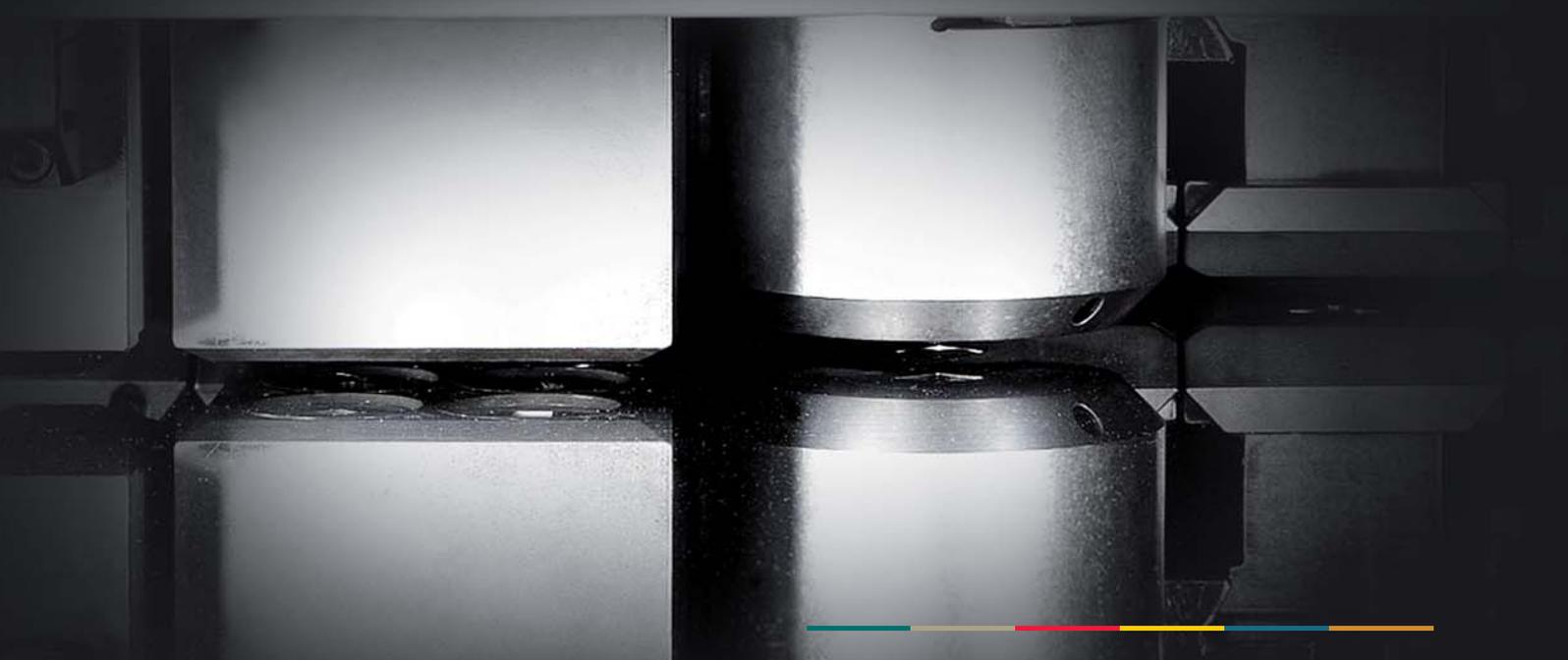


S4Xe



Integrated punching and shearing center. Knows the value of time. Provides optimum performance. Respects the environment.

salvagnini

S4Xe. A winning solution



Productivity

Multi-press head	4
Integrated shear	6
Manipulator	8
Technical specifications	9



Flexibility

Feeding solutions	10
Unloading solutions	10



Automation

Logistic efficiency	11
Part identifier	11

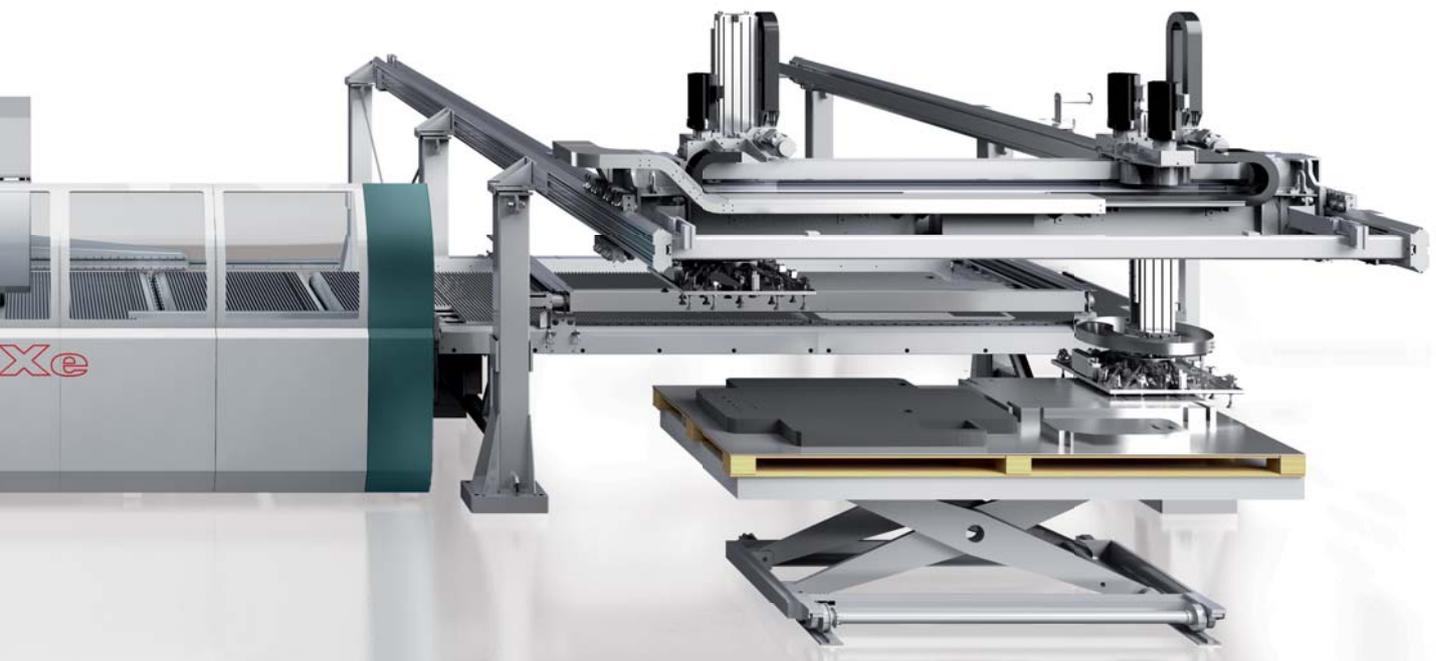


for your success.

An array of technology that guarantees high performance and process efficiency. A highly flexible, productive and automatic system that ensures the most efficient material management, processing nests without holding scrap and reducing waste to a minimum.

A winning solution even when working in line with panel benders. A machine which, due to the sophisticated control techniques and digital communications protocol, succeeds in being extremely precise with rapid movements, guaranteeing astonishing product quality.

S4Xe: you have chosen to work with the best.



High quality

S4Xe software	12
Process software	12
Ethercat protocol	12
Scrap suction	12



Ethics

High eff. components	13
Environment	13
Safety	13



Services

Training	14
Tools	14
Spare parts	14

“Productivity” means achieving the maximum precision and the highest efficiency.



A single structure with no stops for tool changes: the multi-press head.

Patented by Salvagnini, the multi-press head consists of a die-structure in which the punching stations are fitted with all the tools needed for production. Each tool is independently controlled to allow for individual and multiple processing. No stopping is required for tool change nor are automatic set-up devices needed since the tools are always available.

Thanks to this feature, all the movements required to move the sheet to the active tool are eliminated. This function makes the S4Xe unbeatable in terms of both cycle time and tool life.

When production needs require them, tool changes take just a few minutes. They involve releasing the tool-holder cartridges, replacing the dies and then slotting the cartridges back into place. Salvagnini offers 5 different multi-press head **configurations**, with different numbers of stations, to meet the diverse production needs of each and every customer.



ion, eliminating waste and obtaining



H2 Head

H6 Head



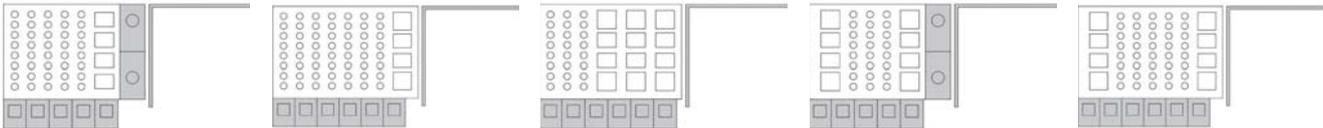
H2

H3

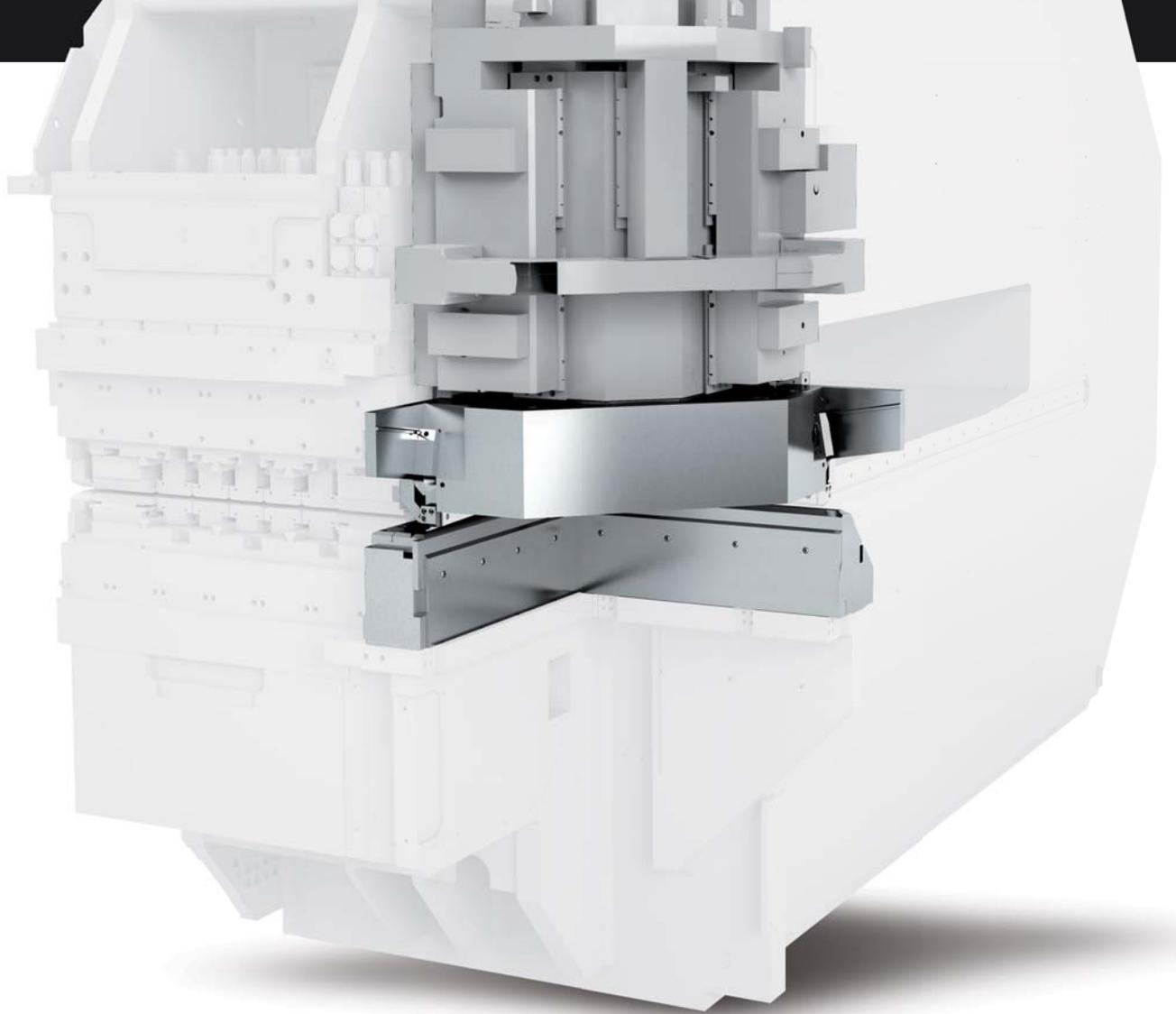
H4

H5

H6



Tool stations	Number of tools per type of head				
	H2	H3	H4	H5	H6
Press specifications					
70kN / 7.7 ton presses with max. Ø 33 mm / 1.30" tools	40	56	24	24	40
260kN / 28.6 ton presses with max. 90 x 90 mm / 3.50" x 3.50" tools	4	4	12	8	8
Basic configuration	44	60	36	32	48
Optional 120kN / 13.2 ton presses with max. Ø 60 mm / 2.36" tools	5	6	6	5	6
Optional 80kN / 8.8 ton embossing presses with max. Ø 60 mm / 2.36" tools	5	6	6	5	6
Optional 120kN / 13.2 ton double indexing presses with max. Ø 60 mm / 2.36" tools	6	6	6	6	6
Optional 30kN / 3.3 ton multiple presses with 6 max. Ø 33 mm / 1.30" tools each	30	36	36	30	36
Optional 55kN / 6.1 ton presses with lower embossing cylinders	5	5	2	3	3
Maximum number of punches in head	76	96	72	64	84



Eliminates waste and balances kit production: the integrated shear.

The shear, one-of-a-kind on the market, adjacent to and integrated with the multi-press head to create a single structure, makes for an extremely compact, multi-function system, ensuring an extremely high degree of efficiency and performance. It consists of two 500 mm independent blades, orthogonally positioned, mobile and equipped with blankholder to permit cuts of any length along both the X and Y axes.

Only the incorporation of the integrated multi-press head-shear can achieve significant advantages in terms of efficiency and productivity, since the following work modes can be exploited:

Scrap-free nesting

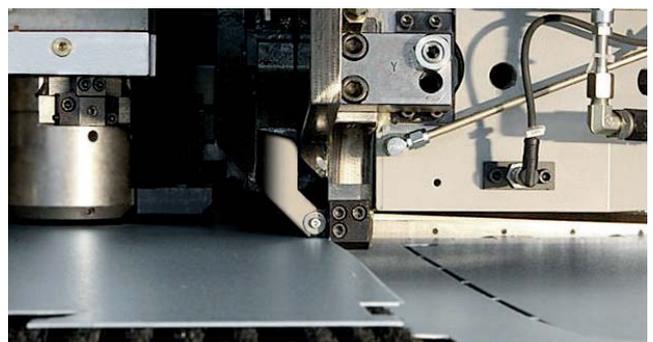
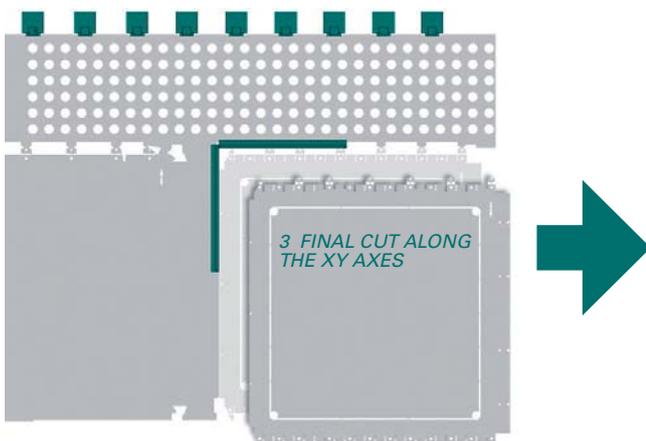
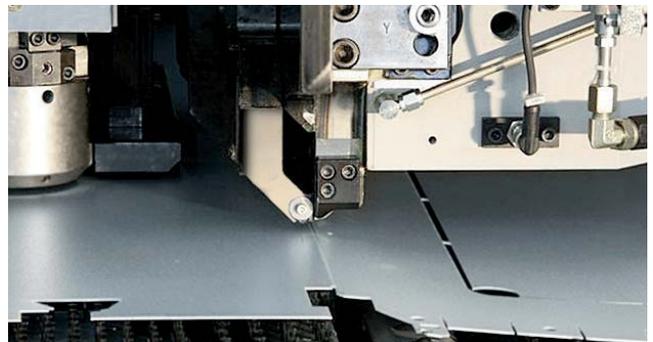
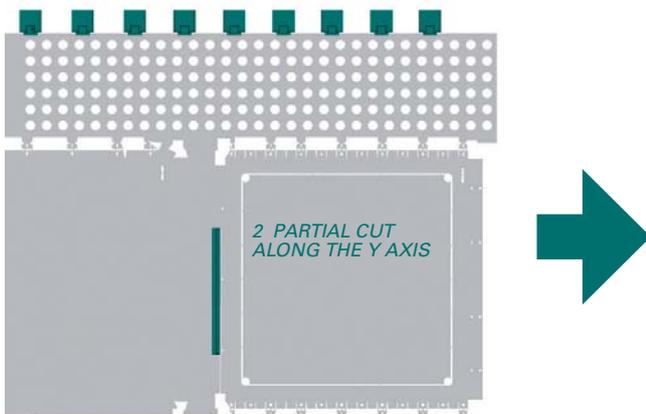
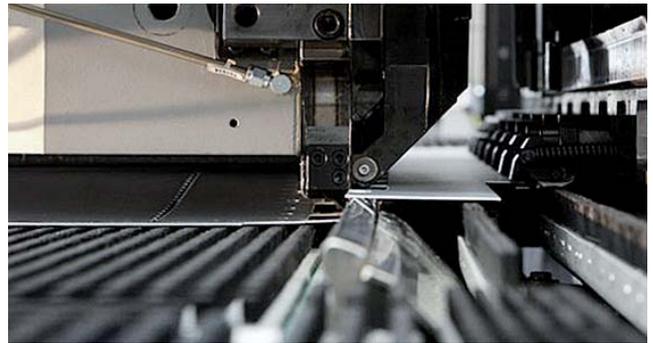
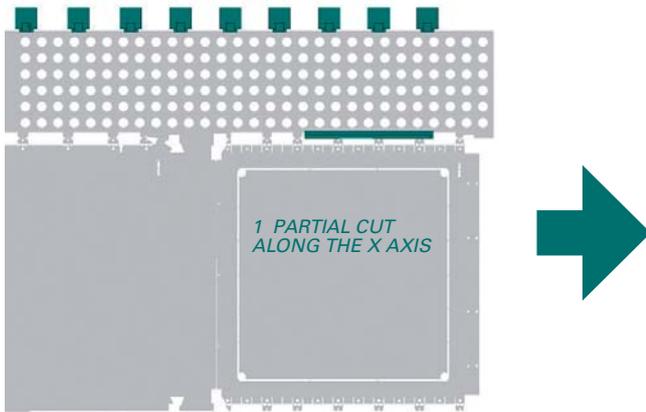
The shear enables the incoming blank to be divided into parts of any size without punch-cutting or pincer-holding scrap.

Punch&Cut

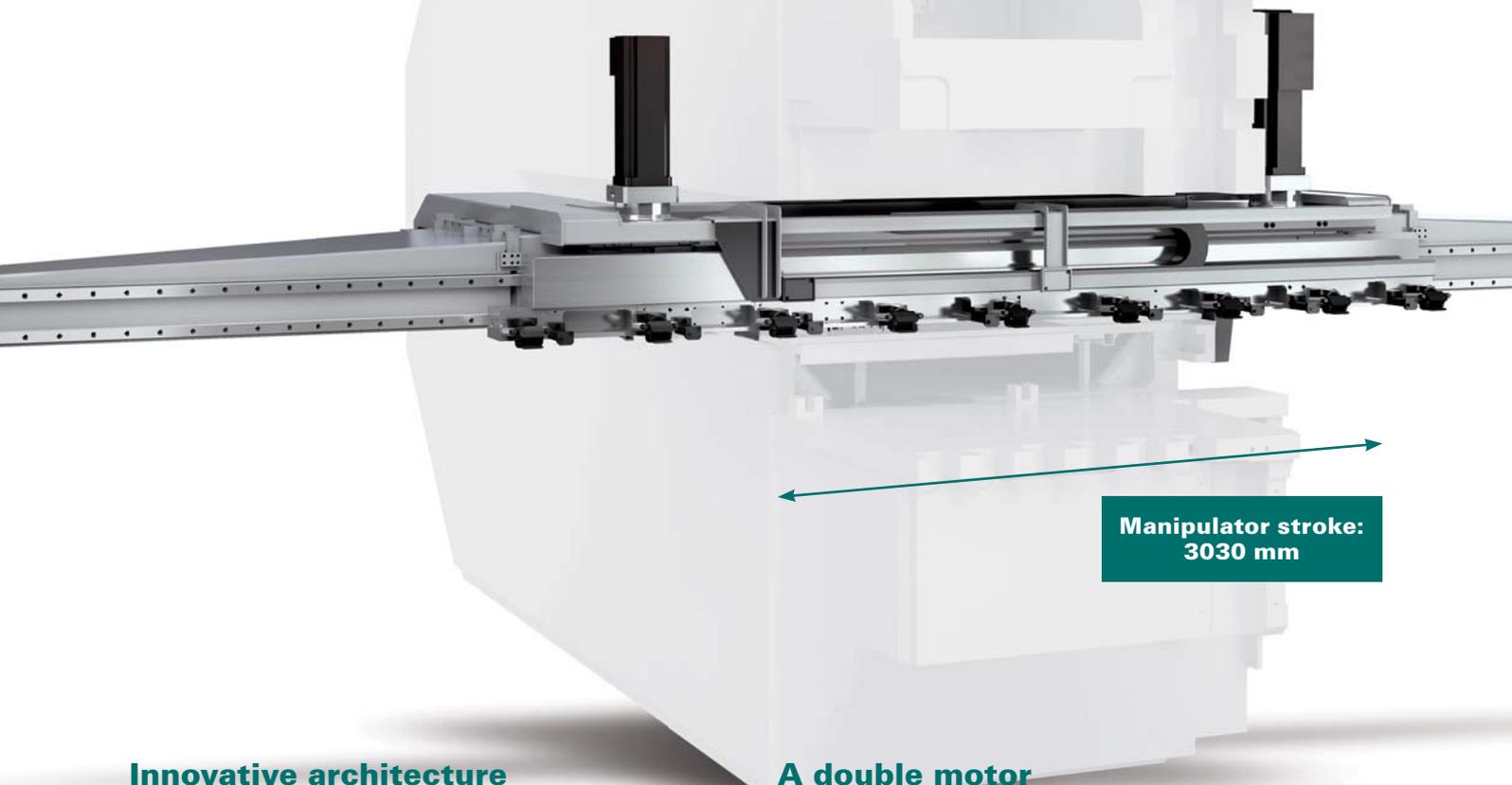
In traditional systems, individual parts making up a multiple sheet or nesting pattern are processed sequentially once the whole starting sheet has been punched. Salvagnini's Punch&Cut function, on the other hand, recognizes the punchings belonging to each individual part, groups them together accordingly and processes them separately, thus balancing kit or multiple productions as generally required on FMS lines.



**Mode of operation:
no energy, time or scrap wasted**



Automatically controls ramps and reduces cycle times: the manipulator.



**Manipulator stroke:
3030 mm**

Innovative architecture for maximum precision

The manipulator, patented by Salvagnini, slides on guides integral with the lower part of the "C" structure, for high positioning precision; it has a lightweight movable symmetrical device, with 9 pincers and 9 mechanical references, for perfect centering and outstanding process reliability. The long 3030 mm stroke allows blanks up to 3024 mm to be processed without regripping, for excellent productivity and incomparable process accuracy.



A double motor for superior performance

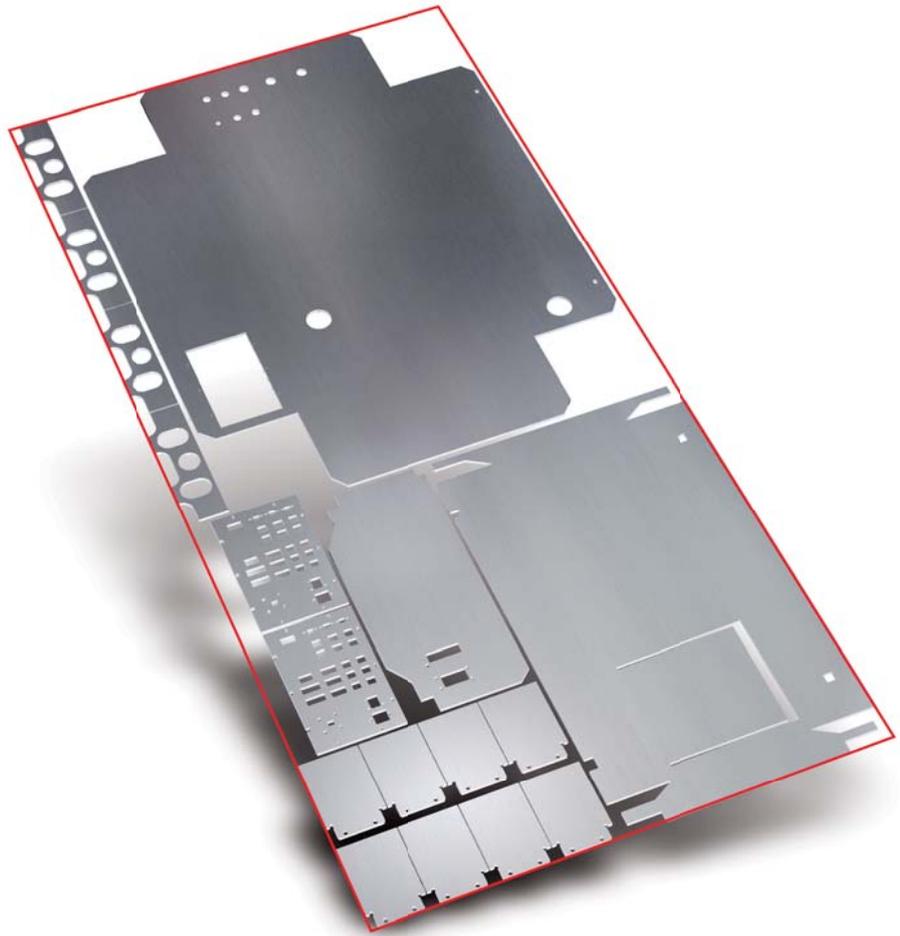
The manipulator is equipped with two pairs of brushless motors: one pair uses proprietary hand-over kinematics while the second uses gantry control logic.

This solution guarantees the following advantages:

- it greatly increases manipulator dynamics and maximum speeds;
- it reduces cycle times, allowing greater machine productivity;
- it guarantees processing accuracy, thanks to the perfectly balanced thrust;
- it enhances dynamics, even when processing thick material, or on type 40 machines (that can process blanks 4 meters long);
- it maintains accuracy, even with very long manipulator strokes.

Sophisticated and unique control techniques

The S4Xe is equipped with a proprietary controller to provide highly efficient operating modes. The handover command structure and superior control techniques **automatically modulate acceleration and brake ramps** within a single machining process as the mass of the blank changes. This makes the machine more adaptable, reducing cycle times and consequently **increasing productivity by an average of 15%**.



Machine		S4Xe.30		S4Xe.40		
Technical specifications						
Maximum sheet dimensions (mm)	(in)	3048 x 1650	120" x 65"	4268 x 1650	168" x 65"	
Maximum sheet diagonal (mm)	(in)	3470	142"	4532	178"	
Minimum sheet dimensions (mm)	(in)	370 x 300	15" x 12"	370 x 300	15" x 12"	
Punching						
Technology		multi-press head				
Punching tool change time (s)		0 (each tool is always ready for use)				
Possibility of activating two or more tools simultaneously		yes				
Maximum material thickness (mm):	(in) / (gage)					
aluminium, UTS 200 N/mm ²		38500 psi		5.0	0.20" / 6	
steel, UTS 410 N/mm ²		59500 psi		3.5	0.14" / 10	
stainless steel, UTS 610 N/mm ²		87000 psi		2.0	0.08" / 14	
Minimum material thickness (mm)	(in) / (gage)	0.5 0.02" / 25				
Type of multi-press head		H2	H3	H4	H5	H6
Max. no. of punches in head		76	96	72	64	84
Shearing						
Technology		independent or simultaneous cuts on X and Y				
Blade clearance adjustment		automatic				
Length of shear blades X x Y (mm)	(in) / (gage)	500 x 500		19.5" x 19.5"		
Maximum material thickness (mm):	(in) / (gage)					
aluminium, UTS 200 N/mm ²		38500 psi		5.0	0.20" / 6	
steel, UTS 410 N/mm ²		59500 psi		3.5	0.14" / 10	
stainless steel, UTS 610 N/mm ²		87000 psi		2.0	0.08" / 14	
Minimum material thickness (mm)	(in) / (gage)	0.5 0.02" / 25				
Dynamics						
Maximum speed (m/min):	(in/min)					
X axis		132		5.19"		
Y axis		96		3.78"		
Speed with both axes moving simultaneously (m/min)	(in/min)	163		6.41"		
Maximum acceleration (m/s ²):	(in/s ²)					
X axis		30		1.18"		
Y axis		15		0.6"		
Consumption						
In-cycle power consumption (S4Xe+chiller) (kW)		21.6				
Power consumption in stand-by (kW)		0.7				

Salvagnini reserves the right to change the data featured without prior notice.



“Flexibility” means maximum configurability and movement excellence.

Feeding solutions

The S4Xe punching and shearing center can mount different types of feeding connections: from in-line conveyors and automatic destackers to automatic single-tower sheet stores and multi-tower tray storage systems. The MD store is an automatic store for packs of sheet metal that feeds the machine with single blanks in masked time. This solution covers a wide range of storage needs, eliminating unnecessary material transfer and facilitating the just-in-time or kit production of parts using different gages and materials.



Unloading solutions

The punched and/or sheared parts can be automatically directed to different collection bins, to buffer stores, to one or more stackers, to intermediate stores or straight to other machining centers.

The intermediate gravity buffer-store perfectly balances production during in-line operation. The part leaving the S4Xe drops onto one of the shelves in the buffer-store and is correctly positioned thanks to a mechanical stop. Unlike the other solutions available on the market, the Salvagnini buffer-store does not work LIFO but according to the processing downstream, positioning itself so that the shelf with the required part is in front of the feeding conveyor for the next process.

Salvagnini stackers allow the S4Xe system to run unmanned until all the unloading areas are completely full, thanks to the use of an optical beam and controlled axes that ensure extremely accurate positioning and stacking.

The MC Cartesian unloading robot picks the punched and/or sheared parts up as they leave the machine and stacks them on one or more tables using two suction-cup gripping devices that run along a carriage and can rotate around a vertical axis. Manipulator rotation allows the parts to be stacked and positioned correctly for the subsequent processes. The two manipulators can work either independently or simultaneously if required by part dimensions.





The “automation” concept is included in everything Salvagnini does. Even in the dark.

Logistic efficiency

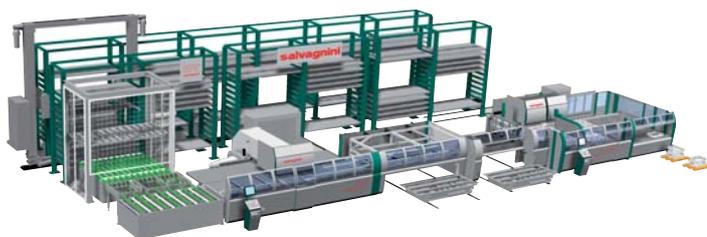
Salvagnini offers extremely flexible systems, suitable for all processing needs and capable of reducing production and overhead costs while satisfying the latest manufacturing criteria and most competitive production trends. Thanks to a wide range of sheet handling devices, the S4Xe systems can work unattended and can easily be incorporated into AJS or FMS systems. The different feeding and unloading connections optimize the production flow, eliminating non-productive operations and their associated processing costs while guaranteeing excellent quality and product profitability.



*LEAN CONFIGURATION:
Automatic feeding from a table and unloading onto a stacker.*



*AUTO CONFIGURATION:
Feeding from a store and unloading with a Cartesian stacker onto one or more tables.*



*FLEX CONFIGURATION:
Complete AJS system.*

Part identifier

The S4Xe system can be equipped with a labeller or inkjet printer for unequivocally marking and identifying the workpiece (with a barcode, for example).

“Quality” is seeking excellence in everything we do. And achieving it.



S4Xe software

JOB.CONSOLE.S4Xe

JOB.CONSOLE is the set of software packages that are integrated into the SiX controller to graphically manage and supervise the system. JOB.CONSOLE provides the operator with all the information he needs to run production, thanks to the following modules:

Salvagnini Console

Main system command module that allows user-friendly management by:

- filing and editing production programs directly via the graphic interface;
- making parts of the system perform semi-automatic movements, guided by a self-explanatory graphic interface.

Maintenance Manager

Database that analyzes the movements and cycles of the components of the system, allowing simple and structured management of maintenance activities.

SDEX

Salvagnini compiler that interprets programming instructions based on geometrical notions and defines the production cycle, optimizing sheet movements and cycle times.

JOBS4Xe

Software that dynamically programs the day's production: the operator can create a series of programs called "job" (or list) on the screen. JOBS4Xe allows a series of jobs to be prepared, edited or suspended, without stopping the current production.

DBHT

Graphical database that checks the punching tools present in the operating head. The system warns the operator if the punch set-up defined is not compatible with the part to be produced.

EasyData

Integrated diagnostic software for interactively browsing the documentation. EasyData provides information about each of the components managed by the Salvagnini controller, using photos, part codes and automatic filters. The system's electrical and/or hydraulic diagrams are available in the main command console. The operator can:

- expand the image archive or search for specific text or codes in the diagrams;
- add personalized notes or photos to the image archive;
- print one or more diagrams from the documentation or export them in PDF or JPG format.

Process software

Opera-OPA is the package capable of satisfying requests from company resource management systems. The software receives production orders from ERP systems, analyses typical parameters such as quantity, codes, delivery and job priorities, generates the single part program by interfacing with the CAD/CAM software and creates work programs for the machines in the system. If installed, the WMS software, which also interfaces in real-time with the management systems, fully monitors raw and semi-finished material over the entire production process, optimizing tray localization, permitting multi-pack storage and dynamically searching for free positions.

ETHERCAT protocol

Digital communications protocol that guarantees fast response times along with excellent signal quality and resolution.

Scrap suction

To guarantee extremely high process quality and minimize waste, all stations are equipped with an adequate vacuum system. In this way, valuable material processing, multiple punching and complex contours can be achieved with maximum precision and yield.



The word “ethics” has a new meaning: KinEtic.

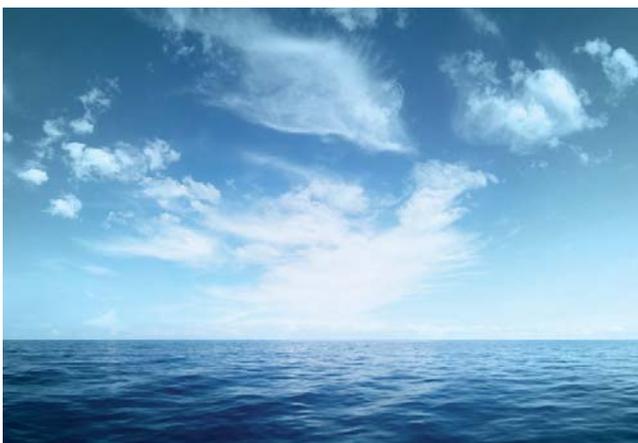
“**KinEtic**” expresses the design dynamics that Salvagnini puts into its entire range of products. This word summarizes the ethical values that allow Salvagnini to go beyond machine innovation and achieve significant goals for both man and work thanks to an active and dynamic design philosophy. “**KinEtic**” means being able to guarantee high productivity and intelligent energy consumption. It means achieving excellent work safety levels, thanks to selective safety systems and machine ergonomics, as well as offering workers extremely easy use and maintenance. “**KinEtic**” means innovating while fully and concretely respecting both man and the environment. Salvagnini has coined this word with the specific aim of communicating and sharing the philosophy that drives its entire production with those who choose its machines and systems: technological innovation is a matter of ethics and ideas first and foremost.

High-efficiency components

The S4Xe punching and shearing center is subject to continuous technological evolution that has gradually improved performance and environmental impact standards thanks to the sole use of high-efficiency components. The intelligent electronic power pack modulates its intensity according to process load, going on stand-by when the system is not running in order to reduce consumption by over 50%.

Ecological structures

Out of respect for the environment, Salvagnini has chosen to use only metal panels around both its machines and the main command console. Furthermore, Salvagnini uses water-based paint so as to eliminate organic solvents and colorants containing heavy metals. The introduction of water-soluble paint greatly reduces the chemical risk to which all those who use it are exposed, as well as considerably lowering the fire risk.



Selective safety devices

Salvagnini machines are produced within a company that is committed to minimizing energy consumption and to handling and disposing of waste correctly, as well as providing a totally safe workplace (for which it has been awarded OHSAS 18001 accreditation). The machines are all EC or UL/CSA certified and equipped with adequate safety devices. The machines are so innovative that they can selectively inhibit some areas for tests or work without shutting down the entire production line, ensuring complete operator safety.

Extremely low noise levels

The use of brush worktables and tools with their own blankholder, together with high-efficiency components, have resulted in below-average in-cycle noise levels (66 dB), far below the legal limit.

Beyond our systems. You'll even find Salvagnini exc

Punch department

Salvagnini's punch department is fully dedicated to tooling. Every day, a qualified team with over thirty years' experience designs and creates standard and special tools that are fully complementary to the system and capable of providing the very best in terms of shearing and punching performance. Each tool is produced in-house, with fully automatic and robotic machines running continuous 24h/24h cycles. This department's main goal is to guarantee quality throughout the entire tool production cycle: in steel choice, mechanical processing, assembly and testing. Attention to detail follows the same principle of excellence, as does pre- and post-tool production customer service.



Training

Salvagnini strongly believes in the value of training those who use its systems, considering this to be an increasingly important aspect of the automation concept. For this reason, the Salvagnini training program is the synthesis of the company's consolidated know-how of, and direct experience with, sheet processing systems. In addition to standard courses, Salvagnini also offers individual training courses for specific machines and functions as well as on-site training on request.

Customer service

Salvagnini systems are always installed on customer premises by highly specialized personnel, trained in-house. Thanks to the Salvagnini system and software technologies, customers always receive fast feedback, preventing any machine downtime. Salvagnini's preventive maintenance programs aim to keep machines in excellent working order.

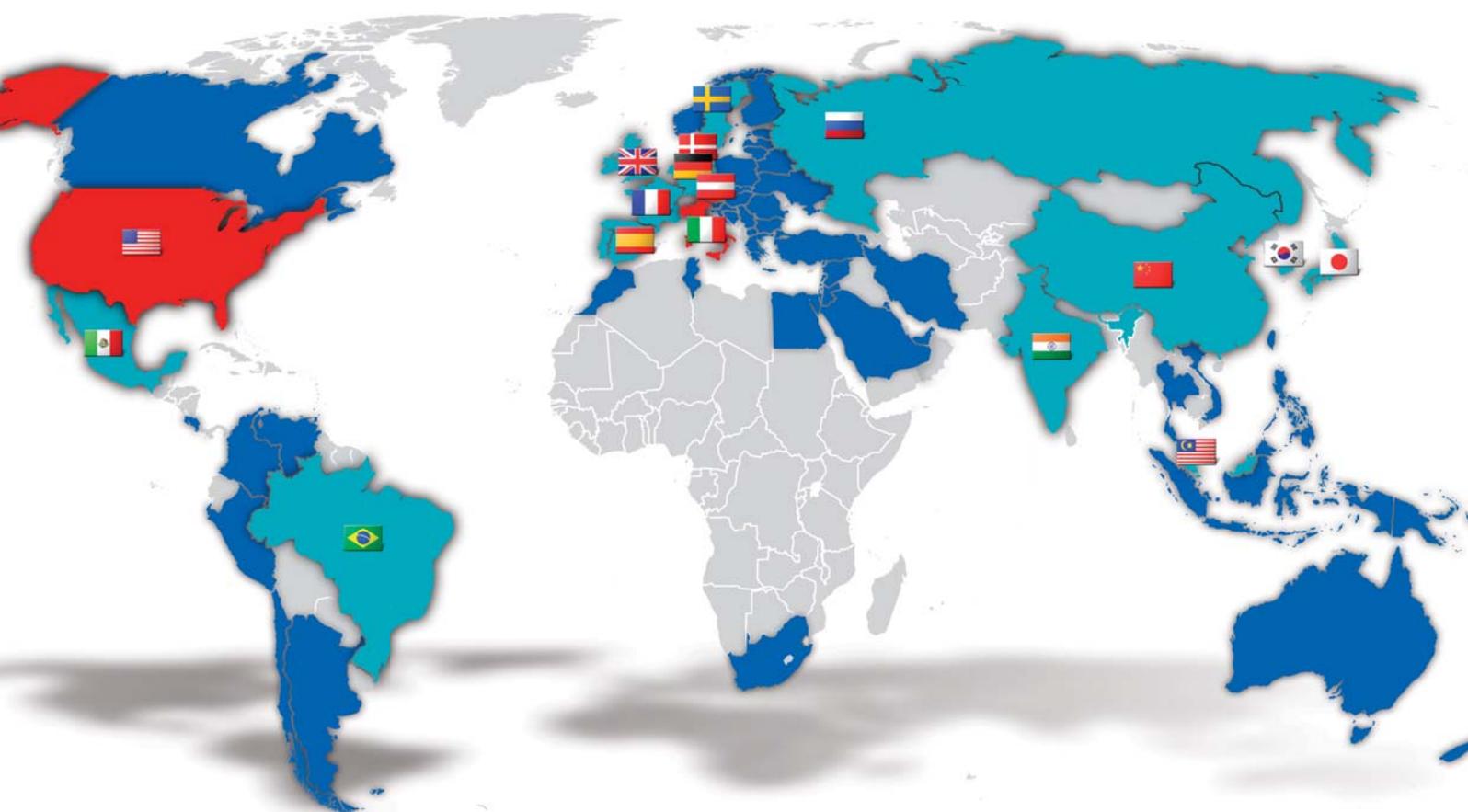
Spare parts

All industrial machines may require parts to be replaced at some time. Preventive maintenance programs certainly help to identify part wear before faults occur. However, having the necessary spare parts on hand, nearby and ready for rapid installation is essential. To guarantee this, Salvagnini has built a world-wide network of spare part warehouses, with constantly updated part selections, ready for immediate delivery, wherever needed.





excellence in our training and service.



4 production facilities

18 operational sites

75 countries in which at least one system has been installed

1300 employees

4400 installations in 75 countries

5 product lines

79000 m² of covered production space

159 different application sectors

Punching

S4Xe SL4

Panel forming

P4Xe P2Xe P1

Laser cutting

L3 L5

Bending

E3 B2 B3 ROBO*form*ER
KinEtic

Automatic storage

MV MD MVL

Systems

AJS® FMS S4Xe + P4Xe

Salvagnini Italia Spa
Via Guido Salvagnini, 51
IT - 36040 Sarego (Vicenza)
T. +39 0444 72 5111
F. +39 0444 43 6404

www.salvagninigroup.com

salvagnini