

L5



**High dynamic adaptive
fiber laser.**

salvagnini

Laser from the Salvagnini perspective: experience and innovation that respect both humankind and the environment.

The result of lengthy experience in the field - Salvagnini was one of the first companies in the world to invest in fiber technology - the L5 is a productive and versatile solution, with high dynamics and competitive operating costs, that respects the environment, humankind and its work.



Thanks to the Salvagnini cutting head with **single optics** and the **cutting parameters** developed for the L5, quality cutting can be achieved on a wide range of thicknesses, high cutting speeds can be obtained on protected or electro-galvanized materials, and processing can be carried out on highly reflective material. The advanced proprietary CNC system optimizes the **modulation of the cutting dynamics** according to the trajectories and includes an anti-shock function that aims to anticipate knocks, thus reducing their effects.

High dynamic adaptive fiber laser.

Smart cutting functions

The proprietary single-optic head and the embedded Standard and Powercut cutting functions allow you to choose the operating mode best suited to the different production requirements without interrupting production or requiring adjustment.

Patented kinematics

The cutting head is integral with the compass, an original and robust mechanical system that allows dynamics of up to 5g to be achieved, keeping consumption exceptionally low and ensuring maximum cutting quality.

Ease of use

The TRADJUST function modulates the cutting parameters according to the trajectories, while the FACE interface ensures easy, simple communication with the machine.

Smart handling

The CPE pallet changer features rapid table exchange and guarantees reliable production during unmanned operation as the material to be processed always passes above the cut sheet.

Scalable automation

The loading/unloading and sorting connections satisfy all automation requirements: from stand-alone operation, to integration in flexible cells or automatic lights-out factories.

4.0 Integration

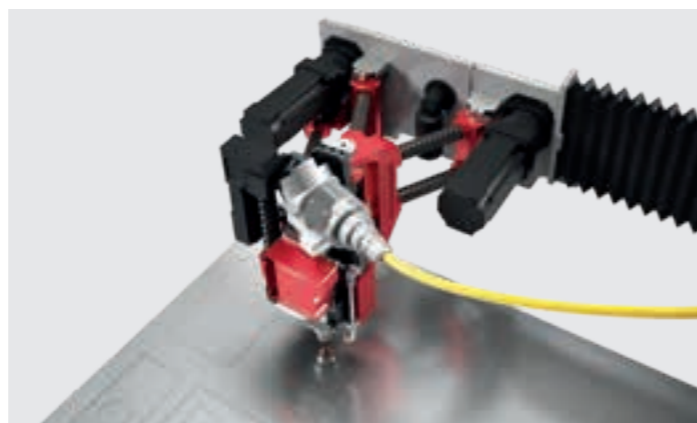
The OPS process software allows the machine and the factory ERP - or other downline 4.0 production equipment - to exchange data in real time, while the Salvagnini IoT, LINKS, makes remote control easier.



Distinctive features designed for modern and dynamic production.

The compass: high dynamics and low consumption.

The compass is the very heart of the mechanical solution. This structure is made possible by the absence of a defined optical path and features 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.



Airplane structure.

The load-bearing beam principle, with lightened airplane manipulator, patented by Salvagnini, guarantees an extremely rigid structure, as well as speed, precise positioning and wide and easy access to the whole work area.

Electronic source and fiber-carried beam.

The laser beam generated and transported in fiber up to the cutting head guarantees:

- **Lower consumption**, thanks to the highly efficient source (40%).
- **Drastically reduced costs for maintenance and consumables**, thanks to the absence of an optical path.

Salvagnini cutting head.

L5 systems have a single optics head that provides high quality cutting across the whole range of workable thicknesses, assuring rapid production changes by eliminating adjustment times. The patented **DRY COOLING** technology cools the optics without the use of gas or liquids, and offers real-time control of the lens temperature.

Adaptable cutting functions.

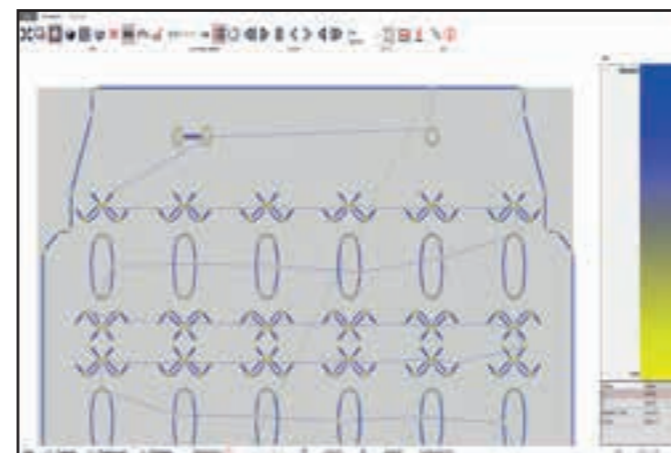
The L5 is fitted with three cutting functions, Standard, PowerCut and DynamicCut, that allow the operating mode best suited to the different productive requirements to be chosen and are easily activated via a toggle switch.

Standard mode guarantees greater safety in unmanned manufacturing, while **PowerCut** offers reactivity and greater operational speed. **DynamicCut** offers higher performance on thin to medium sheets, making the most of the machine's dynamics.

TRADJUST: our experience at your service.

TRADJUST is the set of functions in the Salvagnini SiX controller that automatically modulate the cutting parameters in accordance with trajectories, speed and acceleration.

This makes the L5 a simple system to use, because it has **only one cutting parameter** for each material and thickness, regardless of the dimensions of the cutting profile.



FACE: simple and intuitive interface.

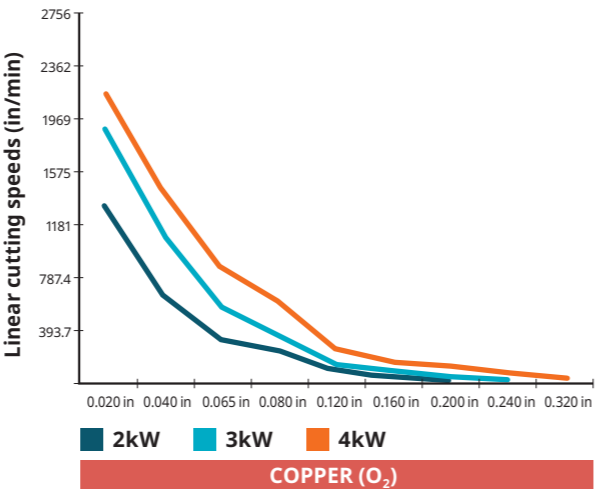
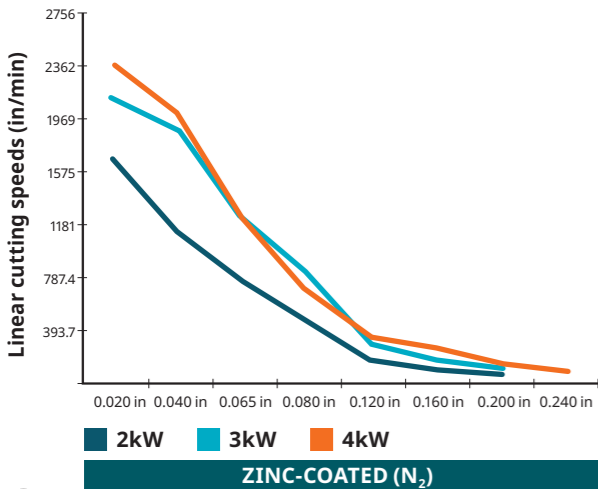
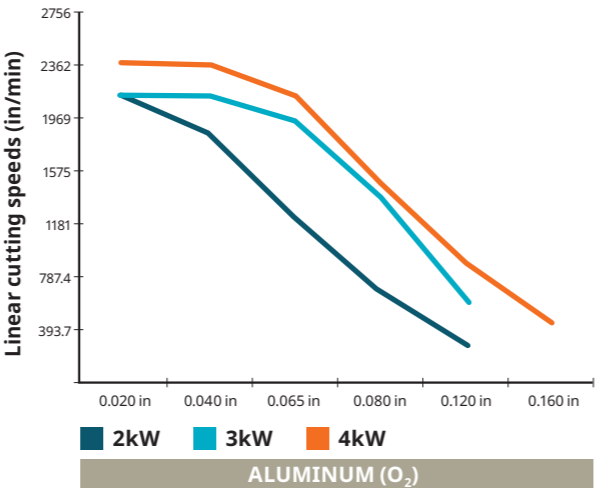
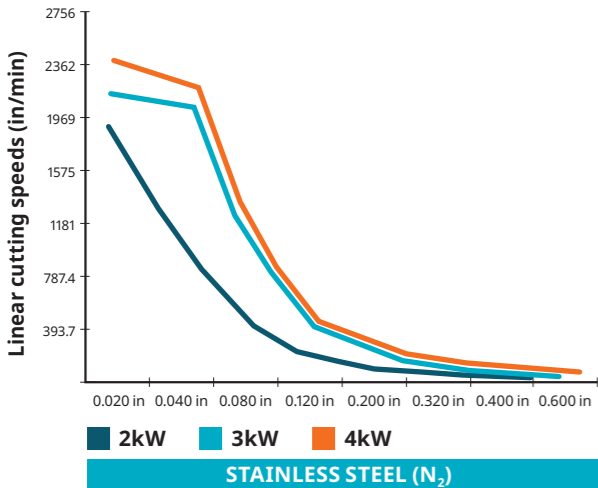
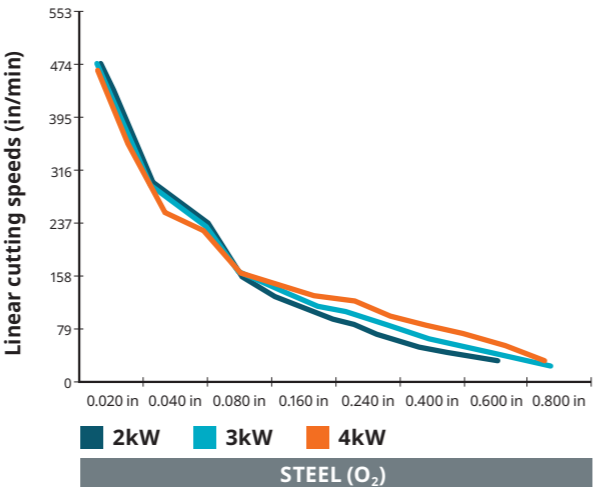
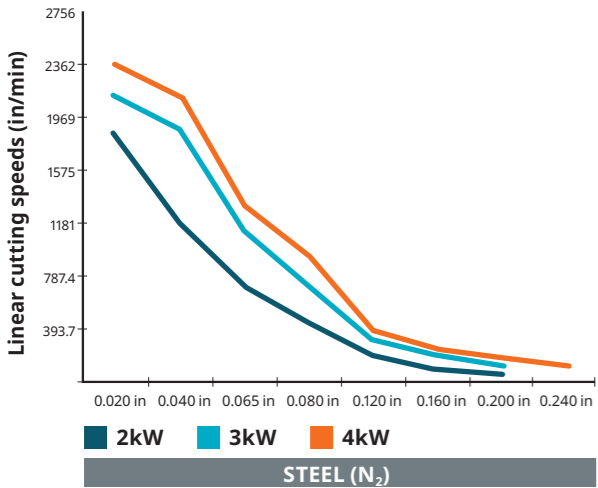
The FACE interface, compatible with all other product lines, offers numerous distinctive features and reduces task performance time because it is simple and intuitive.



Technical data and performance features.

Cutting speed.

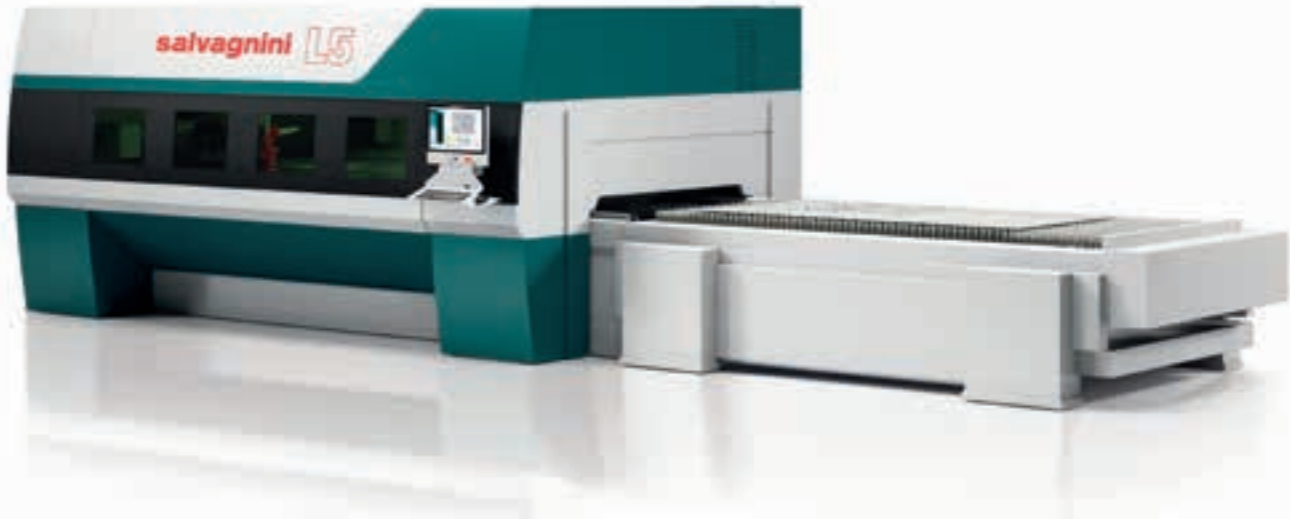
The fiber source and optics chain developed by Salvagnini generate a high power density laser beam which allows high-speed cutting (up to 2360 in/min) on medium and thin materials, without sacrificing high quality when cutting thicker material.



MACHINE DATA

MACHINE DATA				
Working range	L5-30		L5-40	
X Y worktable (in)	120x60		160x60	
Z axis stroke (in)	3.94		3.94	
Accuracy ¹				
Position accuracy Pa (in)			0.003	
Average position range Ps (in)			0.001	
FIBER LASER SOURCE				
Technical data	2000 W	3000 W	4000 W	6000 W (L)
Cutting capacity (thicknesses) ²				
Steel (S185JR,S235JR, RAEX 250 C LASER) (gage)	24 - 19/32"	24 - 3/4"	24 - 3/4"	24 - 3/4"
Stainless steel (AISI 304, X5CrNi18-10 1.4301) (gage)	24 - 3/8"	24 - 7/16"	24 - 19/32"	24 - 3/4"
Aluminium (Al 99.5 EN AW 1050A) (gage)	24 - 5/16"	24 - 3/8"	24 - 19/32"	24 - 3/4"
Copper (Cu-ETP CW004A H040 EN1652) (gage)	24 - 3/16"	24 - 5/16"	24 - 5/16"	24 - 5/16"
Brass (CuZn37 CW508L H055 EN1652) (gage)	24 - 3/16"	24 - 7/32"	24 - 5/16"	24 - 5/16"
Consumption ³				
Maximum power consumption (kW)	16	18	21	28

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.



Smart solutions for optimized unmanned manufacturing.

APC2

The APC2 process sensor monitors the piercing stages in real time, allowing for faster, better quality piercing. It also monitors the cutting process and, if there are any irregularities, it stops the cutting and resumes it with adequately modulated parameters.

It allows for automatic lens focal length search to be performed at the start of processing and it regulates the parameters accordingly.

AVS

The application of AVS artificial vision to the laser, integrated in STREAMLASER, allows the edges of the workpiece to be aligned quickly and allows referencing against processing already performed on the sheet, without any restrictions on shape.

ANC

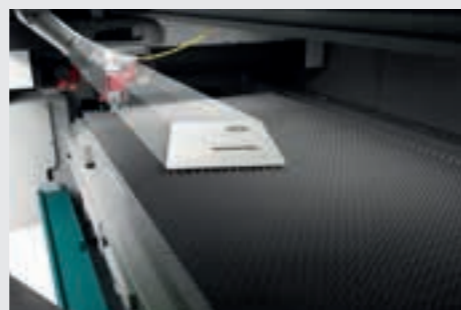
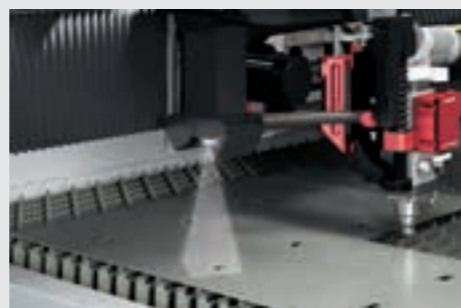
For increased autonomy during unmanned production, Salvagnini offers the optional ANC automatic nozzle change device for L5 systems, equipped with a mobile nozzle-holder magazine. The nozzle replacement cycle is automatically managed in masked time, if activated during the pallet change cycle.

SVS

It is a vision system, located inside the machine, able to read the image of the offcut to be reused directly on the machine, turning it into an electronic format, that can be used as a starting format for the new nesting.

ACUT

L5 is equipped for cutting with nitrogen, oxygen or compressed air. The ACUT option is used to cut with properly treated compressed air, ensuring productivity similar to that obtained with nitrogen cutting but at a much lower cost.



The software ecosystem.

STREAM defines the production process according to the best processing sequence, taking all variables, including production costs, into account, and starting with the model of the finished product.

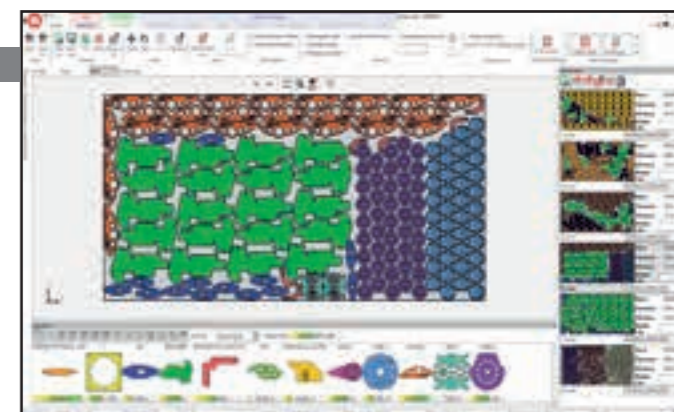
It is structured on three levels: **technical**, **productive** and **business**.



TECHNICAL

STREAMLASER is the programming software for generating the cutting program. It consists of the following modules:

- CAM: creates or permits changes to the 2D model, automatically defines lead-ins and cutting sequences, calculates the processing path and chooses the tool, thus allowing for manual intervention.
- Nesting: automatically, semi-automatically or manually arranges the sheets starting from a list of parts to be produced.
- Reverse engineering: generates the drawing starting from the program.
- OPTI, nesting algorithm that optimizes the use of the sheet and repeatability of the diagrams, minimizing the variability of the nesting layouts.



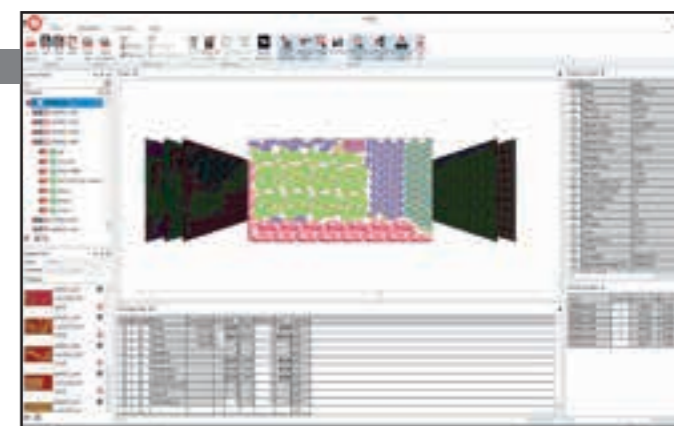
PRODUCTION

PARTS manages all information required to define a production flow (single parts, starting sheets, ...). It allows to associate specific categories (standard and customized) and to define one or more production flow for each part. It is fully integrated with CAM and Nesting software, allowing automatic program generation. The classification of parts is easy and intuitive.



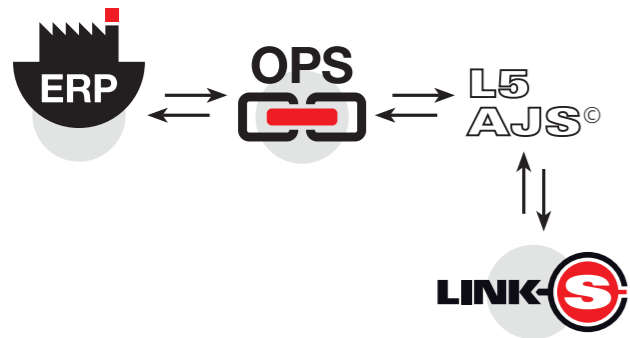
BUSINESS

VALUES estimates the production cost for a part, nest or batch associated with a production flow that features one or more Salvagnini technologies. It handles the cost of electricity, consumables, labor, material, depreciation or any assist gas.



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 with automatic manipulation devices in 4.0 factories.



Integrated communication and JIT-production.

Thanks to the **proprietary software**, the L5 laser can exchange information with the company ERP or communicate with other systems.

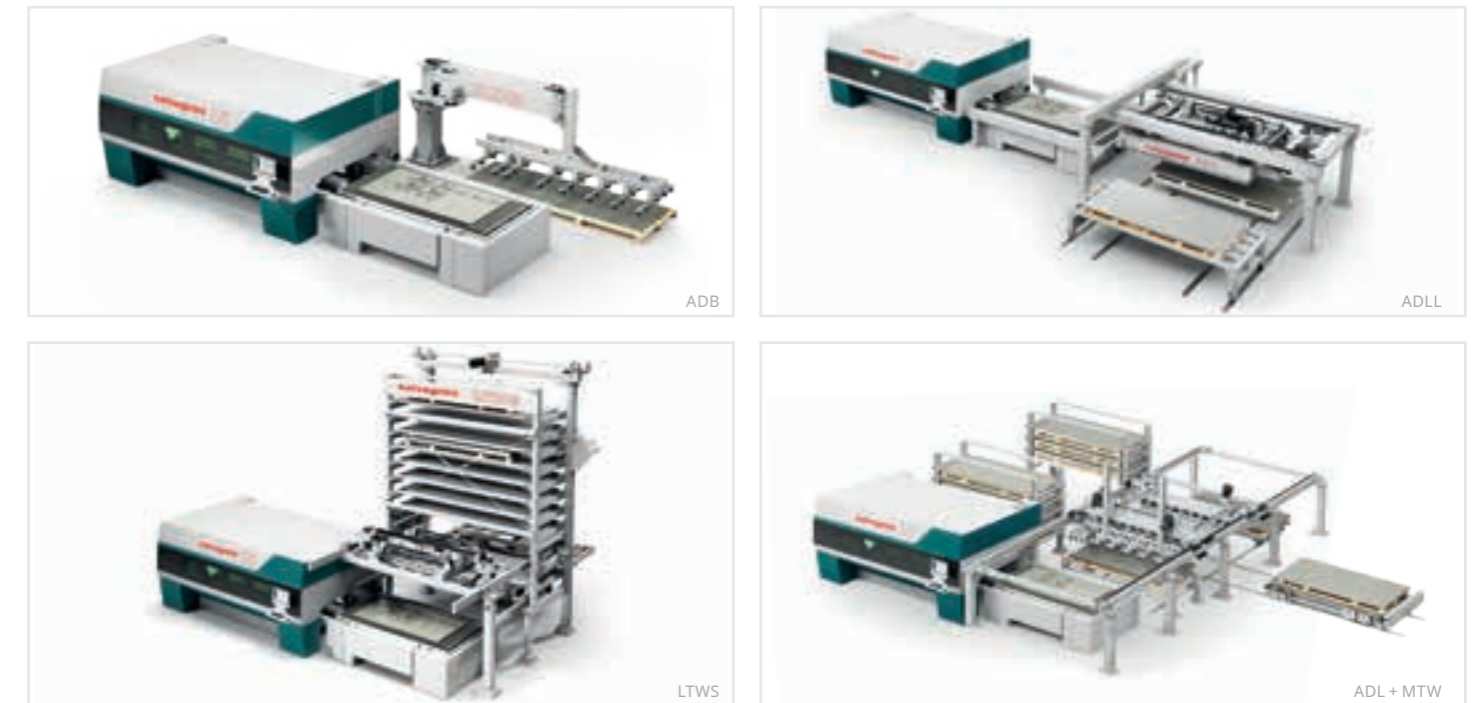
For instance, machine programs can be created from production orders, and information on production can be returned automatically. In an FMC cell, on the other hand, where the laser is integrated with bending centers downstream, integration software enables production flows to be optimized between systems so as to increase productivity and reduce waste and waiting times.

The Salvagnini IoT Links increases overall system efficiency as it ensures real-time access to production data, system logbooks, KPI performance indicators, telemetry and system parameter monitoring via the Condition Monitoring process.



Adjustable automation catering to all production requirements.

The L5 can be set up in various ways according to the different loading and unloading requirements and machine models.



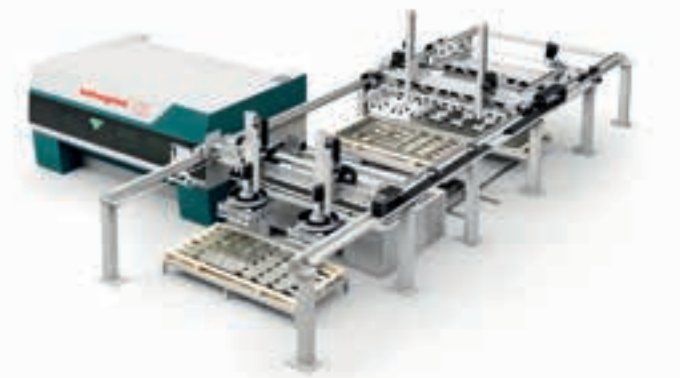
Different feeding automation solutions are offered:

- the **ADB** connection to automatically pick up the sheet from a sheet pack in masked time;
- the **ADL** and **ADL.L** devices to automate the loading of raw material and the unloading of cut sheets, eliminating the intermediate handling stages, usually performed by the operator;
- the **MBT** or extended **MV** vertical pack store-towers;
- the **MTW** mini store-towers for storing sheet metal, highly modular in the number of storage positions and layout solutions;
- the **LTWS** and **LTWS Compact** single store-towers with reduced overall dimensions for loading, unloading and storing the material in unmanned mode. Featuring considerably reduced cycle times, thanks to the loading and unloading devices which are separate from one another, they increase the efficiency of the process even in the case of very fast cutting programs.

MCU and **MCL** are Salvagnini's solutions for automatic **unloading, sorting and stacking** of cut pieces. Each one is fitted with two Cartesian manipulators, supplied with suction cups, that can work individually or simultaneously. The gripping devices are universal and do not require any set-up.

The complete integration with the machine control and the software allows correct picking of pieces including complex shaped ones or ones with holes, for reliable processes even during unmanned production.

Thanks to proprietary control the grips, the trajectories, and the stacking of piles are managed automatically and optimized. Manual sorting is reduced or eliminated, allowing for the reduction or elimination of any separation waste from the skeleton.



CHECKLIST

Performance and design at the service of productivity and quality in laser cutting.

Productivity: high dynamics and reduced consumption.

The compass allows accelerations of up to 5 g with reduced consumption and maximum cutting speed.

Adaptivity: real-time control.

The evolved control detects the variations in both cutting and piercing and automatically responds with the appropriate operating procedures.

Versatility: selectable operating mode.

The three cutting functions available allow the operating mode best suited to the different production needs to be chosen.

Simplicity: automatic parameter modulation.

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

Ergonomics: airplane structure.

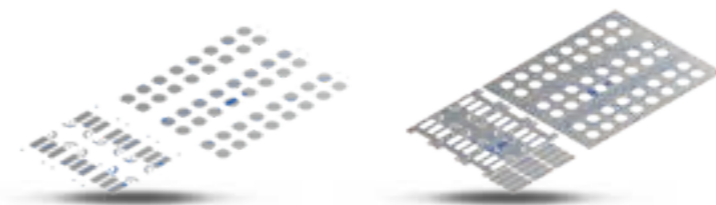
Thanks to its airplane design, the structure is rigid, but still gives easy access to the entire worktable.

Configuration: modular automation.

A range of automatic handling devices designed for unmanned and optimized production at every stage of the process, are available.

Conscious innovation, addressing the application needs of today and tomorrow.

Catering



Lighting



Metal furniture



Lifts



HVAC



Refrigeration



