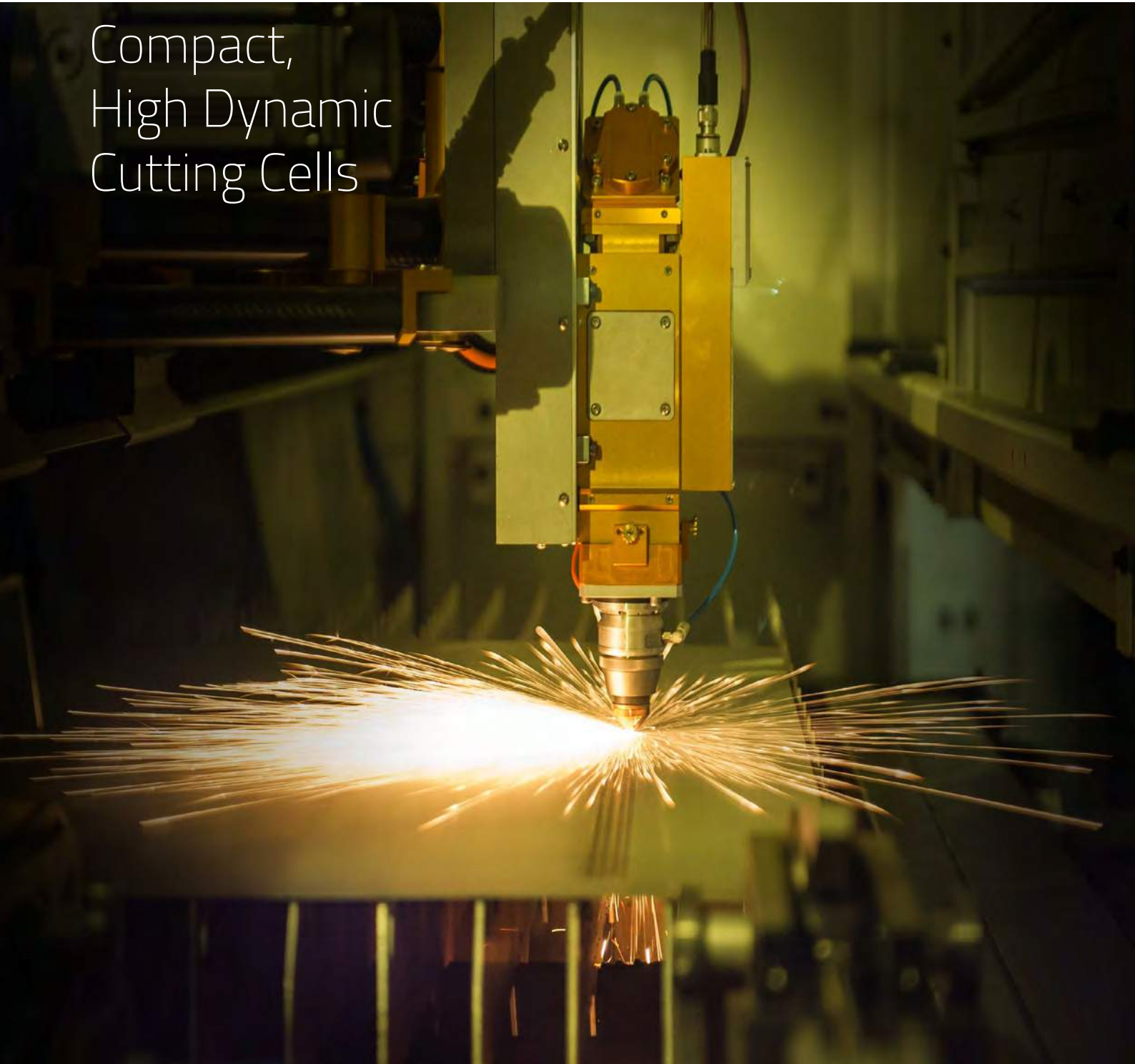


HACO FL SERIES FIBER LASER

Compact,
High Dynamic
Cutting Cells



HACO FL Series Fiber Laser

Advanced and compact cutting cells

HACO FL SERIES FIBER LASER

FL 3015 LU, FL4015 LU and FL 4020 LU

HACO now offers 3 and 4 meter fiber laser cutting machines with 2, 3 and 4 kW laser power together with an integrated loading and unloading system, resulting in a compact, high dynamic laser cutting cell with a footprint of less than 11 by 6 meters, fit for unmanned operation. The FL series features an innovative cutting head, applying 'Parallel Kinematics Technology' for high dynamic 5 g cutting processes.

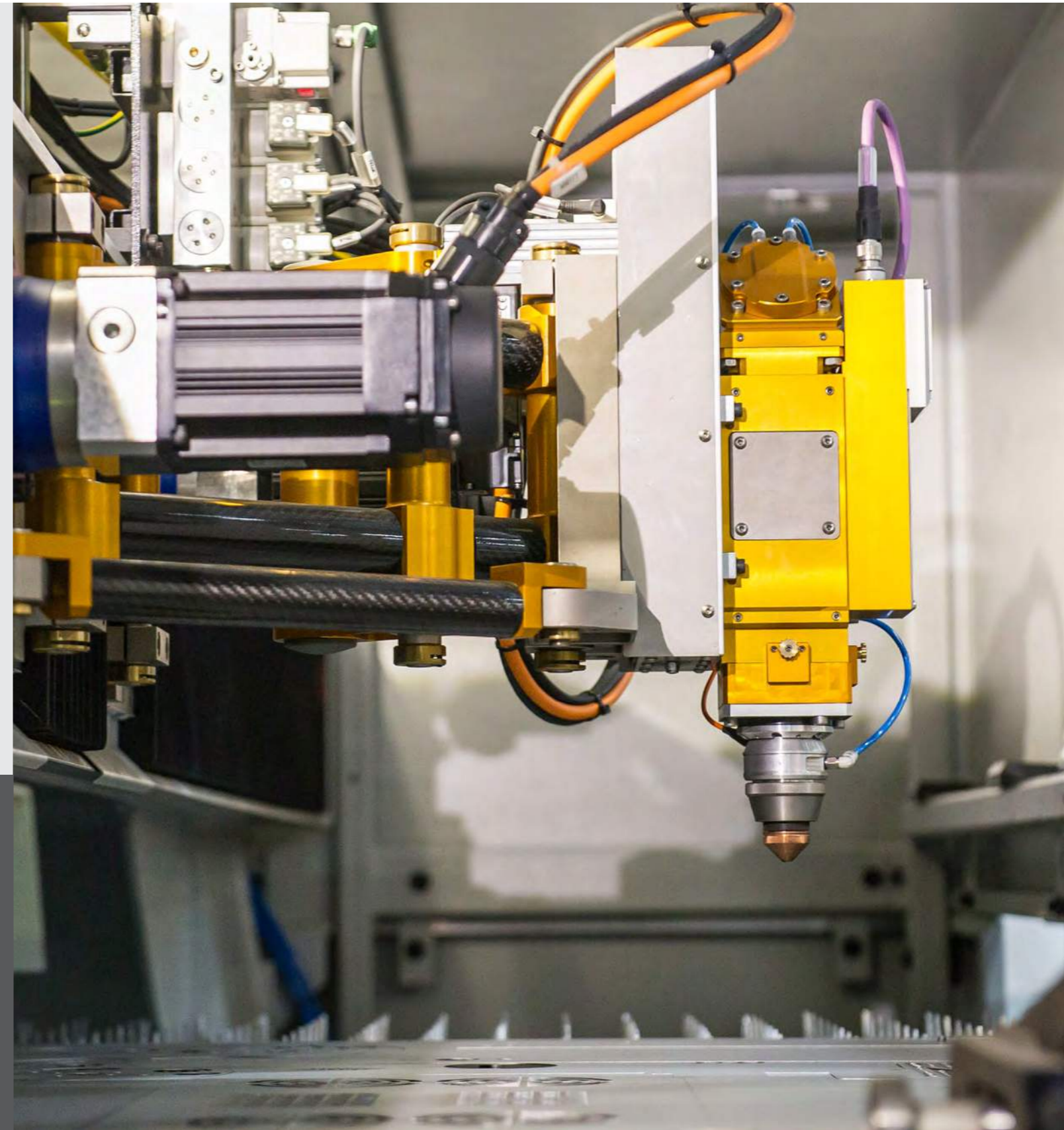


STANDARD EQUIPMENT

- > Application of lightweight carbon technology for fast and precise movements of the laser head (up to 5 g acceleration)
- > Innovative 'Parallel Kinematics Technology' for high dynamic movement
- > Sheet stability by means of CNC retractable clamps
- > Unmatched footprint requirement (10.6 x 6.3 m including safety area for the 3015 LU)
- > Liquid cooled cutting head
- > Integrated automatic loading and unloading system to reduce overall cycle times

FEATURES

- > Higher cutting speeds (especially for thin materials), lower operating costs
- > Lower cost per piece
- > Cutting of reflective materials
- > Energy efficiency three times greater than the CO₂ laser



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The HACO FL XXXX LU Series Fiber Laser Machines are small in footprint, but big in technical innovations

Automatic loading system

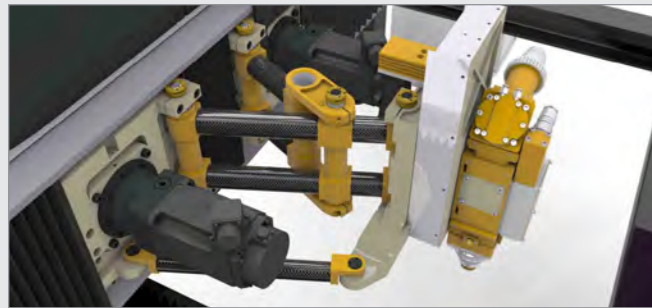
CNC Control with Touch Screen

Protected Cutting Area

Automatic unloading system

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PARALLEL KINEMATICS TECHNOLOGY



The patented 'compass' is an item with elevated content of technology. It allows high acceleration in the X-direction, as the total acceleration of the cutting head is the sum of relative movement of the compass and the movement of the worktable (X-axis).

The CNC control will divide the movement of the cutting head between compass and X-axis using a special algorithm. To combine light weight with rigidity, the compass is made of noble materials such as carbon fiber and ergal.

Advantages

- High acceleration rates of the cutting head
- Less mechanical stress in gantry (part of acceleration generated by the compass, other part by table)
- Gantry is not moving in X-direction, resulting in less movement of fiber cable, maximizing its lifetime

X-AXIS ASSEMBLY WITH RETRACTABLE GRIPPERS



The X-axis assembly moves the sheet along the X-axis through the cutting area.

The sheet is resting on a worktable.

The assembly is foreseen with 4 retractable clamps in order to avoid slipping of the sheet over the worktable.

This assures high precision cutting, especially when working on thin sheets.

AUTOMATIC LOADING AND UNLOADING

The automatic loading device with Front Loading Cart

As modern fiber laser cutting process tremendously reduces cycle times, especially for thin materials, automation of loading and unloading processes has become a must. The automatic loading station contains an innovative gripper concept, existing out of a vertically moving frame, equipped with intelligent suction cups, a separator unit, double sheet detector and separation air blow unit.

Combination with the automatic unloading system allows for efficient unmanned production resulting in improved cost price/part ratio, enhancing the profitability and return on investment.



Front loading shuttle

The automatic loading shuttle has no need for guides out of the machine structure. This allows the passage with forklifts close to the machine.

Lifting frame

The lifting frame is provided with:

- A number of suction cups, adequate to lift the sheet with max. weight in safe conditions
- A sheet detection sensor
- A double sheet detector
- A sheet separator



TECHNICAL SPECIFICATIONS OF THE LOADING SYSTEM

Minimum sheet dimensions :	500 x 500 mm
Maximum sheet dimensions :	3050 x 1530 mm (4050 x 1530 mm ; 4050 x 2050 mm)
Minimum sheet thickness :	0,6 mm
Maximum sheet thickness :	20 mm
Maximum height pack :	230 mm (pallet included)
Maximum weight pack :	3000 kg

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FUME EXTRACTION CHAMBER WITH SINGLE SLAG BIN



The slag bin is positioned under the main structure, behind the front lower doors. You can easily extract the bin by pulling the handle. The handle can be disconnected to facilitate emptying the bin.

ROFIN FIBER LASER SOURCE



The machine is standard offered with a RoFin FL Series source, featuring a diode pumped YB-fiber laser. The laser is equipped with a direct fiber of 50/100 μm . The machine can be equipped with a 2000W, 3000W or 4000W source.

The 50/100 μm fiber is inserted on the fiber laser head that supports power up to 6 Kw. Fiber lasers of the ROFIN FL Series are extremely efficient. With their modular and robust design they have been set-up for optimum reliability. The emitted wavelength of 1 μm features high absorption in many materials and is especially suitable for processing highly reflective materials.

ADVANTAGES

- > High beam quality
- > No laser gas required for generating the laser beam
- > The laser cavity is free of scheduled maintenance (*)
- > Low energy consumption = low running cost: 30% wall plug efficiency
- > High speed cutting of thin materials
- > Integrated Fiber to Fiber Couples allows exchanging process fiber in the field

(*) Laser diodes and fiber have a limited life time but are exchangeable

FIBER CUTTING HEAD

The head is provided with a motorized focal lens which is commanded by the CNC controller. The head is completely water-cooled and therefore does not require a cooling gas.

The cutting head is composed of 3 main parts:

- Collimator unit
- Cutting head body
- Sensor body



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ALC59-T LASER CONTROL WITH TOUCHSCREEN

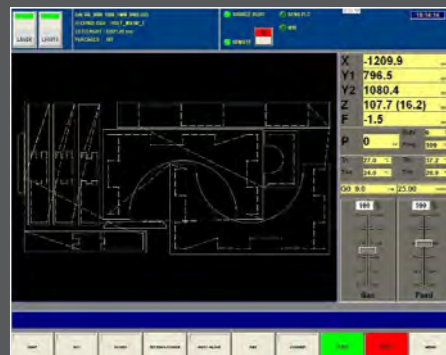
Speed and reliability

Driven by high-performance, PC-based hardware, the ALC59-T allows very fast processing of data and highly accurate calculation of laser cutting operations.

Combined with a HACO FL- Series Laser Cutting Machine, the ALC59-T represents a most desirable system for a demanding, high-precision and high-volume sheet metal production.

Features

- 19" color TFT display
- High-performance PC-based hardware
- Windows®-type user interface
- Touch Screen
- Graphical simulation of the production process
- mm or Inch
- Network support
- External USB port
- Language support



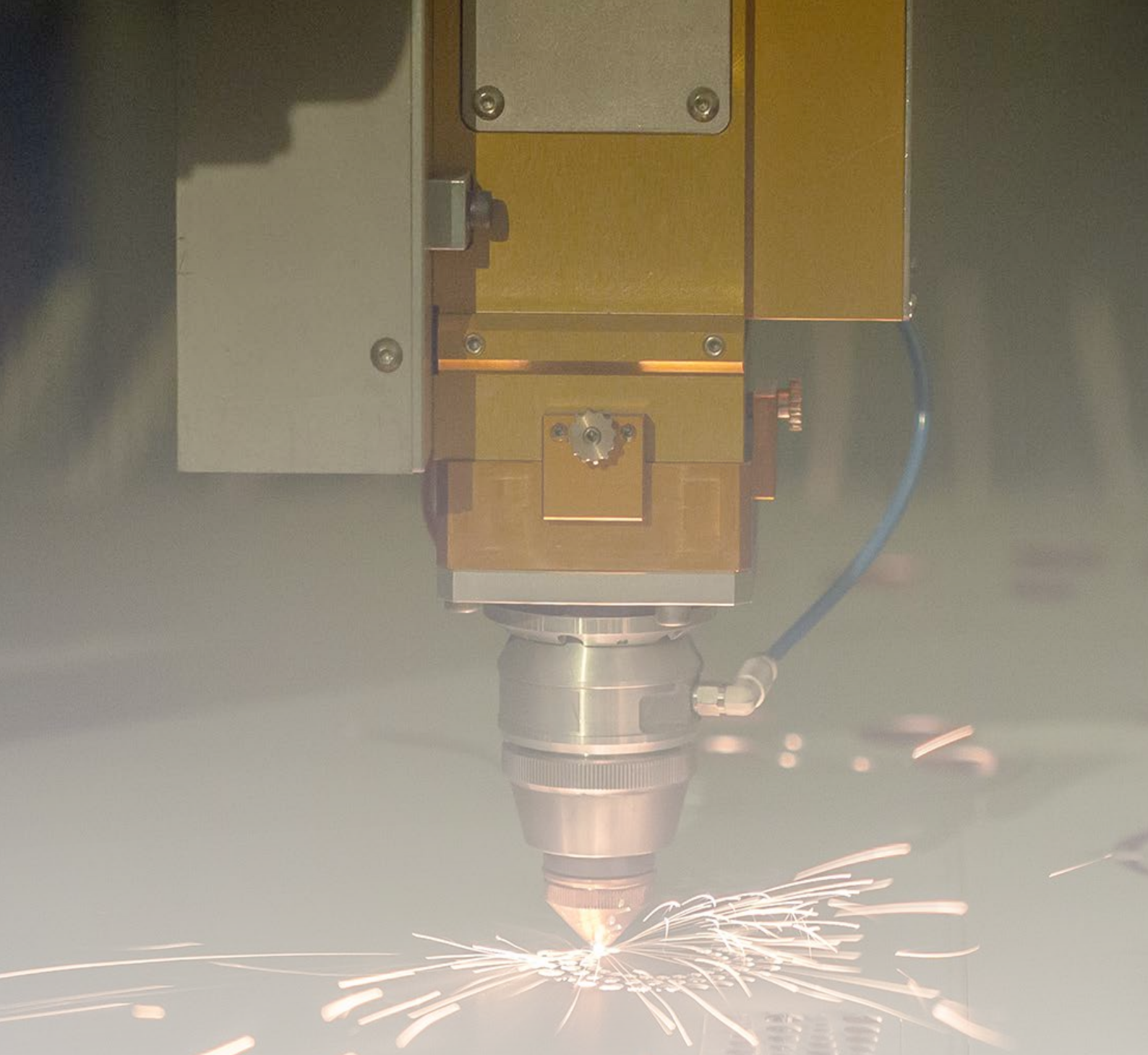
ROBOLASER USER INTERFACE

The highly advanced software "RoboLaser" raises the bar for other Fiber Laser software on the market. The simple layout of the user interface allows direct access to the desired functions, thus creating optimum operator convenience.

TECHNICAL DATA FL 3015 LU, FL 4015 LU AND FL 4020 LU

	FL 3015 LU	FL 4015 LU	FL 4020 LU
Max. Sheet Dimensions	3000 mm x 1500 mm	4000 mm x 1500 mm	4000 mm x 2000 mm
Machine dimension (including automatic Loading and Unloading system, fiber laser source, chillers, fume extractor and safety fences)	10.600 mm(L) x 5.500mm (W) x 1.950 mm (H) (*)	12.600 mm(L) x 5.500mm (W) x 1.950 mm (H) (*)	12.600 mm(L) x 6.500mm (W) x 1.950 mm (H) (*)
Machine Weight	+/- 8.500 kg	+/- 10.200 kg	+/- 10.800 kg
Positioning accuracy	+/- 0.1 mm	+/- 0.1 mm	+/- 0.1 mm
Programming accuracy	0.01mm	0.01mm	0.01mm
Chip to chip automatic load and unload cycle	40 sec	40 sec	40 sec
Complete automatic load and unload cycle	50 sec	50 sec	50 sec
Electrical consumption working at 20°C with full 3000W laser load, cooling unit and fume extractor included	40 KVA	40 KVA	40 KVA
Voltage	400V – 3phases (L1,L2,L3, PE) 50Hz +/- 10%	400V – 3phases (L1,L2,L3, PE) 50Hz +/- 10%	400V – 3phases (L1,L2,L3, PE) 50Hz +/- 10%
Main switch protection (3000W)	80A	80A	80A
Protection in main cabinet (all components)	63A	63A	63A
Required Compressed air	6 bar – 50Nm³/h	6 bar – 50Nm³/h	6 bar – 50Nm³/h
Average compressed air consumption	6 bar – 15Nm³/h	6 bar – 15Nm³/h	6 bar – 15Nm³/h

HACO reserves the right to modify any specifications without price notice



CNC Punching Machines



CNC Guillotine Shears



CNC Press Brakes

HACO NV
Oekensestraat 120
8800 Rumbeke, Roeselare
Belgium
Tel. (+32) 51 26 52 00
E-mail: sales@haco.com
www.haco.com

HACO FL Series Fiber Laser

WWW.HACO.COM

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