless steel combs. This option is strongly recommended for companies primarily processing stainless steel, since it helps avoid scratches.

Copper combs
The cutting table can be equipped with copper combs which have and extended lifetime and are recommended for powers ranging from 10kW upwards.

Manual fixing of the metal sheet

This system allows fixing the metal sheet on the processing bench. This is a particularly useful option for the processing of thin, small, and not full metal sheets. It helps prevent shifting of the material being processed and dampens the generated vibrations, especially during high pressure cutting using N2. This option is not available with loading and unloading systems.

Production kit
The production kit is prepared according to the machine series, laser power and set of consumables necessary to start production immediately. The kit is meant to last for the first weeks of cutting and, with it, the operator can also acquire knowledge and experience on what consumables should be in store.

IV. SPECIFICATION OF THE OFFERED MACHINE

MACHINE		
model		iNspire 1530 F30.0
drives		direct linear drives
touchscreen	['']	21
working area	[mm]	1500 x 3000
maximal weight of cutting material	[kg]	1000
Z axis stroke	[mm]	120
positioning speed – X axis	**[m/min]**	**250**
positioning speed – Y axis	**[m/min]**	**250**
positioning speed – Z axis	**[m/min]**	**250**
positioning simultaneous speed	**[m/min]**	**350**
acceleration – for X and Y axis	[m/s^2]	Up to 60
cutting accuracy (metal sheet # 1mm)	+/-[mm/m]	0,05
maximal cutting speed	[m/min]	150

CNC		
control		Beckhoff TwinCAT CNC
positioning accuracy	+/- [mm]	0,05
repeatability	[mm/m]	0,03

MEDIA		
max. system energy	[kVA]	120
Protection	A	200
average energy consumption	[kW/h]	62
required air pressure	[BAR]	6

MAXIMUM SHEET THICKNESS		STANDARD	ADVANCED
construction steel	[mm]	25	-
construction steel /N_2 MyeCat *	[mm]	25	60
stainless steel /N_2	[mm]	25	-
stainless steel /N_2 MyeCat *	[mm]	25	60
aluminum / N_2	[mm]	25	-
aluminum / N_2 MyeCat *	[mm]	25	60
copper / O_2	[mm]	25	-
brass / N_2	[mm]	25	-

LASER SOURCE DATA		
laser type		Ytterbium Fiber Laser YLS F30.0
laser power	[W]	30 000
wavelength	[µm]	1,07
beam quality	mm x mrad	4,5
frequency	[kHz]	5

(*) Advanced max. thicknesses are available on customer's request as an extra paid option and are not the subject of final acceptance protocol. If the ADVANCED thicknesses have to be cut on fully sized metal sheets, the Heavy Duty Package is required.

ATTENTION - The above-mentioned maximum cutting thickness is based only on laser source capabilities. There are restrictions for maximum cutting thickness due to other factors such as the maximum possible load on the machine's pallets or the amount of heat to which the sheet is exposed during its processing. These restrictions are independent. The fact that the laser source power allows cutting a specified maximum sheet thickness does not mean that you cut a full-size sheet on the machine. Depending on the machine model, the size of the working area and the machine's pallet number (A and B), the machine's processing capabilities may be limited by the maximum allowed sheet metal weight that can be loaded onto the cutting table. An additional paid option (HeavyDuty) is available, which enables the processing of entire metal sheets with a maximum thickness of 60mm