



*Automatic tray store:
world-class integrated logistics.*

salvagnini

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Salvagnini can boast a long experience of integrating sheet metal processing machines. The first flexible panel production line in 1978 and the first automatic lights out factory implementation in 1985 demonstrate just how thoroughly focused Salvagnini has always been on offering flexible, automated and integrated sheet metal processing systems comprising specifically designed products.



Salvagnini manufacturing lights out systems have the MV tray store as a hub. Thanks to Salvagnini's proprietary software the material is scheduled and sequenced through the punching, shearing, laser cutting and bending operations in a totally automated and integrated production environment.

AJS Automatic Job Shop



The automatic multi-tower tray store system is the backbone of any automatic factory and can be arranged in a variety of configurations:

- *a fast picker crane on rail with telescopic fork system (MV)*
- *using push-pull technology on polythene (MVT)*

In both configuration it handles trays inside the store for automatically storing and serving sheet metal packs to one or more machining centers.

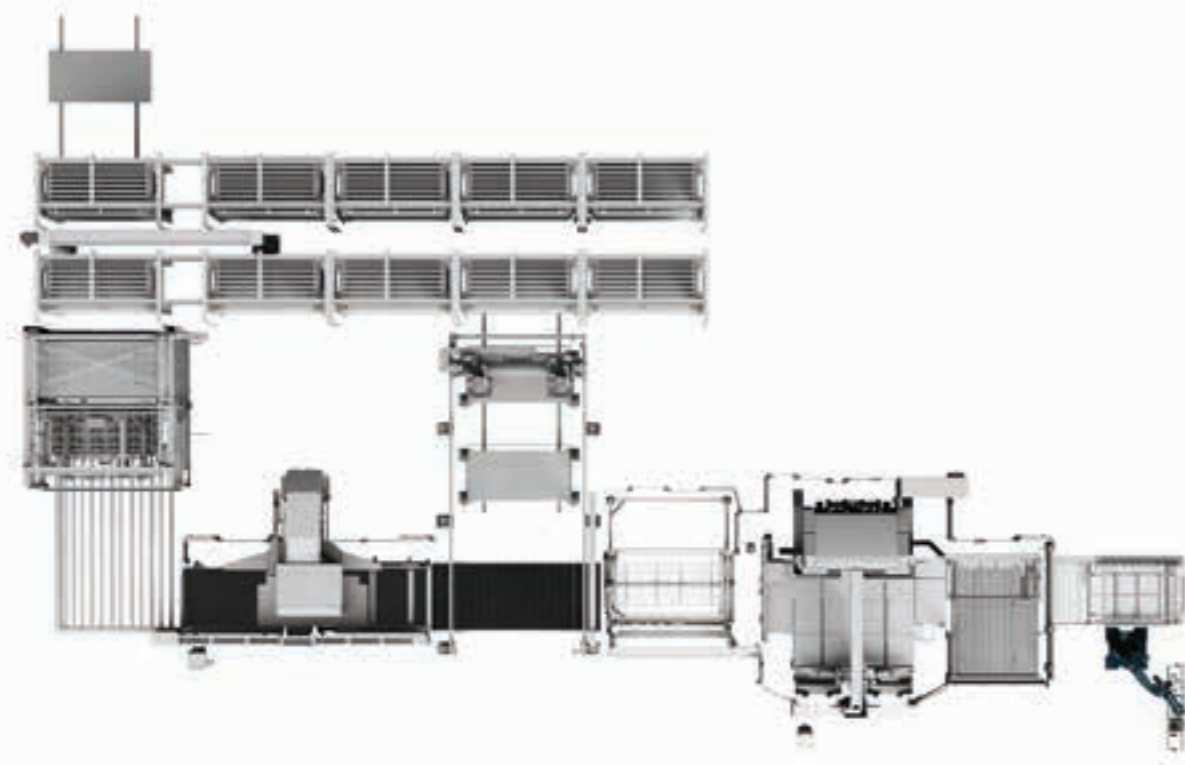
The right choice

The choice between telescopic fork or push&pull technology is driven by customer's workshop availability in terms of footprint and height, and by customer's total number of positions requested or machines to be integrated. The possibility to choose among the two technologies allows to reach the optimum solution that matches both economic both technical and logistics needs and requirements.

The Automated Job Shop, or "AJS" is a group of Salvagnini machines linked together and orchestrated by the proprietary OPS software. This software is designed to easily communicate with customers' MRP/ERP systems, to quickly create the machine program and to efficiently manage the production flow between the machines in order to achieve completely integrated flexible sheet metal processing.

The backbone for every automatic job shop

The tray store configuration is fully adaptable to specific factory requirements. MV system acts as a backbone for the entire factory, coordinating and moving automatically the materials needed for the different machining processes just in time, reducing transfer costs and times, while increasing machine efficiency. Without the need for intervention by operators or warehousemen.



Complete automation.

Material handling is designed-in and thoroughly integrated into the Salvagnini manufacturing process. Packs are transported through the system using fast tray exchange stations that can work from a single pack (SSC/SSV/SPV) or from double packs (SDV) or even from single sheet from different pack (SMD) in order to provide the best solution to meet customer's need in term of efficiency and production flow. The picker crane is also equipped with a pack weighing system to grant automatic checking on stock levels.

MV COMPONENTS

MS Station:

Tower for simply tray shelving.

MA Station:

Tower for tray store feeding equipped with a motorized "pegged bed" carriage and a reference system to allow the correct positioning of the pack of sheet metal to be processed or the picking up of a pack.

MIS.SPV station and MIS.SDV:

Tower for tray exchange equipped with a carriage (SPV) or with a double carriage (SDV) to feed or unload a Salvagnini feeding or unloading connection. This is the basic interface station (picker crane missions are not masked).



MIS.SSV station:

Tower for tray exchange equipped with a scissor table to feed or unload the connection of a Salvagnini system. This is an advanced interface station (picker crane missions are half masked).



MIS.SSC station:

Tower for tray exchange equipped with a pair of chain conveyors and a scissor table to feed or unload the connection of a Salvagnini system. This is a highly advanced interface station (picker crane mission are fully in masked time).



MIE station:

Tower for trays auxiliary exit. It is equipped with a motorized carriage for tray exchange between:

- the store and the workshop, allowing the material deposited onto the trays to be picked up;
- the store and third parties machines.

SMD destacker:

Tower with an integrated manipulator-elevator with suction cups, able to pick up the single sheets directly from different trays positioned inside the shelving and to transfer them to Salvagnini systems. SMD destacker is a unique connection that integrates the great capacity of a tray store with the great flexibility of a single sheet feeding. Suitable when small batches or lists of single parts different from one another are to be processed without any waiting time. In addition SMD allows to compact the same material present in more trays in the store and to create packs for MIE station (defrag function).



The heart of the AJS: the proprietary software

The Warehouse Management System (WMS) software package allows to easily and effectively manage the MV tray store. Through the full management of the data of the material and of the store stocking and unloading order, and thanks to on-screen information and printing function, the user can keep under control all the process.

WMS software allows to optimize tray location, the storing of multiple packs, to dynamically search for free positions. The user can decide whether or not to use a given tray and the material on it and retain the control to insert hot-jobs, reschedule system priorities and create customized performance reports.



4.0 factory. Ready for the future

The basis of the new industrial revolution is the flexible digital factory where flow of information between work stations is continuous and just in time. In such a scenario, **the Salvagnini's proprietary OPS production management software can play a key strategic role.** Standing for Order Processing System, OPS, created in the late '90s to interface Salvagnini's machines with customers' management software, is a proprietary software automatically managing the entire manufacturing process.

OPS supervises production orders, turns them into programs, sends them to machines, adjusts and optimizes production flow and handles Visual Management on-board each machine.

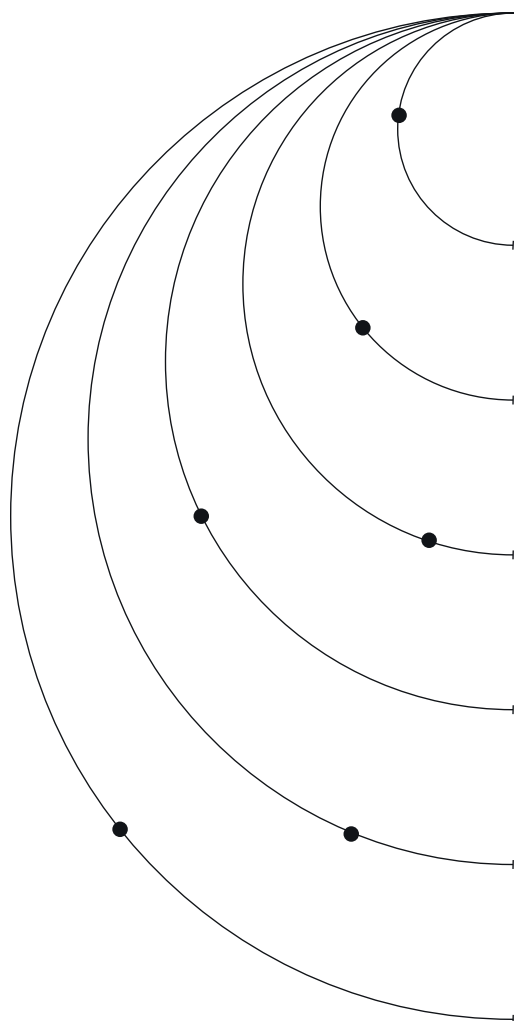
With its modular architecture, **OPS covers a wide range of activities, as the automatic inventory data transfer from MV to customer ERP (OPS Report), the Plant control and Visual Management (OPS-SFC), the production flow management between the machines integrated with MV (OPS-Flow), by integrating and communicating either with Salvagnini systems, either with computerized design systems and other machine tools.**



Layout and technical data

Technical data	MV	MVT
LAYOUT	Single or double row	
SIZE	2500, 3000, 4000 (and mixed)	3000, 4000 (and mixed)
MAX HEIGHT	10.300mm (32 levels)	10.700mm (50 levels)
MAX LOAD	3000Kg	
PICKER CRANE	with telescopic forks	P&P technology
PICKER CRANE MAX HORIZONTAL SPEED	2,5m/sec	
PICKER CRANE MAX HORIZONTAL ACCELERATION	0,5m/sec ²	0,3m/sec ²
PICKER CRANE MAX VERTICAL SPEED	0,5m/sec	0,3m/sec
PICKER CRANE MAX VERTICAL ACCELERATION	0,5m/sec ²	0,3m/sec ²
PITCH BETWEEN LEVELS	280mm	190mm
MAX HEIGHT OF THE SINGLE PACK	130mm	90mm
MAX HEIGHT OF DOUBLE PACK	410mm	280mm
AUTOMATIC WEIGHING SYSTEM (P)	tolerance of ±3Kg	

Data could change according with tray store configuration



L3 L5

Laser cutting

S4Xe SL4

Punching

P1 P2lean P4

Panel forming

B3 ROBO*form*ER

Bending

AJS® FMS S4 + P4 FlexCell

Systems

MTW MD MBT MV LTW

Logistics