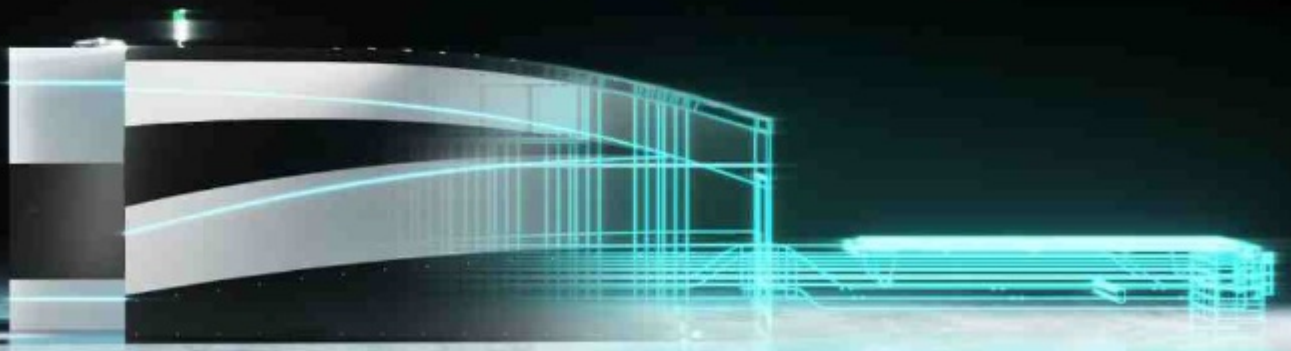




FIBER LASER CUTTING SYSTEMS

**NOTHING FASTER.**





# eSmart series

## BASE DATA

Cutting speed: **max 100 m/min**

Positioning: **170 m/min**

Acceleration: **2G**

Laser sources: **from 1 to 10kW**

## STANDARD EQUIPMENT

- Fiber laser source;
- Linear motors on all axes;
- Advanced body structure of composite material;
- Eagle eVa cutting head;
- Efficient pallet changer without slow moving hydraulics.



## SPECIFICATIONS

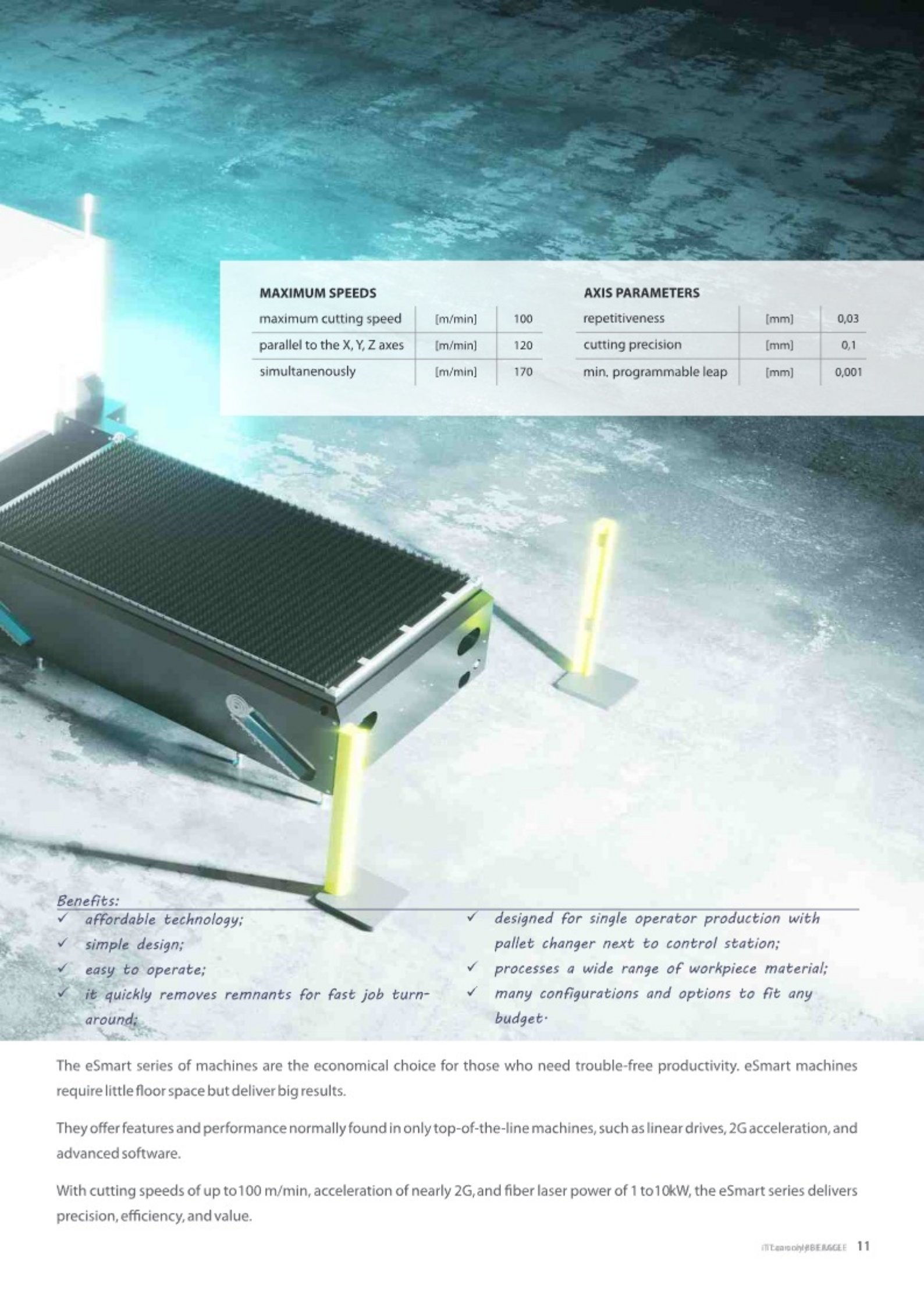
### WORK AREA

MACHINE MODEL	[um]	1530	2040
X-axis	[mm]	3060	4070
Y-axis	[mm]	1540	2098
Z-axis	[mm]	100	100
max. sheet weight	[kg]	1000	3200

### DIMENSIONS AND WEIGHT OF THE MACHINE

MACHINE MODEL	[um]	1530	2040
length	[mm]	10000	11570
width	[mm]	3080	3016
height	[mm]	3060	2240
weight	[t]	18	21

<sup>1)</sup> Approximate values. The exact parameters are specified in the installation plan.



#### MAXIMUM SPEEDS

maximum cutting speed	[m/min]	100
parallel to the X, Y, Z axes	[m/min]	120
simultaneously	[m/min]	170

#### AXIS PARAMETERS

repetitiveness	[mm]	0,03
cutting precision	[mm]	0,1
min. programmable leap	[mm]	0,001

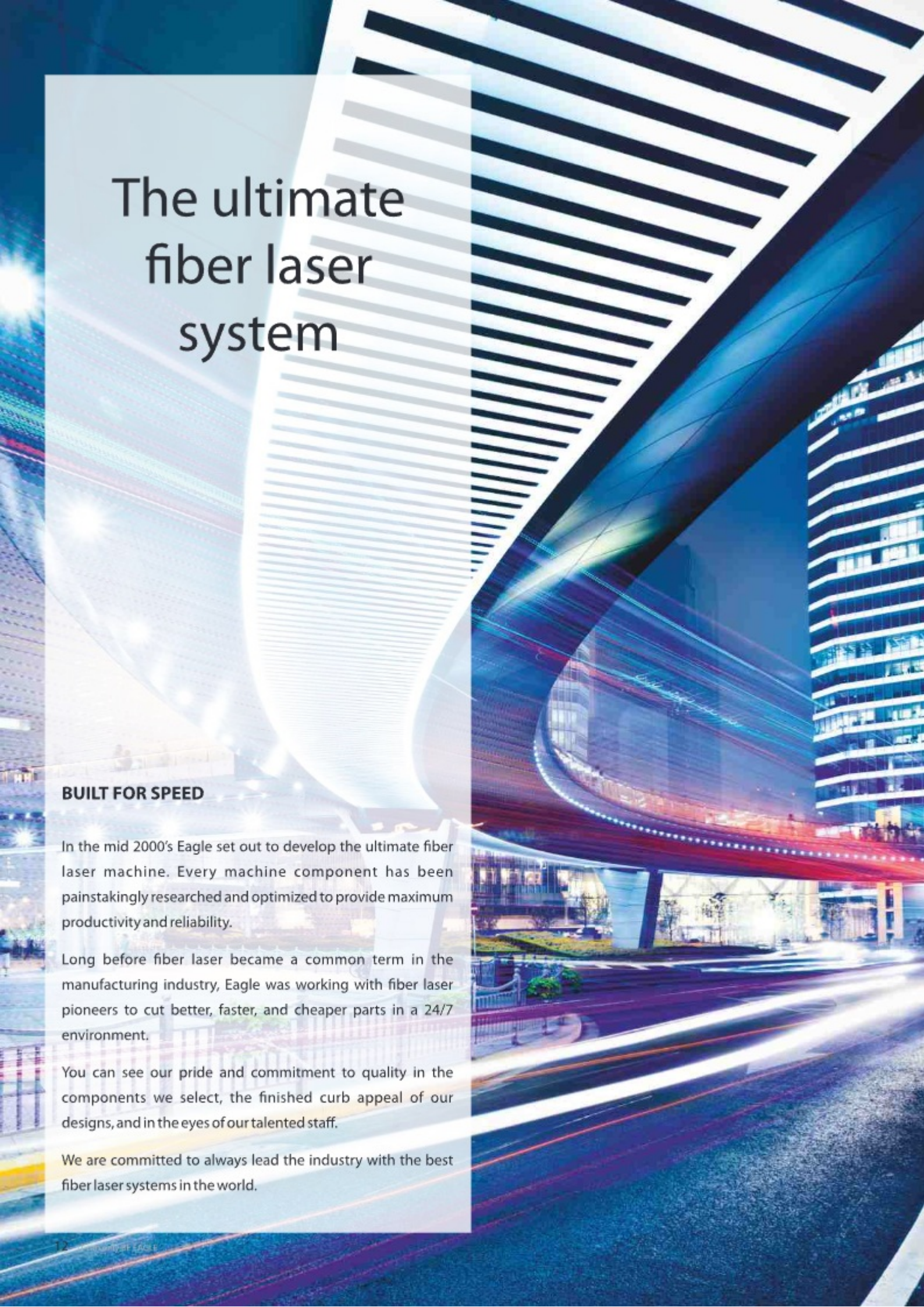
#### Benefits:

- ✓ affordable technology;
- ✓ simple design;
- ✓ easy to operate;
- ✓ it quickly removes remnants for fast job turn-around;
- ✓ designed for single operator production with pallet changer next to control station;
- ✓ processes a wide range of workpiece material;
- ✓ many configurations and options to fit any budget.

The eSmart series of machines are the economical choice for those who need trouble-free productivity. eSmart machines require little floor space but deliver big results.

They offer features and performance normally found in only top-of-the-line machines, such as linear drives, 2G acceleration, and advanced software.

With cutting speeds of up to 100 m/min, acceleration of nearly 2G, and fiber laser power of 1 to 10kW, the eSmart series delivers precision, efficiency, and value.



# The ultimate fiber laser system

## **BUILT FOR SPEED**

In the mid 2000's Eagle set out to develop the ultimate fiber laser machine. Every machine component has been painstakingly researched and optimized to provide maximum productivity and reliability.

Long before fiber laser became a common term in the manufacturing industry, Eagle was working with fiber laser pioneers to cut better, faster, and cheaper parts in a 24/7 environment.

You can see our pride and commitment to quality in the components we select, the finished curb appeal of our designs, and in the eyes of our talented staff.

We are committed to always lead the industry with the best fiber laser systems in the world.

## WHAT MAKES IT AN EAGLE LASER

To create the ideal fiber laser machine, every aspect of the machine must be carefully thought out and researched. Stand back from an iNspire system and you'll notice a few things.

### POWER UNDER CONTROL

The first thing you notice before the machine even turns on is the fiber laser power. Eagle offers the highest fiber lasers power in the world, and we won't be stopping at 20kW, you can be sure of that . But all that power is useless if two attributes are not maximized: reliability and motion speed.

Eagle has always led the world in fiber laser power, and we designed our own delivery system and automated cutting head to ensure we get the reliability necessary to run 24/7.

The greater the fiber laser power the faster the machine must be able to move. But top speed is not enough, the true limiting factor using 6 to 20kW of fiber laser power is acceleration. Eagle machines generate up to 6G of acceleration. If you stand in front of a 20kW Eagle Laser, cutting thin sheet metal you'll know you are seeing something very special, and very productive. At 6G, we are accelerating from 0 to 100 km/hr. in under ½ second.



### UNIQUE MACHINE DESIGN

To reach these acceleration levels, Eagle Laser has researched and tested many different types of machine base designs, lightweight bridge designs, mechanical motion designs, and control architectures to come up with the ideal machine. The base is rigid composite, the traverse bridge is carbon fiber composite, the drive system is high-power linear drive with integrated cooling and the control system is all high-speed digital based on the EtherCat. Every ounce of weight was removed from the moving components and every sub-assembly was carefully selected for compatibility and performance.

The machine is built for more than just a speed, it is also compact, ergonomic, and beautiful. With integrated chillers and material handling, Eagle Lasers require 30% less floors pace than other fiber laser systems. The operator station, material handling, and work enclosure are conveniently located to improve the operator's work.

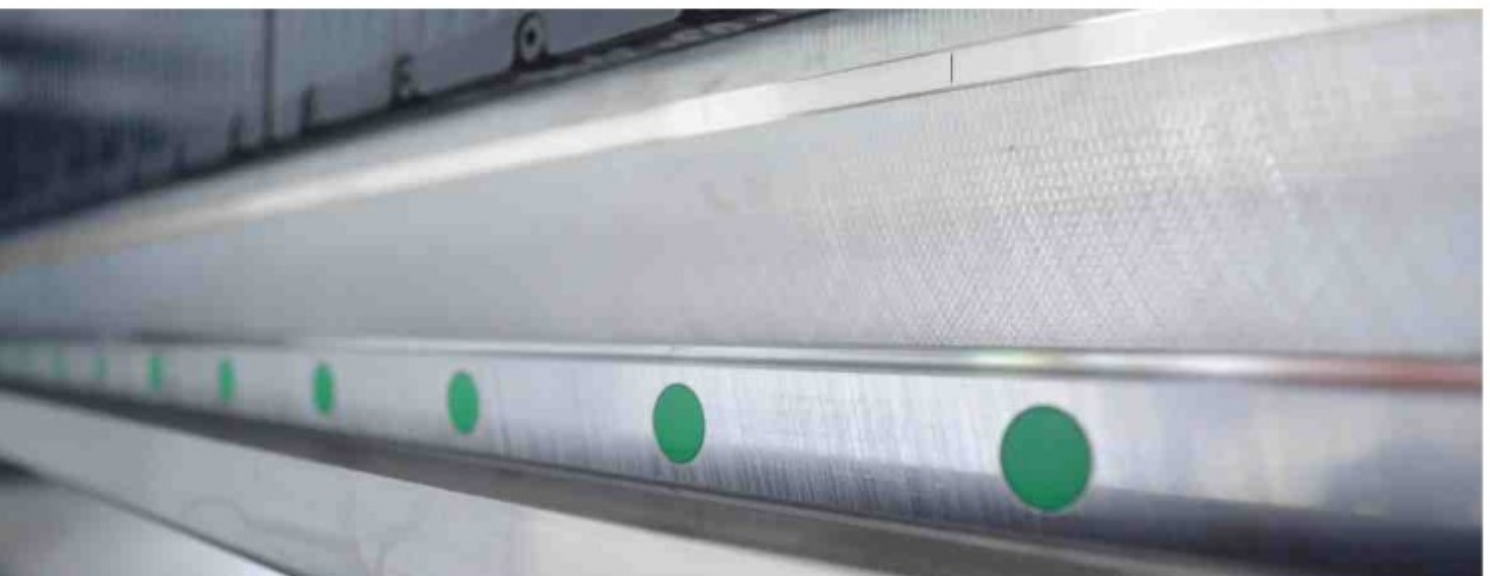
## LINEAR MOTORS

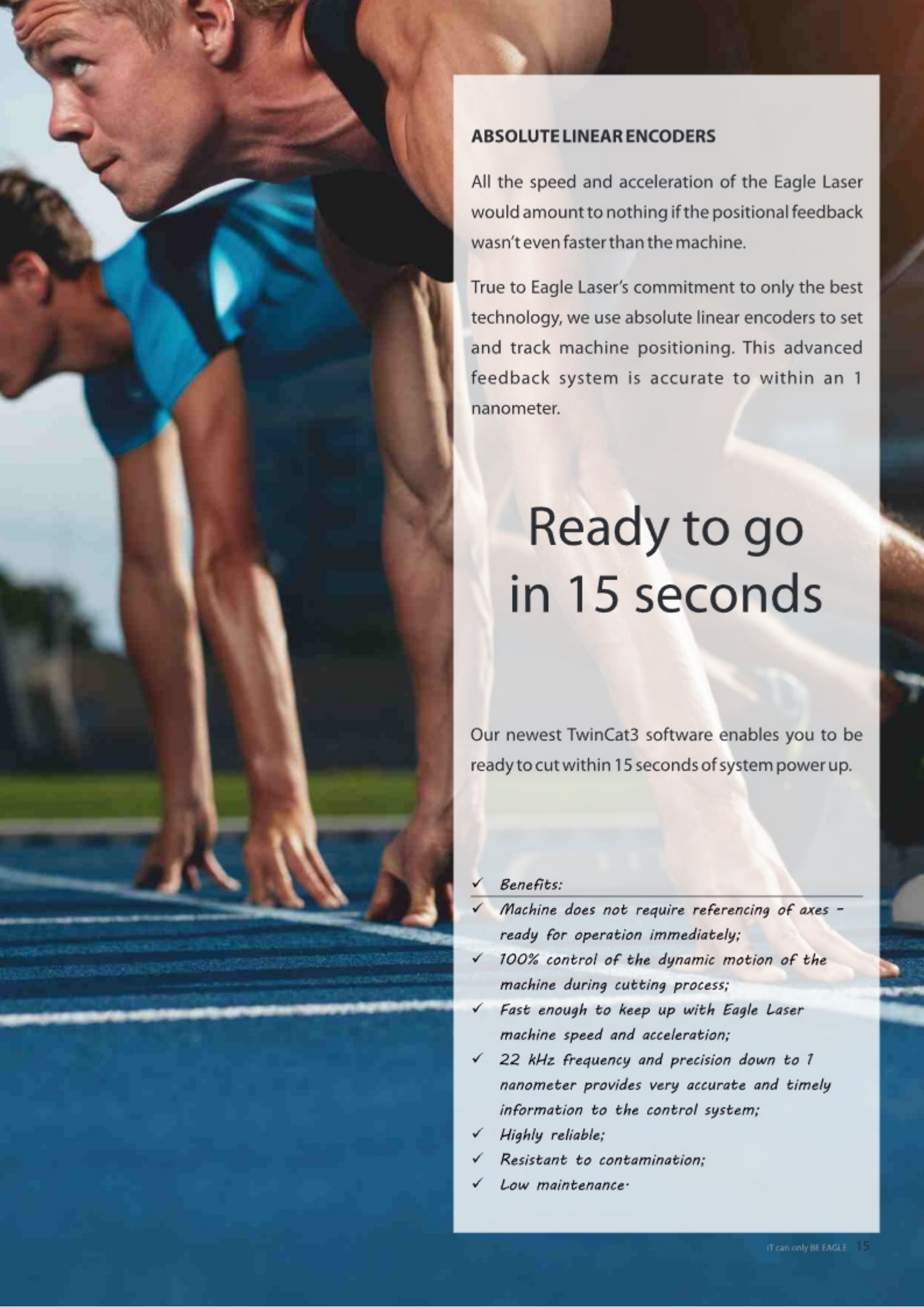
The only drive system available that has the speed, acceleration, and precision to meet Eagle Laser's performance criteria is the linear motor. With traditional rotary motors you must convert rotational torque and motion into linear motion through some mechanical means (such as rack and pinion or ball screw). This conversion is highly inefficient and slows down motion acceleration and speed. Linear motors eliminate this conversion.

We have perfected the use of the latest linear motor technology. The result? Our machines have high acceleration, obtain the highest speeds in the industry, deliver high-precision, and never wear out.

### *Benefits:*

- 
- ✓ *Reliability of cutting head and motion system;*
  - ✓ *Contamination resistance for uptime;*
  - ✓ *High G acceleration;*
  - ✓ *Low maintenance requirement of the cutting head;*
  - ✓ *No maintenance required of the linear drive mechanics;*
  - ✓ *24/7 reliable operation.*





## ABSOLUTE LINEAR ENCODERS

All the speed and acceleration of the Eagle Laser would amount to nothing if the positional feedback wasn't even faster than the machine.

True to Eagle Laser's commitment to only the best technology, we use absolute linear encoders to set and track machine positioning. This advanced feedback system is accurate to within an 1 nanometer.

# Ready to go in 15 seconds

Our newest TwinCat3 software enables you to be ready to cut within 15 seconds of system power up.

- ✓ *Benefits:*
- ✓ *Machine does not require referencing of axes - ready for operation immediately;*
- ✓ *100% control of the dynamic motion of the machine during cutting process;*
- ✓ *Fast enough to keep up with Eagle Laser machine speed and acceleration;*
- ✓ *22 kHz frequency and precision down to 1 nanometer provides very accurate and timely information to the control system;*
- ✓ *Highly reliable;*
- ✓ *Resistant to contamination;*
- ✓ *Low maintenance.*

## MACHINE BODY OF COMPOSITE MATERIAL

The base frame of an Eagle Laser is no ordinary steel weldment. To achieve 6G acceleration, the body of the machine must be completely rigid, dampen vibration and harmonic frequencies, remains stable at all working temperatures, and be of high precision.

Through careful research, material testing, and finite element analysis design work, we have developed the ultimate high-performance machine body. A massive polymer concrete body provides an extremely stable base for an extremely fast machine. Vibrations associated with high G moves are dampened. Precision mounting of the linear drive stator and linear encoder feedback system is enabled. In addition, the machine can be transported anywhere in the world and quickly installed without concern for transit-induced inaccuracies.

### *Benefits:*

- ✓ *Enables high G acceleration;*
- ✓ *Vibration dampening;*
- ✓ *Temperature stability;*
- ✓ *Stable foundation for the life of the machine*
- ✓ *Safe global transport*
- ✓ *Fast to install or relocate*

## PALLET CHANGER

The dynamic pallet changer allows for quick pallet replacement. Consequently improves the efficiency of the machine and facilitates the operators work. Pallet changer is fully automated. Our pallet change system exchanges a sheet of material within 9 seconds. We obtained this performance by removing slow-acting hydraulics, reducing the number of components, and optimizing machine/pallet interface. We reduce non-production time to a minimum.

### PALLET CHANGE TIMES

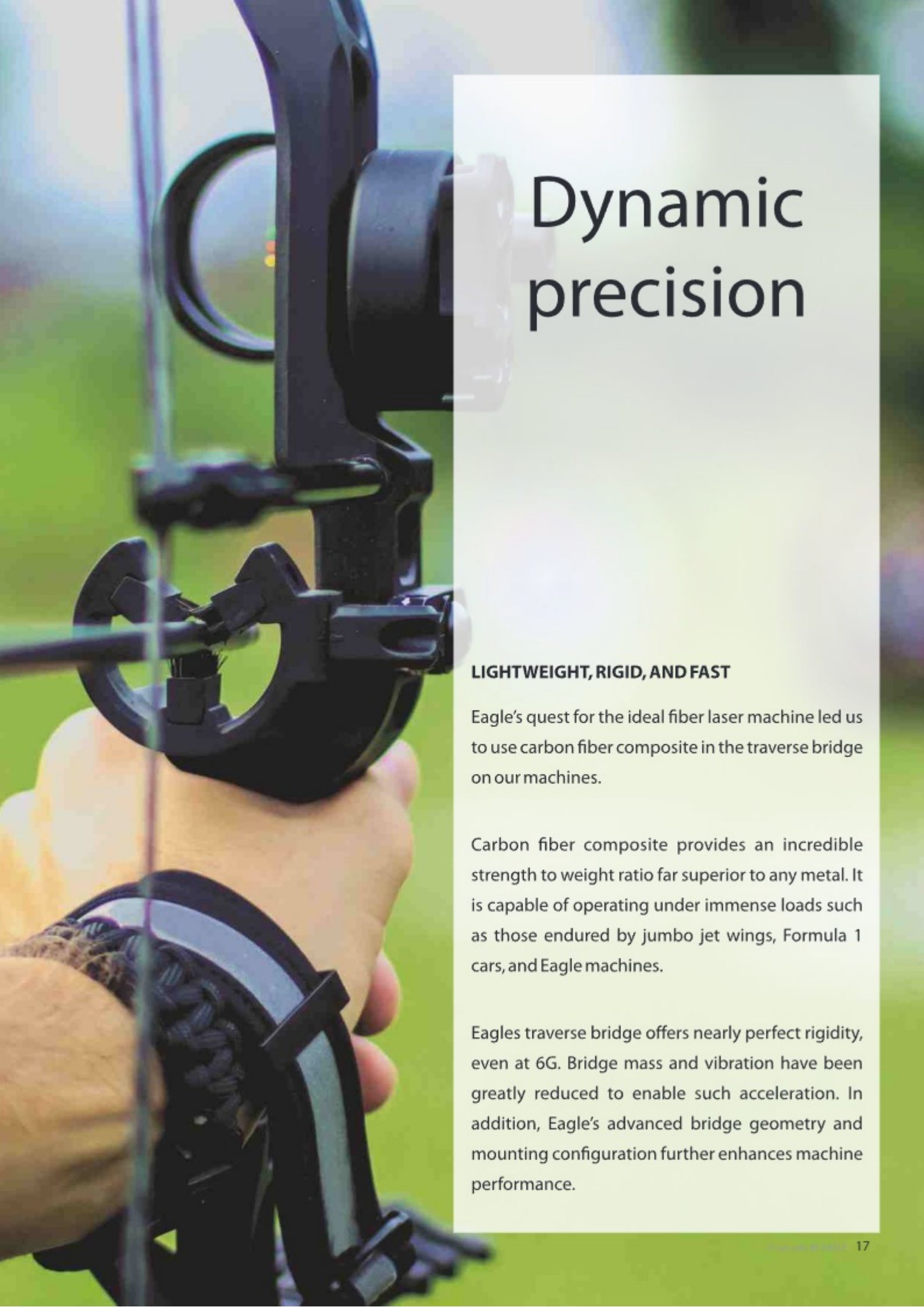
MACHINE MODEL	[um]	1530	2040	2060	2560
PALLET CHANGE TIME	[s]	9	14	18	22

### *Benefits:*

- ✓ *Extremely fast: 10s sheet removal and replacement within the machine;*
- ✓ *Enclosed work area allows for sheet load and unload without machine stoppage;*
- ✓ *Safe operation;*
- ✓ *Easy access from 3 sides;*
- ✓ *Increased work comfort;*
- ✓ *Fully automated.*







# Dynamic precision

## **LIGHTWEIGHT, RIGID, AND FAST**

Eagle's quest for the ideal fiber laser machine led us to use carbon fiber composite in the traverse bridge on our machines.

Carbon fiber composite provides an incredible strength to weight ratio far superior to any metal. It is capable of operating under immense loads such as those endured by jumbo jet wings, Formula 1 cars, and Eagle machines.

Eagle's traverse bridge offers nearly perfect rigidity, even at 6G. Bridge mass and vibration have been greatly reduced to enable such acceleration. In addition, Eagle's advanced bridge geometry and mounting configuration further enhances machine performance.

# Reaching higher performance

eVa

## **EAGLE'S eVa CUTTING HEAD**

Harnessing the ultrahigh power of today's most advanced fiber laser machines can result in short cutting head life, heavy components, and time-consuming maintenance.

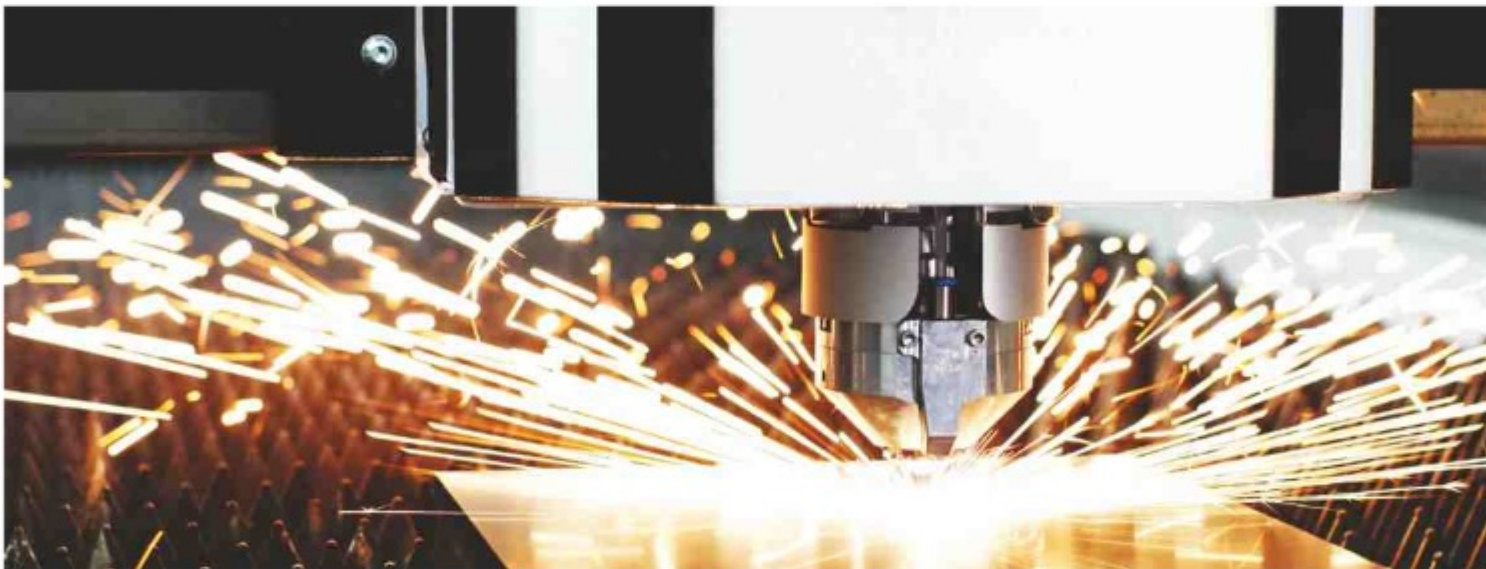
Eagle offers an innovative solution, setting a new standard in the laser industry – the patented eVa cutting head. It's the first of its kind in the industry.

The eVa is designed to handle fiber laser power of over 20kW. It is the answer to the growing demand for efficient durable and reliable sheet-metal production. The eVa head is your competitive advantage.



The eVa cutting head is unique in the world of ultrahigh-power fiber lasers. It has very few moving parts in the path of the laser beam, is very simple and lightweight in design, is easily maintained in minutes by the operator, and delivers extremely fast hole piercing.

The eVa is equipped with only two fixed lenses. Despite this, the cutting head provides the ability to change the focal diameter and the angle between the beam and the material. The glass that protects the optics is far away from the cutting nozzle making the eVa much more resistant to contamination during the cutting process. As a result, replacement of the protective glass occurs 10 times less frequently than other fiber laser cutting heads. In addition, the eVa incorporates a collimator protective glass mounted over the collimating lens to further enhance durability and uptime.



**Benefits:**

- ✓ Four times less sensitive to dirt;
- ✓ 10x fewer replacement of protective glass;
- ✓ Serviced by your staff while on the machine;
- ✓ Lower maintenance cost;
- ✓ Extremely fast piercing;
- ✓ Automatic beam centering;
- ✓ Automatic nozzle quality checking;
- ✓ Can be equipped with automatic nozzle exchange.

## MULTI-CHAMBER EXTRACTION SYSTEM

Eagle's multi-chamber extraction system is so effective that in most cases exhaust air can be diverted right back into the workshop. This integrated extraction system works seamlessly with the operator and machine to turn on and off automatically as required.

Small metal particles are dragged and filtered in the compact filter while bigger particles are gathered in a container. Optimum filter performance and extended life is obtained by simply shaking the filters free of excess debris when necessary. The filter system is also equipped with a spark arrestor.

## CONVEYOR BELT TRANSPORTER

A conveyor is located under the cutting area of the machine to transport small parts away from the cutting area so that they are not dirtied or damaged by subsequent cutting, and to remove dropouts. The Eagle conveyor system is designed as an integral part of the machine body design, not an afterthought, further reducing footprint and enhancing performance.

The built-in conveyor system has another highly beneficial attribute; it reduces or eliminates the need to add micro joints to your parts. Micro joints are used to keep cut parts from falling through, but since Eagle machines come with an integrated conveyor you can let the parts fall through and thereby simplify part programming, decrease part cycle time, reduce piercing wear and tear, and reduce secondary operations.

### *Benefits*

- 
- ✓ *better quality of cut parts;*
  - ✓ *greater machine throughput;*
  - ✓ *faster cycle times;*
  - ✓ *ability to cut without micro-joints;*
  - ✓ *reduced secondary operations on the parts;*
  - ✓ *reduced downtime.*





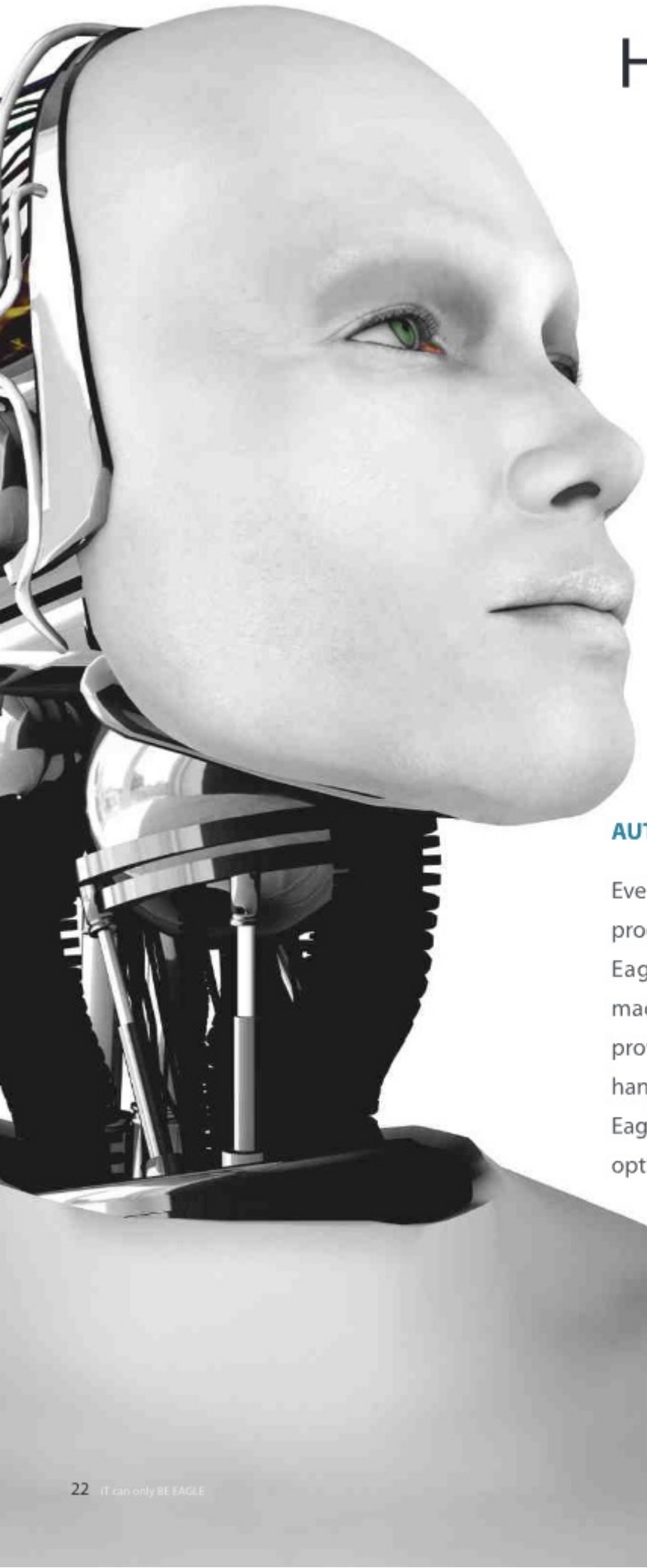
## Cutting thick sheet

### **CatLine**

Eagle Laser's CatLine system can be used to improve part edge quality and tolerances when you need it most.

CatLine allows your Eagle Laser machine to cut 20% thicker materials with the same laser power. Time of burns of thick sheets is reduced by as much as 50%. Cuts greater detail. Reduce the need for secondary drilling of small holes since CatLine produces holes to tight tolerances and no flash. In addition, you'll obtain high quality edges on thick sheets of stainless steel and aluminum, all while reducing burrs by 80%.

CatLine utilizes advanced cutting process models to control the entire machine, even adjusting optics while cutting the part.



# High-production possibilities

## **AUTOMATION**

Every production manager knows that the key to a productive shop is to keep the machines running. Eagle makes the most productive fiber laser machines in the world, and that's why we are providing the most productive options for material handling. Keep your laser cutting by selecting the Eagle CraneMaster material handling and storage option that matches your production needs.

## MATERIAL HANDLING AUTOMATION OPTIONS

Automation of manufacturing processes is considered a major element in the development of the company. That is why engineers and designers created and build comprehensive solutions in order to automate the production process. At the moment, when the machines are working very efficiently and produce more elements than people are able to handle, special automation solutions work best. Due to the increasing demand of productivity, we prepared a special system of loading - unloading equipment for storage of materials and loading facilities, which allows you to increase efficiency of production even more.



### Benefits:

- ✓ CraneMaster brand material handling by Eagle;
- ✓ Optimized to work with our machines;
- ✓ Increase machine productivity;
- ✓ Increased efficiency;
- ✓ Reliable operation;
- ✓ Increased material security and work organization;
- ✓ Improvement of the operator's work;
- ✓ Increase worker safety.

## CraneMaster

AUTOMATIC LOADING - UNLOADING UNIT



### TECHNICAL DATA

Cycle time	from 65s
Max. sheet size	1,25m x 2,5m; 1,5m x 3m; 2m x 4m; 2m x 6m
Max. sheet	25mm

The **CraneMaster** loading and unloading unit offers a wide array of capabilities to enhance your machine throughput. This automated system both loads and unloads material from the Eagle laser pallet changer.

It is fully automated and integrated into our Eagle machine and software. Reduce errors with our sheet separating system where the CraneMaster will measure sheet thickness and confirm that thickness with the software on the Eagle laser. A separately controlled vacuum system on a loading frame picks up raw material sheets from the loading table and transports it to the machine pallet changer. The unloading unit removes the cut items with comb shaped forks and places them on the upper surface of the loading frame.

Picking up new material and removing cut remnants and parts occurs simultaneously, enhancing throughput efficiency.

**NO SCRATCH** it is an option available for CraneMaster and CraneMasterStore, which almost completely eliminates scratching cut parts during unloading from the pallet changer. Thanks to that, the combs of the discharge bin are equipped with special brushes, which are intended to prevent the elements scratching.



## LoadingUnit

AUTOMATIC LOADING SYSTEM



### TECHNICAL DATA

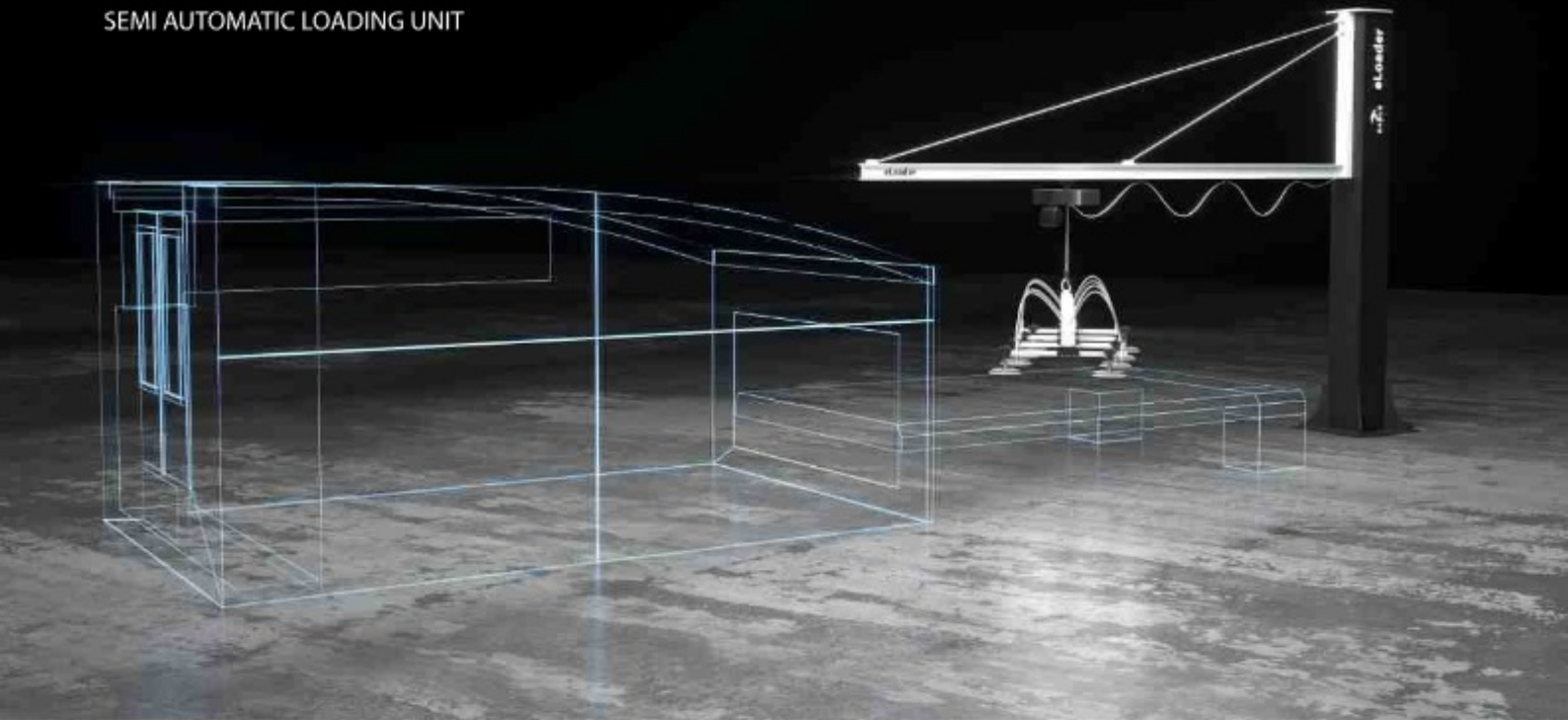
Cycle time	from 55s
Max. sheet size	1,25m x 2,5m; 1,5m x 3m; 2m x 4m
Max. sheet	25mm

The **LOADING UNIT** loads sheets onto the Eagle laser pallet changer. The loading system is fully automated and integrated with our machine.

The device is based on a rotary arm equipped with individually controlled high pressure vacuum cups. The system is able to separate the sheets and measure their thickness, and then check with the machine control system to make sure the material is in accordance with the given cut program.

## eLoader

SEMI AUTOMATIC LOADING UNIT



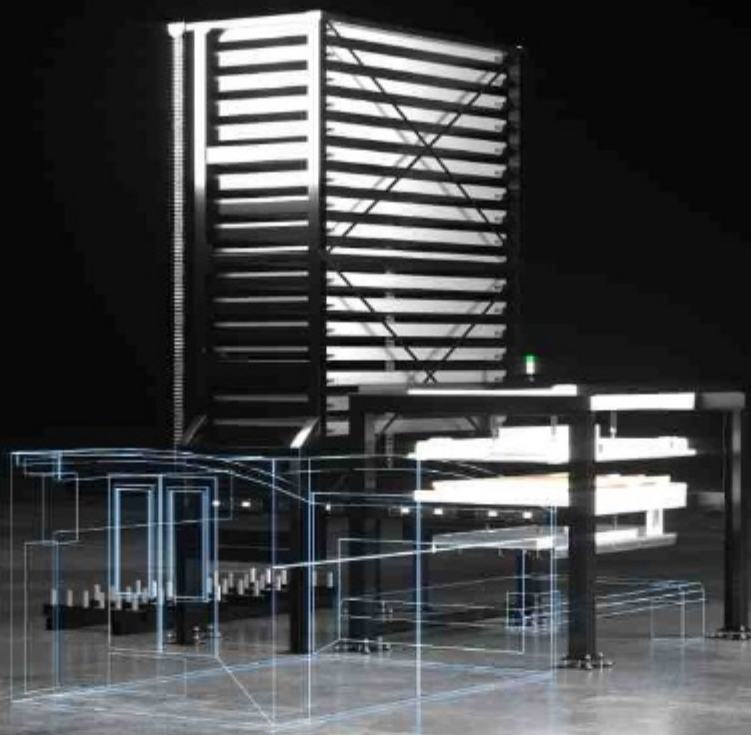
### TECHNICAL DATA

Max. sheet size	1,25m x 2,5m; 1,5m x 3m; 2m x 4m
Max. sheet	25mm

The **eLoader** is a loading unit that consist of a manually operated swing arm crane, electric hoist, and vacuum cup assembly. This unit is installed next to the Eagle Laser pallet changer unit. This affordable solution streamlines the loading of sheets and reduces operator fatigue while improving operator safety.

## CraneMasterStore

instalation with eTower 1



### INSTALATION CONSISTS OF:

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EAGLE laser cutting machine

---

CraneMasterStore loading - unloading system

---

eTower 2

---

### TOWER TECHNICAL DATA:

Type	number of towers	number of shelves	sheets dimensions [m]
eTower 110	1	10	1,5 x 3 2 x 4 2 x 6
eTower 115	1	15	1,5 x 3 2 x 4 2 x 6
eTower 120	1	20	1,5 x 3 2 x 4 2 x 6

## CRANE MASTER STORE

The **CraneMasterStore** is Eagles comprehensive material handling and storage option. Three major devices are integrated together into a seamless system that includes:

- Eagle laser cutting machine
- CraneMasterStore loading - unloading system
- eTower 1 or eTower 2 store unit

Selected material is transported by the eTower storage elevator and then grabbed by the CraneMasterStore for loading onto the Eagle Laser pallet changer.

## CraneMasterStore

instalation with eTower 2



### INSTALATION CONSISTS OF:

EAGLE laser cutting machine  
 CraneMasterStore loading - unloading system  
 eTower 2

### TOWER TECHNICAL DATA:

Type	number of towers	number of shelves	sheets dimensions [m]
eTower 226	2	26	1,5 x 3 2 x 4 2 x 6
eTower 236	2	36	1,5 x 3 2 x 4 2 x 6
eTower 246	2	46	1,5 x 3 2 x 4 2 x 6

#### Features:

- ✓ modular construction allowing for extension of existing system (i.e. change of its height);
- ✓ steering integration with ERP and WMS class systems;
- ✓ system can be mounted outside the building;
- ✓ flexible access points (access space at any level, loading stations at both sides of the system);
- ✓ horizontal and vertical transportation with use of Gall chains.

#### Benefits:

- ✓ easy access to selected sheets;
- ✓ maximizing the use of available storage height;
- ✓ cataloging sheets before and after cutting;
- ✓ the compact installation saves space in the production area;
- ✓ fully automated process that does not require the presence of an operator
- ✓ minimize your time by simultaneously loading sheets and unloading cut parts

# Software & Control

## SOFTWARE

Eagle machines come with a software suite that not only optimizes fiber laser cutting, but also makes production control and accounting easy.

eSoft software provides an integrated approach to maximize all aspects of your Eagle Laser productivity:

- › drafting
- › processing
- › autoNest
- › postprocessing
- › simulation
- › DNC file transfer
- › file import and export
- › multilanguage support



## CONTROL

All Eagle machines are equipped with a reliable Beckhoff control system and EtherCAT Technology that delivers the fastest possible communication. This real – time control system checks the process and machine parameters in microseconds.

Maintaining position in small contours at high speed is not easy. Only the fastest control system will do for the world's fastest fiber laser that's why we believe it can only BEE EAGLE.





# Easy Cut

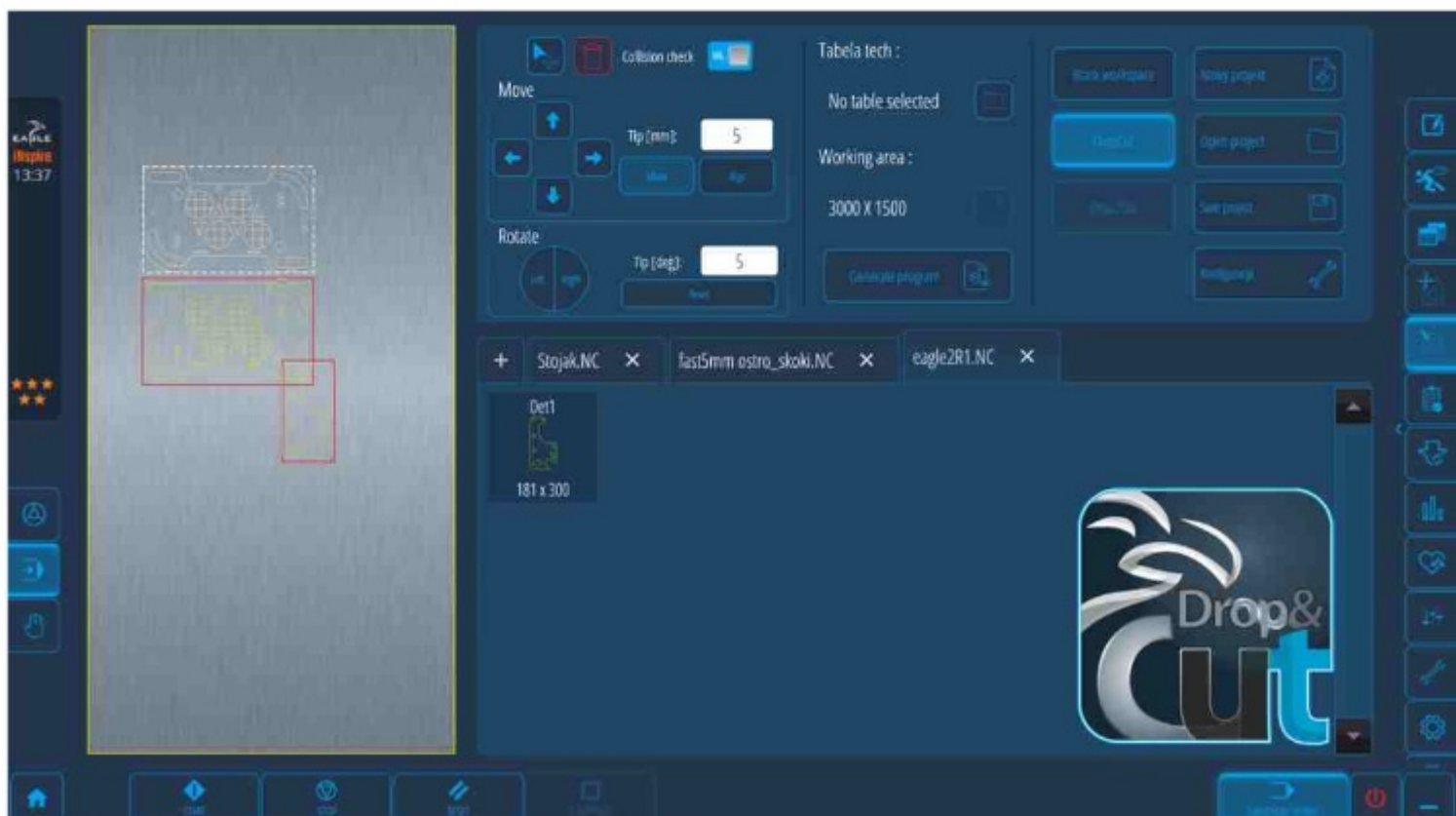
## Drop&Cut

The **Drop & Cut** module of our software suite makes it possible to make efficient use of material remnants, even when the remnant is irregularly shaped and full of holes and gaps. With our system, you no longer need a separate program for measuring sheets, and the operator doesn't need to measure whether an element will fit within a sheet remnant.

A video camera is placed inside the working closure enabling the Drop & Cut system to provide an image of the remnants to the operator. The operator can drag a virtual outline of the part to be cut onto the remnant image and quickly see if it fits. The operator can also rotate the part as needed to fit within the remnant. The software will not allow the operator to cut out a part out that does not fit on the material. All of this can be accomplished without the operator reprogramming the machine.

### Benefits:

- ✓ utilize all of your remnant material;
- ✓ fastest means of cutting extra parts;
- ✓ does not require reprogramming or nests;
- ✓ ability to preview the path before cutting;
- ✓ eliminates operator errors;
- ✓ simple user interface.



# New philosophy of user experience



## eRis - GRAPHICAL USER INTERFACE

Eagle eRis Graphical User Interface is a new product from the eSoft software family. It is a completely new quality of human interaction and external systems with the Eagle laser cutter. Revolutionary design, new functionalities and application of leading technologies in the field of software production are the characteristics of the new product.

The application has been designed in a way that fully exploits the potential of the touch screen that is installed in the machine. Modern user interface combines attractive design with ease and ergonomics of work known from devices such as smartphones, tablets, computers with touch screen.

eRis offers the possibility of integration with external Industry 4.0 systems. This allows the user to plan production from A to Z, i.e. from order acceptance to goods release, including warehouse automation, warehouse towers and integration with the ERP system. The data acquired by eRis is used by the new eRs Cloud reporting system, which collects and processes them in the cloud.



## What's new?

- ✓ Wide range of possibilities of production management, e.g.: production queuing, dividing into work tables, grouping or splitting, possibility of integration with external software;
- ✓ Production planning is designed in such a way that the execution of each program is recorded. This enables a detailed control of the operators' work efficiency and maximum use of the laser cutting machine's production capacity;
- ✓ Possibility of integration with MES systems (production management);
- ✓ Clear and well-thought-out user interface translates directly into savings in operator time and machine operation;
- ✓ Optimized mechanics of the basic machine operations - operation by means of gestures;
- ✓ The key activities and procedures performed during machine operation have been optimized to few steps;
- ✓ The most frequently used functions are always at hand;
- ✓ Shortcuts to fast programs in automatic mode;
- ✓ Always the latest version - online and offline update mechanism.



# Everything under control

## eRs Cloud - Eagle Reporting System

It is a modern reporting system giving unlimited possibilities to create online reports on the work of laser cutting machine.

After logging on to the website you can freely create reports that generate according to personalized settings. Attractive graphic form of static and dynamic reports allows you to receive clear information about the laser cutting machines. The central database of users and licenses allows for a fully organized access plan for enterprises, as well as synchronization and personalization of the settings of all reports.

Mobile technology - The system allows for mobile access to reports. The interface is adapted to devices such as smartphones and tablets. The user can check at any time whether the cutter that is standing in his company is switched on or off, whether it is currently cutting, what employee is currently logged in as the operator.



### Types of reports:

**Owner's Report** - contains information about the full range of machine performance and shift work. Compares current work performance to previous periods. Visualizes the estimated and actual working time of the machine. The owner's report provides an overview of the work and performance of the laser cutting machine in the enterprise. It makes it easy to assess whether the capabilities of a laser cutting machine are being used 100%. Which shift works most efficiently. What caused the non-production times of the machine. How much of a percentage of the machine state is changed, i.e. how much time was in the state of settings, error, waiting and how much time was cut. The owner will be able to control the state of the machine from anywhere in the world. All this information allows you to assess how you can improve the efficiency of work and, consequently, the profits of the company.

**Technologist Report** - Provides access to reports on material usage, gas consumption, quality and quantity of realized programs, broken down by thickness of material, use of technological tables and type of material. Thanks to these reports, the technologist will be able to plan the work plan, supply of gases and cutting materials. On the basis of the information received, he will also be able to correctly determine the prices of cutting services and optimize them. He will be able to have full control over when and what programs have been cut on the machine and by whom, and thus will be able to eliminate "private" orders.

**Operator's Report** - A report displayed on the machine desktop will inform the operator about the current use of the machine, program execution, working time, machine readiness status. The operator will be able to check his performance in selected periods of time, e.g. during the day, week of the month, and on the basis of this information he will be able to plan his work accordingly.



## ORIGINAL SPARE PARTS

Our spare parts warehouse is always well-stocked. We guarantee quick shipment and competitive prices.

You can rely on our qualified staff and the guaranteed quality of our EAGLE original parts.

Professional spare part advice will help you choose the right part and quantity to keep your EAGLE laser running a peak performance.

Our specialists are knowledgeable in the purchase and use of all spare parts. In our main warehouse and local warehouses you will find a wide range of components for your EAGLE laser.



## TECHNICAL SUPPORT

We know how important productivity is to you, and we are committed to providing comprehensive service and support to maximize your Eagle Laser productivity.

Our application experts will ensure that you select the right Eagle Laser machine and options to meet your specific needs. Upon machine delivery, we provide fast installation and commissioning of the machine.

Training your personnel will ensure that you realize the full potential and capabilities of your Eagle laser.

Thanks to the design, components, and construction, Eagle systems require minimal maintenance. 99% of maintenance procedures on Eagle machines may be performed by your staff without the need to call a service technician.

Eagle offers online diagnostics and remote service assistance for common minor issues.



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