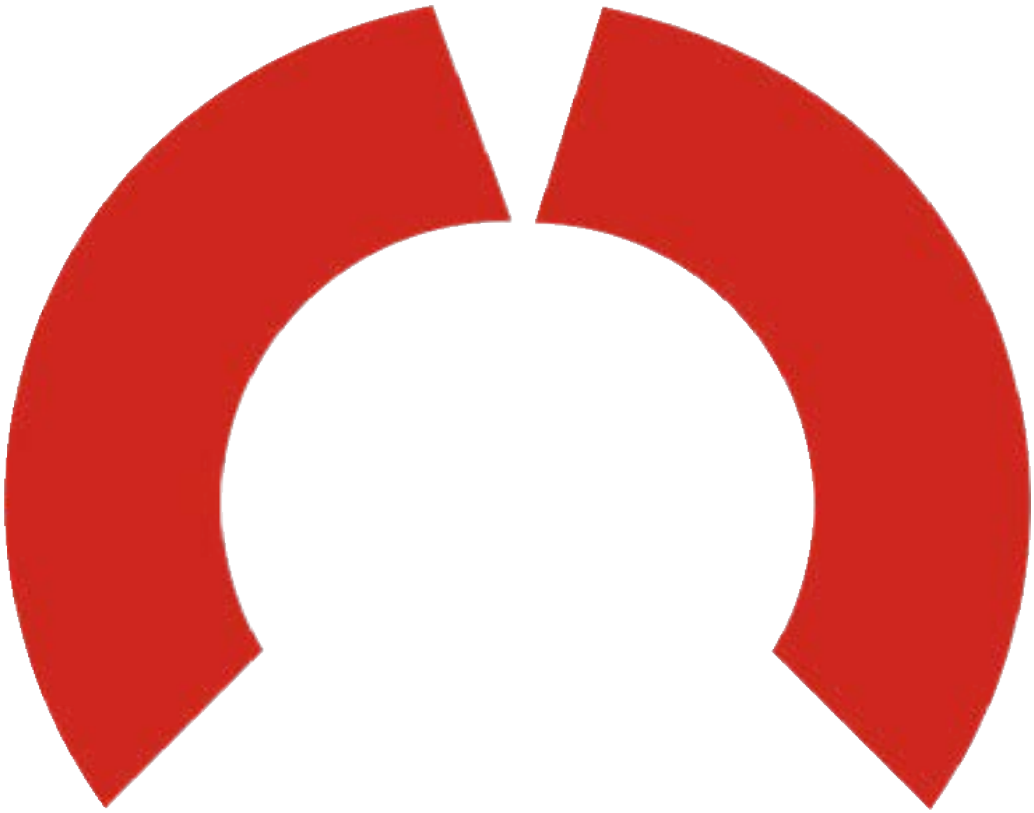
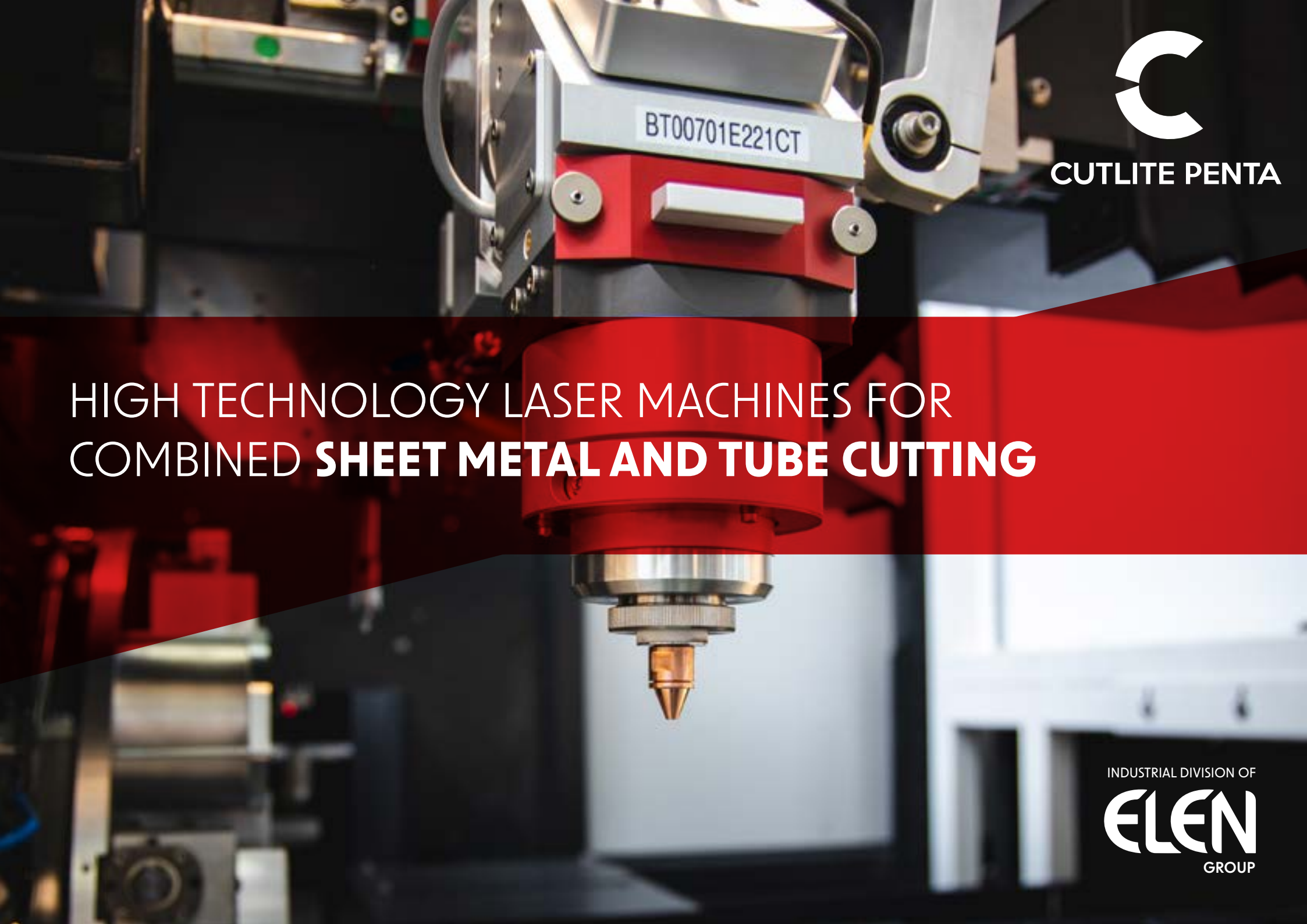


Metal cutting division

COMBO SYSTEMS



CUTLITE PENTA

HIGH TECHNOLOGY LASER MACHINES FOR COMBINED **SHEET METAL AND TUBE CUTTING**

INDUSTRIAL DIVISION OF
ELEN
GROUP

Contents

PENTA

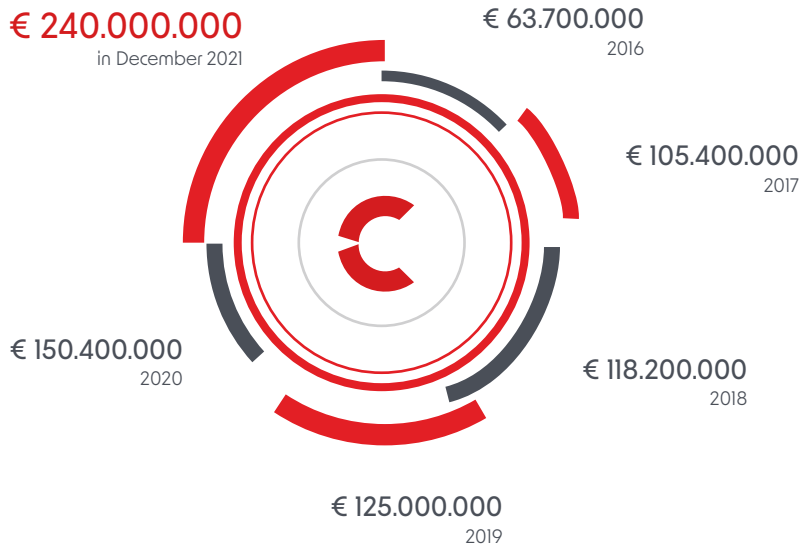
THE COMPANY

Cutlite Penta was founded in 1992 as a division of the El.En. group, and began construction of the first machines to cut wood and plastic materials using resources that were **designed and constructed at El.En**. The group grew steadily over the years, expanding both in the industrial and medical sectors. El.En. Group is a well-established Italian company, listed on both the Italian and US stock exchanges, with a market capitalisation of almost €1.34 billion. Cutlite Penta forms part of the industrial division of the El.En. Group, and has manufacturing and sales facilities around the world: Italy, France, China, and Brazil.

To date, it employs over 850 people as direct employees of the industrial group, includes over 5,500 laser machines equipped with fibre laser sources installed worldwide, and over 80,000 m² of manufacturing space.
Long-running, well developed experience combined with a profound knowledge of the dynamics of metal cutting have allowed us to become a standard for our customers. The industrial group, which had a total turnover of €63 million in 2016, has been growing at a dynamic pace, reaching a turnover of €150 million by the end of 2020. **In December 2021, the industrial group closed the year with a total turnover of €240,000,000.**

Despite the difficulties caused by the international emergency, the group's growth has been steady and exponential. In 2021, the turnover in the first six months of operation already exceeded the previous year's figure. With hard work and dedication, Cutlite Penta is consolidating its position as a global player in metal laser cutting, developing, designing and manufacturing each and every part of the cutting systems in-house.

INDUSTRIAL GROUP TURNOVER



MISSION

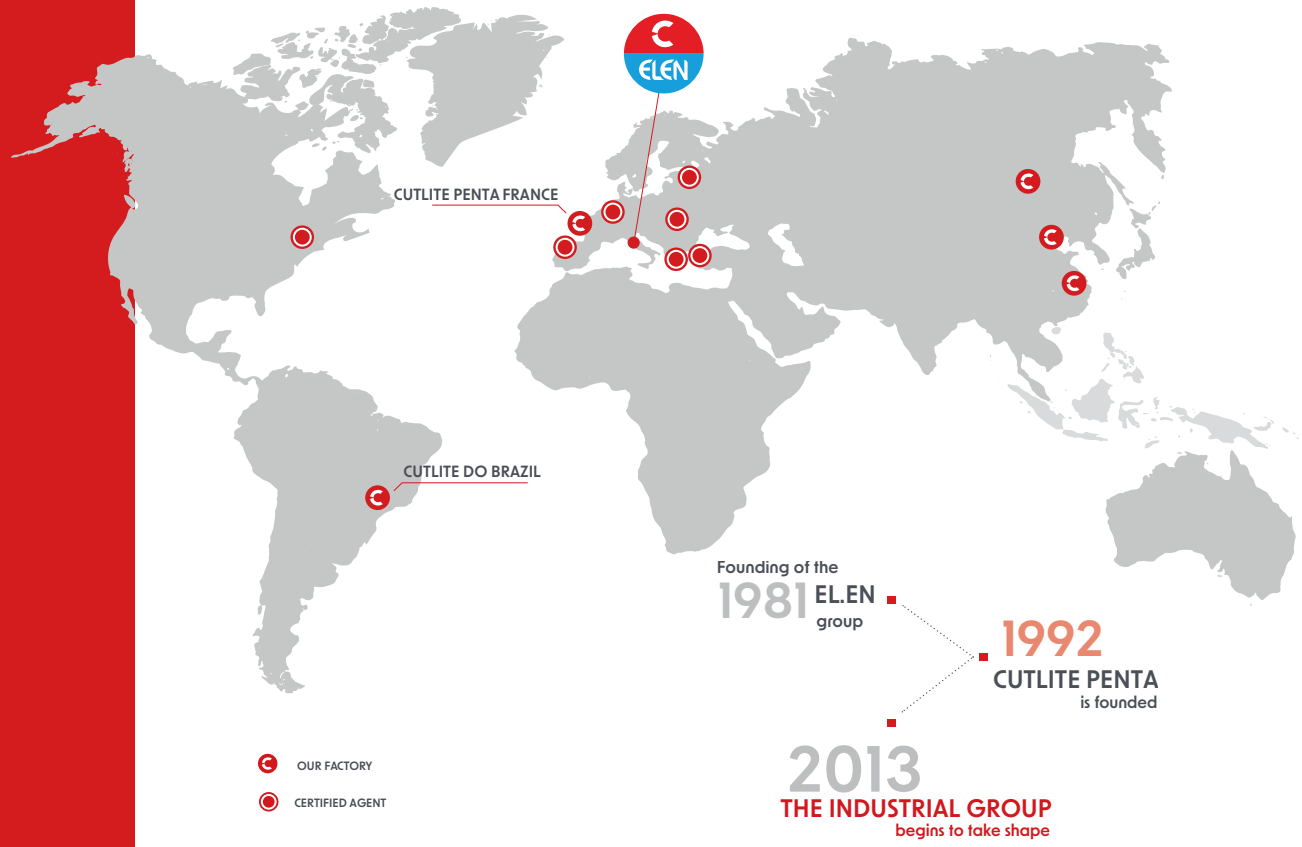
Cutlite Penta's objective has always been to create systems that guarantee high levels of productivity and quality with low running costs, enabling its customers to be extraordinarily competitive.
Cutlite Penta's **R&D department**, which is continually developing its cutting head, proprietary CNC and front-end software, ensures that Cutlite Penta systems are always state-of-the-art.
Flexibility, speed, simplicity of use and ease of familiarisation, are the distinctive features of this new family of systems that will place our customers in a position of being market leaders.

OUR FIGURES

850
employees

80.000 m²
manufacturing areas

YEARS OF EXPERIENCE AND KNOW-HOW AT YOUR DISPOSAL



Based on El.En. Group's decades of experience with CO2 laser sources, we have transferred and perfected this advanced, multi-disciplinary know-how from the field of CO2 laser technology to the field of **FIBER LASER TECHNOLOGY**.

By partnering with the world's largest manufacturer of laser sources, IPG Photonics, we have access to the best fibre laser sources to develop fast, high-power machines.

THE FIRST IN EUROPE TO INSTALL HIGH-POWER

LASER SOURCES ON CUTTING MACHINES

TRANSVERSAL TECHNOLOGY
ON ALL OUR MODELS

FLY CUT
Proprietary on-the-fly cutting technology

FLY PIERCING
Piercing of moving material

LINEAR MOTOR
In any system we produce we only use linear motors

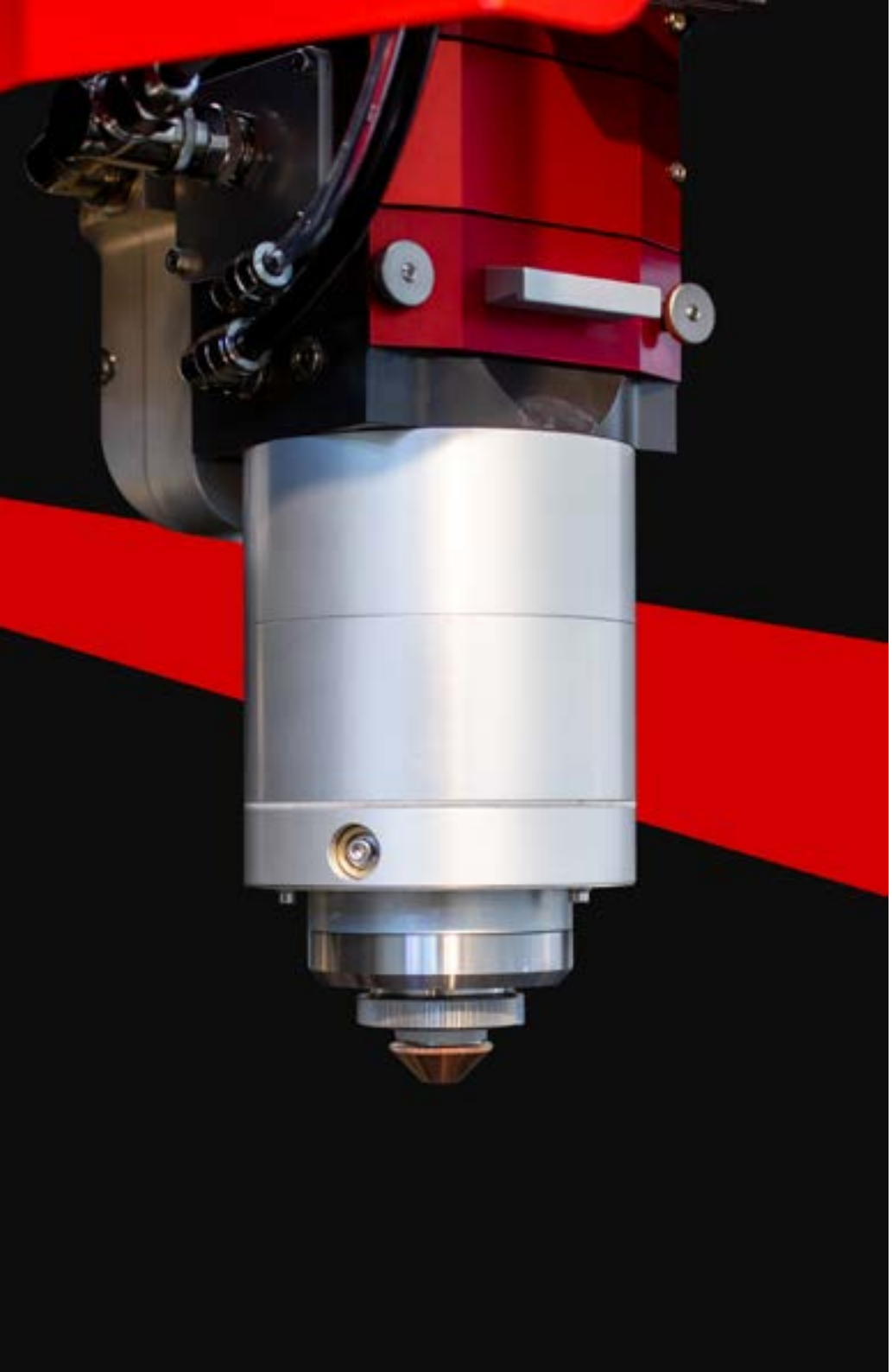
ABSOLUTE ENCODERS
Guaranteed axis positioning with no need for machine zeroing

CUTTING HEAD
In-house designed and manufactured for all models, enabling high-power handling and significant savings in terms of gas (-20%)

SMART MANAGER 6
Software machine management is identical on all models

SMART COMPOSER
Integrated CAD/CAM on all installed systems

RASTER MODULE
Software and hardware module for the reproduction of images on sheet met



EVO 3 HEAD

The EVO3 cutting head is equipped with a capacitive sensor. The FIBER PLUS and LME systems use the **EVO 3** autofocus cutting head, entirely designed by our research and development department and built using cutting edge precision mechanics from Cutlite Penta; the head is equipped with a contactless capacitive sensor.

The head itself and the focusing lenses can be used with a laser power of up to **40 kW** at a pressure of 25 bar; several focal configurations are possible. The assist gas is automatically selected from the 3 different connectable gases – air, nitrogen and oxygen: gas service pressures are automatically determined according to the cutting parameters and materials. The head has a removable cartridge to facilitate replacement of the protective glass.

CAPACITIVE HEAD

- Integrated contactless capacitive sensor
- High pressure gas management
- Focal-changeover cartridge
- All connections placed one top
- Contact and impact errors management
- Focal lengths: 150 mm – 300 mm
- Maximum pressure 25 bar

TUBE CUTTING BEVEL HEAD

Bevel cutting is the process of cutting a piece with an edge not perpendicular to the top of the piece. This is carried out to increase the surface area of the edge for a stronger and more secure weld.

There are a number of different types of bevel edges. Edges are specified throughout the industry by a letter of the alphabet that most closely resembles the shape of the cut as seen in cross-section. The head **designed by Cutlite Penta** allows performing these operations without penalizing the classic flat cut. The mechanically innovative head is very small, lightweight and allows rotating by +/- 45° in both cutting directions.

STRENGTHS

- 350 mm Z-axis
- Autofocus cutting head with contactless capacitive sensor
- Automatic system for adjusting the focal length and 6 sensors for fast piercing
- Double protective glass
- Sealed lens cartridge

LASER CUTTING SYSTEMS

COMBO CUTTING SYSTEMS

- **PLUS TUBE**
  Uncompromising power and precision
- **LME TUBE**
  Accessible laser technology


more than
300
systems installed in
2021

PLUS TUBE

PLUS TUBE

The PLUS Tube system represents the best possible choice in terms of **high performance**, structural solidity and high efficiency for both flat and tubular machining.

The tube module completes the system, making it versatile and dynamic: it changes from flat to tubular machining automatically using the same EVO 3 cutting head which, if equipped, provides the possibility of Bevel cutting on the tube part.

The basic structure consists of the PLUS system and the **EVO 3 cutting head** can manage up to **40 kW** of laser power. It guarantees efficiency and reliability in the most intense processes while maintaining a high quality standard.

Mechanical design

The base is an **electro-welded**, thermally stabilised steel frame, which is then machined to accommodate the high-precision guides and linear motors.
The Gantry frame is made up of cast aluminium alloy tables to which a steel beam is anchored, which is light and stiff enough to compensate for thermal expansion with no deformation.

This type of configuration provides remarkable dynamic performance.

Offcut recovery

The work surface area is divided into modular sections each approximately 500 mm long, which direct the offcuts to the corresponding collection systems located beneath the frame. Each section is equipped with two suction inlets.

Work surface

The work surface consists of a replaceable support grille. The same laser machine can also be used to produce the grille using a pre-installed program in the numerical control.

Laser sources

Fibre laser sources provide a great deal of versatility and make it possible to cut a multiplicity of metal types. Developed as a single system, it can be paired with a wide variety of optical fibre diameters. **High efficiency,** excellent beam quality and low power consumption are all hallmarks of the source. The source is housed in a NEMA 12 cabinet which is conditioned and sealed so that it can operate even in the harshest of environments. The high degree of reliability of these sources ensures very low maintenance costs.

PLUS TUBE systems combine high performance levels, structural robustness and increased efficiency.
The linear motor drive provides very responsive dynamics, enabling excellent productivity even on extremely complex geometries.

TECHNICAL CHARACTERISTICS

WORK AREA

3000x1500 mm

4000x1500 mm

4000x2000 mm

6000x2000 mm

8000x2000 mm

Z AXIS

350 mm

FIBER SOURCES

From 1.000 W to 40.000 W

TUBE FORMAT

Round sections with diameters ranging from 20 to 220 mm (changes on request)

Square and rectangle sections with side from 20 to 160 mm (changes on request)

MAXIMUM WEIGHT OF THE MACHINABLE BAR

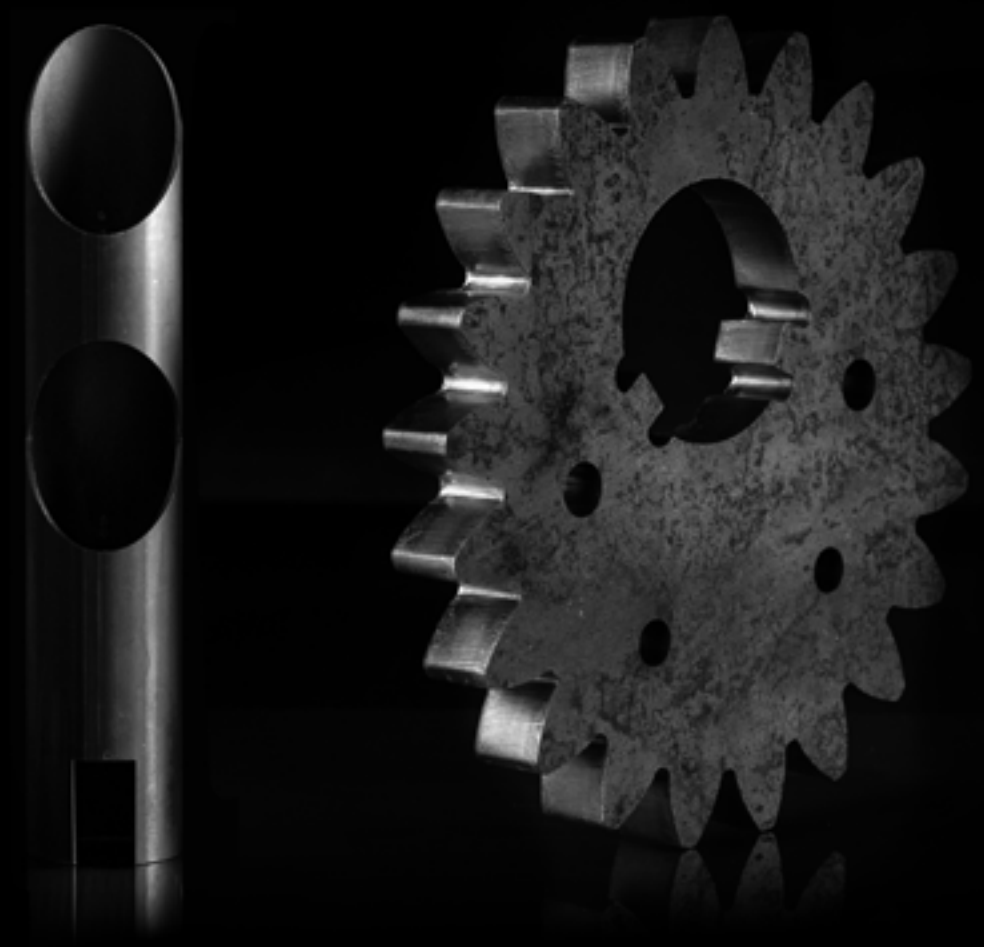
50 Kg/m

MAX LOADABLE BAR LENGTH

6000 mm

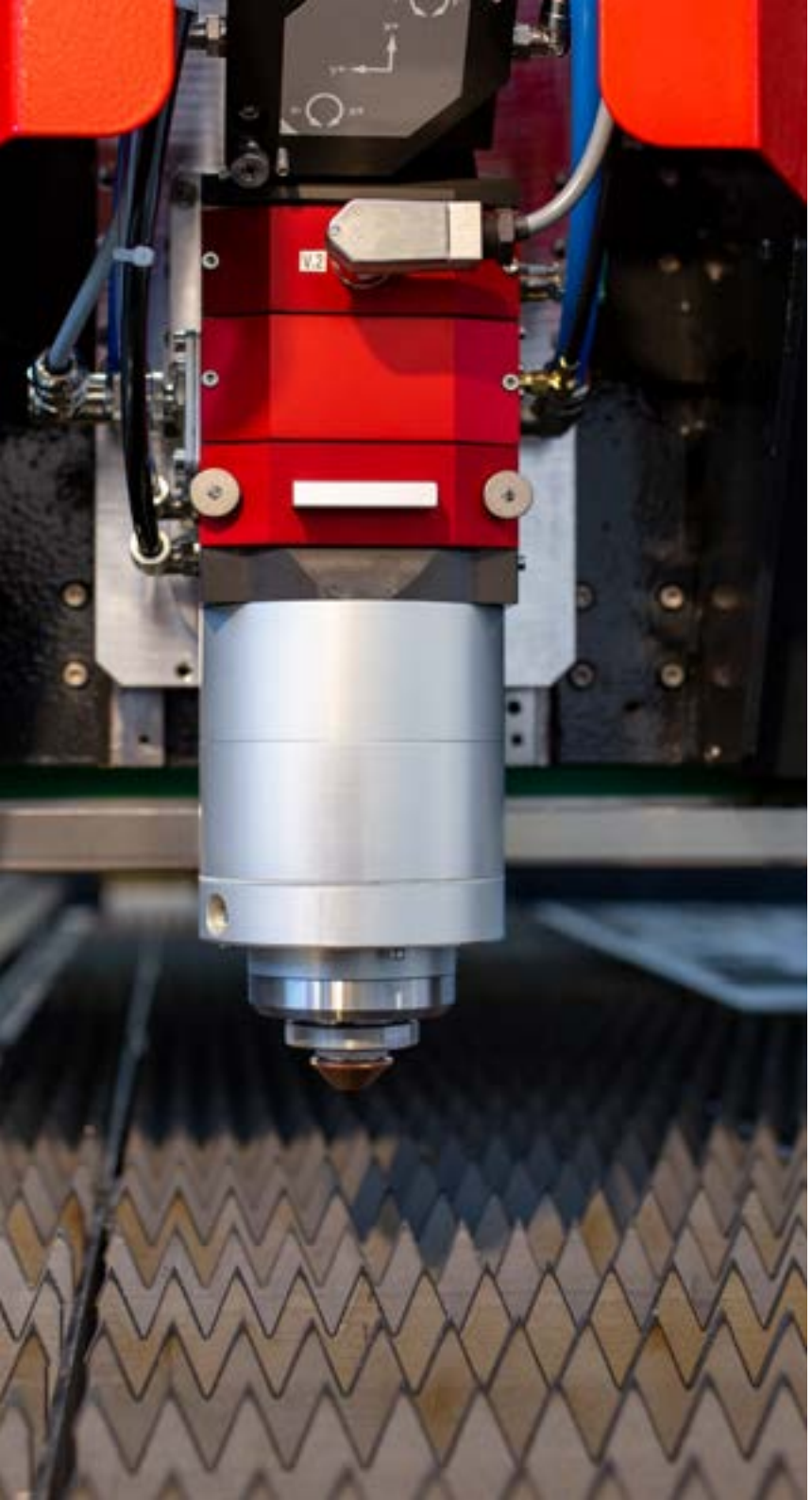
UNLOADABLE BAR LENGTH

From 3500 mm to 6000 mm



STRENGTHS

- The maximum performance contained in a single machine for cutting operations on sheet metal, tubular elements and profiles
- The option to customise the layout according to your production requirements
- The possibility of implementing the tube module with a step by step automatic loader
- Excellent mechanical characteristics of the structure and the use of linear motors which guarantee precision and repeatability



HARDWARE SOLUTIONS

AUTOMATIC NOZZLE CHANGE (OPTIONAL)

Automatic nozzle replacement is an option whereby the machine automatically changes the cutting head nozzle with no need for operator involvement

BENCH CHANGE ON TWO LEVELS (OPTIONAL)

The bench change on two levels allows the work bench to be replaced in approximately 15 seconds, almost completely reducing the loading and unloading times

CAMERA

It is a position camera that allows remote controlling and viewing of the machine work

TUBE SIZE DETECTION (OPTIONAL)

Tube size detection optical sensor

AUTOMATION

The various automation options allow optimisation of the work phases, significantly reducing the loading and unloading times

CHANGE PALLET LIFT

This optional allows the optimisation of processing times, reducing the sheet metal loading and unloading times

FLAT PART

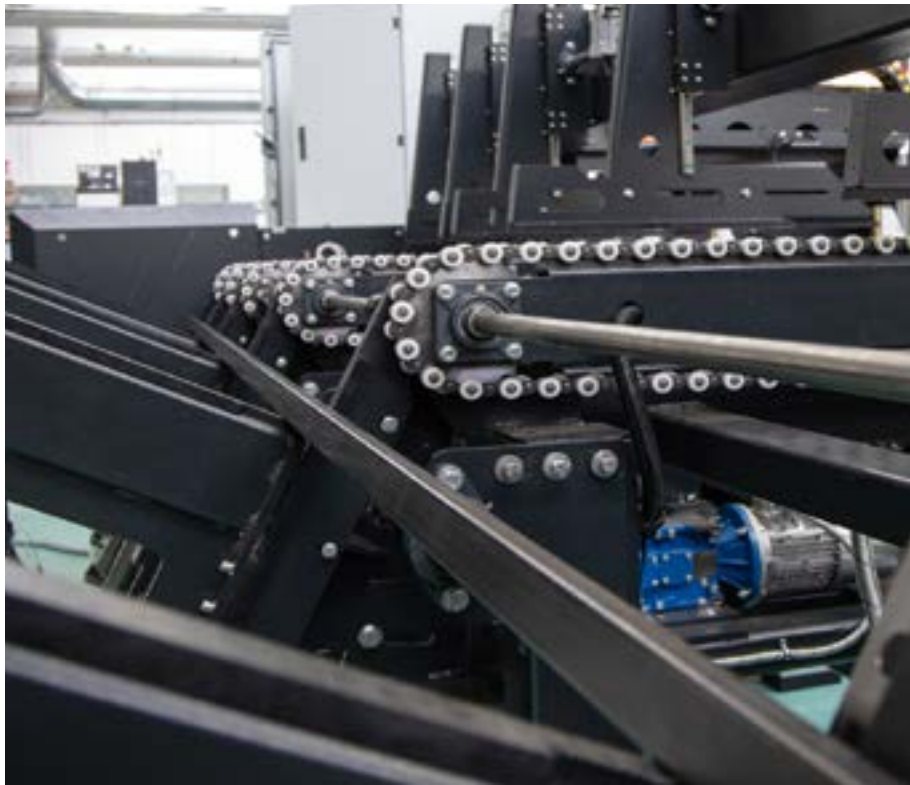
LOADING, UNLOADING AND WAREHOUSES

The PLUS TUBE system can be equipped with the sheet metal loading and unloading system and with the addition of automatic warehouses

TUBE PART

STEP BY STEP LOADER

The PLUS TUBE system can be equipped with the tube loading and unloading system



LME TUBE

LME TUBE

LME Tube combines the advantages of an LME system for the cutting of flat sheet metal with the new laser technology applied to cutting tubular elements for the new FIBER Tube, which make it an actual machine for the processing of tubular elements.

The transition from flat to tubular machining takes place automatically and the cutting process uses the same EVO 3 cutting head, designed and developed internally by Cutlite Penta, and also provides for the possibility of Bevel cutting on the tube. LME Tube represents the best quality-price choice on the market and guarantees superior flexibility of use with high cutting performance, while maintaining a high quality standard

Mechanical design

The base is an electro-welded steel frame which is then machined to accommodate the absolute high-precision guides and linear motors.

Gantry

The Gantry frame is made of a light, sturdy steel beam that is stiff enough to compensate for thermal expansion with no deformation. This type of configuration provides remarkable dynamic performance.

Offcut recovery

The work surface area is divided into modular sections each approximately 500 mm long, which direct the offcuts to the corresponding collection systems located beneath the frame.

Each section is equipped with two suction inlets (these are switched automatically depending on the cutting path).

Work surface

The work surface consists of a replaceable support grille. The same laser machine can also be used to produce the grille using a pre-installed program in the numerical control. The work grille is adaptable and can be spaced as required for improved processing material handling.

Laser source

Fiber laser sources of up to 15000 W provide extensive versatility and make it possible to cut a multiplicity of metal types. Developed as a single system, it can be paired with a wide variety of optical fiber diameters.
High efficiency, excellent beam quality and low power consumption are all hallmarks of the source. The source is housed in a NEMA 12 cabinet which is conditioned and sealed so that it can operate even in the harshest of environments. The high degree of reliability of these sources also ensures particularly low maintenance costs.

TECHNICAL CHARACTERISTICS

WORK AREA

3000x1500 mm

4000x1500 mm

4000x2000 mm

6000x2000 mm

Z AXIS

200 mm

FIBER SOURCES

From 1.000 W to 15.000 W

TUBE FORMAT

Round sections with diameters ranging from 20 to 220 mm (changes on request)

Square and rectangle sections with side from 20 to 160 mm (changes on request)

MAXIMUM WEIGHT OF THE MACHINABLE BAR

50 Kg/m

MAX LOADABLE BAR LENGTH

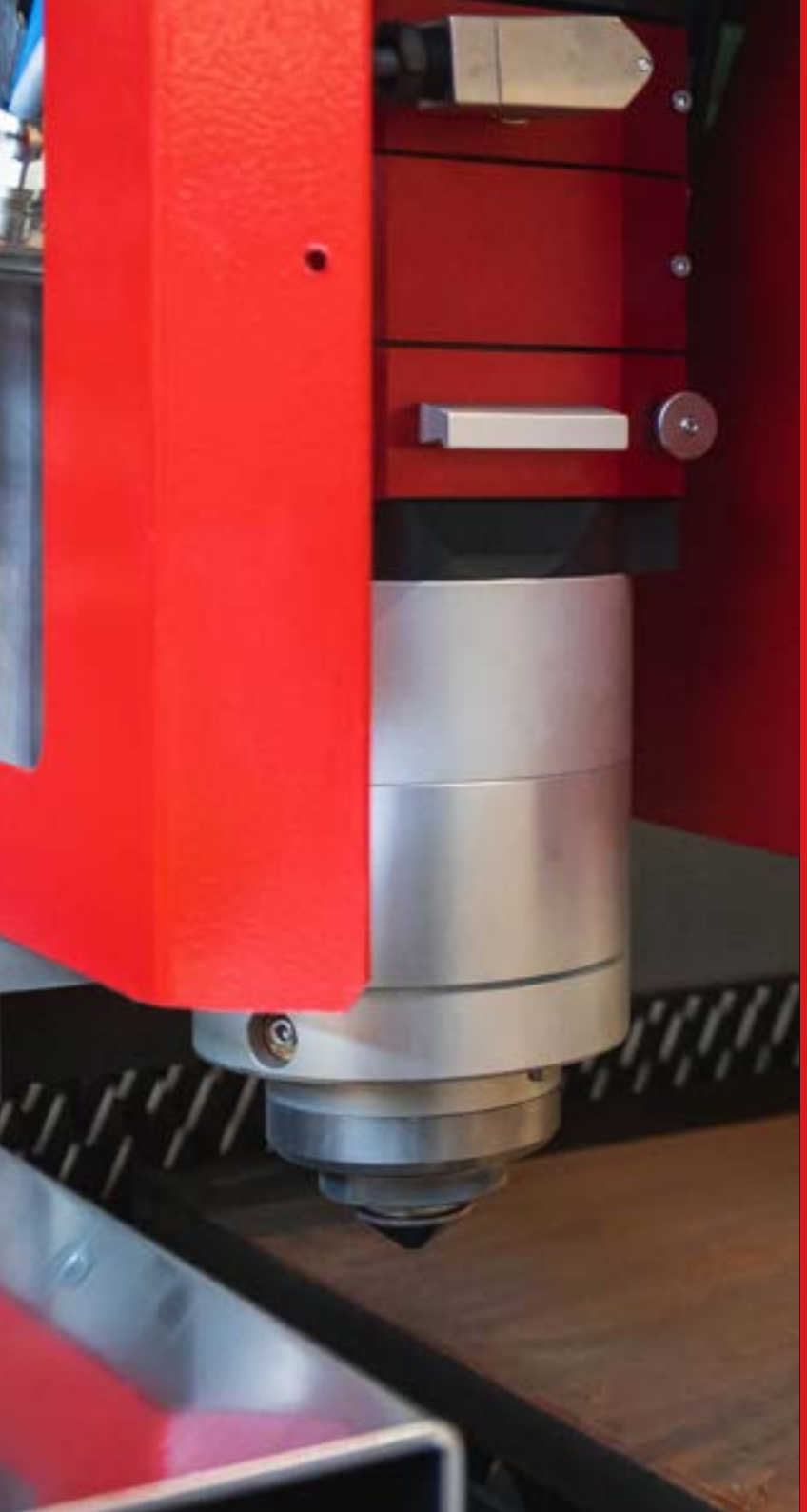
6000 mm

UNLOADABLE BAR LENGTH

From 3500 mm to 6000 mm

STRENGTHS

- A single machine to cover a large number of cutting operations on both sheet metal, tubular elements and profiles
- Maximum layout configurability
- The tube module makes LME TUBE an actual machine for tubular element processing
- Double control console to better monitor the cutting process
- Possibility of implementing the tube module with an automatic step loader



HARDWARE SOLUTIONS

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Automatic nozzle replacement is an option whereby the machine automatically changes the cutting head nozzle with no need for operator involvement

CHANGE PALLET LIFT (OPTIONAL)

This optional allows the optimisation of processing times, reducing the sheet metal loading and unloading times

CAMERA

It is a position camera that allows remote controlling and viewing of the machine work

TUBE SIZE DETECTION (OPTIONAL)

Tube size detection optical sensor

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The various automation options allow optimisation of the work phases, significantly reducing the loading and unloading times

BENCH CHANGE ON TWO LEVELS

The bench change on two levels allows the work bench to be replaced in approximately 15 seconds, almost completely reducing the loading and unloading times

FLAT PART

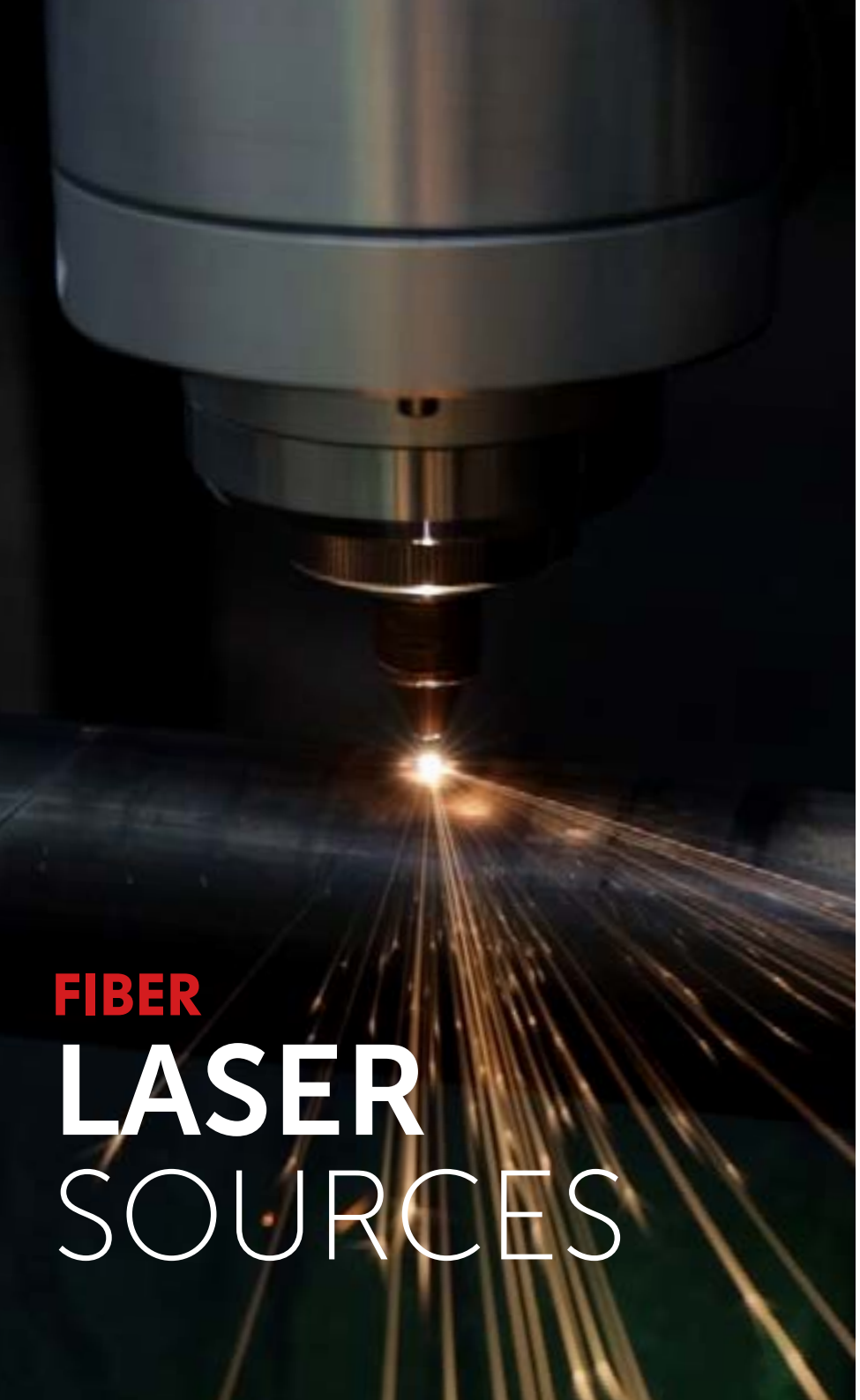
LOADING, UNLOADING AND WAREHOUSES

The LME TUBE system can be equipped with the sheet metal loading and unloading system and with the addition of automatic warehouses

TUBE PART

STEP BY STEP LOADER

The LME TUBE system can be equipped with the tube loading and unloading system



FIBER LASER SOURCES

IPG FIBER LASER

IPG was founded in Russia in 1991 by physicist Valentin P. Gapontsev, Ph.D, a pioneer in the fiber laser industry. Since 2006, IPG has been listed on the NASDAQ Global Select Market with the IPGP ticker.

In 1992, the company began to focus on the development of high-power fiber lasers and amplifiers and established its worldwide headquarters in the United States in 1998.

In 2000, IPG invested in new high-capacity production facilities in the US for the production of its own diode pumps, an important component of its fiber lasers and amplifiers. IPG is highly vertically integrated and manufactures all the critical components for its lasers and amplifiers.

Fiber optic technology has had a revolutionary impact on laser manufacturing. The simplicity and elegance of the fiber laser is reflected in its efficiency, compactness, sturdiness and low cost, all of which has led to its tremendous success in the market.

CUTLITE PENTA

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