

L5



*The high-dynamic fiber laser,
for superior manufacturing.*

salvagnini

Ethical solution for 2-dimensional cutting.

The result of extensive experience in the field - Salvagnini was one of the first companies in the world to invest in fiber technology and adopt it as the **sole technology** around which to develop and design its 2D cutting systems – the L5 is a versatile, high-performance solution that is both environmentally and user friendly.



Thanks to the **compass**, a mechanical drive system, to the **single-optic** cutting head and to the cutting **parameters** developed specifically for it, the L5 provides quality cutting across a wide range of thicknesses, achieves high cutting speeds on protected or coated materials and can even process highly reflective materials, where other technologies fail. The proprietary TRADJUST functions define a single cutting parameter for all materials and thicknesses, regardless of the cutting profile, making the system simple to use and ensuring the **first part is a good part**.

The high-dynamic fiber laser, for superior manufacturing.

Speed and quality

The cutting head is integral with the compass, an original and robust mechanical structure offering dynamics of up to 5g while keeping consumption down and guaranteeing excellent cutting quality.

Simple to use

Simple and intuitive, the proprietary software automatically manages the cutting parameters from the database of specific functions for each material and thickness, enabling optimal parameter modulation and achieving excellent cutting quality and high dynamics.

Competitive cost-per-part

In a demanding, ever-changing market, the L5 achieves a competitive cost-per-part thanks to high machine productivity and reduced running costs.

Cutting versatility

The single-optic cutting head and the cutting parameters developed for the L5 allow for effective cutting of highly reflective materials, such as high-purity aluminium alloys, brass and copper and achieve high-quality cutting on coated materials such as galvanized steel.

Intelligent modular design

The loading/unloading connections available allow the machine to be configured to meet all automation requirements: from stand-alone mode to integration into a flexible cell or automated factory.

Ergonomics and safety

Salvagnini fiber laser systems are class 1 machines. They come equipped with all the protections needed to assure absolute safety in compliance with current standards. The large observation windows are approved for solid-state laser use.

Lean architecture for high quality cutting

The absence of an optical path has allowed a lightened structure with a compact kinetic chain to be used.

The cutting head equipped with Dry Cooling functionality does not use any cooling gas, increasing process reliability and reducing gas consumption.



Speed



Productivity



Ease of use

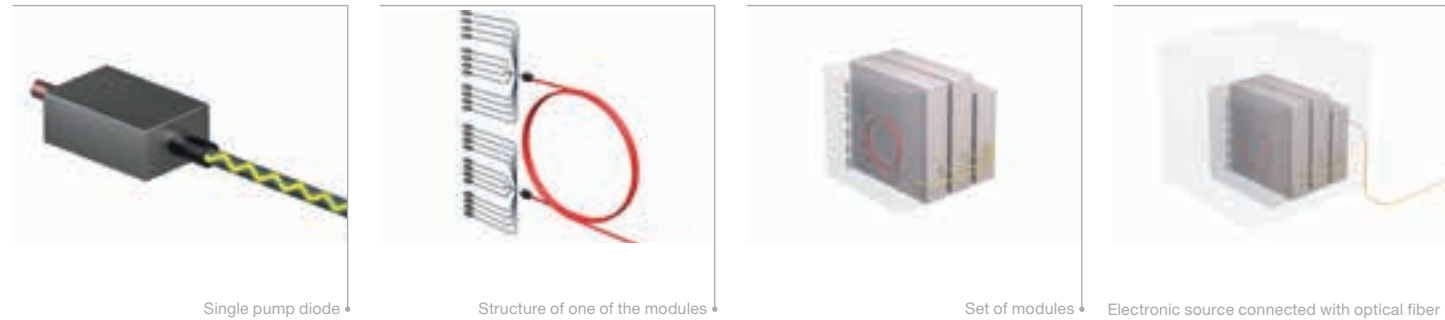


Quality

Ergonomic architecture, easy to use.

Electronic source and fiber-carried beam

In Salvagnini laser systems, the laser beam is generated and carried by fiber. The beam is generated by an electronic source which comes with various output powers, and is carried by a standard fiber with no need for an optical path.

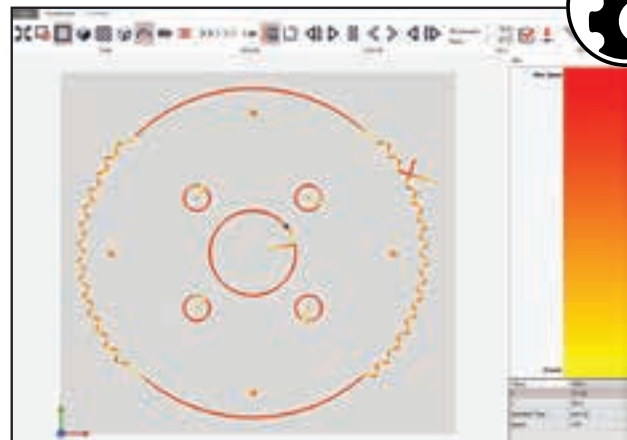


The advantages are:

- **Lower consumption**, thanks to the highly efficient source (up to 40%).
- **Increased speed and productivity**, thanks to the reduced inertia of the moving part, without an optical path.
- **Drastically reduced costs for maintenance and consumables**, thanks to the absence of consumables associated with the optical path.

Our experience at your service... on the machine.

TRADJUST is a series of proprietary functions incorporated into the Salvagnini SiX controller. It flawlessly combines the requirements of the application with the trajectories generated by CAMFiber to automatically calculate the modulation of the cutting parameters as a function of changes in direction, speed and instantaneous acceleration. With a single, predetermined cutting parameter for all materials and thicknesses, regardless of the cutting profile, the L5 could not be more simple to use.



Our experience at your service... in the office.

The office programming suite revolves around CAMFiber, a Salvagnini software developed specifically for fiber technology. Simple, intuitive and automatic, it uses geometric and technological parameters that have been predetermined for every machinable material and thickness. The result is quicker generation of a robust program, ready to be sent to the machine.



Smart mechanical solutions for a competitive cost-per-part

The compass: high dynamics and reduced consumption.

The compass is the very heart of the mechanical solution designed by Salvagnini for the L5. This structure is made possible by the absence of a defined optical path and features lean carbon arms driven by a pair of rotary motors that move the cutting head on the XY plane in small steps. Dynamics are up to 5g, as offered by linear motors, but on account of the light weight, energy consumption and running costs are cut and kept competitive.



Technical focus



DRY COOLING

The cutting head adopts an original solution for **cooling the optics**, which eliminates the use of **any gas** and offers real-time control of the lens temperature. The result is reduced consumption and increased reliability.

PROPRIETARY SINGLE-OPTICS

The L5 system features a **single-optic** focusing head that provides high-quality cutting across the total range of thicknesses, assuring **rapid throughput** and eliminating set-up time.

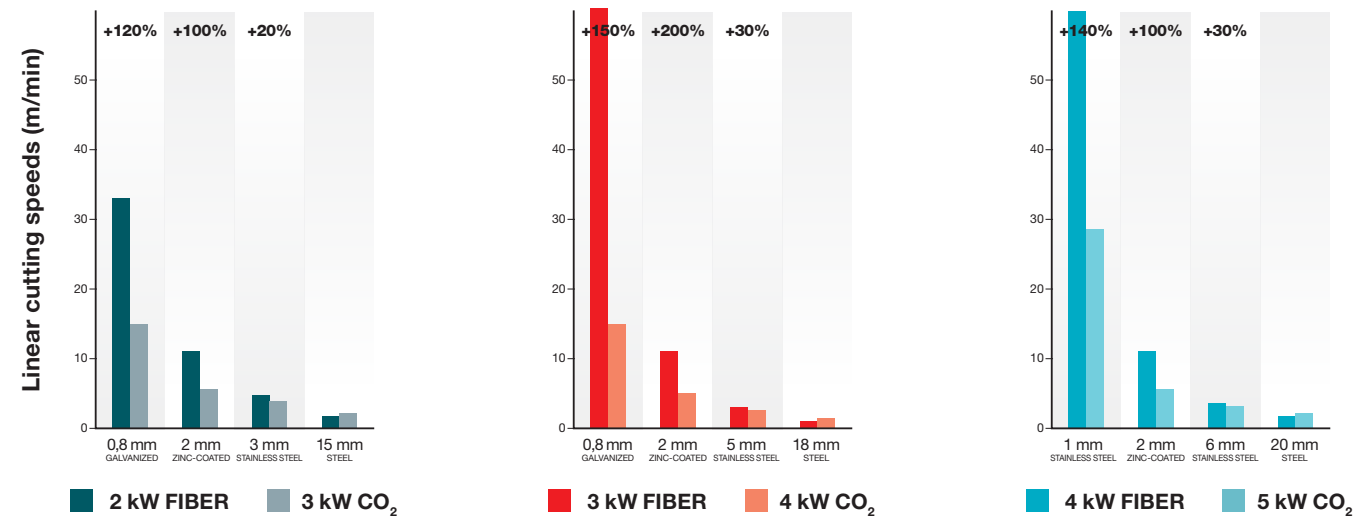
AIRPLANE STRUCTURE

The principle of a load-bearing beam with an airplane-like manipulator, patented by Salvagnini, produces an extremely rigid construction that guarantees precise, stable positioning of the focusing head and easy access to the worktable.



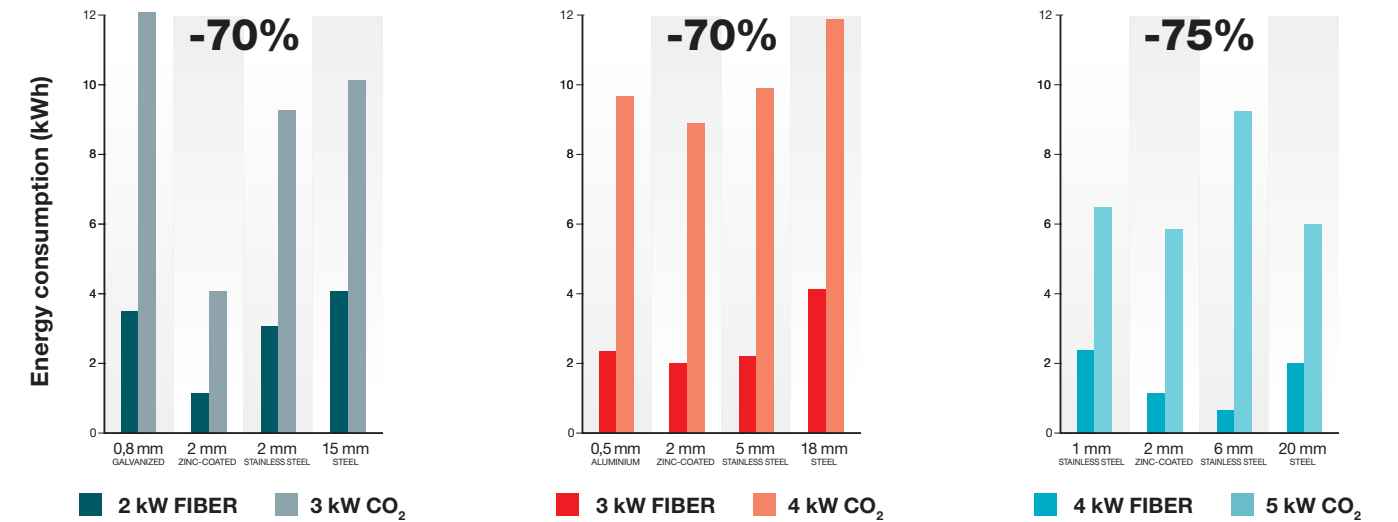
Cutting speeds.

The fiber source and the optic chain, combined together, generate a laser beam characterized by high power density, which allows high-speed cutting (more than 60 m/min) to be achieved on medium and thin materials, without sacrificing high quality when cutting thicker material.



Reduced consumption.

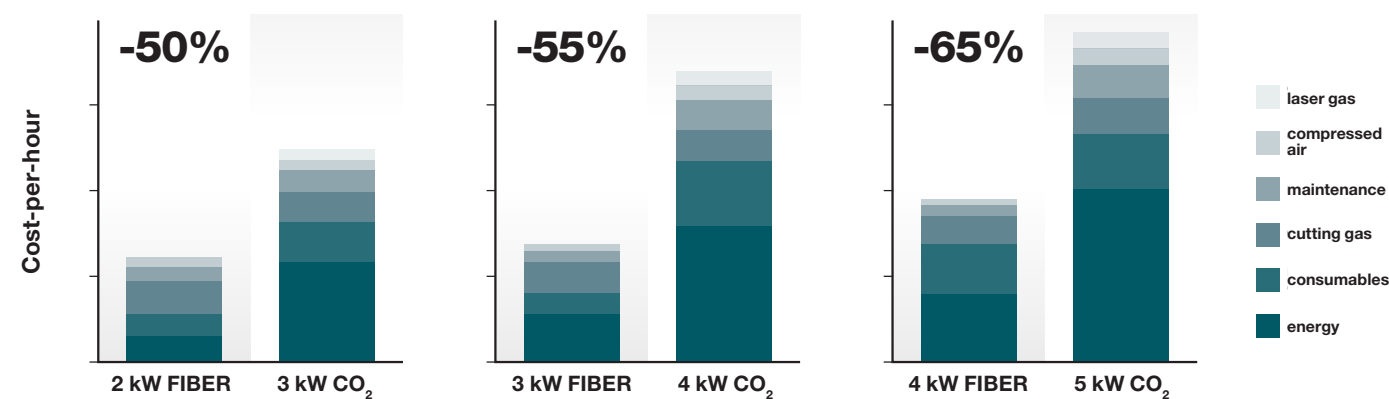
Compared to a traditional CO₂ laser source, the fiber source provides energy savings of more than 70% and a reduction in running costs of more than 50%. Warm-up times and consumption are practically eliminated; energy consumption on the entire system (machine, 3kW resonator, chiller and connections) during standby is always less than 5 kW.



Running costs.

The L5 boasts extremely low running costs, thanks to:

- the highly efficient source and chiller;
- the elimination of the optical path;
- the elimination of laser gas;
- lower costs for maintenance and consumables;
- the ability to cut with compressed air.



MACHINE DATA

MACHINE DATA			
Working range	L5-30	L5-40	
X Y worktable (mm)	3048 x 1524	4064 x 1524	
Z axis stroke (mm)	100	100	
Accuracy ¹			
Position accuracy Pa	0.08		
Average position range Ps	0.03		
FIBER LASER SOURCE			
Technical data	2000 W	3000 W	4000 W
Cutting capacity (thicknesses)²			
Steel (S185JR, S235JR, RAEX 250 C LASER) (mm)	0.5 - 15	0.5 - 20	0.5 - 20
Stainless steel (AISI 304, X5CrNi18-10 1.4301) (mm)	0.5 - 10	0.5 - 12	0.5 - 15
Aluminium (Al 99.5 EN AW 1050A) (mm)	0.5 - 8	0.5 - 10	0.5 - 15
Copper (Cu-ETP CW004A H040 EN1652) (mm)	0.5 - 5	0.5 - 8	0.5 - 8
Brass (CuZn37 CW508L H055 EN1652) (mm)	0.5 - 5	0.5 - 6	0.5 - 8
Consumption³			
Maximum power consumption (kW)	16	18	21

¹ Measurement calculated according to VDI3441 on maximum axis lengths.

² Cutting quality on limit thicknesses depends on geometries required, material quality and system operating conditions. At limit values, burrs may be present on lower edge of cut.

³ Maximum consumption calculated at full power on a system in a standard configuration with a standard work cycle.

Continuous improvement.

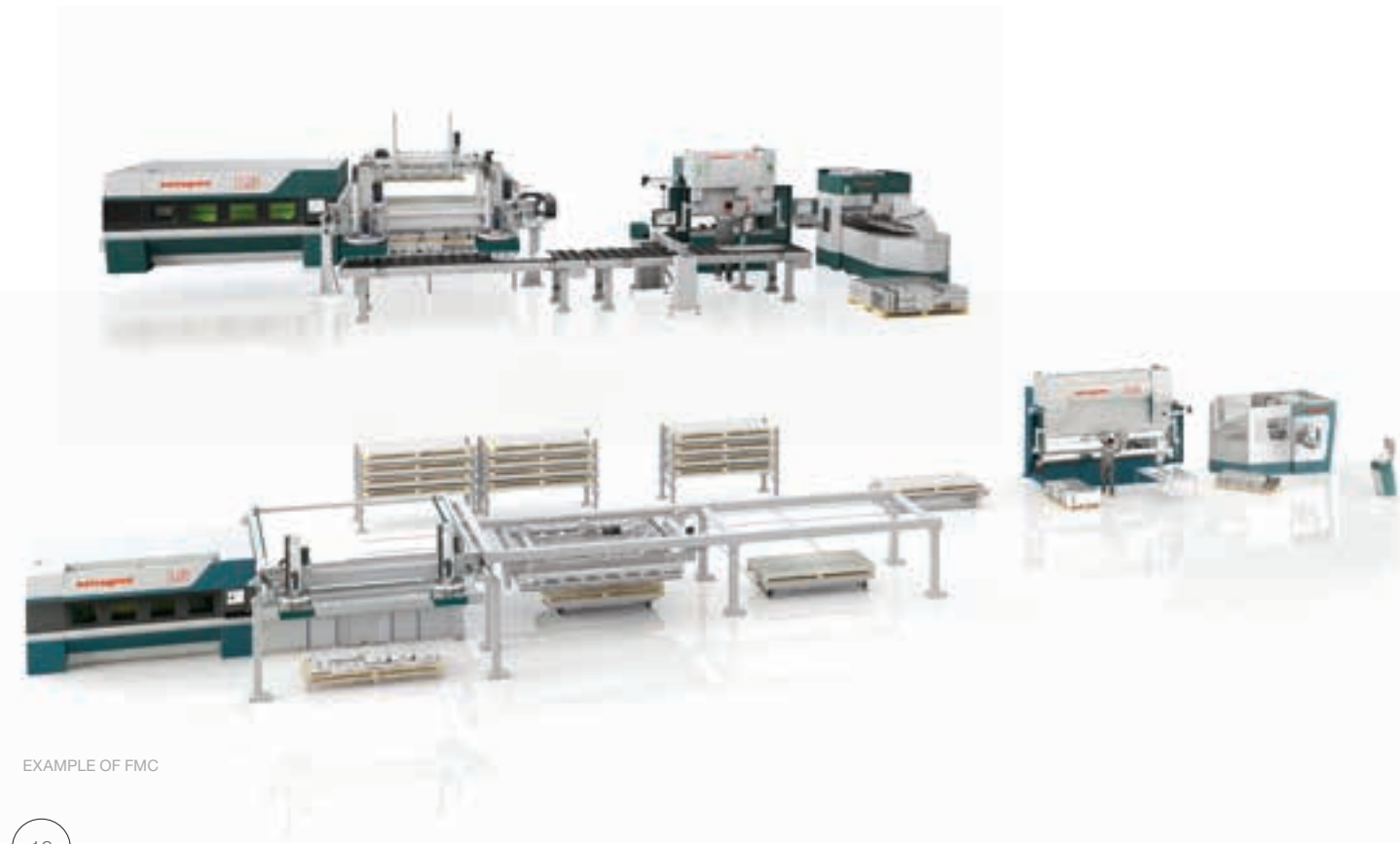
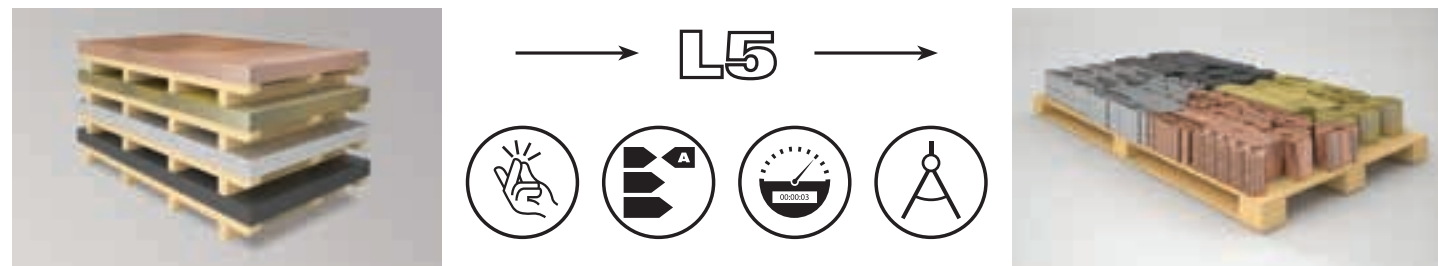
The L5 laser is designed for the future, to evolve and meet the demands of ever-changing manufacturing trends and to be easily integrated in 4.0 factories.

Integrated communication and JIT-production.



With its proprietary software, the L5 laser can exchange information with the company's ERP or communicate with other systems: for instance, machine programs can be created from production orders, and information on production can be returned automatically.

In an FMC cell, on the other hand, where the laser is integrated with bending centres downstream, integration software enables production flows to be optimized between systems so as to increase productivity and reduce waste and waiting times.

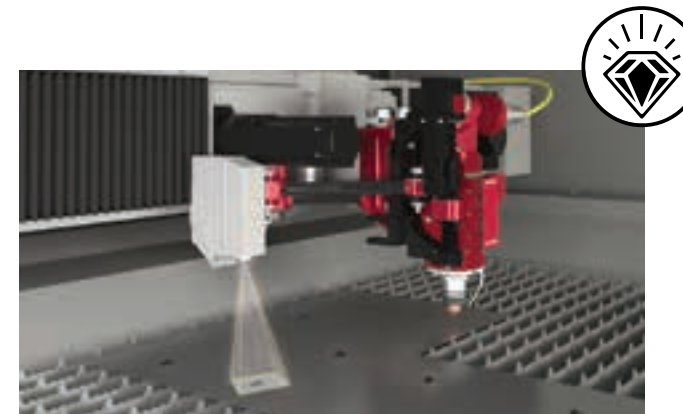


EXAMPLE OF FMC

Smart solutions for optimized unmanned manufacturing.

AVS

The application of AVS artificial vision to the laser allows the edges of the blank to be aligned quickly, and details already present on the sheet to be used as cutting references, without any restrictions on shape. It even allows offcuts to be recovered and used, regardless of their shape, as starting sheets for new nesting patterns. AVS is completely integrated into the CAMFiber software and can be programmed with a single click of the mouse.



ANC

The L5 can be equipped with an automatic nozzle change device (ANC) for increased automation during unmanned operation: this device consists of a mobile tool-carrier for laser head nozzles. The nozzle is changed automatically during the table changeover cycle.



Process sensor for high-quality flexible processing.

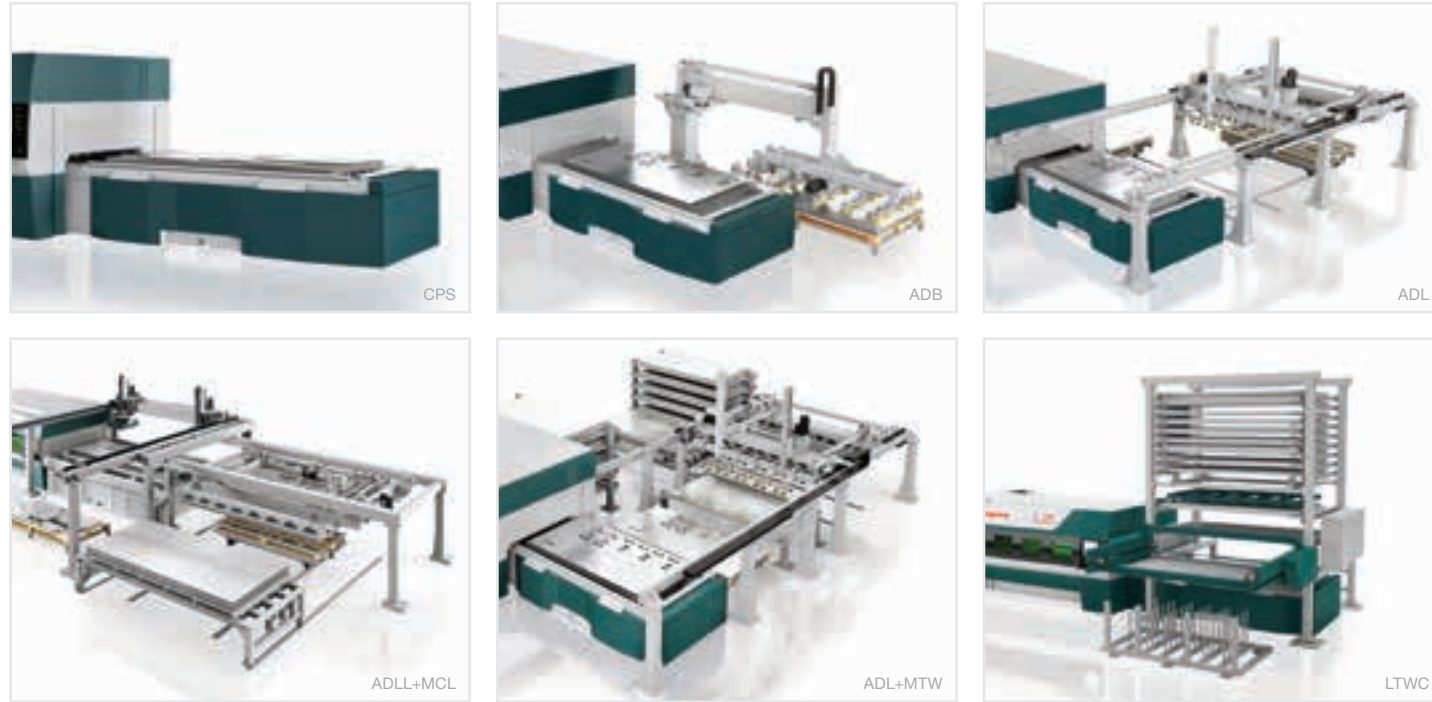
APC

The adaptive process sensor controls the behaviour of the material in real time, modulating the parameters accordingly during piercing: this allows both total cycle time and assist gas and energy consumption to be reduced. It also improves part quality and process reliability by checking cutting in real time: in fact, in the event it detects anomalies, it immediately stops the machine, re-modulates the parameters and then resumes cutting.



Modular automation catering to all production requirements.

The L5 can be set up in various ways to match different production needs. Configurations are defined according to a variety of requirements in terms of loading and unloading solutions.



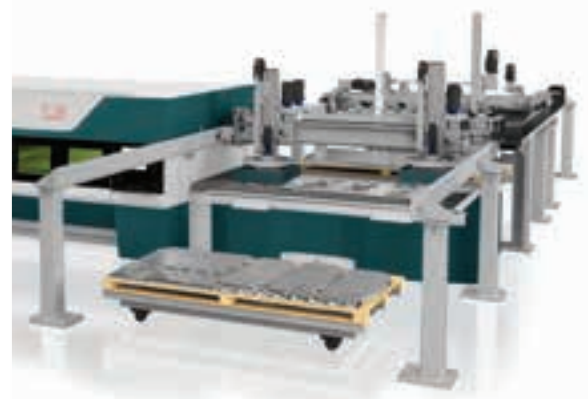
The L5 can be fed manually or automatically using the ADB and ADL connections whereby sheets are taken from one or more packs to feed the machine in masked time.

The **pallet changer (CPS)** allows unmanned operation: during the pallet exchange phase, the table with the processed sheet always travels beneath the table with the blank to be cut, avoiding any possibility of cut parts or scrap falling onto the incoming workpiece.

The **ADL connections** automate the process of loading blanks and unloading cut sheets, increasing the overall efficiency of the system by eliminating the intermediate handling phases that are usually performed by an operator. Connections are modular and can be easily integrated with compact or high-capacity storage towers (**MBT, MV**). Automation also allows feeding by compact sheet metal storage towers (**MTW**), highly modular units thus offering freedom in terms of number of storage positions and layout solutions; the **LTW and LTWC** are two extremely compact unmanned solutions for loading, unloading and storing material.

The **MCL is an automatic, integrated system for unloading, separating and stacking parts** produced on laser systems in a customizable area. More than any other connection, the MCL allows for functional configurations that can be integrated with other systems downstream, making flexible, batch-one processing possible on laser systems too.

This solution, the only one of its kind in the market, is fully integrated with the machine's CNC and software and consists of two rotary manipulators, each featuring 32 independent suction cups that can pick up parts weighing as much as 130 kg and can work **either separately or simultaneously**, for unrivalled flexibility.



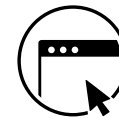
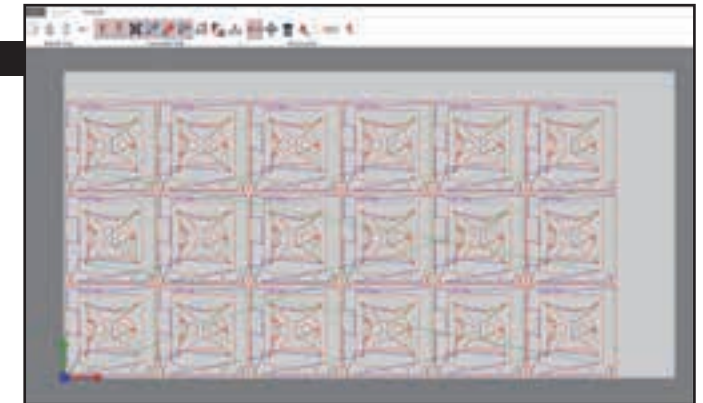
Simple, intuitive laser control with dedicated software.



MACHINE SOFTWARE

SIMFiber

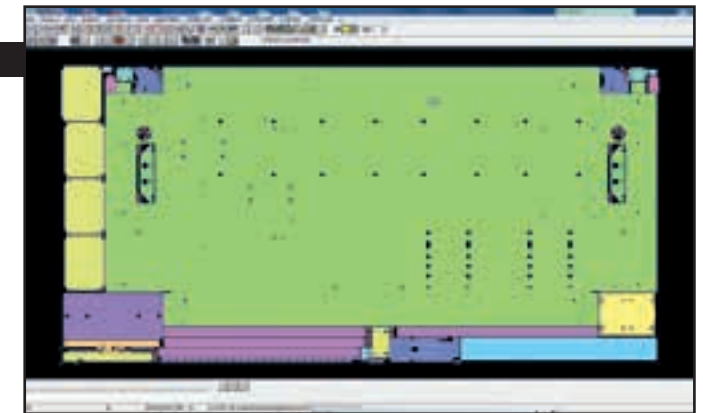
Simulation software that makes for easier interaction with the machine through a number of unique features, like the possibility of editing and entering micro-joints directly on the machine computer, showing changes in speed and power parameters in graphic format and viewing the real-time simulation feature.



OFFICE SOFTWARE

CAMFiber and NESTFiber

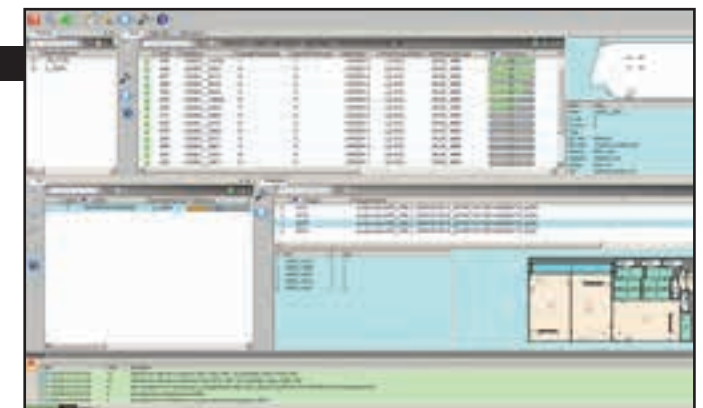
Nest generation software that allows the process to be run in manual, semi-automatic or automatic mode: it automatically delivers an optimized composition of the blanks based on the list of parts to be produced and reduces the scrap percentage by automatically applying common cuts.



PROCESS SOFTWARE

The OPS process and management applications enable:

- increased control, streamlined processes and a substantial reduction in costs, through the elimination of errors and low-value activities;
- the integration of Salvagnini systems with the company's MRP/ERP system;
- the automatic flow of information to and from the machine about production programmed and parts manufactured.



CHECKLIST

Performance and design focused on productivity and quality in laser cutting.

Productivity: *high dynamics and reduced consumption.*

The compass offers acceleration of up to 5g, with reduced consumption and very high cutting speeds.

Simplicity: *automatic parameter modulation.*

The system automatically calculates the modulation of the cutting parameters as a function of changes in direction, speed and instantaneous acceleration.

Ergonomic design: *airplane structure.*

With its airplane design, the structure is rigid, but still gives easy access to the worktable.

Versatility: *single optic without gas cooling.*

The single-optic cutting head is cooled without gas, making high quality cutting over the entire range of thicknesses and fast production changeover possible.

Configurability: *modular automation.*

A wide range of automatic handling devices designed for unmanned manufacturing optimized at every stage of the process.

Quality: *smart process solutions.*

APC and AVS, fully integrated into CAMfiber, help increase cutting quality and reduce cycle times and consumption.

Conscious innovation addressing the application needs of today and tomorrow.

Catering



Lighting



Metal furniture



Lifts



HVAC



Refrigeration





Laser cutting

L3 L5

Punching

S4Xe SL4

Panel forming

P1 P2lean P4

Bending

B3 ROBO*former*ER

Systems

AJS[®] FMS S4 + P4 FlexCell

Logistics

MTW MD MBT MV LTW