BENDING

A system beyond the machine.
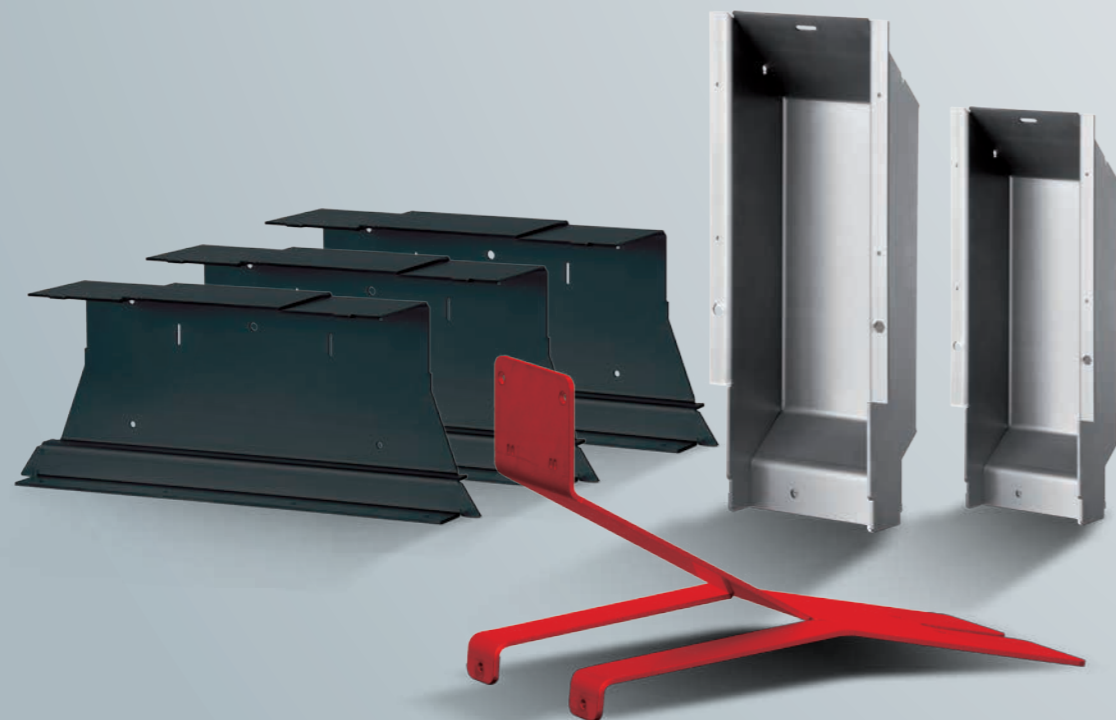
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A press brake is usually used to produce a series of bends.

Salvagnini systems are designed to manufacture without restrictions, flexibly, from the idea through to the finished product.

- Low process efficiency as a result of frequent set-ups, uncertain lead times and productivity tied to batch size.
- Low integration, reduced connectivity, manual control of WIP, probable risk of late deliveries.
- Production scrap, cycle times and product quality mainly depending on operator skill.
- Partial control of use of resources.

- ✓ Unbeatable efficiency regardless of the production method: kit, batch or single part.
- ✓ Full integration into company's flow; automatic real-time WIP control, guaranteed delivery times.
- ✓ Scrap reduced to zero, first part good and consistent quality thanks to unique adaptive solutions.
- ✓ Smart use of resources and unbeatable operator safety.

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Much more
than just a press brake.

✓ ### KITABLE
Unique technical solutions (ATA, MVM) combine the **productivity** and **flexibility** required both in batch production and in the production of single parts or kits.

✓ ### 4.0 CONNECTED
The proprietary **STREAM**, **VALUES** and **OPS** softwares establish **communication** between the system and all company departments involved in the production flow.

✓ ### MAC 2.0 READY
Integrated adaptive technologies (S-CROWNING, AMS, TFC) make the **system smart**, allow zero scrap, do not require corrections and enable production of an ever-wider range of products.

✓ ### KinETIC
The architecture and solutions (Direct Drive, KERS, LSB) are designed to **respect both man and the environment**, and deliver maximum productivity at the same time.

Flexibility   *Industry 4.0*   *Precision*   *Productivity*

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KITABLE

✔ **ATA**

✔ **MVM**

✔ **OPTIPRESS**

ATA - Automatic Tool Adjustment: automatic tool set-up based on the part to be produced. The sectionalized tooling installed means any size can be accommodated with increases as small as 10 mm.

MVM - Multi V Matic: die with automatic V-groove width adjustment. The size is managed and set by the CNC, which ensures it is ideal for each bend. Available in 2 versions: 6-32 mm and 6-51 mm.

OPTIPRESS: software analyzing the parts' programs and defining the optimal bending sequence based on estimated bending and set-up times.
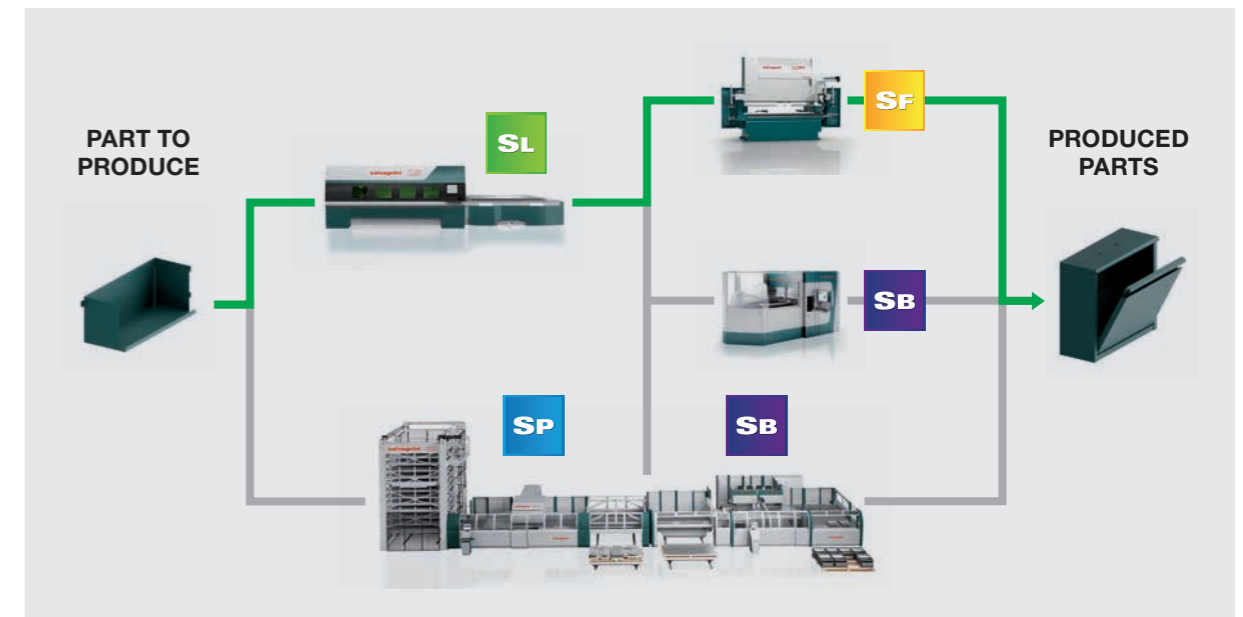
4.0 CONNECTED

✔ **VALUES**

✔ **OPS OFFICE**

✔ **FLEXCELL**

PART TO PRODUCE

PRODUCED PARTS

VALUES: software designed to provide accurate production costing; in addition, the cost/part can be calculated even for a number of technologies operating in sequence within a production flow (e.g. cutting+bending).

OPS OFFICE: process applications allowing process control, logistics and organization integration, automation of information flow, programs and production lists from and to the machine.

FLEXCELL: smart combination of two standalone machines that communicate seamlessly with each other through a single software system that orchestrates the production flow. FlexCell has been designed for easy integration with automatic handling devices and to be ready for Industry 4.0.
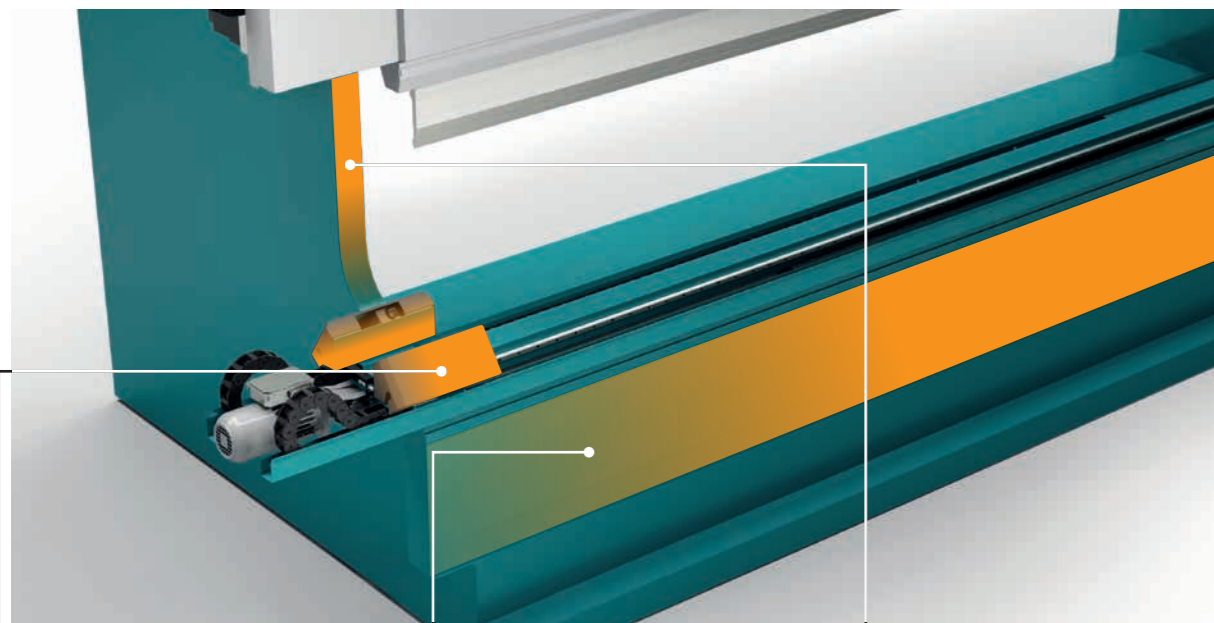
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MAC 2.0 READY

✓ **AMS**

✓ **S-CROWNING**

✓ **TOTAL FRAME CONTROL**

AMS - Angle Measurement System: angle measuring laser for the compensation of the sheet's spring-back. It also allows measurements to be saved and active monitoring for enhanced productivity.

S-CROWNING - Salvagnini crowning: fully adaptive mechanical crowning system. It ensures consistent bending angles along the full bending length, even as parameters vary, without operator intervention.

TFC - Total Frame Control: closed circle control system of smart sensors detecting and reporting in real time deflections and variations to the controller, which activates corrections preventing deviation of the bending angle.
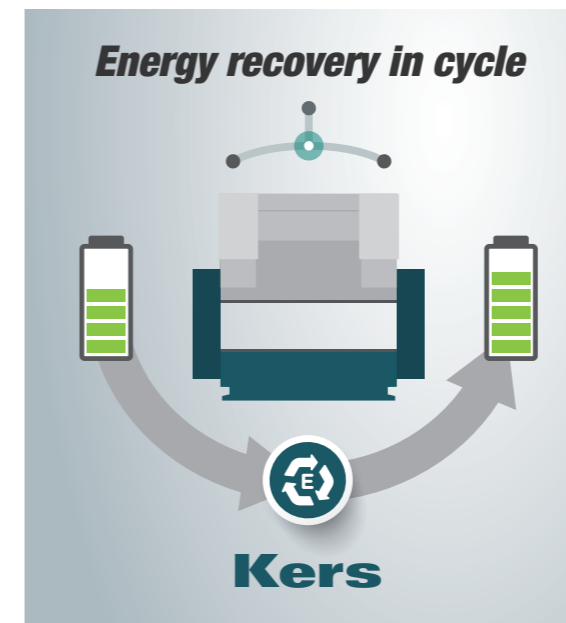
KinETIC

✓ **DIRECT DRIVE**

✓ **KERS**

✓ **BLOCK LASER**

Energy recovery in cycle — Kers

Direct Drive — On-demand consumption

DIRECT DRIVE: thanks to 2 independently managed brushless motors and direct drive, the upper beam can achieve both fast approach and fast return, with speeds as high as 250 mm/s.

KERS - Kinetic Energy Recovery System: the system recovers energy that is usually wasted and reuses it later, obtaining higher speeds and accelerations with the same consumption.
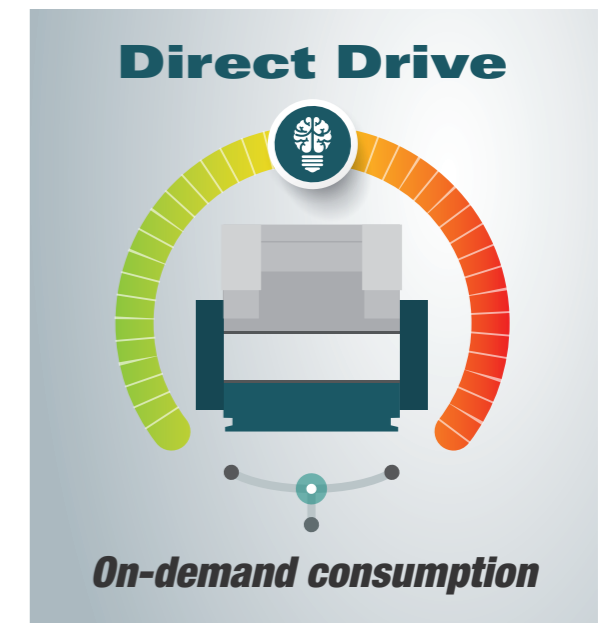
LSB Block Laser: technology offering totaly safe use combined with maximum productivity. Side guards sliding along the structure give fast and safe access while minimizing floorspace.

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From drawing to finished product.
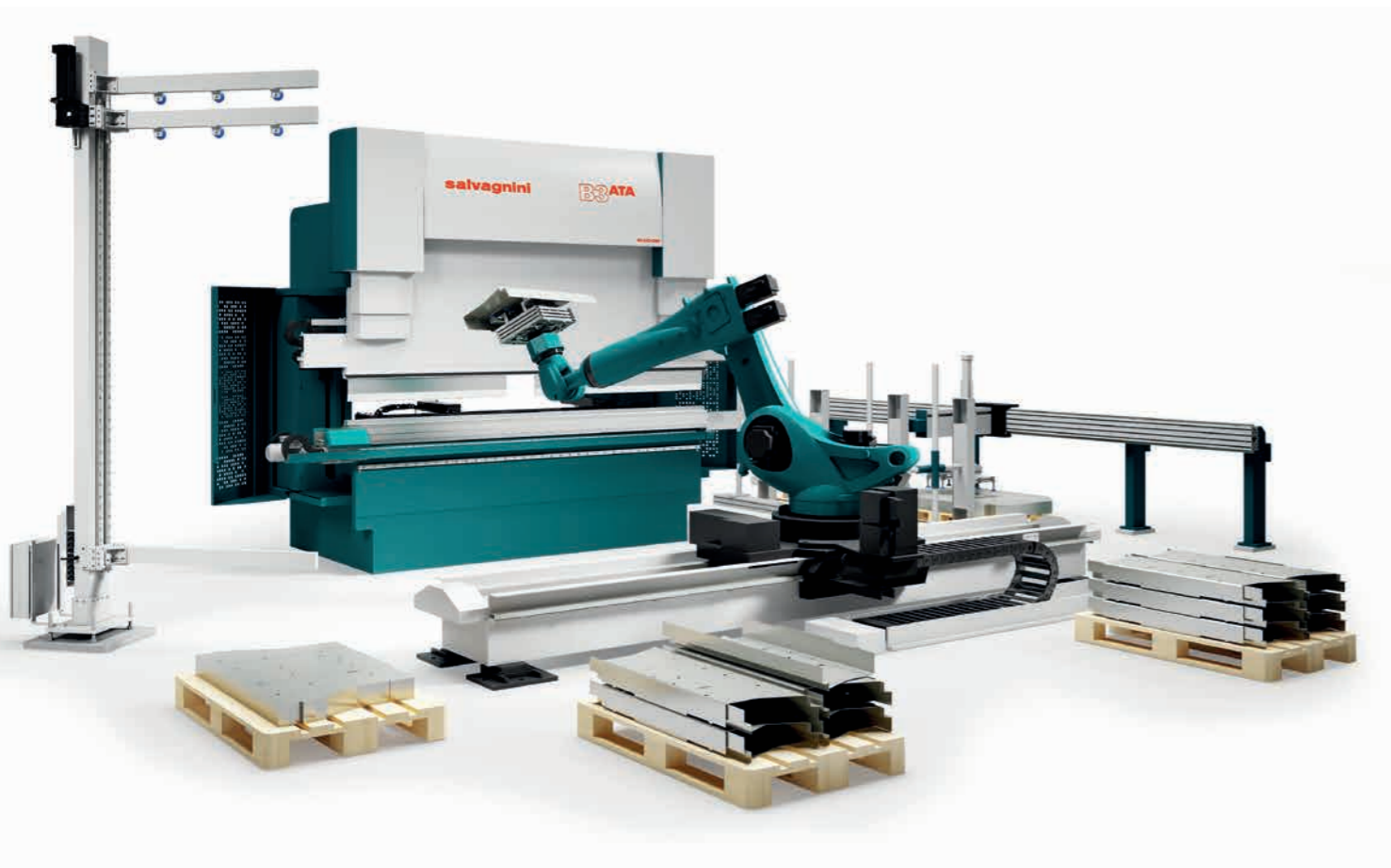
|	
1 MAIN FEATURE:	robotic bending
2 TARGET MARKET:	wide
3 TYPICAL APPLICATION AREA:	medium batches
4 APPLICATION SECTOR:	job shop, electrical industry, ...
5 MACRO ADVANTAGES:	repeatability for serial production

ROBOformER is the automatic solution for unmanned management of Salvagnini press brakes. This non-traditional solution combines the dynamics of press brakes with the operation of a robot managing each activity completely autonomously without robot teaching.

|	
1 MAIN FEATURE:	flexible bending cell
2 TARGET MARKET:	very wide
3 TYPICAL APPLICATION AREA:	medium/small batches
4 APPLICATION SECTOR:	OEM (HVAC, catering, switchboards, ...)
5 MACRO ADVANTAGES:	flexibility, optimized times and costs

FlexCell unites automation and productivity of the panel bender with the versatility of a Salvagnini press brake in a flexible cell, and is the only solution of its kind in the market for getting the most out of bending.

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From drawing to finished product.
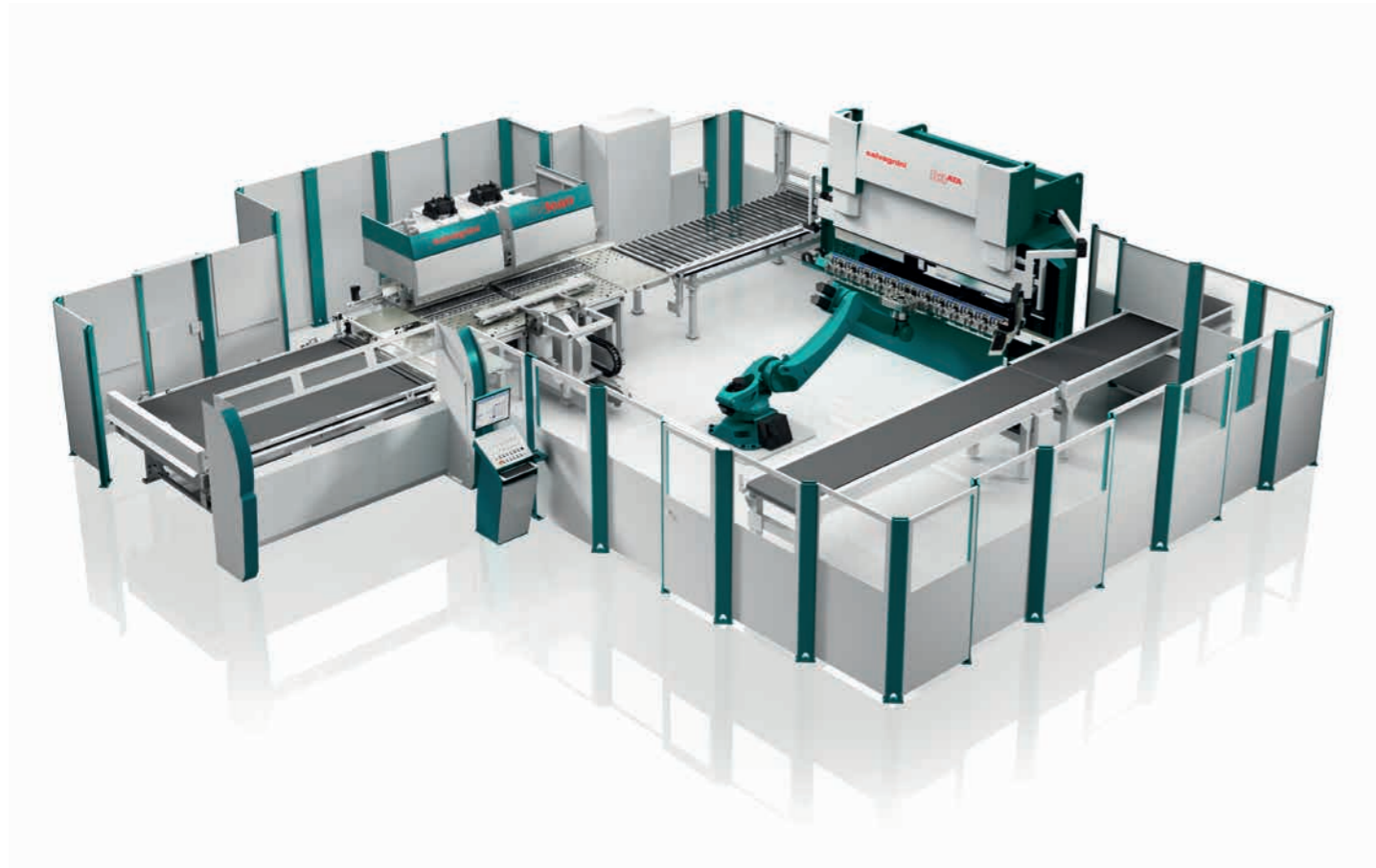
	MAIN FEATURE:
1	in-line bending
2	**TARGET MARKET:**
	medium
3	**TYPICAL APPLICATION AREA:**
	production of families of parts
4	**APPLICATION SECTOR:**
	doors, profiles
5	**MACRO ADVANTAGES:**
	speed and repeatability

Frame Bender is the automatic bending solution with its configuration uniting a panel bender with a press brake and robots handling the pieces in production.
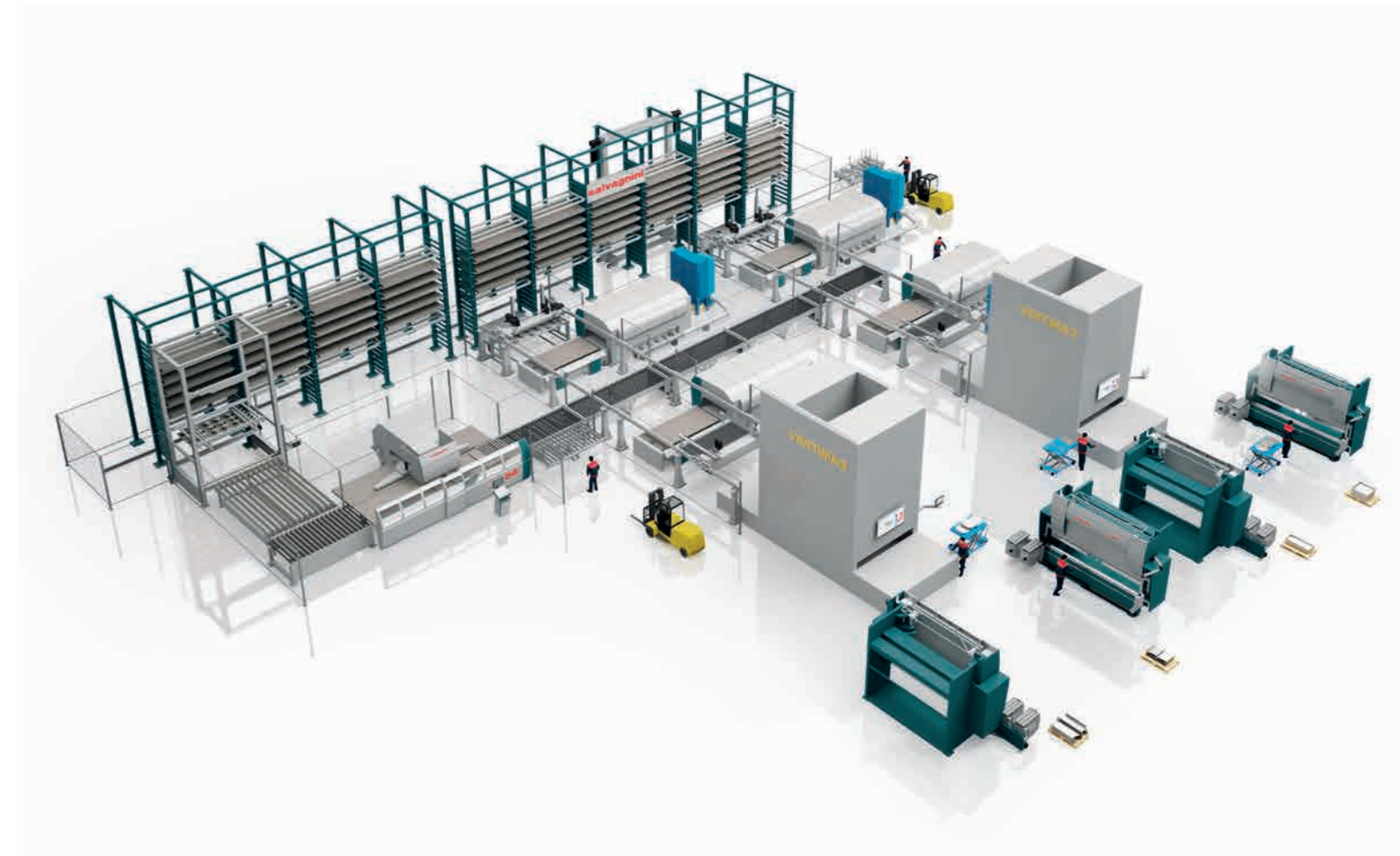
	MAIN FEATURE:
1	lights-out manufacturing
2	**TARGET MARKET:**
	low
3	**TYPICAL APPLICATION AREA:**
	mass production
4	**APPLICATION SECTOR:**
	OEM
5	**MACRO ADVANTAGES:**
	automation, factory 4.0

AJS is the multi-process 4.0 solution by Salvagnini that combines different production technologies, planning, balancing and optimizing production flow, and managing operations completely automatically and flexibly thanks to the OPS proprietary software.

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The best partner for your future?
A Salvagnini system.

You can tell a system is flexible by its ability to consistently deliver the same result, by the control features it provides to facilitate production and by the speed with which it responds to stimuli.

	VERSATILITY + FLEXIBILITY / VELOCITY	SIMPLICITY	PRODUCTIVITY	AUTOMATION
B3				
FlexCell				
Frame Bender				
ROBOformER				
AJS				
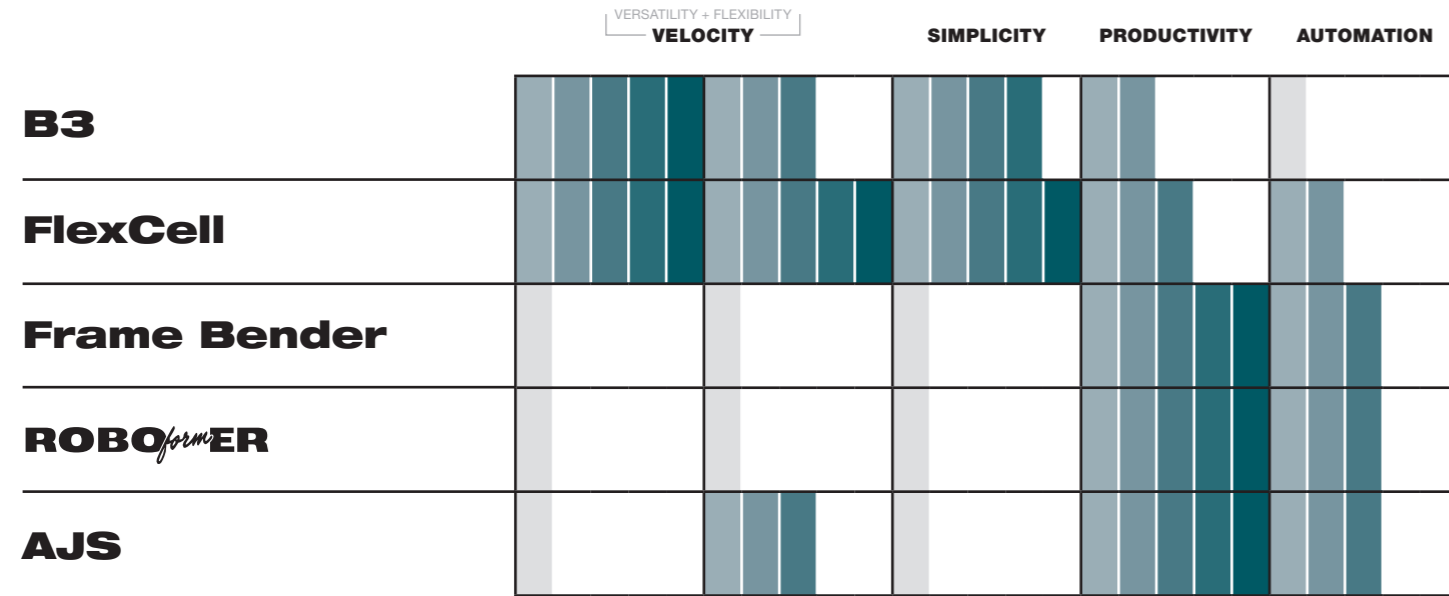
TECHNICAL DATA

Model	60/2000	100/3000	135/3000	135/4250	170/3000	170/4250	170/4250XL
Maximum bending force (ton)	60	100	135	135	170	170	170
Table length (mm)	2000	3000	3000	4250	3000	4250	4250
Distance between housings (mm)	1740	2640	2640	3640	2640	3640	3620
Throat depth (mm)	350	430	430	430	430	430	520
Maximum speed (mm/s)	250	250	250	250	250	250	250
Bending speed (mm/s)	10	10	10	10	10	10	10
Maximum stroke (mm)	300	300	350	350	350	350	450
Open height (mm)	550	550	600	600	600	600	700
Maximum electrical consumption (kW)	10	12	16	16	20	20	20

Model	220/3000	220/4250	220/5100	320/3000	320/4250	320/5100	400/4250
Maximum bending force (ton)	220	220	220	320	320	320	400
Table length (mm)	3000	4250	5100	3000	4250	5100	4250
Distance between housings (mm)	2650	3620	4620	2630	3600	4600	4600
Throat depth (mm)	520	520	520	520	520	520	520
Maximum speed (mm/s)	250	250	250	220	220	220	220
Bending speed (mm/s)	10	10	10	10	10	10	10
Maximum stroke (mm)	450	450	450	450	450	450	450
Open height (mm)	700	700	700	700	700	700	700
Maximum electrical consumption (kW)	26	26	26	39	39	39	45

* Bending speed regulated by current standards. Salvagnini reserves the right to modify this data without prior notice.

CHECKLIST

The new definition of bending 4.0.

Kitable
Flexibility for batch, single part and kit production

4.0 Connected
Integrated communication between company departments and the machine

MAC 2.0
Adaptive technology to eliminate scrap and corrections

Solution for you
Automation and integration in Salvagnini systems for every type of production

Intelligent integration
Machine integration with the entire Salvagnini software range

S

Laser cutting
L3 L5

Punching
S4Xe SL4

Panel forming
P1 P2lean P4

Bending
B3 ROBO*form*ER

Systems
AJS° FMS S4 + P4 FlexCell

Logistics
MTW MD MBT MV LTW

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