S1

Compact punching system with adaptive hybrid technology.

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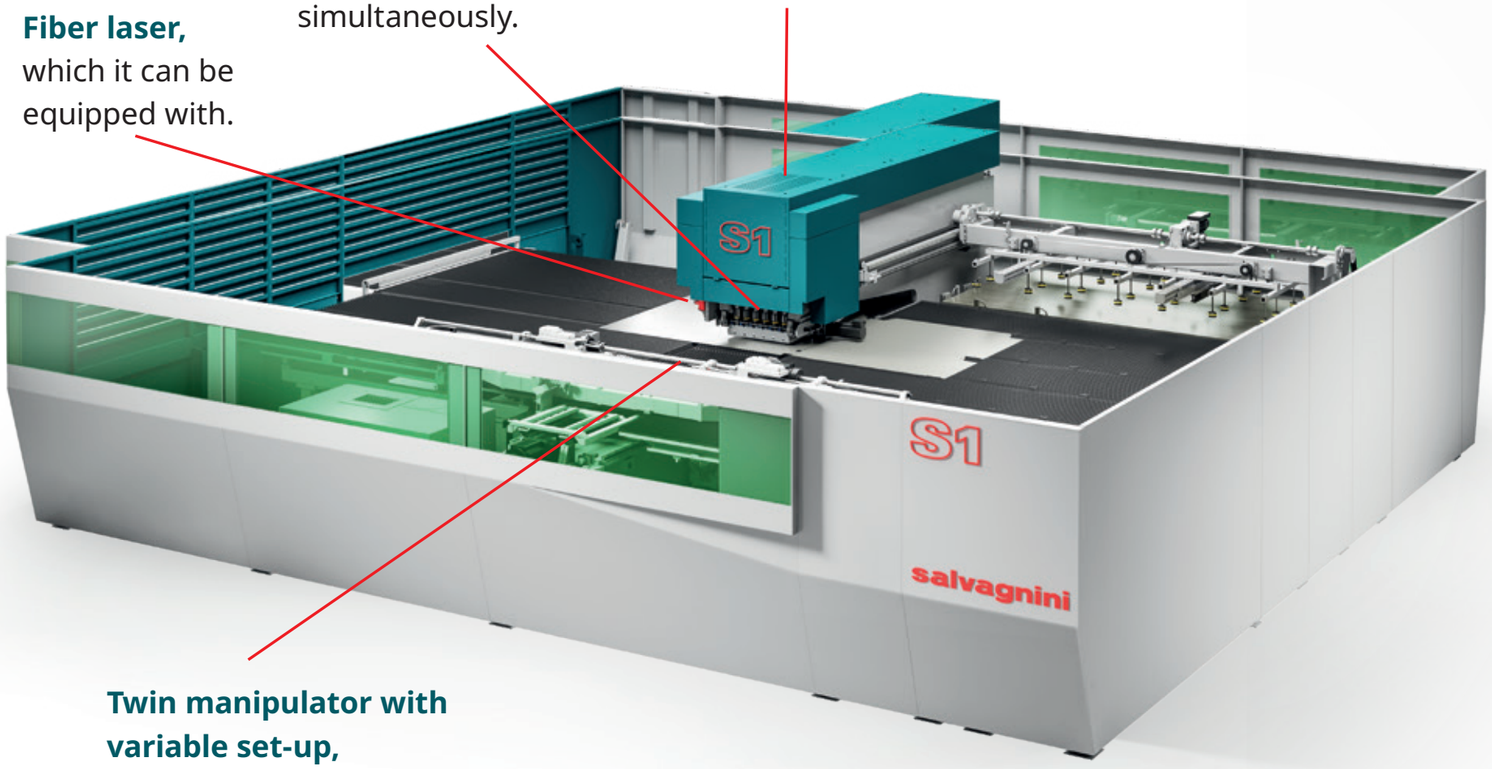
Mechatronic punching machine with multi-press head.

S1 was designed by Salvagnini to satisfy the growing requirements for punching flexibility and productivity while maintaining its distinctive features such as the multi-press head, flexible automation and integrability.
S1 implements **innovative and original elements,** that make it a solution with a wider range of applications, that goes beyond common similar technology and is unique in the market.

Thick turret tools with controlled descent mounted on a multi-press head and managed simultaneously.

Evolved process automation, optimizes cycle times and drastically reduces consumption.

Fiber laser, which it can be equipped with.



Twin manipulator with variable set-up, for 100% sheet utilization.

Combined flexibility and modularity.

In the combined punching-laser head configuration, **S1** becomes the ultimate **flexible solution.**

- It makes it possible to cut **materials that are less suited to laser technology,** such as delicate, filmed or pre-painted materials;
- It offers **different possibilities for unloading,** depending on the production strategy:
  - single part with destruction of the skeleton, for in-line operation.
  - single part with evacuation of the skeletons by means of the optional device with pincers and suction cups, for easy and precise automatic stacking.
  - Positioning on a table of micro-joined nests for downstream manual part removal, if the cycle time is a topic.
- It basically **eliminates any constraint related to the geometry of the machine part,** thanks to laser cutting.
- It is **very competitive in terms of cost per part,** guaranteeing high productivity and low consumption, thanks to the multi-press and advanced hybrid technology.

Multi-press head with advanced hybrid technology.

Cutting-edge solution.

S1 embeds the latest second generation multi-press punching head, featuring **advanced hybrid technology.**
The hybrid drive, previously applied in the Salvagnini lean panel benders, allows high quality punching, thanks to a **patented architecture** and to **sophisticated cycles.**
The intelligent use of latest generation components and the original solution in which the system and electric motor are sized not for full punching power, but for a fraction of it, made it possible to **reduce energy absorption by 20%** in comparison to common electrical solutions available on the market, which also results in a reduction in component dimensions and costs, thereby minimizing maintenance.

Thick turret tools, always available.

The Salvagnini multi-press has always been a unique solution in the market, as it is able to simultaneously manage one or more tools and does not need to stop for tool change. This makes punching incomparable in terms of cycle time and tool wear and makes the process extremely productive and efficient.

The multi-press head uses standard thick turret tools type **B**, **C** and **D**. They allow greater versatility, they widen the range of thicknesses that can be punched compared with other Salvagnini punching centers, they guarantee the highest punching and embossing quality thanks to their controlled descent.

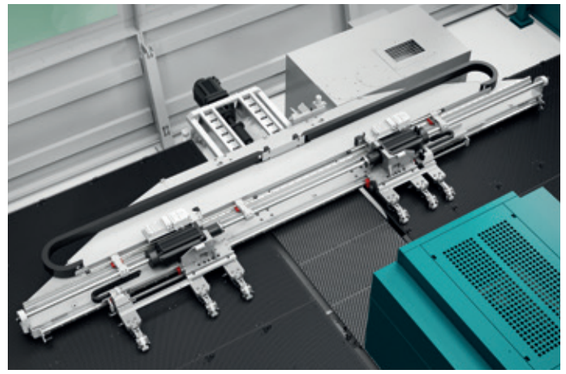
Unique, thanks to its patented die-structure.

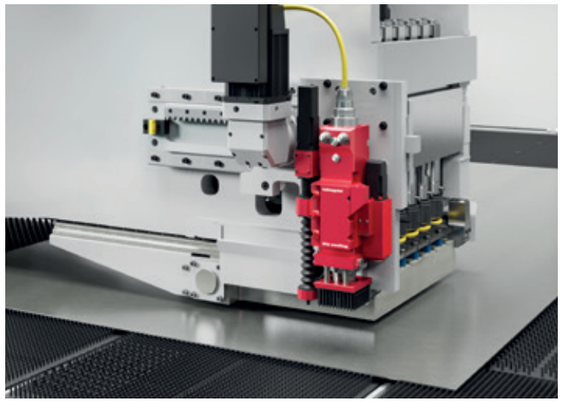
Fast, because there is no stopping for tool change.

Versatile, as tools are always available and ensure efficient nesting.

Twin manipulator with variable set-up.

The twin manipulator, equipped with **two independent trolleys** moving along X axis, centers the metal sheet when cycle starts and keeps it clamped during the punching and cutting operations.
The two trolleys can operate **simultaneously or independently** and each of them features 3 independently extended opening pincers, one with a **variable set-up:** this configuration allows to work in the entire areas of the sheet, including those with embossing or on long and narrow formats, guaranteeing **100% sheet utilization.**
All parts of the sheet can be reached, thanks to an intelligent path and punching **optimization algorithm,** which manages the movements of the two trolleys and the extended pincers.





Laser cutting for limitless design.

The fiber laser cutting head, positioned to the side of the multi-press head, **moves on a carriage** along the Y-axis with a 290 mm stroke: it guarantees maximum freedom in cutting geometries and it is responsible for the **final cut of the part.**
The 2000 or 3000 W fiber laser source makes it possible to achieve high linear cutting speeds as well as absolute precision when making irregular contours.

HEAD CONFIGURATION

Max. number of punching stations	14
Max. no. of tools:	41
Lower and upper head gap (mm)	18
Maximum embossing height (mm)	16
Type of thick turret tools:	B,C and D
Number of B-type stations Ø 31.7 mm	6
Number of C-type stations Ø 50.8 mm	5
Number of rotation D-type stations D Ø 88.9 mm	3
Options	
Embossing stations (max number)	6 (2B, 2C, 2D)
Electric tap	installed to the side of the head

B-type stations

C-type stations

D-type stations

The rotating stations can house multitool tools, configured as follows:
10 with Ø maximum 18 mm
6 with Ø maximum 24 mm
4 with Ø maximum 31.7 mm
1 with Ø maximum 88.9 mm

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Lean production for Industry 4.0.

The **S1** punching machine was designed for easy integration with automatic handling devices and to be ready for Industry 4.0.

Automation within the reach of everyone.

Salvagnini offers extremely flexible systems that are suited to all production needs and able to reduce production and management costs while satisfying the most modern manufacturing strategies and the most competitive production trends. The **feeding** and **unloading** connections make it possible to optimize the production flow, eliminating non-productive operations and their related costs, while keeping the level of product quality and profitability high.
For feeding **S1** can provide, in an increasing order of automation, different types of connection: manual, from a pack via a suction cup device or with a single sheet **(MD)** or pack tower. Similarly, unloading can be manual, or automatic with the unloader on a dual-position table or with a Cartesian manipulator **MCU.**
Thanks to different handling devices, S1 can operate without the presence of an operator and is suited to working in line, by means of conveyors connected to a panel bender, or in stand-alone mode, in which case it becomes a productive and flexible tool suited to those who are looking for intelligent affordable solutions and competitive operating costs.

Integrated communication and flexible automation.

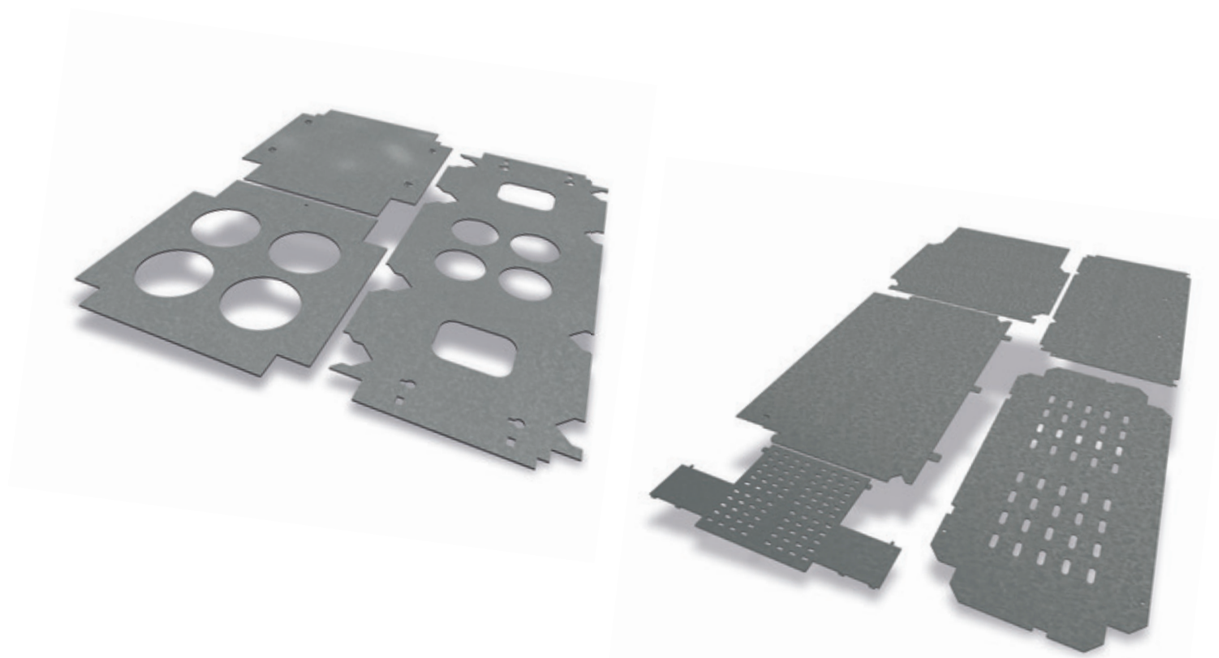
Thanks to proprietary software, S1 can exchange information with the company ERP or communicate with other systems: for example, in the FMS S1+P4 lines, dedicated software allows the two systems to communicate with each other, balance production in order to increase productivity as well as reduce waste and wait times. In the flexible cells which include an S1 and bending solutions as B3, P1, P2 or P4, the OPS software makes it possible to optimize the work and guide the operator during part production.

FMS and unmanned in-line manufacturing.

The S1 punching machine lends itself to working in line with the P4 panel bender thanks to the handling and transfer devices that connect it mechanically and the communication software that allows bi-directional communication between the two systems, even with unmanned operation. The combination has been designed to run kit or batch-one production - or process other series of parts that differ from each other - in an efficient flow, without work-in-process, avoiding intermediate sheet handling and, thanks to automatic blankholder set-ups and the multi-press head, without set-up times.
It is the ideal solution for companies seeking responsiveness, i.e. wanting to run operations without restrictions, on a just-in-time basis, reducing stock to zero, or kit, batch-one while still having the utmost flexibility.

TECHNICAL DATA	S1.30	S1.40
Technical features		
Max length of incoming sheet (mm)	3048	4064
Max width of incoming sheet (mm)	1524	1524
Min length of incoming sheet (mm)	370	
Min width of incoming sheet (mm)	300	
Max diagonal of incoming sheet (mm)	3466	4340
Min thickness of metal sheet (mm)	0,5	
Max thickness of sheet (punching)		
mild steel, UTS 410 N/mm² (mm)	5,0	
stainless steel, UTS 660 N/mm² (mm)	5,0	
aluminum, UTS 265 N/mm² (mm)	5,0	
Laser		
Technology	fiber	
Source	fiber	
Max power (W)	2000 - 3000	
Max thickness of sheet (mm)	5,0	
Assist gas	Nitrogen, compressed air	

Salvagnini reserves the right to modify this data without warning.



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Laser cutting

L3
L5

Punching

S1
S4Xe

Panel bending

P1
P2lean
P4lean

Bending

B3
B3 AUTO AUTOMATIC TOOL
ROBOformER

Systems

AJS®
FMS
S4 + P4
FlexCell

Automatic storage systems

MTW
MD
MBT
MV
LTWS