

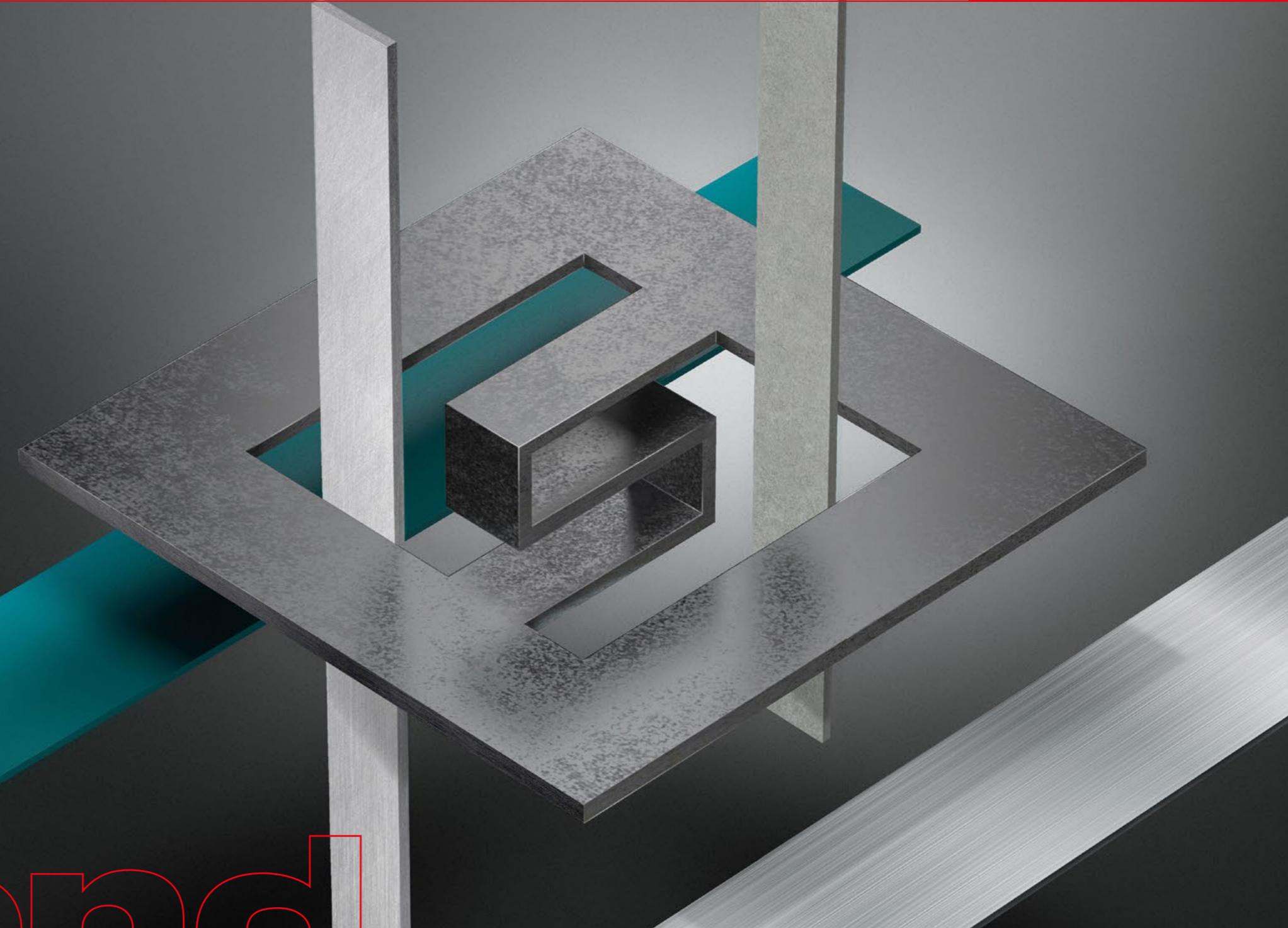
# HIGHLIGHTS

**Flexible solutions  
for Industry 4.0**

**salvagnini**

**We work with the  
businesses of the future  
to turn what they imagine  
into reality.**

Technology, innovation, tailored consulting:  
this is how we give shape to our ideas. And  
this is how we can help you to design **your  
future**.



beyond  
manufacturing



**Salvagnini is panel bending,  
panel bending is Salvagnini.**



**Over 4,000 installations in 85 countries, the Europe's largest panel bender manufacturing plant and over 40 years of experience and competence speak for themselves:**

Salvagnini is an authority on "panel bending 4.0", a flexible process as never before, with application boundaries now extending to sectors and industries that have always been considered inapt for this technology.

In just 8 m<sup>2</sup> and with maximum consumption of 3kW, the **P1** offers all the standard characteristics of Salvagnini panel benders, natively combining productivity, flexibility and patented kinematics.

The **PX** natively combines productivity, with its automatic bending cycles, with flexibility, using universal bending tools. For uncompromising performance.

The **P2** seduces with its high technological content, low energy consumption and compact layout, without forgetting the productivity and flexibility typical of Salvagnini panel benders.

The **P4** amazes with its configuration potential and performance: productive and flexible, it can be independent, work in a flexible cell or be installed in an automatic factory.

P1



## Electric panel bender for versatile production.

- +** Bends a wide range of parts, thanks to its patented kinematics.
- +** Automatically adapts to changes in material and the external environment, thanks to MAC2.0 technology.
- +** Produces kits or single batches continuously, when equipped with the ABA automatic blankholder tool.

MACHINE DATA	P1
Maximum bending length (mm)	1250
Maximum bending height (mm)	127
Maximum bending force (kN)	90
Maximum sheet bending force (kN)	310
Minimum thickness (mm)	0.4

MACHINE DATA	P1
Maximum thickness and bending angle (mm):	
Steel, UTS 410 N/mm <sup>2</sup>	1.60 (±90°)
Stainless steel, UTS 660 N/mm <sup>2</sup>	1.30 (±90°)
Aluminium, UTS 265 N/mm <sup>2</sup>	1.60 (±90°)
Average absorbed power (kW)	3.0

PX



## Uncompromising panel bender.

- +** Requires operator intervention only for loading and unloading.
- +** Ready to be connected with Salvagnini's IoT solution, LINKS.
- +** Ideal for Industry 4.0 cells and automation, thanks to the OPS software.
- +** Can handle both kit and batch-one production thanks to the universal tool that automatically adapts in-cycle.
- +** Automatically adapts to changes in material and the external environment, thanks to MAC3.0 technology.
- +** Requires operator intervention only for loading and unloading.
- +** A loading/unloading robot can be integrated on the left of the machine, using the CI interface.
- +** Ready to be connected with Salvagnini's IoT solution, LINKS.
- +** Ideal for Industry 4.0 cells and automation, thanks to the OPS software.

MACHINE DATA	PX
Maximum length of incoming sheet (mm)	2180
Maximum bending height (mm)	203
Maximum bending force (kN)	330
Maximum sheet bending force (kN)	530
Minimum thickness (mm)	0.5
Maximum thickness and bending angle steel, UTS 410 N/mm <sup>2</sup> (mm)	2.5 (±90°)
Maximum thickness and bending angle stainless steel, UTS 660 N/mm <sup>2</sup> (mm)	2.1 (±90°)
Maximum thickness and bending angle aluminium, UTS 265 N/mm <sup>2</sup> (mm)	3.5 (±90°)
Average absorbed power (kW)	5
Noise level (Machine Directive 2006/42/EC) (dB)	70

**Reduced cycle times and no re-tooling,  
whatever the geometry of the parts  
to be machined. For consistently  
competitive performance.**

# P2.G4



## Compact panel bender for lean, flexible production.

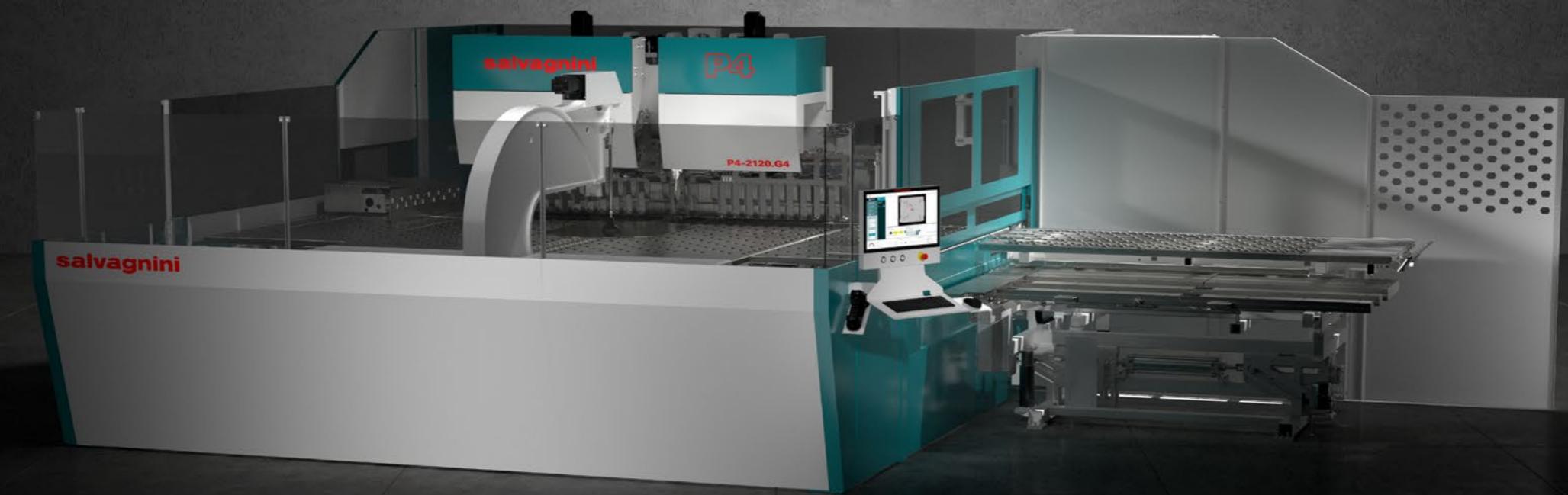
- +** Available in 5 models, to produce parts ranging from 1600 to 2750 mm in length and from 203 to 260 mm in height.
- +** Automatically adapts to changes in material and the external environment, thanks to MAC3.0 technology.
- +** Can handle both kit and batch-one production thanks to the universal tool that automatically adapts in-cycle.
- +** Ideal for loading/unloading solutions that are robotized or differentiated with an additional port.
- +** Guarantees power consumption below 4 kW (P2-2120.G4) thanks to electric actuators.
- +** Ready to be connected with Salvagnini's IoT solution, LINKS.
- +** Ideal for Industry 4.0 cells and automation, thanks to the OPS software.
- +** Operator intervention is required only for loading and unloading.

MACHINE DATA	P2-1620.G4	P2-2120.G4	P2-2226.G4	P2-2520.G4	P2-2720.G4
Maximum bending length (mm)	400-1000	1000-1600	2180	2200	2500
Maximum bending height (mm)		203	203	260	203
Maximum bending force (kN)	240	330	590	660	660
Maximum sheet bending force (kN)	380	530	635	1060	1060
Minimum thickness (mm)	0.4	0.4	0.4	0.4	0.4
Maximum thickness and bending angle (mm):					
Steel, UTS 410 N/mm <sup>2</sup>	3.2 (±90°)	2.5 (±90°)	3.2 (±90°)	3.2 (±90°)	3.2 (±90°)
Stainless steel, UTS 660 N/mm <sup>2</sup>	2.5 (±90°)	2.1 (±90°)	2.5 (±90°)	2.5 (±90°)	2.5 (±90°)
Aluminium, UTS 265 N/mm <sup>2</sup>	3.5 (±120°)	3.2 (±120°)	4.0 (±120°)	4.0 (±120°)	4.0 (±120°)
Average absorbed power (kW)	3.0	3.0	4.0	5.0	5.0
Noise level (Machine Directive 2006/42/EC) (dB)	68	68	68	69	69

**5 P2.G4 models to choose from, to bend up to 2750 mm in length and 260 mm in height.**

# P4.G4

Automatic panel bender  
for versatile production.



**+** Available in 8 models, to produce panels ranging from 2180 to 4000 mm in length and from 203 to 350 mm in height, with thicknesses of between 0.5 mm and 3.2 mm (steel).

**+** Works with universal tools that require no retooling.

**+** Can handle both kit and batch-one production thanks to the universal tool that automatically adapts in-cycle.

**+** Can be integrated with manual or robotized unloading devices.

**+** Automatically adapts to changes in material and the external environment, thanks to proprietary MAC3.0 technology.

**+** Can be integrated with different semi-automatic, automatic or robotized feeding devices.

**+** Guarantees maximum operator safety, as handling and bending are completely automatic.

**+** Ideal in FSL S4+P4 lines or in AJS integrated factory systems.

MODELLI	P4-2120.G4	P4-2226.G4	P4-2520.G4	P4-2535.G4	P4-2720.G4
Maximum bending length (mm)	2180	2200	2500	2500	2750
Maximum bending height (mm)	203	260	203	350	203
Maximum bending force (kN)	330	590	660	660	660
Maximum sheet bending force (kN)	530	635	1060	1060	1060
Minimum thickness (mm)	0.5	0.5	0.5	0.5	0.5
Maximum thickness and bending angle (mm):					
Steel, UTS 410 N/mm <sup>2</sup>	3.2 (±90°)	3.2 (±90°)	3.2 (±90°)	2.5 (±90°)	3.2 (±90°)
Stainless steel, UTS 660 N/mm <sup>2</sup>	2.5 (±90°)	2.5 (±90°)	2.5 (±90°)	2.1 (±90°)	2.5 (±90°)
Aluminium, UTS 265 N/mm <sup>2</sup>	4.0 (±120°)	4.0 (±120°)	4.0 (±120°)	3.2 (±90°)	4.0 (±120°)

MODELLI	P4-3126.G4	P4-3220.G4	P4-4020.G4	
Maximum bending length (mm)	3100	3200	400-3200	3200-3850 3850-4000
Maximum bending height (mm)	260	203		203
Maximum bending force (kN)	625	660		660
Maximum sheet bending force (kN)	825	1060		1060
Minimum thickness (mm)	0.5	0.5		0.5
Maximum thickness and bending angle (mm):				
Steel, UTS 410 N/mm <sup>2</sup>	3.2 (±90°)	3.2 (±90°)	3.2 (±90°)	2.5 (±125°) 1.6 (±130°)
Stainless steel, UTS 660 N/mm <sup>2</sup>	2.5 (±90°)	2.5 (±90°)	2.5 (±90°)	2.5 (±90°) 1.3 (±120°)
Aluminium, UTS 265 N/mm <sup>2</sup>	4.0 (±120°)	4.0 (±120°)	4.0 (±120°)	4.0 (±120°) 2.5 (±125°)

# case history



AKE thought long and hard about investing in automated bending. Careful analysis and consulting preceded the purchase: the Salvagnini specialists studied AKE's production and found the P1 to be the most suitable panel bender model. 100% electric with a compact layout of just 8 m<sup>2</sup>, the P1 bends sheet metal up to 1250 mm long, and fully convinced AKE's managers. Whatever the batch size, AKE's production is now fully automatic.

The strengths of the P1 are, for example, particularly clear in the production of certain refrigerated well components. Two machinings were needed to produce them on a traditional press brake. "Today, the Salvagnini panel bender produces them automatically, in a single production

process, reducing the cycle time by around 75%," explains Andreas Pilz, Technical Director of AKE. He sees the P1 as an opportunity for investigating new design approaches, which were unthinkable with a traditional press brake.

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[WATCH THE VIDEO >](#)



To automate some of its bending activities, Metalsystem chose a P2-2120. It is an extremely versatile solution, used to bend panels up to 2180 mm, with a maximum bending height of 203 mm. The panel bender also has a DPM – an optional gripping device coupled to the manipulator which is used to bend panels that have internal windows or are below the minimum bending size – and a special P tool, which further extend the field of application.

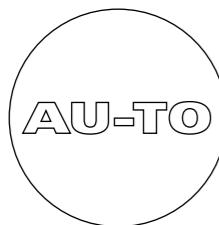
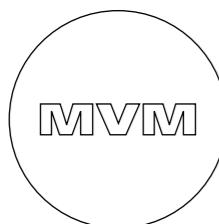
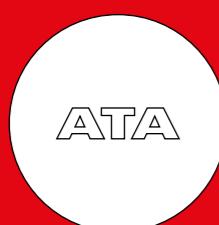
# case history



One example of the advantages that using a panel bender has given Metalsystem are doors. These are 2000x1000mm panels of 0.8 mm stainless steel, which used to be manufactured using conventional technology. Due to their size and the material flexing, 2 operators were needed and the average bending cycle time was around 6 minutes. With the panel bender, the cycle time is reduced to 90 seconds. "We decided to slow the machine down and bring the cycle time to 2 minutes," explains Fabio Pollastri – owner, with his sister, of Metalsystem. "While the machine is bending, the operator welds the joints. If the panel bender produced at 100% of its speed, the operator would not be able to manage the welding. Slowing down the P2lean, we found the right rhythm for working in a continuous cycle without stopping. Every 2 minutes, we produce a finished part, reducing

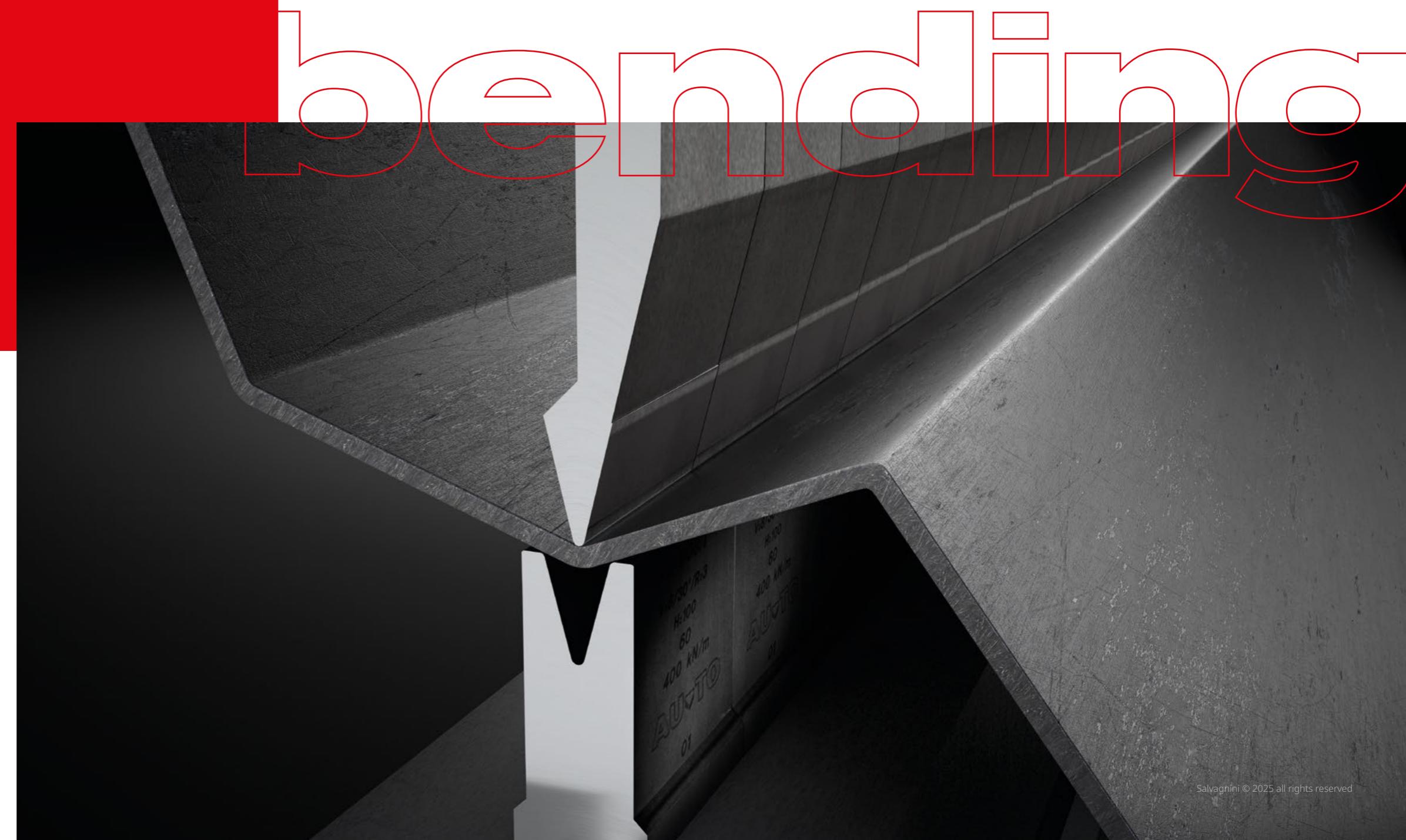
the production times by one quarter, with 50% less manpower. Without forgetting that the time dedicated to bending masks the time dedicated to welding: a single operator manages both activities, whereas the two operators who used to machine these parts on the bending machine spent all their time just bending. Today I can truly produce just in time, what I need, when I need it; I couldn't have asked for more. In quality terms, since we introduced the panel bender, scrap has been reduced to just a very few parts, substantially due to downstream operations. The guys on the shop floor are happy, because it's less tiring and they are more productive; I am enthusiastic because there is less effort and I can deliver according to the times set by the market: it's the perfect combination."

Thanks to Salvagnini's unique solutions, the press brake can adapt itself in setting up and managing the tools on the basis of what it needs to produce. Adopting scalable and modular automation in bending brings significant improvements in the machine's availability, extending its independence and flexibility.



## Change perspective, think results!

Salvagnini has already done this, introducing a **modular and scalable automation concept** that extends the flexibility and autonomy of the press brake.



# B3.G4

**The ideal press  
brake for dynamic  
production.**

The B3.G4 was designed by combining the features and benefits of **electric** and **hydraulic** press brakes with Salvagnini's in-depth knowledge of **automation**, **software**, **mechanics** and **electronics**. Whatever the level of **automation** chosen from the 4 available, the B3.G4 remains the solution with the smallest footprint available on the market.



- + Available in a wide range of sizes, from 2 m to 6 m, and from 80 to 400 tons.
- + MAC2.0 technology guarantees bending repeatability and precision.
- + Reduces power consumption while maintaining high levels of productivity with the **Salvagnini Power Unit**.
- + Allows kit and batch-one production and efficient bending of parametric parts thanks to ATA and AU-TO automation.
- + Ideal for Industry 4.0 cells and automation, thanks to the OPS software.
- + Ready to be connected with Salvagnini's IoT solution, LINKS.

MACHINE DATA	80/2000	100/3000	135/3000	135/4250	170/3000	170/4250	170/3000XL	170/4250XL	170/5100XL
Maximum bending force (ton)	80	100	135	135	170	170	170	170	170
Maximum speed (mm/s)	20	20	20	20	20	20	20	18	20

MACHINE DATA	240/3000	240/4250	240/5100	240/6100	320/3000	320/4250	320/5100	400/4250	AU-TO 170/4250	AU-TO 220/4250	AU-TO 320/4250
Maximum bending force (ton)	240	240	240	240	320	320	320	400	170	220	320
Maximum speed (mm/s)	18	18	18	18	18	18	18	18	20	18	18



# ROBOform<sup>ER</sup>

## Automated, robotized bending cell.



Depending on the configuration chosen, consists of a B3.G4 press brake, a robot and a number of devices for automatic sheet metal handling.



In the ATA configuration, automatically adapts the upper and lower tools in-cycle.



Managed by a single controller and controlled by a single program, allows unmanned production, with no need for robot teaching.

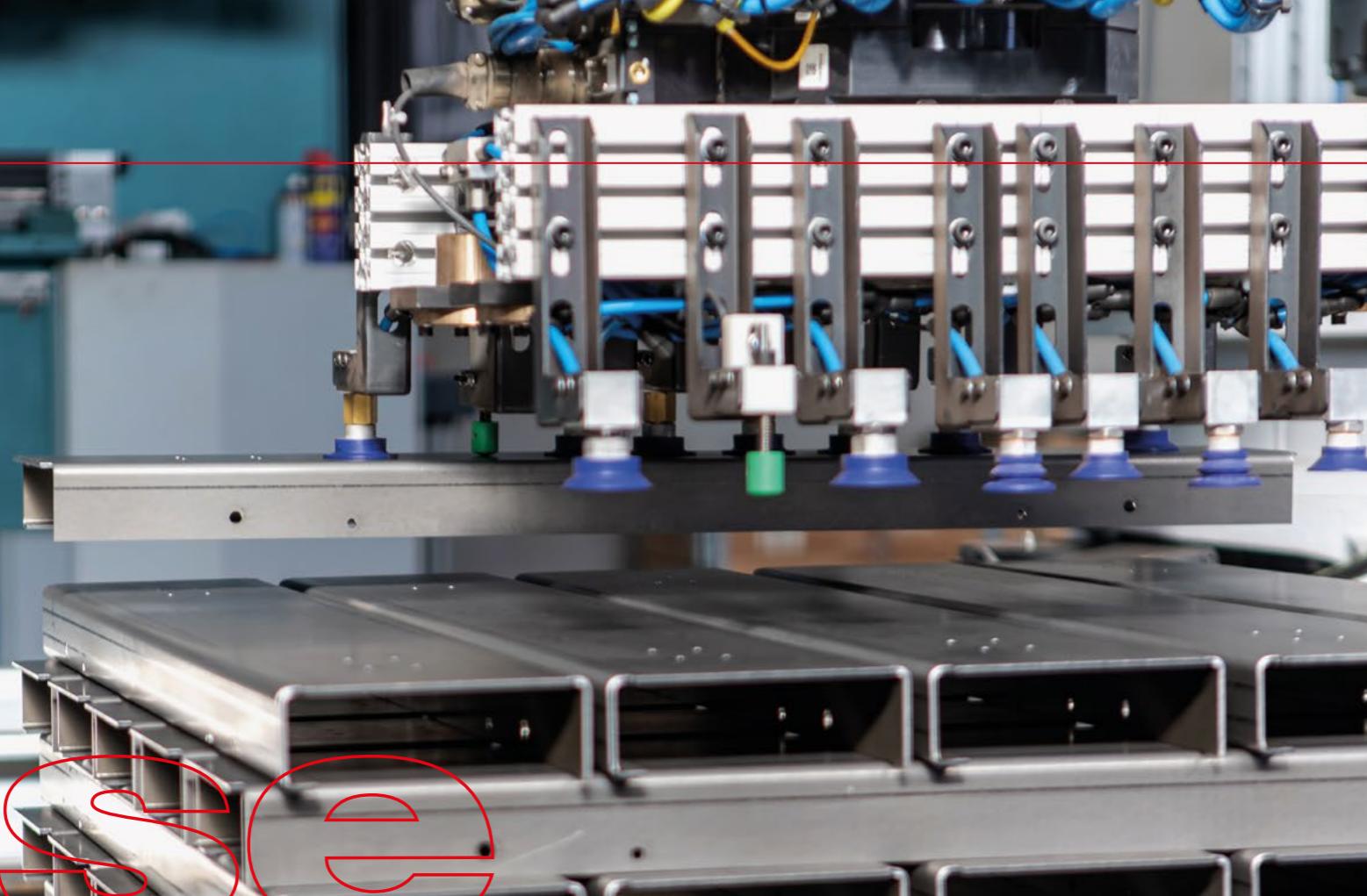


In the AU-TO configuration, automatically replaces and adapts the upper and lower tools in-cycle.

**Repeatability, flexibility, versatility:  
all the advantages of robotized bending.**

# case history

**The ROBOformER installed at BF Metal, a company in Volta Mantovana (Mantua, Italy), is a powerhouse of technology: a 4250 mm, 170-ton press brake with ATA and AU-TO devices. ATA is used to change and automatically adjust the bending tool length, regaining production times and efficiency, while AU-TO automatically changes the tools according to the production flow. AU-TO reduces set-up times and the risk of errors, as well as increasing the availability of the B3 press brake: operations are quick and performed in-cycle, even in masked time. The tool magazine, covered and located in the rear section of the press brake, can hold up to 24 meters of tools.**



"Despite the workloads, today our delivery times are extremely precise and reliable, far more so than in the past," says Andrea Boselli, owner of BF Metal. "ROBOformER has allowed us to increase our quality: once programmed, it ensures consistent bending quality. 300 parts are always 300 good parts: it is a highly repetitive machine. Another huge advantage we are happy with is in the process: in 2020 we produced a total of over 800,000 parts. Some of our items are produced in thousands of units a month, and completing them requires 2 or 3 traditional press brakes to be set up. ROBOformER makes the parts autonomously, without regripping them. Our production plan is variable: we may have to change the tools several times a day, or use the same set-up for several days in a row. The AU-TO tool changer easily manages this variability: there are no more down times, and it is much quicker than manual re-tooling. Even if we re-tool 5 or 6 times a day, the time savings compared to a manual press brake are clear. And ROBOformER has brought another huge advantage: higher productivity. It helps us to regain autonomy, by working unmanned, and extend working times. It would be practically impossible to go back."



FIND OUT MORE ▾



Increasing the productivity of a laser system means guaranteeing efficiency throughout the whole process. The Salvagnini formula blends the power of the source with intelligent sensors and integrated solutions, automation upstream and downstream of the cutting process, and digitalization. The result? Higher performance, and an optimized production process.



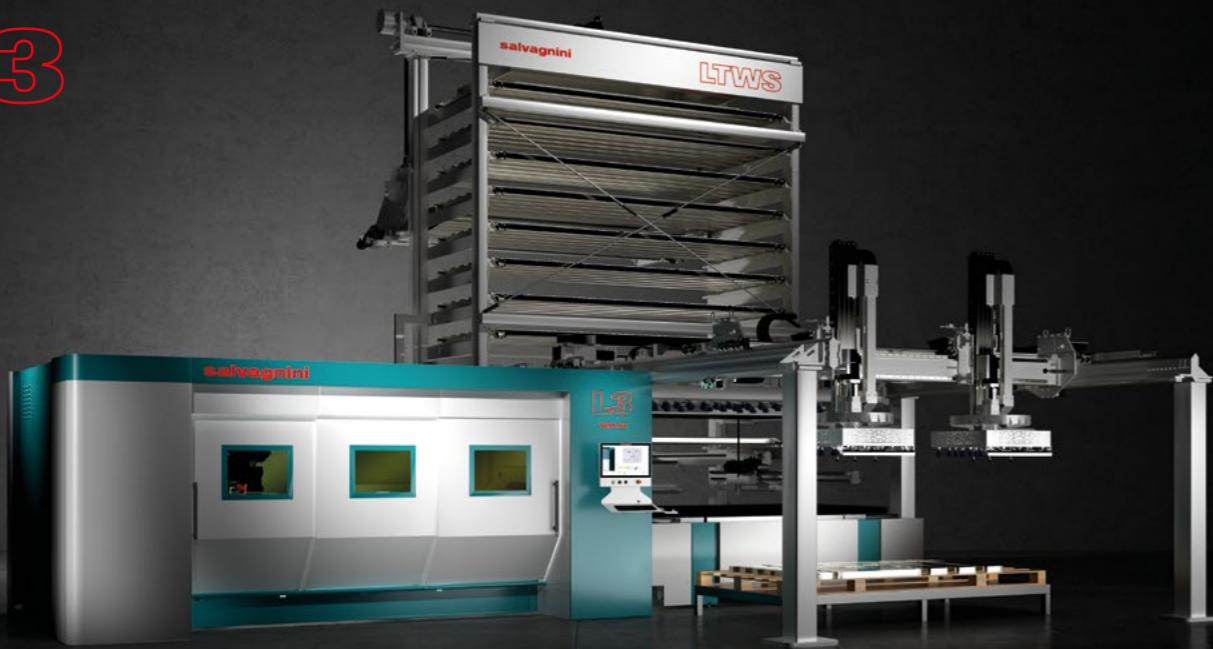
The **L3** is a versatile, multi-purpose laser designed for transversal use, whatever the applications, materials and thicknesses.

The **L5** is a particularly high-performing laser with high dynamics on thin and medium-thin thicknesses.



**Productive, versatile fiber laser,  
with low consumption and  
competitive running costs: cutting  
has never been easier!**

L3



### Multi-purpose adaptive fiber laser.

- Available in 4 sizes, for processing sheets from 3 to 6 m in length and 1.5 to 2 m in width.
- Feature an airplane structure to guarantee processing precision and stability.
- The Tradjust function automatically adjusts the cutting parameters according to the trajectories.
- Ready to cut with nitrogen and oxygen, while the ACUT option allows them to cut with compressed air too.

- Offer full control of the cutting area and the automation, thanks to the central position of the touch-screen monitor.
- Equipped with a single optics head offering high-quality cuts across the entire range of workable thicknesses.
- Suitable for unmanned operation, since the fast pallet changer always moves the sheet to be cut above the one that has already been machined.

L5



### High-dynamics fiber laser.

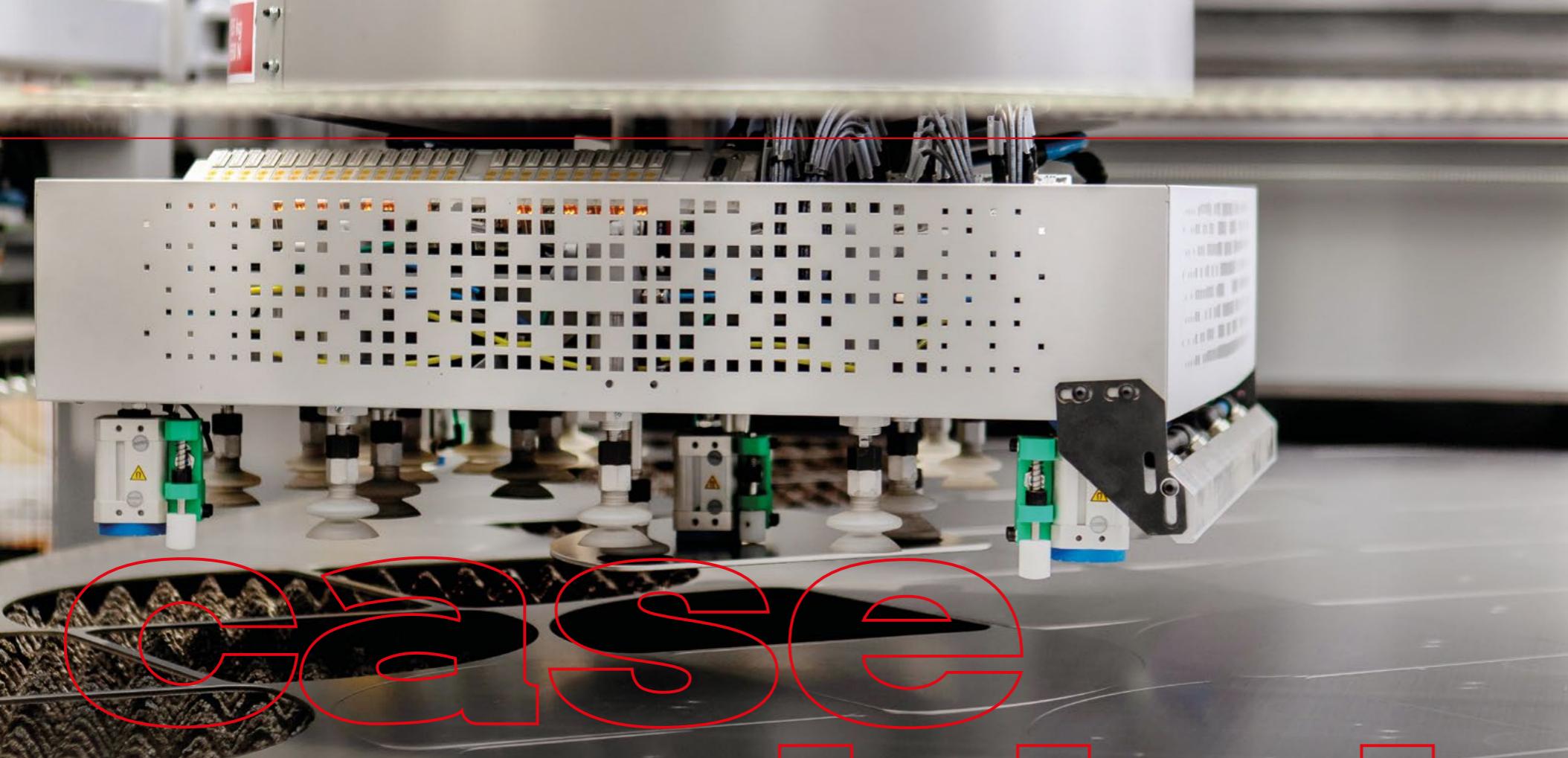
- Guarantee easy access to the worktable for rapid part pick-up and lean maintenance.
- Integrate advanced solutions for process control and efficiency:
  - APC2 monitors piercing in real time, for greater speed and higher quality;
  - AVS speeds up the centering of the metal sheet, and allows earlier machining operations to be used as references;
  - SVS regains scrap and sheet metal leftovers;
  - NVS checks the centering of the laser beam and the state of the nozzle.
- Achieve maximum autonomy thanks to numerous manual and automatic feeding and unloading devices, as well as the sorting systems and modular store-towers available.
- Ideal for Industry 4.0 cells and automation, thanks to the OPS software.
- Ready to be connected with Salvagnini's IoT solution, LINKS.

MODELS							
L3-30		L3-40		L3-4020		L3-6020	
XY working range (mm)	3048 x 1524	4064 x 1524	4064 x 2032	6096 x 2032			
FIBER SOURCES							
Fiber laser source (W)	2000 W	3000 W	4000 W	6000 W	8000 WE*	8000 W	10000 W
Cutting capacity (maximum thickness)(mm) <sup>1</sup>							
Steel	15	20	20	25	25	25	25
Stainless steel	10	12	15	20	25	25	30
Aluminium	8	10	15	20	25	25	30
Copper	5	8	8	8	10	10	10
Brass	5	6	8	8	10	10	10
Minimum thickness (mm)							
Average absorbed power (kW)	11	12	13	16	16	20	24

<sup>1</sup> These values are for the Salvagnini reference materials. \*High efficiency version.

MODELS							
L5-30		L5-40					
XY working range (mm)	3048 x 1524	3048 x 1524	4064 x 1524	4064 x 2032	6096 x 2032	6096 x 2032	6096 x 2032
FIBER SOURCES							
Fiber laser source (W)	2000 W	3000 W	4000 W	6000 W	8000 WE*	8000 W	10000 W
Cutting capacity (maximum thickness)(mm) <sup>1</sup>							
Steel	15	20	20	25	25	25	25
Stainless steel	10	12	15	20	25	25	30
Aluminium	8	10	15	20	25	25	30
Copper	5	8	8	8	10	10	10
Brass	5	6	8	8	10	10	10
Minimum thickness (mm)							
Average absorbed power (kW)	11	12	13	16	16	20	24

<sup>1</sup> These values are for the Salvagnini reference materials. \*High efficiency version.



case  
histo  
ry

After scrupulous research and analysis, Venix chose a Salvagnini L5 high-dynamics fiber laser, with a 3000x1500 mm work range and 3 kW source, ideal for processing thin material – between 0.7 and 1 mm, above all AISI 430 and SAE 340 – which represents 80% of the company's production.

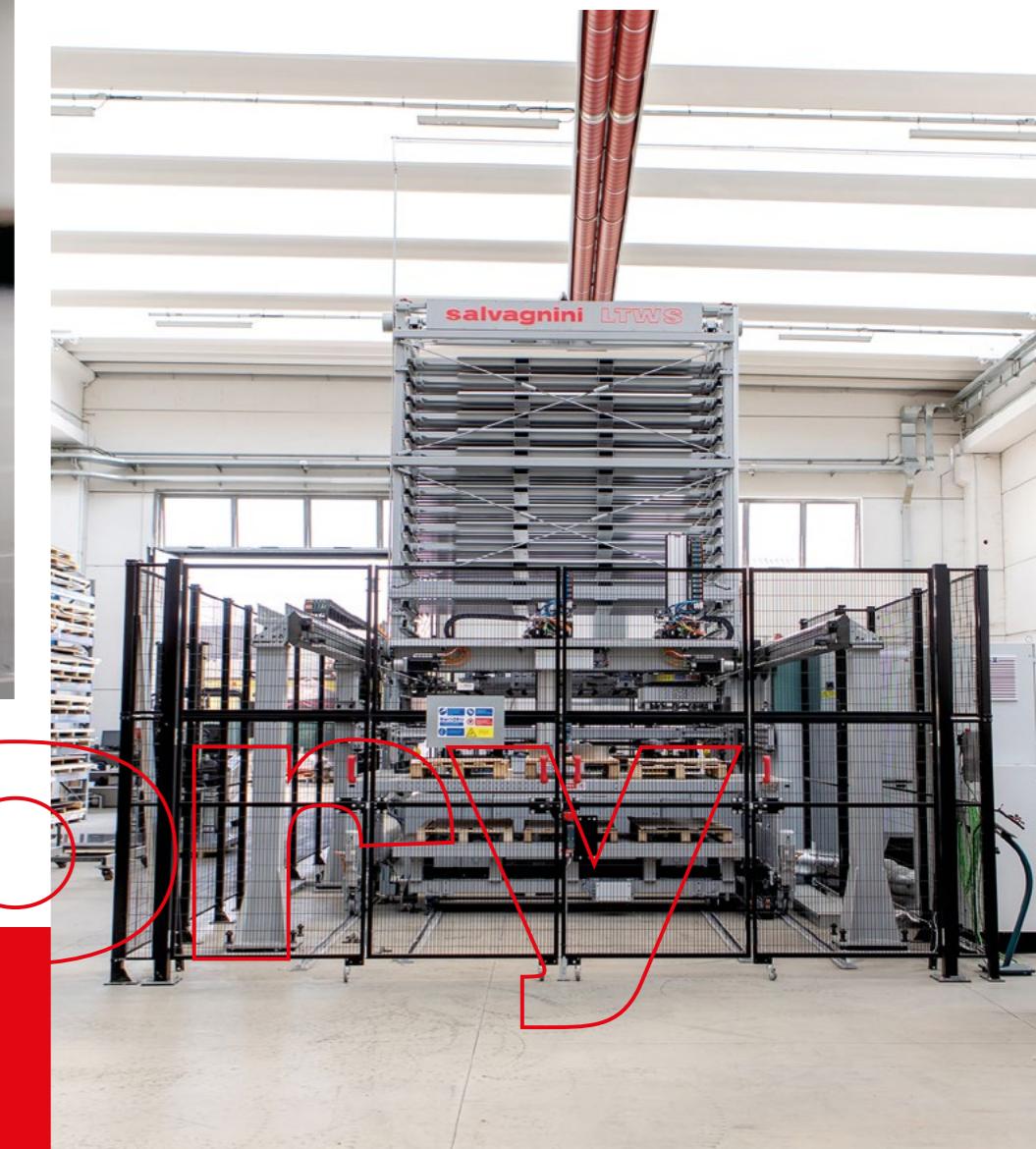
Cutting with compressed air, which is used for 90% of the machining processes, allows the company to maintain high quality results yet keep operating costs under control. The LTWS store-tower with 16-tray capacity maximizes the system's flexibility, and is rounded off by the MCU automatic sorting system, ensuring autonomy for unmanned operation. In short, it is a configuration created precisely to allow the internalization of around 80-85% of the total cutting required by the Veneto-based company, with the system being run continuously if necessary.

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"We needed a laser which was fast, which could cut our stock thicknesses with high quality, but above all which was as automated as possible," explains Nicola Lago, Head of Production at Venix. "We chose Salvagnini, completing our laser system with an LTWS store-tower and an MCU automatic loading/unloading/sorting system. I did not want to assign two operators to manually separating and stacking

the laser-cut parts: that wouldn't have made sense. I think that the choice of automation, if it is possible to automate things, is completely justified also from the point of view of return on investment. Without forgetting that automation allows you to achieve a constant and predictable level of quality. Our investment in the LTWS store-tower and MCU can also be looked at from this point of view."



Salvagnini punching machines are workstations that punch, form and cut parts. They work by subtraction, cutting the parts from the sheet metal and rapidly sending them to downstream operations. Designed to optimize the production process, reduce waste and operator intervention, they natively integrate the concept of part separation, the Salvagnini paradigm underlying a truly efficient production flow. These automatic systems can be customized to satisfy different production strategies. The product range is extremely wide, flexible and suited to all types of material, meeting practically all layout or configuration needs.

**Tools always available and integrated separating devices: not simple punching machines, but 4.0 workstations.**



S1



## Punch-laser with adaptive hybrid technology.

- +** Equipped with a multi-press head featuring advanced hybrid technology that guarantees high quality processing and reduced cycle times, since the tools are always available.
- +** Equipped with a manipulator featuring two independent trolleys to optimize sheet reachability and guarantee precision, repeatability and high dynamics.
- +** Uses a reliable, green hybrid actuator, which reduces absorption by 20% compared to common electrical solutions.
- +** Can be integrated with the entire Salvagnini automation range.

### MACHINE DATA

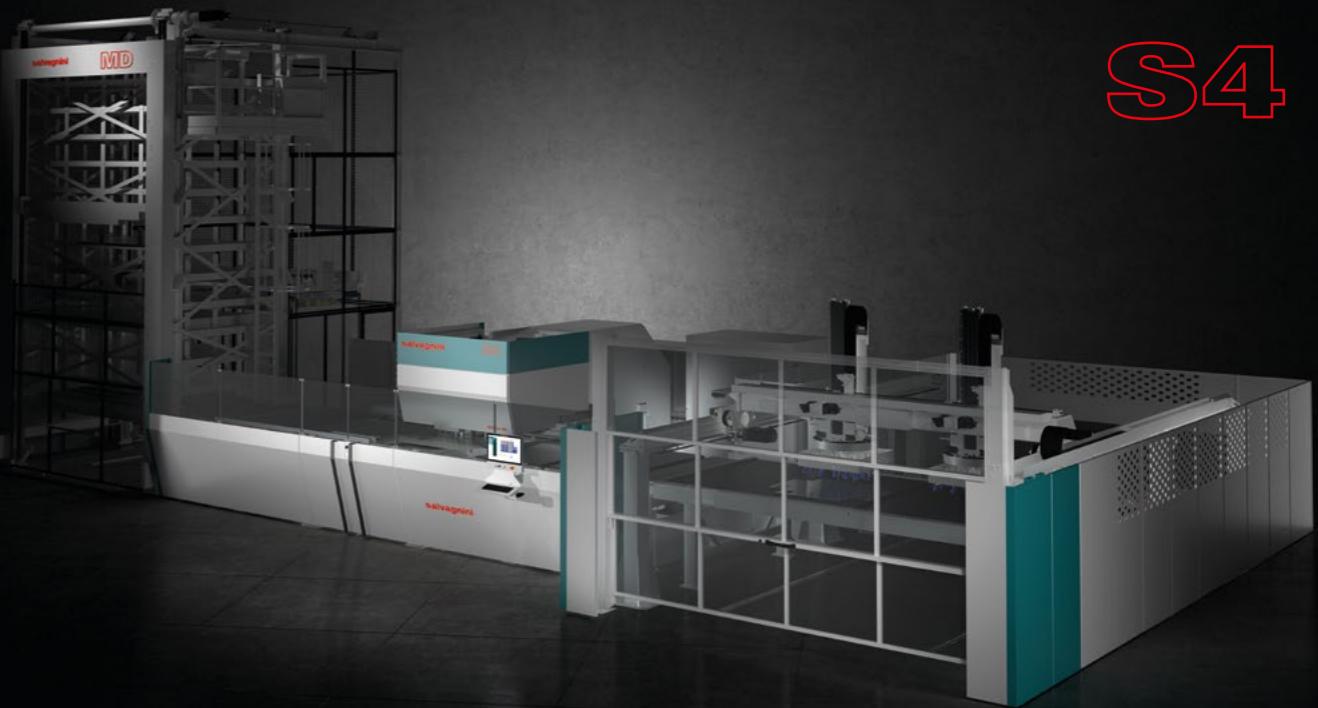
	S1.30	S1.40
Maximum sheet dimensions (mm)	3048 x 1524	4064 x 1524
Minimum sheet dimensions (mm)	370 x 300	

### Punching

Max thickness of sheet (mm)	
Aluminum, UTS 265 N/mm <sup>2</sup>	5.0
Steel, UTS 410 N/mm <sup>2</sup>	5.0
Stainless steel, UTS 660 N/mm <sup>2</sup>	5.0
Min thickness of sheet (mm)	0.5

### Laser

Technology	fiber
Source	fiber
Max power (W)	2000 - 3000
Max thickness of sheet (mm)	5.0
Assist gas	Nitrogen, compressed air



## Punching-shearing center.

- +** Equipped with a multi-press head, a solid die-structure that holds up to 96 tools which are always available and doesn't require re-tooling for production changes. The shear is integrated into the structure, for superior quality machining.
- +** Minimizes cutting scrap and eliminates holding scrap.
- +** Ideal for flow processing thanks to the Punch&Cut function.

### MACHINE DATA

	S4.30	S4.40
Maximum sheet dimensions (mm)	3048 x 1650	4064 x 1650
Maximum sheet diagonal (mm)	3466	4386
Minimum sheet dimensions (mm)	370 x 300	

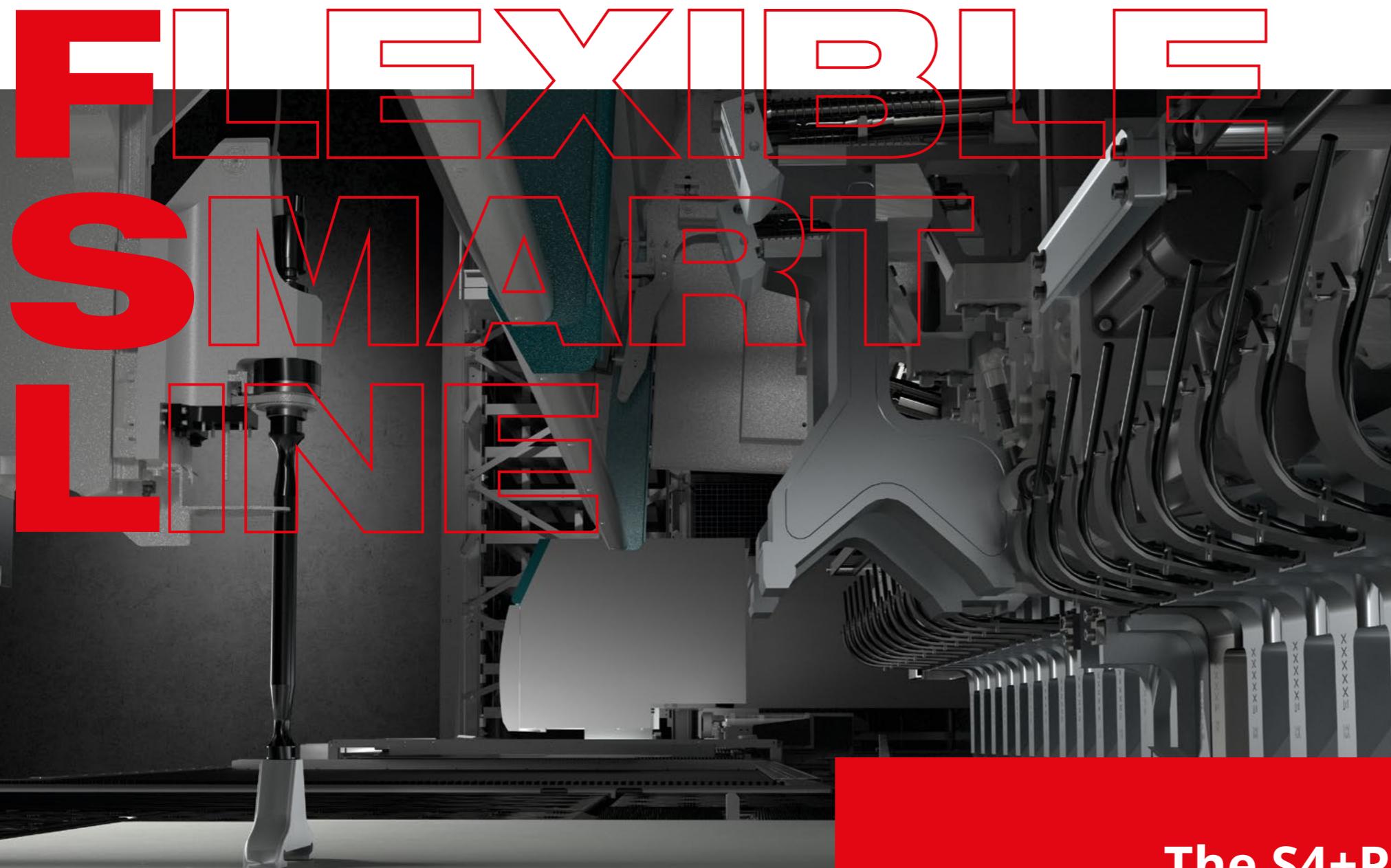
### Punching

Punching tool change time (s)	0*
Possibility of activating two or more tools simultaneously	yes
Max thickness of sheet (mm)	
Aluminum, UTS 265 N/mm <sup>2</sup>	5.0
Steel, UTS 410 N/mm <sup>2</sup>	3.5
Stainless steel, UTS 610 N/mm <sup>2</sup>	2.0
Min thickness of sheet (mm)	0.5

### Shearing

Cutting technology	simultaneous or independent X and Y axis
Blade clearance adjustment	automatic
Length of shear blades X x Y (mm)	500 x 500
Max thickness of sheet (mm)	
Aluminum, UTS 265 N/mm <sup>2</sup>	5.0
Steel, UTS 410 N/mm <sup>2</sup>	3.5
Stainless steel, UTS 610 N/mm <sup>2</sup>	2.0
Min thickness of sheet (mm)	0.5

\*each tool is always ready for use



The FSL integrates the **physical world**, i.e., machinery and people, with the **virtual world** of data, in a single ecosystem that respects both humans and the environment. It analyzes data, interprets and acquires useful information for implementing safe and intelligent production flows; it communicates with the external environment and can work in harmony with other functions in the supply chain, reducing scrap, waste and consumption in full safety.

**The S4+P4 line ensures continuous production of kits and batch ones, minimizing cycle times, semi-finished parts and intermediate handling, eliminating tool changes.**



# S4 + P4

## Simply the line.



Automatically punches, cuts and bends sheet metal without intermediate handling.



Combines productivity and flexibility: the ideal solution for any production strategy, be it kit, single-batch or series production.



Can be integrated with the entire Salvagnini automation range.



Ideal for Industry 4.0 automation and in-line processing, thanks to the OPS software.



Ready to be connected with Salvagnini's IoT solution, LINKS.



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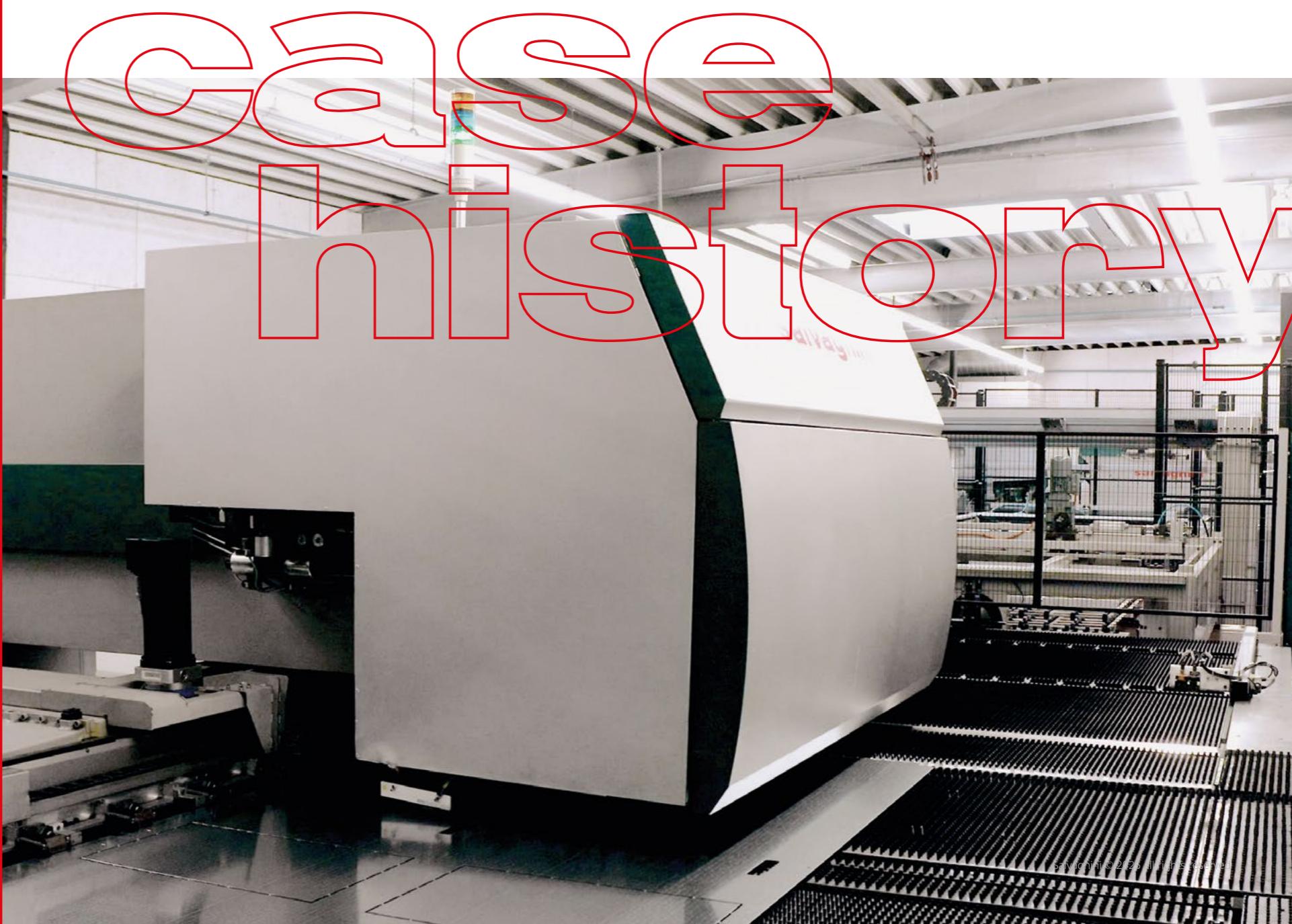


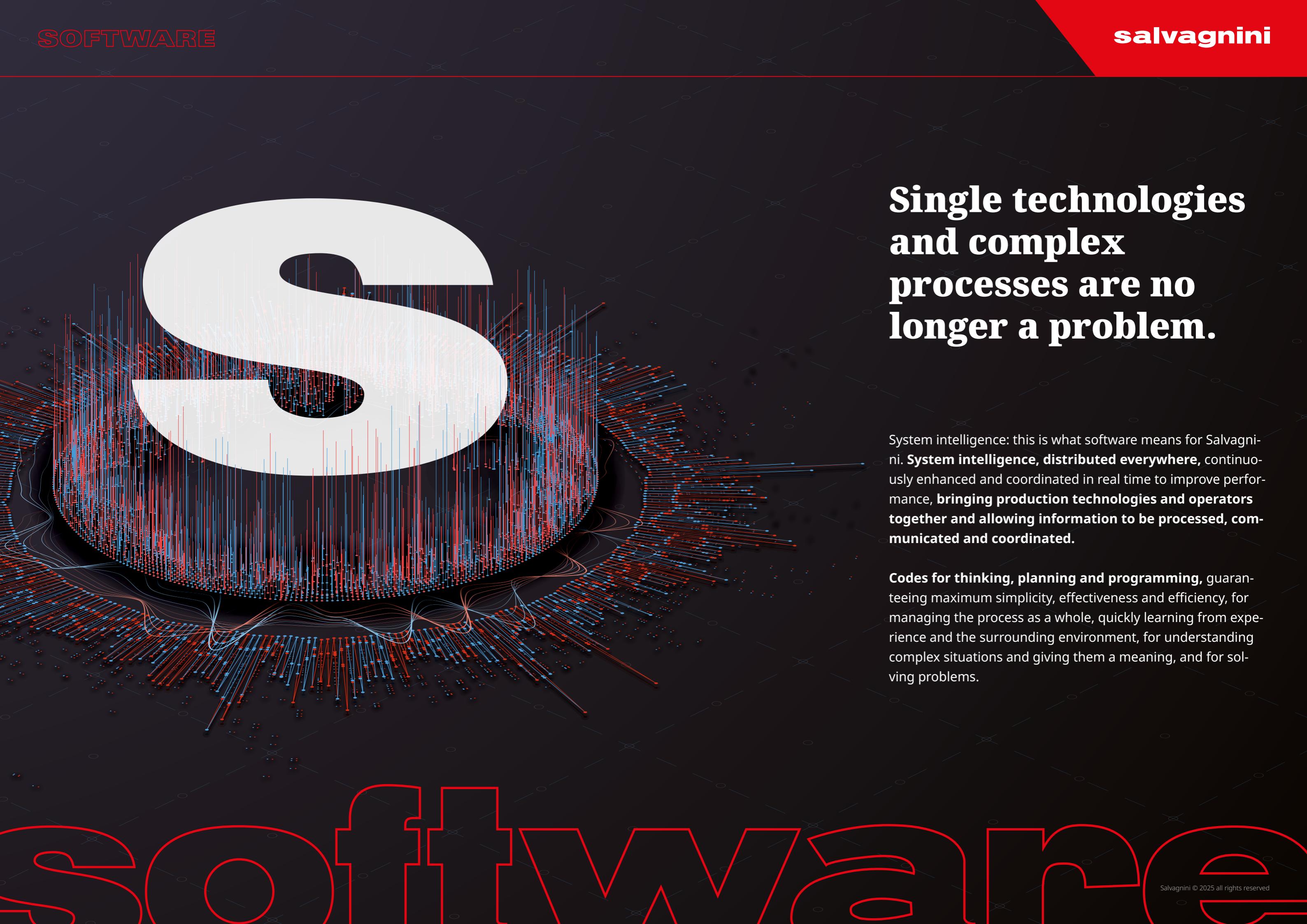
"We process around 1000 tons of sheet metal every year, mainly Sendzimir galvanized steel with a small percentage of stainless steel," explains Andreas Seidl, CEO of Steurer Systems. The production plant is ultra-modern and highly automated: the Salvagnini S4+P4 line marks the start of the sheet metal manufacturing process, which is completed by robotized welding and painting. These machines guarantee a very high level of autonomy, rapid production and excellent quality, whatever the batch size. "In 2011, we chose Salvagnini precisely because we wanted to move

into the future. With the same staff numbers, we have increased productivity by around 70% and we have also increased our flexibility. Today we manage variable batch sizes, and have overcome the impossible technological limits of traditional machines. Depending on the size of the parts, we produce between 600 and 1000 parts in 24 hours, while the line runs 24 hours a day, 7 days a week, alternating manned and unmanned production. In peak periods, the system runs at full capacity during the week and at weekends."

To switch from a traditional layout, with independent punching and bending stations, to a fully integrated production system that increases flexibility and maximizes capacity without increasing staff: this is the ambitious plan that Steurer Systems put into practice in late 2011 when it installed a Salvagnini S4+P4 line.

**Over the years, this Austrian company that works in the metal furniture industry, has learned to appreciate all the advantages guaranteed by Salvagnini automation: increased production capacity, high flexibility, reduction in semi-finished parts, no tool changes, high precision and repeatability, and the possibility of producing large batches, kits or batch one without distinction.**





# Single technologies and complex processes are no longer a problem.

System intelligence: this is what software means for Salvagnini. **System intelligence, distributed everywhere**, continuously enhanced and coordinated in real time to improve performance, **bringing production technologies and operators together** and allowing information to be processed, communicated and coordinated.

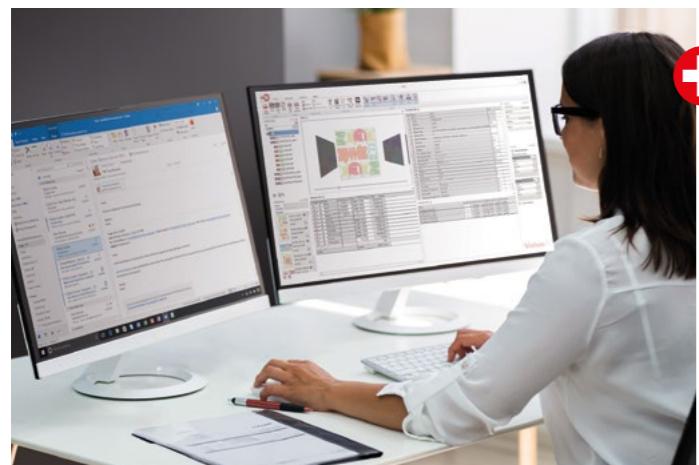
**Codes for thinking, planning and programming**, guaranteeing maximum simplicity, effectiveness and efficiency, for managing the process as a whole, quickly learning from experience and the surrounding environment, for understanding complex situations and giving them a meaning, and for solving problems.

# The human-sized software suite.



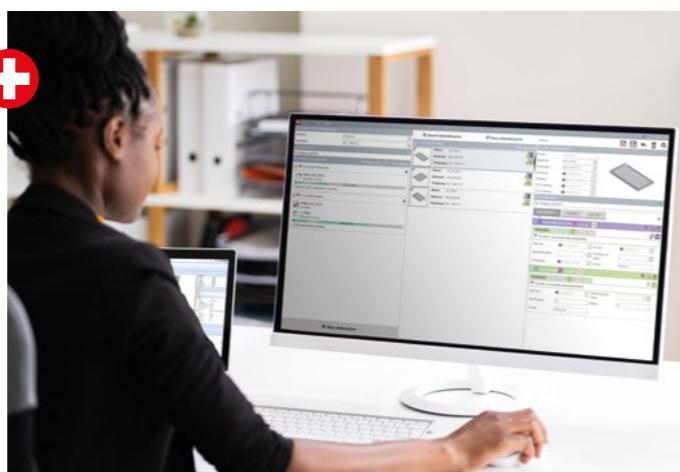
**STREAM** is Salvagnini's answer to the modern industrial context, a programming suite that improves reactivity and reduces costs, operating errors and process inefficiencies. STREAM is the integrated ecosystem for managing all activities in the office and on the factory floor, the only point of access for all technologies, from cutting to bending, meeting all planning, programming, production, management, control, and optimization needs throughout the production process.

The programming suite includes 4 CAM modules, associated with each individual technology.



**PARTS** is the software used to manage the whole database of products and parts:

- it classifies the elements according to common or customized categories;
- it defines the production flows for each part to be machined;
- it is integrated with the CAM software.



**VALUES** is the software which provides an accurate estimation of production costs. It allows calculation not only on the basis of the individual technology, but also on that of the entire process, including upstream and downstream machining where necessary.



The OPS applications for simplifying workshop management include PDD, which supports the operator via the monitor for manual part separation and sorting, and LPG, which laser-guides the operator in the pick-up sequence.

# Coordinate your factory, in real time.



**OPS** is the modular production management software. Within the production equation, it acts as the central coordinator, managing and distributing information among all the environments and stakeholders involved, eliminating critical points and drastically improving process efficiency.

OPS receives the production list from the factory information management system in real time, and delivers an updated version to the programmer. It can support the programmer's activities by defining priorities, automatically generating the machine programs and sending them to the workshop. It checks the availability of raw materials or semi-finished parts and generates feedback to the factory information management system, updating it in real time, part by part. It can make autonomous decisions according to a production logic - or according to a multiple mix of production logics - designed to meet the needs of the customer and transformed into an algorithm. It integrates labeling, traceability and store-tower management upstream and downstream of the cutting, punching and bending activities.



## IoT to serve efficiency

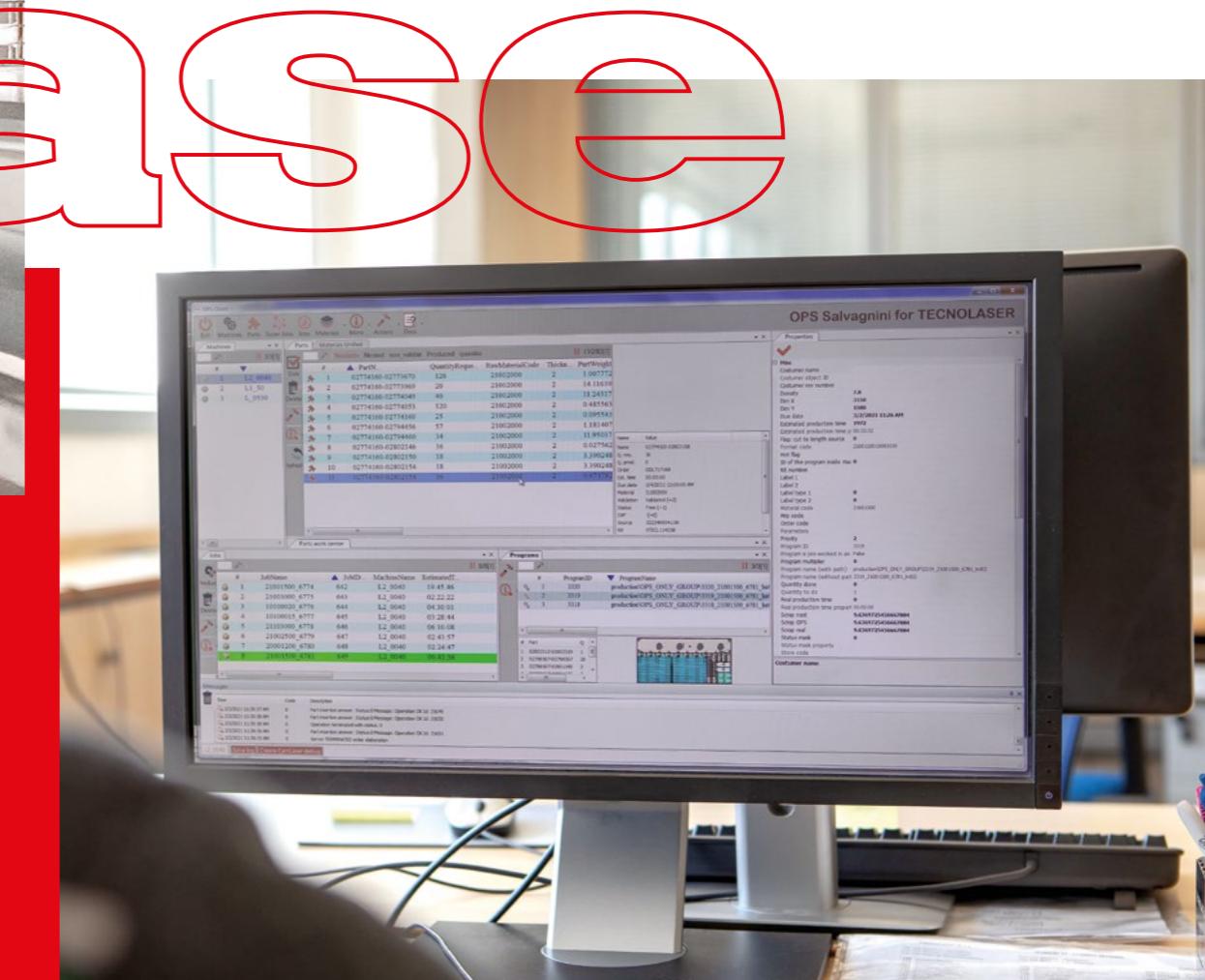
**LINKS** is Salvagnini's IoT solution that monitors the **performance of all systems**. It offers access to production data, logbooks, performance KPIs and telemetry, as well as parameter monitoring by the Condition Monitoring process, thus increasing the overall equipment efficiency.



Focusing on efficiency, in 2014 Tecnlaser launched a vital role, leading to the implementation of OPS, the major digitalization program, with the declared aim of improving order management and programming through to sending the machine programs to the workshop, reducing the overall time for this phase by at least 50%. All redundant or low value-added activities, and any unnecessary players or functions, were reduced or eliminated. In the design phase, process mapping highlighted that for around 6 hours of work – from order receipt and data entry to programming, nesting and sending the programs to the machinery – between 4 and 5 days were required before the order reached the shop floor. And in this project too, the partnership with Salvagnini played a

major digitalization program, with the declared aim of improving order management and programming through to sending the machine programs to the workshop, reducing the overall time for this phase by at least 50%. All redundant or low value-added activities, and any unnecessary players or functions, were reduced or eliminated. In the design phase, process mapping highlighted that for around 6 hours of work – from order receipt and data entry to programming, nesting and sending the programs to the machinery – between 4 and 5 days were required before the order reached the shop floor. And in this project too, the partnership with Salvagnini played a

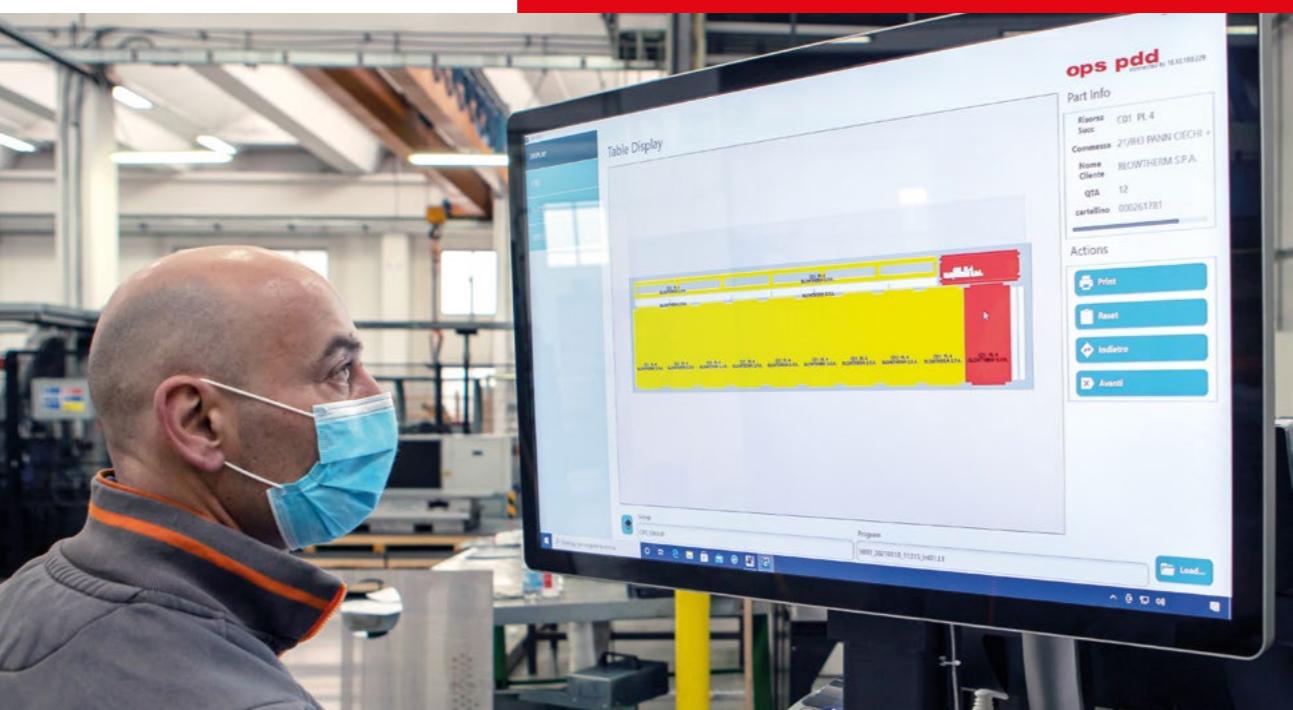
"We have always believed in digitalization, and we continue to do so," explains Mario De Bardi, one of the three founders and a member of the board. "We have eliminated a lot of paperwork, and low value-added activities along with the relative waiting times, moving on to a lean logic in which the CAM leads production, selecting the material and thickness codes."



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**"OPS has made us even more flexible and reactive,"** says Massimiliano Targa, Director of PadovaLamiere. **"But it has also helped us to fully exploit our cutting and punching systems, with clear costs and totally forecastable production times.** Today, with a few monitors installed on the machine, OPS even helps us to separate, stack and label the cut parts. With an extra advantage: 4.0 integration even beyond PadovaLamiere. The labels applied to the parts produced are barcodes containing useful information for the subsequent machining phases that are performed outside our company. This is a service we offer our more evolved customers, who recognize its practical and economic value."

# case history



PadovaLamiere is a company with 14 employees which, after installing an L3 laser system with store-tower, chose OPS to increase the efficiency of its production process, reducing paperwork and the risk of error. The digitalization project ended with the adoption of OPS Shop Floor Control and a simple PDD touchscreen that allows the operator to accurately identify each part picked up, label it and stack it. The operator just has to touch the screen to receive all the useful information he needs: part ID code, order code, customer code, quantity and any subsequent machining station. This information is printed on the

label, which can hold other data too – for instance a barcode used to call up the machine program for the next production step, whether this is inside or outside the factory. And by touching the screen, the operator also provides feedback to the factory ERP, marking a part as completed and updating the production list. The project has allowed PadovaLamiera to regain around 30% efficiency with just a small investment.

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