

L3



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 to invest in fiber technology - the L3 is a productive and versatile solution that offers reduced consumption and competitive operating costs as well as respecting both the environment and humankind and its work.



Thanks to the Salvagnini cutting head with **single optics** and the **cutting parameters** developed for the L3, 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.

Unique solutions for modern productions.

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.

Lightweight structure

The further lightened and reinforced airplane structure and the compact kinematic chain guarantee improved dynamics.

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.

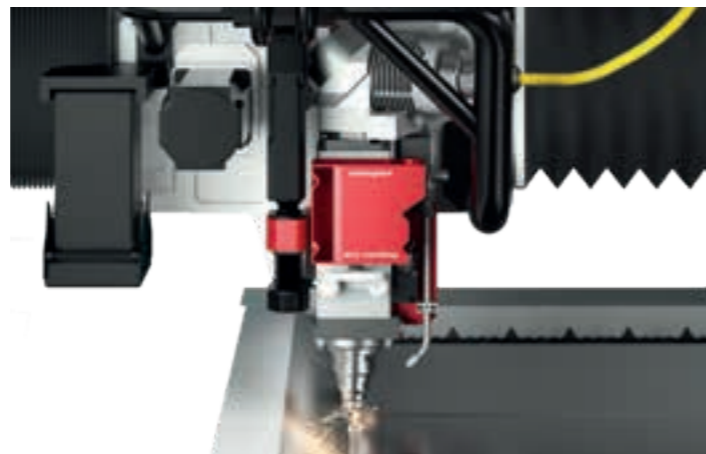
Airplane structure.

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.



Salvagnini cutting head.

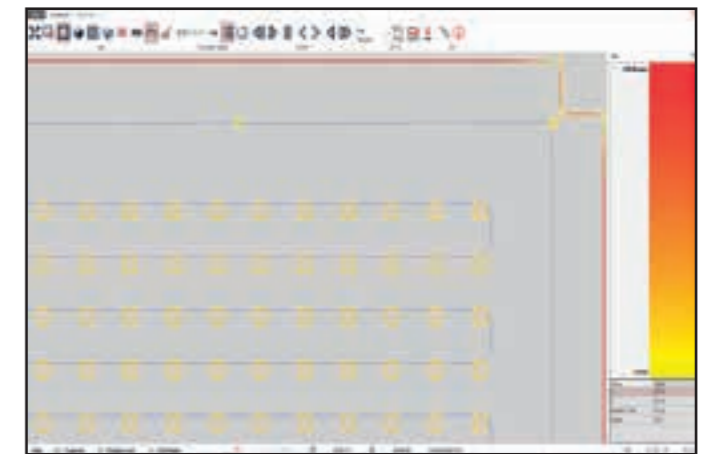
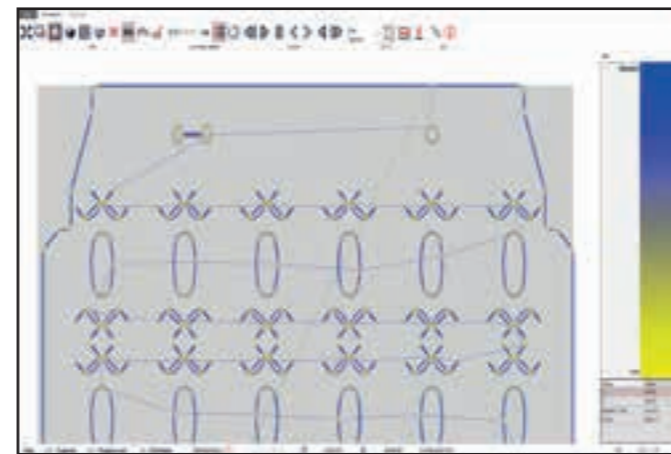
L3 systems have a single optics head that provides high quality cutting across the whole range of workable thicknesses, assuring rapid production changes by eliminating adjustment times. The patented **DRY COOLING** technology cools the optics without the use of gas or liquids and offers real-time control of the lens temperature.



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 L3 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.



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.

Adaptable cutting functions.

The L3 embeds two cutting functions, Standard and PowerCut, that allow the operating mode best suited to the different production requirements to be chosen.

Standard mode guarantees greater safety in unmanned manufacturing, while **PowerCut** offers reactivity and greater operational speed. Both can be easily activated using a button on the video.

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.



Ergonomics and Safety.

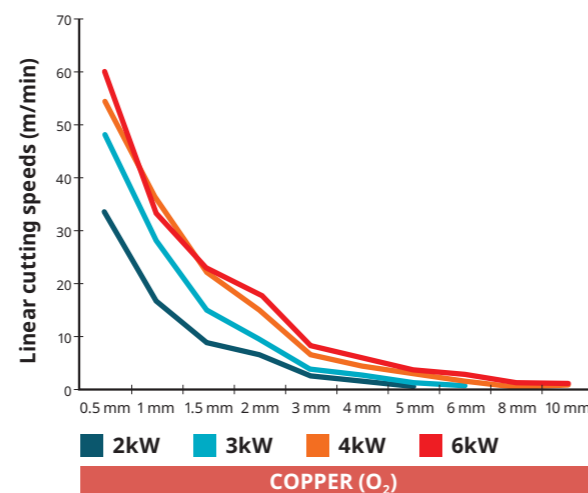
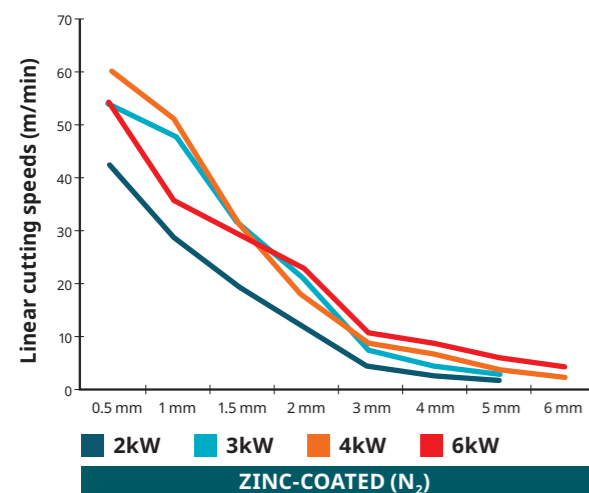
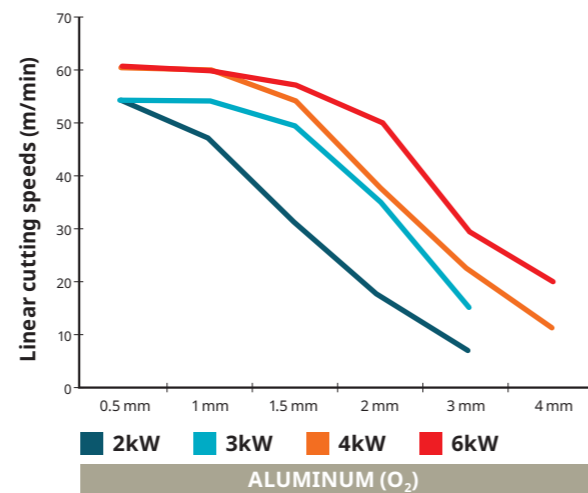
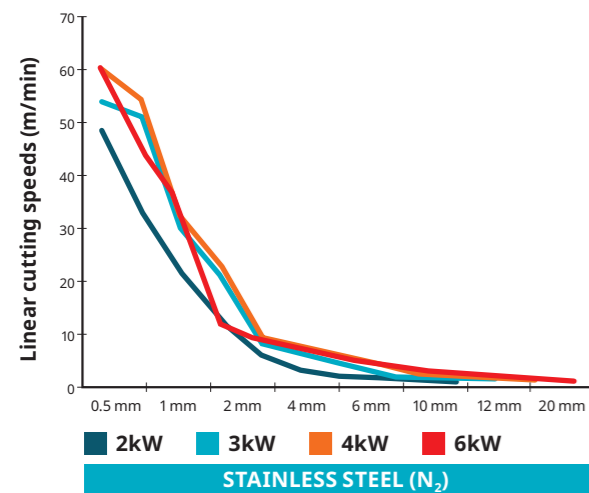
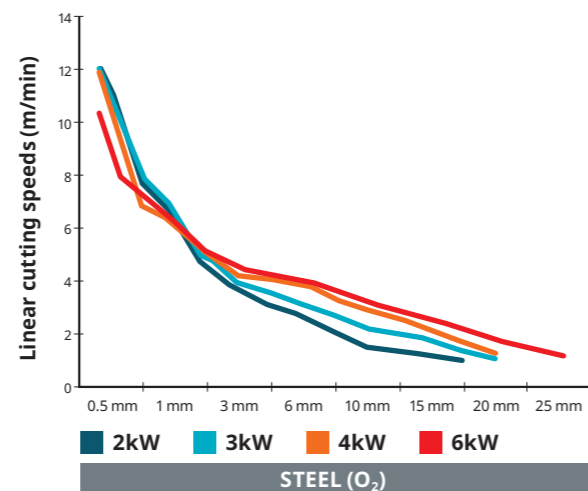
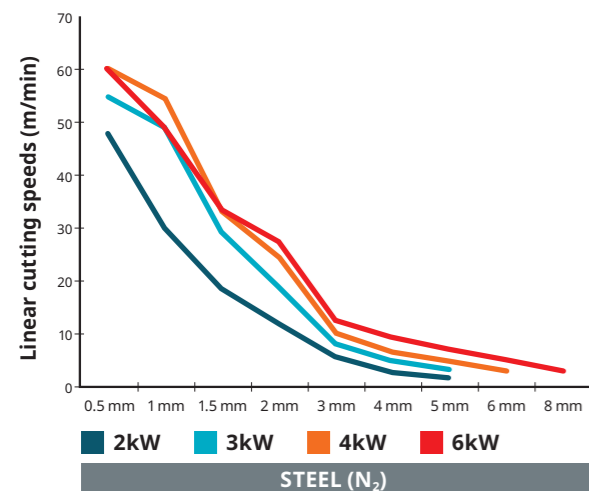
The large windows, approved for safe use with solid-state lasers, and the position of the control console, guarantee maximum visibility of both the cutting area and the pallet changer. The sliding doors on the long side grant easy access to the work area.



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 60 m/min) on medium and thin materials, without sacrificing high quality when cutting thicker material.



MACHINE DATA

MACHINE DATA					
Working range	L3-30	L3-40	L3-4020	L3-6020	
X Y worktable (mm)	3048 x 1524	4064 x 1524	4064 x 2032	6096 x 2032	
Z axis stroke (mm)	100	100	100	100	
Maximum XY speed (m/min)	140	140	140	140	
Accuracy ¹					
Position accuracy Pa	0.08				
Average position range Ps	0.03				
FIBER LASER SOURCE					
Technical data	2000 W	3000 W	4000 W	6000 W (L)	6000 W
Cutting capacity (thicknesses) ²					
Steel (S185JR, S235JR, RAEX 250 C LASER) (mm)	0.5 - 15	0.5 - 20	0.5 - 20	0.5 - 20	0.5 - 25
Stainless steel (AISI 304, X5CrNi18-10 1.4301) (mm)	0.5 - 10	0.5 - 12	0.5 - 15	0.5 - 20	0.5 - 20
Aluminium (Al 99.5 EN AW 1050A) (mm)	0.5 - 8	0.5 - 10	0.5 - 15	0.5 - 20	0.5 - 20
Copper (Cu-ETP CW004A H040 EN1652) (mm)	0.5 - 5	0.5 - 8	0.5 - 8	0.5 - 10	0.5 - 10
Brass (CuZn37 CW508L H055 EN1652) (mm)	0.5 - 5	0.5 - 6	0.5 - 8	0.5 - 8	0.5 - 8
Consumption ³					
Maximum power consumption (kW)	16	18	21	28	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

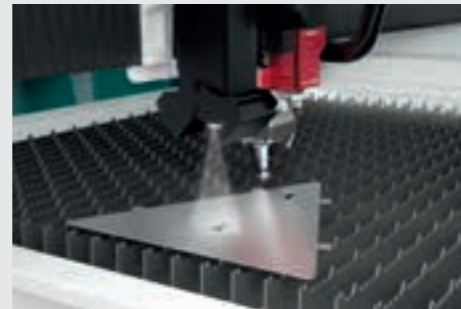
The APC2 process sensor monitors the piercing stages in real time, allowing for faster, better quality piercing. It also monitors the cutting process and, if there are any irregularities, it stops the cutting and resumes it with adequately modulated parameters.

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 L3 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

L3 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.

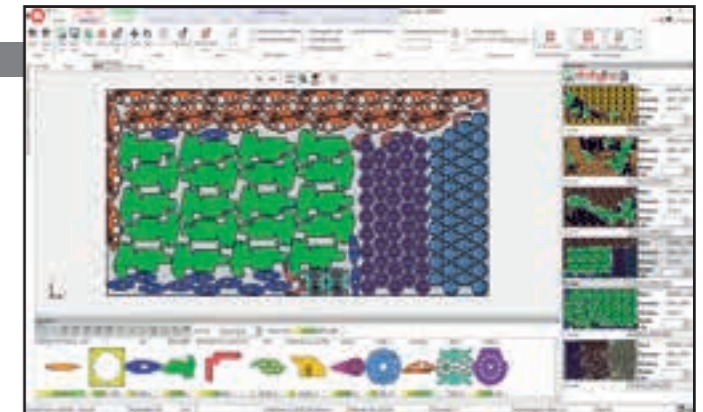
It is structured on three levels: **technical**, **production** and **business**.



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.



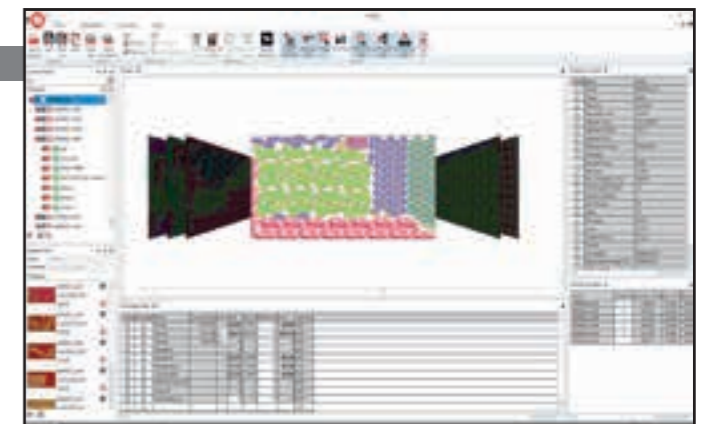
PRODUCTION

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.



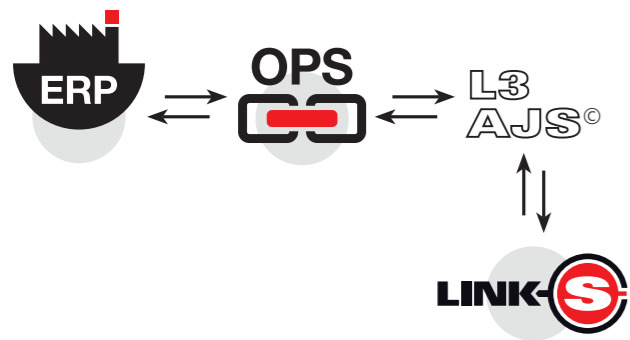
BUSINESS

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 L3 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.

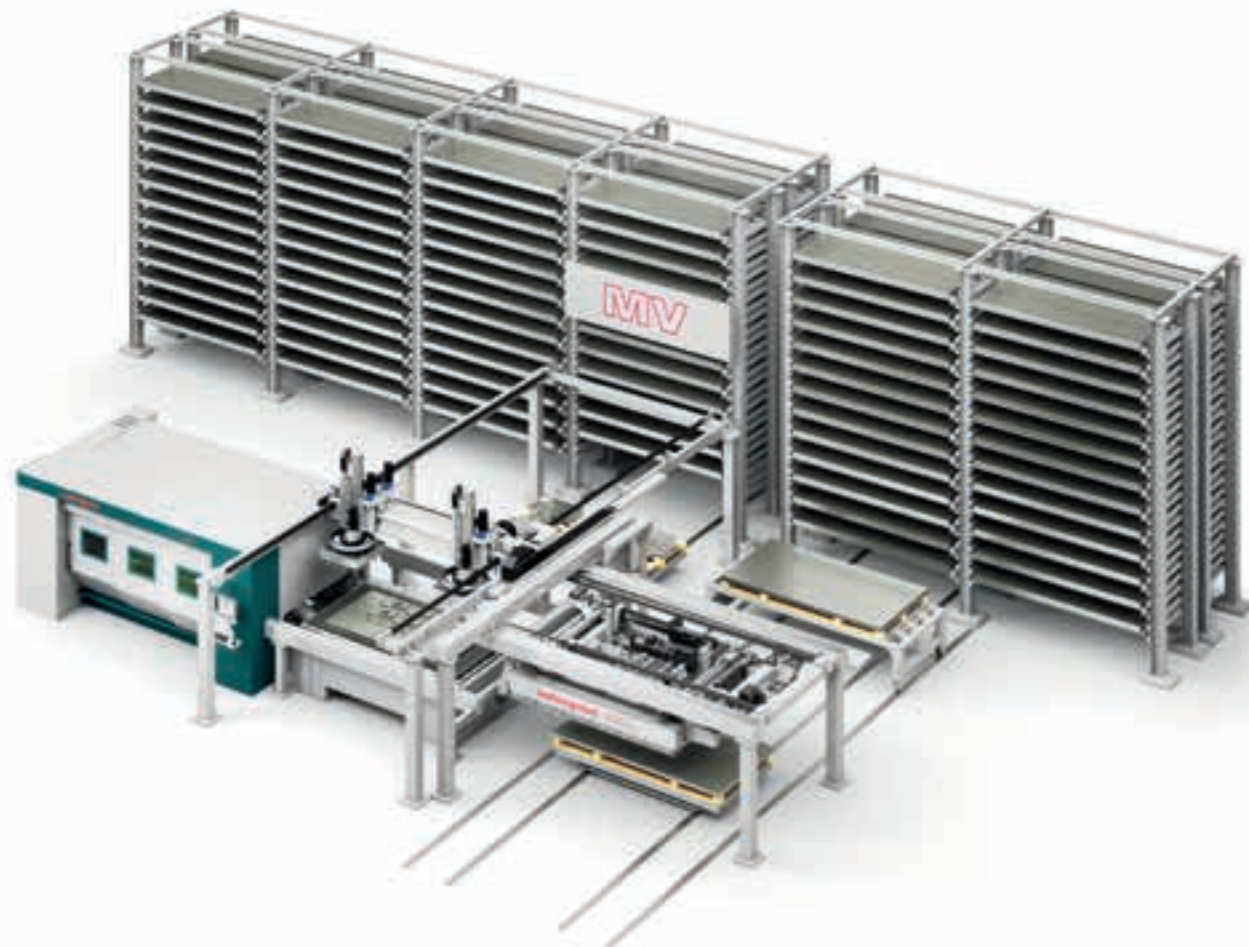


Integrated communication and JIT-production.

Thanks to the **OPS process software**, the L3 laser can exchange information with the company ERP, creating both the machine programs and production lists from the order list, optimizing flows, balancing production and automatically returning information on progress and production.

OPS also allows for one-to-one exchange between systems, for example, an FMC cell consisting of a standalone laser and panel bender and/or press brake. In this case, OPS optimizes the production flows between the systems, increasing productivity and reducing waste and downtime.

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 for all production requirements.

The L3 can be set up in various ways depending on the different loading and unloading requirements and machine models.



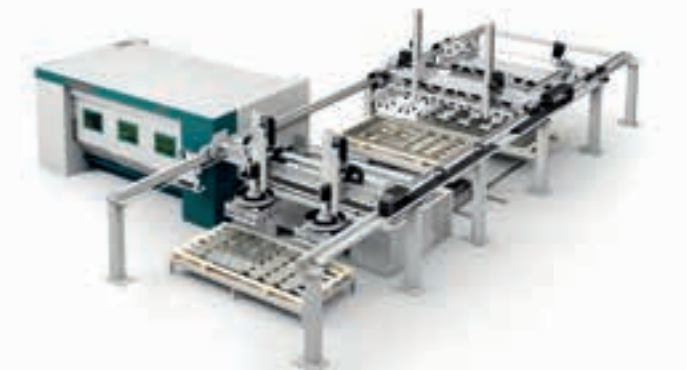
Different feeding automation solutions are offered:

- 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

A unique investment on all fronts.

Adaptivity: real-time control.

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

Versatility: selectable operating mode.

The two cutting functions available allow the operating mode best suited to the different production requirements 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.

Ergonomic design: airplane structure.

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

Configurability: modular automation.

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

Flexible automation: accurate unmanned manufacturing.

Applying AVS artificial vision and the automatic nozzle change system to the laser allows features already present on the sheet to be used as references and increases autonomy during unmanned production.

Conscious innovation addressing the application needs of today and tomorrow.

Refrigeration



HVAC



Catering



Metallic furniture



Lifts



Electrical industry



