



CONVEYING
PALLETIZING
SYSTEMS

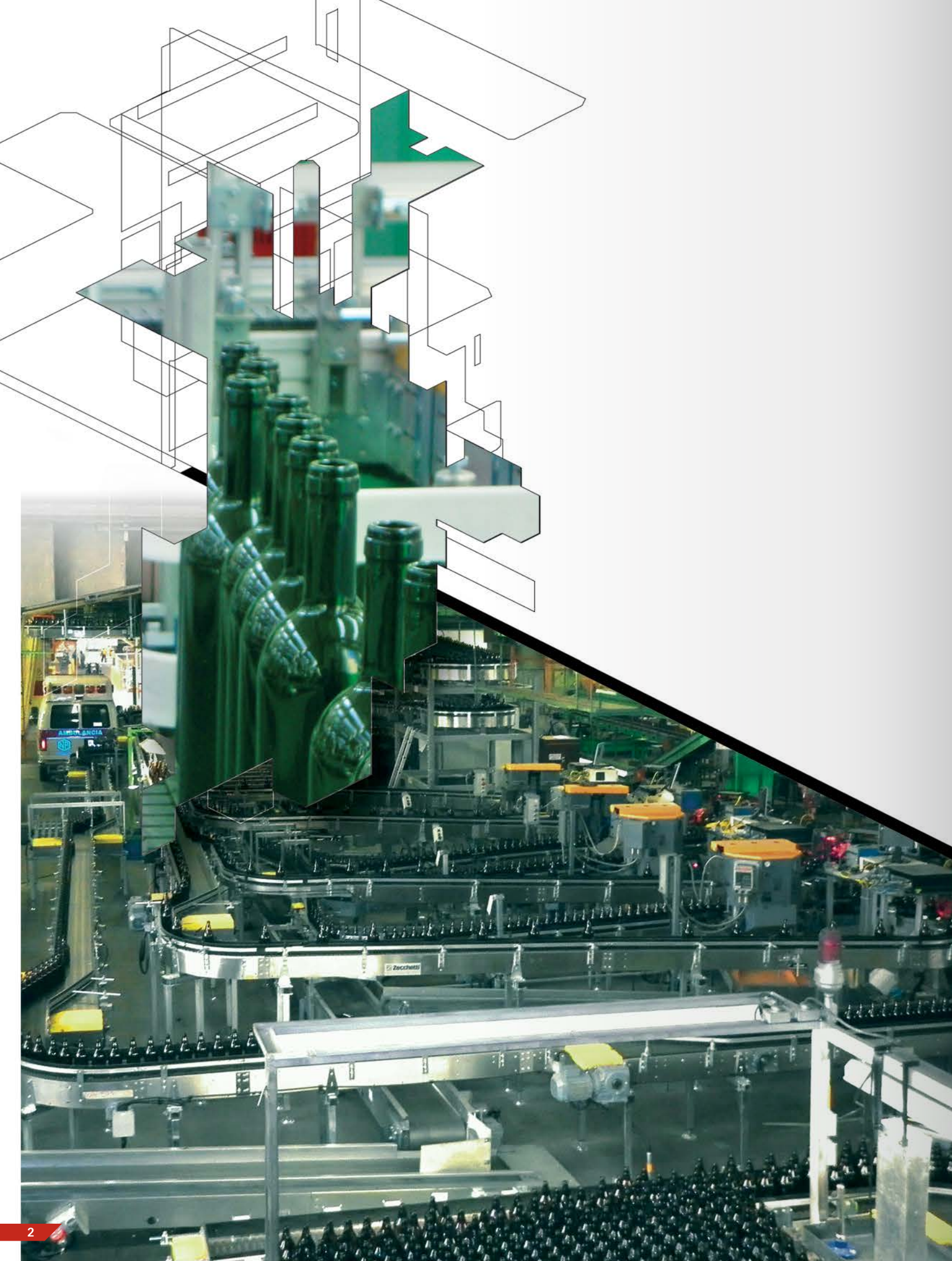
CUTTING EDGE SOLUTIONS





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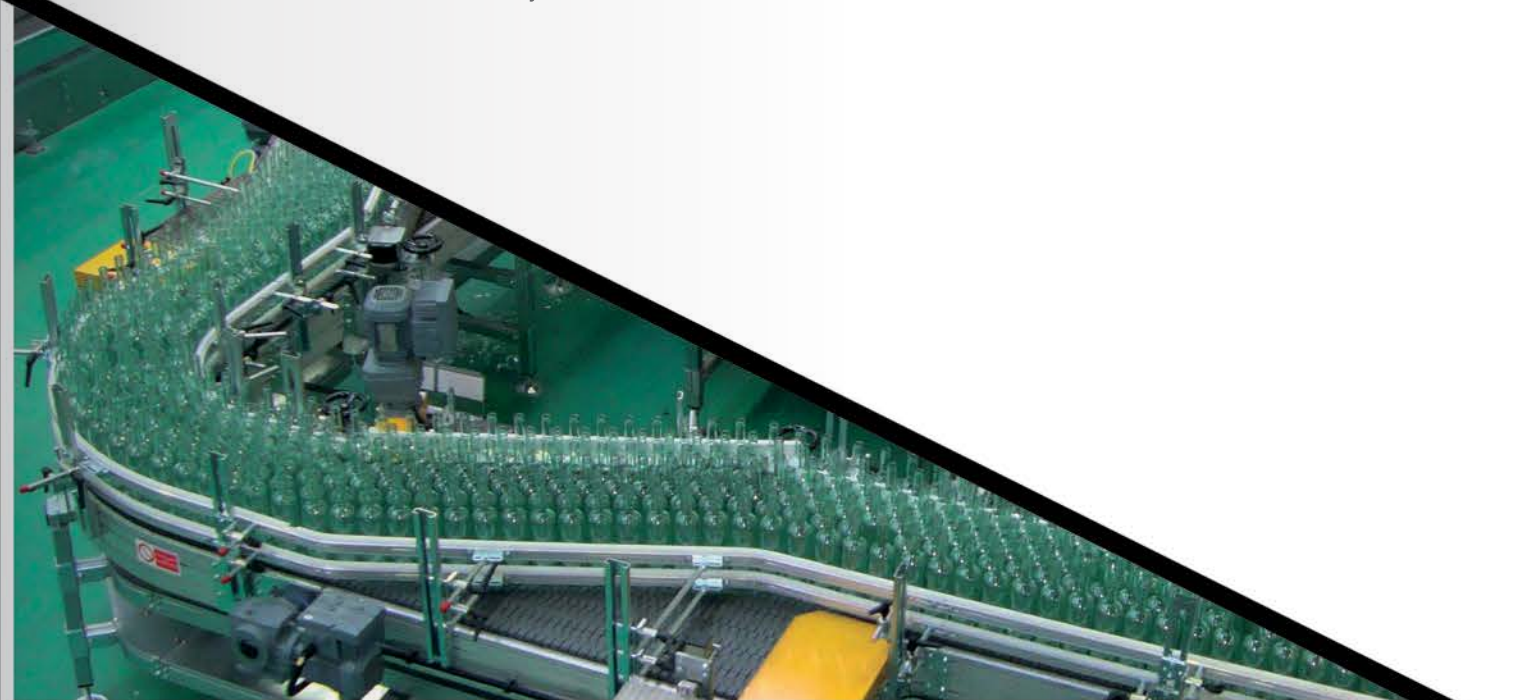
COLD END CONVEYORS

THE RIGHT SOLUTION FOR EACH CONTAINER, IN EVERY ZONE

Someone holds the cold end conveyors just a whole of sprockets and chains maybe even achievable with commercial modules. Who well knows the Glass-Works, on the contrary, is perfectly aware that every single meter of the line hides secrets which are vital to ensure the effective operation of the system. It goes without saying that only the hard-earned experience on the field allows to develop new solutions and to build up the knowledge that helps in finding and applying the best solutions matching with the customer needs such as:

- type and mix of containers to be handled;
- line speed;
- type and speed of the inspection machines;
- available space;
- required level of automation;
- previous specific experiences of the glasswork;
- opening to future needs etc.

The Zecchetti know how, acquired over decades of experience, allows to choose the best solution to make every cold end line tailored on the needs of their customers.



Main features

The primary goal of a cold end conveying system is to harmoniously connect the various machines and/or areas of the line by ensuring a **smooth, safe and efficient transfer of the containers**. To succeed in this, every detail is of high quality, each critical area is designed with the right solution, the performances are guaranteed, regardless to hardware brand, type and architecture, being Zecchetti the LINE MASTER.

■ LEHR DISCHARGE CONNECTION

- vibrating plates;
- dead plates.

■ LEHR DISCHARGE CONVEYORS

- flow in 1 direction;
- bi-directional flow;
- tandem flow;
- direct alignment.

■ CONNECTION BETWEEN CONVEYORS

- 90° passage with passage plate;
- 90° passage with active transfer;
- 90° passage with fixed guide;
- 90° passage with driven guide;
- side-by-side passage;
- side-by-side passage with driven guides.

■ ACCUMULATION TABLE

- several dimensions and solutions;
- special load/unload systems for shaped containers.

■ ALIGNERS

- pressurless aligners 1 leg - 2 legs - 3 legs;
- closed cone aligner with anti-jam guide.





■ FLOW SPLITTER UNITS

- Spontaneous pressurless splitters;
- splitter conveyor 1 to 2 lanes;
- continuous flow splitter;
- paddle splitter;
- mobile guide splitter;
- pneumatic splitter with stop;
- multi-article splitter;
- "blow" splitter;
- combined flow splitter units.



■ VARIOUS EQUIPMENTS

- Elevator/lowerator;
- elevator/lowerator with overturning system;
- omega passage;
- omega passage with overturning system;
- overturning system;
- "alpine" buffer system;
- rotary table;
- cullet conveyors.

■ INTERFACE WITH ALL THE INSPECTION MACHINES WITH PERFECT INTEGRATION (WITH OR WITHOUT BY-PASS)

- Agr;
- Bull;
- Busch & Spreen/Heye;
- Emhart;
- Ermi;
- Iris;
- Msc-Sgcc.

■ ACCESSORY EQUIPMENT

- Video camera orientator;
- double belt orientator;
- wheel orientator;
- double belt spacer;
- double belt transfer;

- "visual";
- "laying down bottle" ejector;
- total discard;
- collecting hoppers;
- conveyor covers;
- anti raising covers.

At the same way, the quick & easy format change over is more and more an important goal.

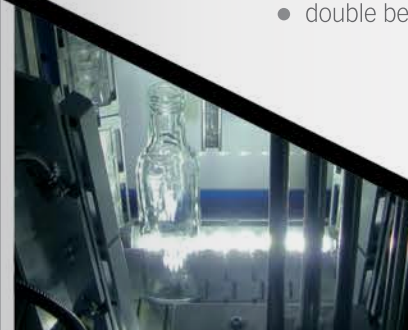
■ Format changeover on Zecchetti cold end lines is based on automatic speed adjustment through the setting of three basic parameters (in %).

The 3 basic absolute parameters (1, 2 and 3.) are:

- Bottle diameter;
- Bottle production (bpm);
- Bottle spacing.

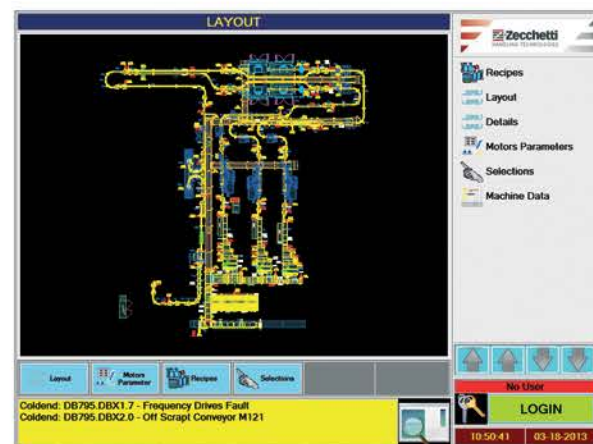
A mathematical calculation determines the speed for every zone of the line. At the format change-over, the correct values have to be set and all the VFDs (Variable Frequency Drives) reach the necessary speed to cope with the IS production.

■ In addition to the above parameters and to the necessary ones for correction, it is possible to adjust the speed of each motor (in percentage) in order to carry out the "fine tuning" of different line zones.

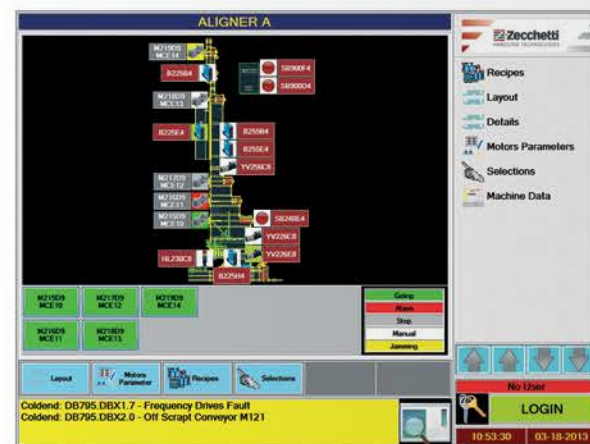


Focus on

- To identify needs and to create new and original solutions **to simplify the life of our customers** is the primary goal of Zecchetti. This is being done with the constant proposal of new even patented solutions.
- SIMPLICITY, QUICKNESS AND REPETITIVENESS IN THE FORMAT CHANGE OVER
Different levels of **automation in the format change over** are available for every part of the line. In particular, Zecchetti can propose an automatic system to adjust the conveyor side guides by taking into consideration the different needs of each conveyor section along the line. The system includes a handheld touch screen that enables the operator to find **the ideal adjustment for each conveyor segment**, fix it and save it in a final recipe. The handheld touch screen can also get a feed-back from the other Zecchetti equipment in the line as well as from all the existing machines in that line.
- SMART CONTROL ENGINEERING
Given the major role played by the HMI in the efficiency of the line, Zecchetti proposes a user friendly, highly developed supervision software with great flexibility in the recipe setting to guarantee **top performances** and **minimum change-over times**.
- DATA PROTECTION
6 safety and configurable levels accessible by means of a password.



- PRODUCTION COUNTINGS
 - to cover up to 4 work shifts;
 - to view production history for any period.
- MAIN FUNCTIONS
 - synoptic of the whole line, possibly even on a remote supervision PC;
 - simple and immediate access to any part of the line by selecting it;
 - possibility of modifying the line parameters;
 - display of every single motor speed;
 - display of every single motor absorption;
 - adjustment of every single motor speed.
- RECIPE SETTING
 - it is possible to create a new recipe by simply typing the new bottle diameter;
 - possibility of saving/loading/deleting the recipes;
 - possibility of offline setup for any recipe while machine is running.
- ALARM MANAGEMENT
 - to display active alarms with their help;
 - to display the alarm history for period;
 - to display statistics about any alarm for any period.



Benefits

- Tailor-made solutions according to needs, available space and customer mind.
- Several options to transport any type of container.
- User friendly line operation.
- High level electronic control for top efficiency.
- Possible fully auto adjustment for the format change over.

Speed

- Up to 1000 bottles/min.



Options

- Each glasswork has got its own reality and beliefs. Being aware of this, Zecchetti proposes different solutions in terms of line control and commercial components.

ADJUSTMENTS

Each area and each accessory can have format change over adjusting devices of different levels of automation:

- manual adjustment assisted by graduated scales;
- hand wheel adjustment assisted by position indicators;
- new infinite position automated adjustment by means of drives.

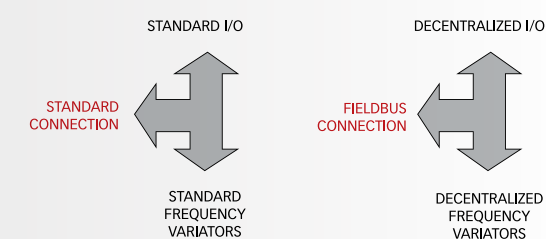
The system includes a handheld touch screen for the local fine tunings. On request, the handheld touch screen may act as a portable HMI panel and report the alarm messages.

ELECTRIC INSTALLATION

- cable truck may run at low-medium or high level;
- electric wiring may be traditional or through bus way.



ARCHITECTURES



HW-SW

The PLC may be chosen among the most important brands:

- Siemens;
- Allen-Bradley;
- Omron;
- Telemecanique.

LINE CONTROL

Several different architecture for the line control are available:

- electro-mechanical control (without PLC);
- PLC control with frequency variators fitted in the Control Cabinet and potentiometers for the speed manual adjustment;
- PLC control with frequency variators fitted in the Control Cabinet and recipe based adjustments;
- PLC control with frequency variators in the field and recipe based adjustments;
- I/O and/or frequency variators connected in the standard mode;
- I/O and/or frequency variators connected via field bus.

MECHANICAL COMPONENTS/CHAINS

- steel or plastic chain;
- table-top type (slat chain) or mat-top type (modular mat);
- any brand available on the market, provided of course it is suitable to convey glass articles (ex. Rexnord - Regina - System Plast - Intralox, etc.).

MECHANICAL COMPONENTS/CHAIN SLIDING GUIDES

- high-density polyethylene (UHMW) with 10mm. thickness is the standard;
- on request, we may install polished stainless steel sliding guides or guides in oil soaked wood.

MOTORS

- IE4** Super Premium (Energy Saving > 20% CO₂ Ejection < 21%);
- IE3** Premium efficiency;
- IE2** high efficiency (EFF1);
- IE1** Standard.

GEARED REDUCTION UNITS

Geared reduction units are all with hollow shaft, directly fitted onto the towing shaft.

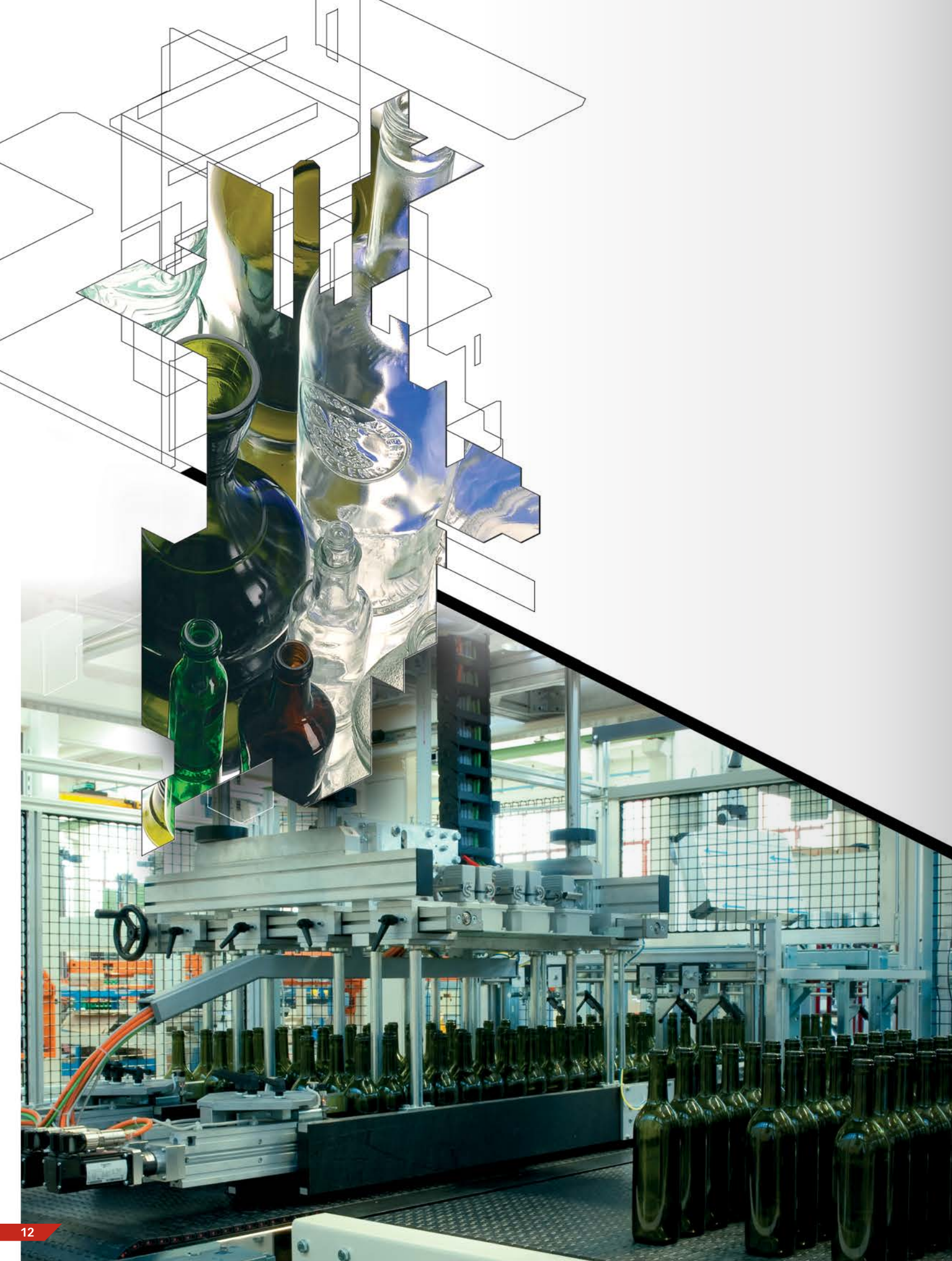
Possible different types:

- SEW – MOVIMOT / MOVIGEAR;
- SEW with frequency variator fitted into the control cabinet;
- Motovario/Bonfiglioli/Rossi with frequency variator fitted into the control cabinet;
- Possible FOODGRADE lubricant;
- other brands can be installed on request.

MOBILE ZSA (Zecchetti Supervising Application)

The Mobile ZSA can be installed on walk-pad, smartphone, tablet.





STACKER

HANDLING OF EVERY CONTAINER, NO MATTER WHICH SHAPE

Thanks to its experience "in the field" Zecchetti knows that the stackers and more generally the layer formation phases are perhaps the most important palletizing operations. Indeed this is the first area where containers of whichever shape must be prepared in a decisive and precise way to achieve all of the "infinite" palletizing patterns the glassworks are expected to create to meet the needs of their customers. It is just for this reason that Zecchetti proposes a wide and advanced range of options in terms of speed, number of feeding lanes, equipment dedicated to special shaped containers, automation options, etc. The ultimate goal is to have the best solution tailored to the specific needs of each client.



Main features

■ The Zecchetti range includes Stackers for **any kind of container**:

- cylindrical bottles (with or without tapered neck); jars (with or without tapered neck);
- square, rectangular, conical or indefinitely shaped bottles;
- small containers for pharmaceutical or perfumery sectors;
- cartons containing empty bottles (opened or closed, with upwards or downwards flaps, with up or down bottles);
- thermo shrunk bags containing bottles;
- trays supporting small containers.

■ 1-lane infeed basic sweep-off stacker for low speeds.

■ 2-lane infeed compact sweep-off stacker for medium-low speeds.

■ Modular design stackers, 1 to 8-lane infeed and beyond, are available, for the most complex needs and/or for very high speeds. The units can operate in the various basic modes:

- sweep-off;
- step-by-step sweep-off;
- step-by-step pick-and-place with row approach;
- step-by-step pick-and-place with row approach and bottle spacing.

Especially for the step-by-step operation, all the devices necessary to handle any type of container are included.

■ High-precision take-out stacker to process containers that cannot be accumulated due to their instability or containers that have not to lose their given orientation.

■ Solutions with **4-axis Zecchetti or industrial robot** for the row pickup and the layer formation directly onto the pallet.

■ Operator interface with colour touch screen and Zecchetti supervision software:

- 6 password levels independently settable;
- synoptic layout;
- automatic, manual and "zone" controls;
- alarm diagnostic with integrated help and alarm history;
- efficiency parameters diagnostic;
- recipes with graphic setting of layer and pallet configuration;
- possibility of remote control of the system.



Focus on

■ EFFICIENCY AND FLEXIBILITY

The design philosophy of the Zecchetti stacker is oriented to obtain the **maximum efficiency, versatility and duration**. From the mechanical point of view this is ensured by a robust structure able to absorb, without vibrations, the high acceleration needed to achieve the high speeds required, by the use of accurate and long-life linear guides and double toothed belts free from deformation and maintenance.

■ The motors are all directly splined to the shaft, and assisted by sophisticated and quick reaction torque limiters.

■ The electronic part is as, if not more, important as the mechanical one:

- the use of servo controlled axis, a rich PLC program associated to a highly developed supervision software, complete the job to make the Zecchetti stacker extremely **efficient, fast, versatile and long-lasting**.

Options

■ Accessories for bottle counting and handling before the row formation:

- counting and precounting photocells;
- wheel orientators;
- belt orientators;
- video-camera orientators;
- laying down bottle ejectors;
- bottle stops;
- belt spacers (multi-article spacers are also available);
- bottle retaining guides.

■ BOTTLE PICKUP FACILITIES

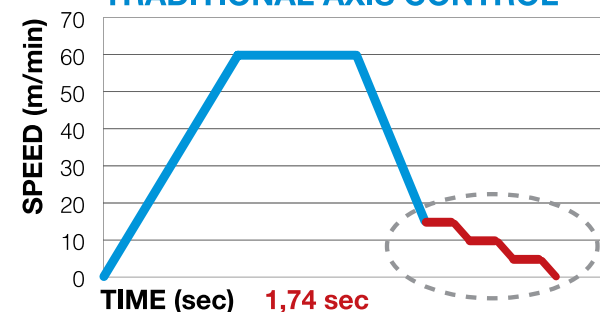
- inflatable tubes of various shapes;
- cups;
- mechanical grippers;
- pneumatic fingers;
- mechanical fingers.

Options

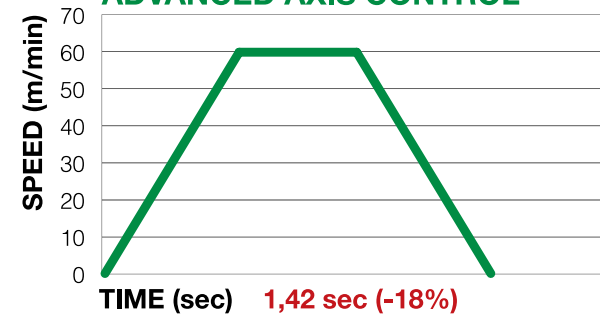
■ Axis management SW, developed by Zecchetti, with interpolated control of speed acceleration and space. Dedicated axis card in case of servo-assisted axis or on request. Both solutions provide:

- progressive movements (zero – max. speed - zero);
- top accuracy and repetitiveness of movement;
- speed variation according to line production;
- no vibrations and stresses for the components;
- preservation of the components and care for the manipulated products.

TRADITIONAL AXIS CONTROL



ADVANCED AXIS CONTROL



CONTAINER/ROW HANDLING FACILITIES

- pushing guides;
- pick-up assisting guides;
- row staggering (2, 3 or infinite positions);
- row holding grippers;
- row lateral compacting guides;
- container retaining and/or spacing combs;
- row/layer compacting guides.

■ Hand wheel or driven adjustments, on request, in alternative to the traditional easy made adjustments carried out by means of handles and gauges, for all the components involved in the format change-over (guides, photocells, etc.).

■ Possible head changeover carried out on a mobile trolley with assisted positioning and quick or automatic hook-release operations.

Benefits

■ A number of solutions to get the right choice at the best price.

■ Handling of all types of containers.

■ Realization of all types of palletizing pattern.

■ High-level electronic control for high-precision, high performance and long life.

■ Easy to use by the operator.

■ Possible fully automatic adjustment at the format change over.

Speed

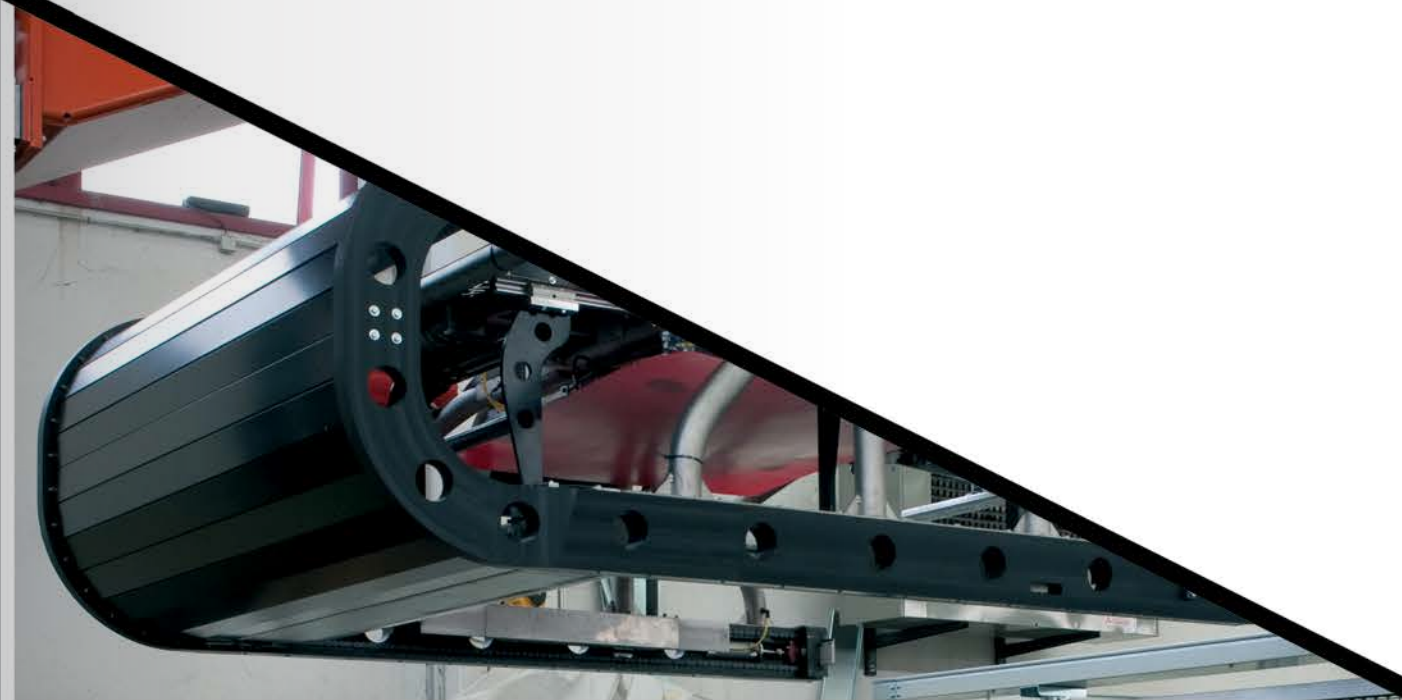
■ Up to 15 cycles/1'.



R-PAL MULTI-PURPOSE ROTARY COLUMN PALLETIZER

ONE CHOICE, MAX FLEXIBILITY

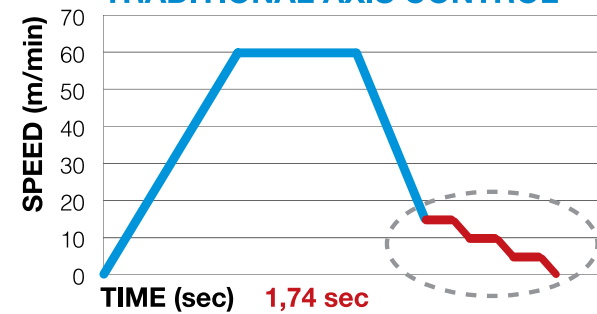
The rotary column type palletizer mod. R-PAL M.P.H. (Multi-Purpose Head) is the highest expression of important features such as flexibility and accessibility. Its modular design allows it to match, even in the future, with any type of layout, production and article. In fact, it makes possible to both operate in "sweep-off" and in "pick-and-place" mode with the advantage that such a decision can be taken any time in the future, not necessarily at the time of purchasing. The 3-axis manipulation design, born 30 years ago and realized with the Zecchetti rotating column, has been developed over the years to increase reliability, flexibility and performance. Its success was enhanced by over 1000 units in operation worldwide, 300 of them in glass plants.



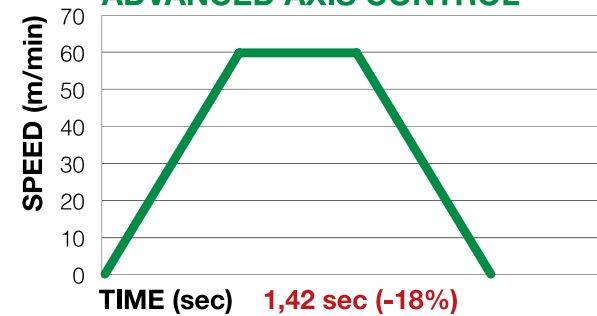
Main features

- Operations are carried out at low level with **easy access** to all the working areas.
- Palletizing is carried out with stationary pallet for **maximum load stability**.
- Axis management SW, developed by Zecchetti, with interpolated control of speed, acceleration and space. Dedicated axis card in case of servo-assisted axes or on request. Both solutions provide:
 - progressive movements (zero – max speed - zero);
 - top accuracy and repetitiveness of movement;
 - speed variation according to line production;
 - no vibrations and stresses for the components;
 - preservation of the components and care for the manipulated products.

TRADITIONAL AXIS CONTROL

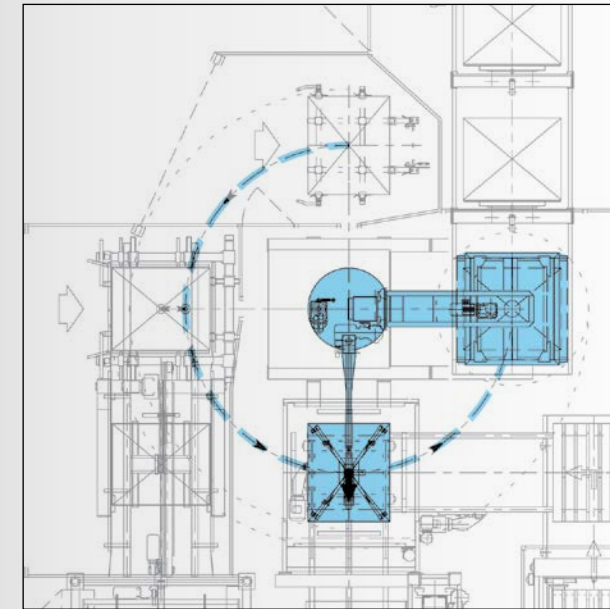


ADVANCED AXIS CONTROL

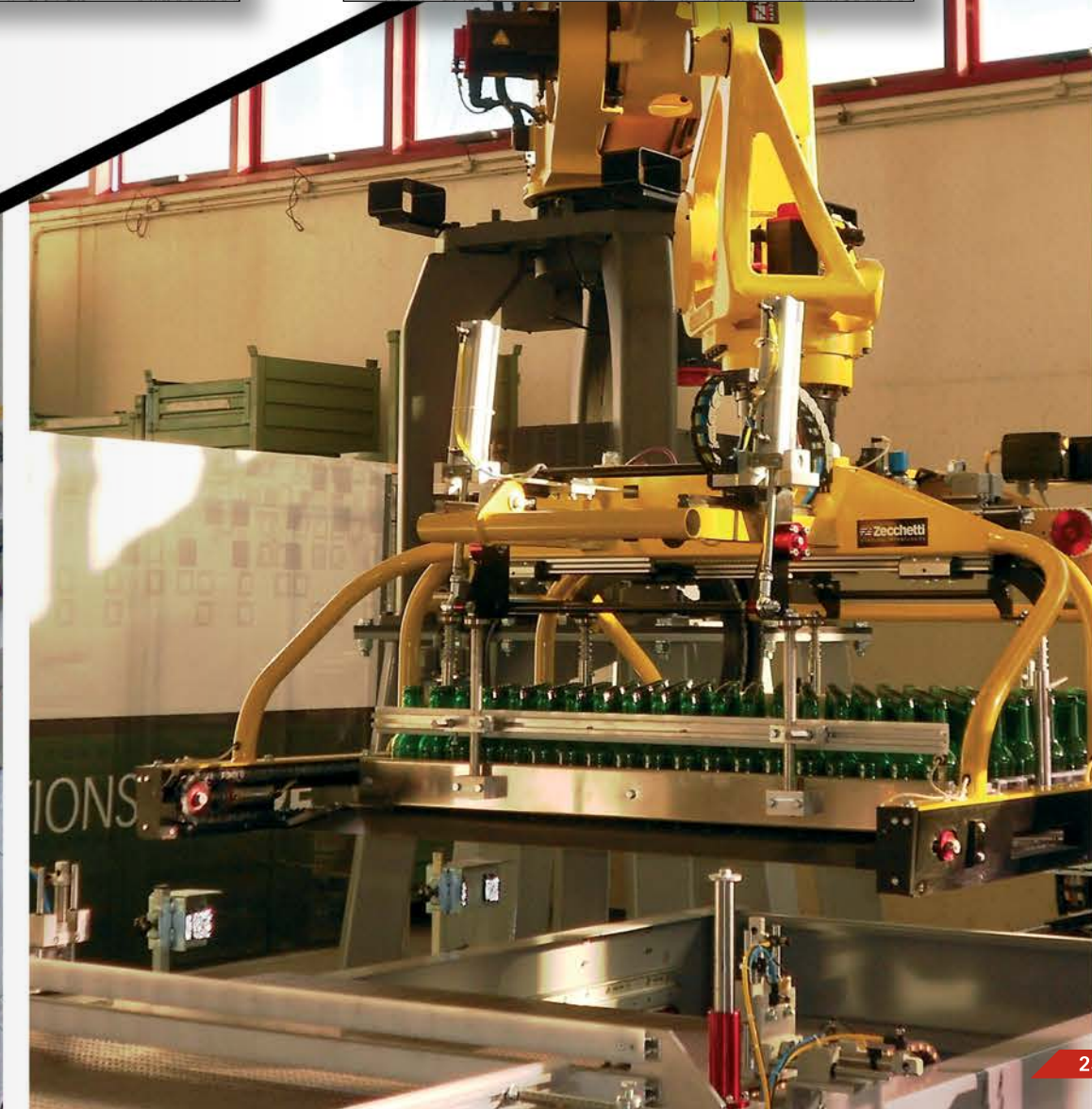
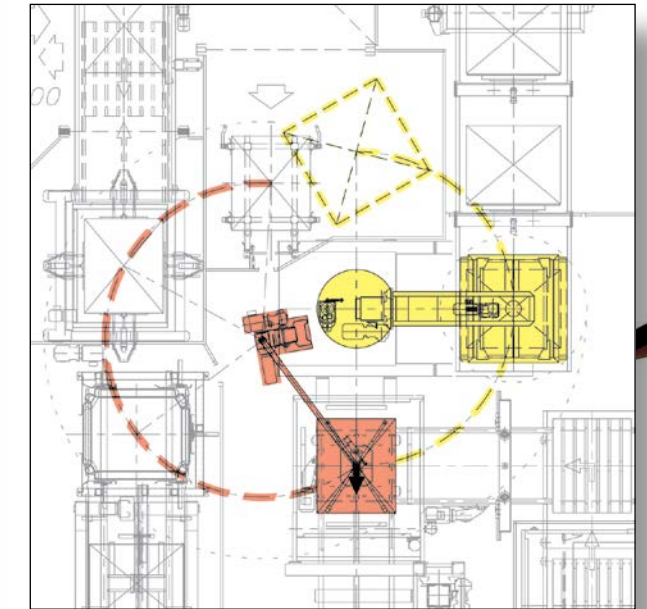


- The columns rotate to allow for a **multi workstation operation**, each zone being dedicated to a particular task.
- Area at ground level assigned to **head changeover** operation. The head is positioned on a mobile trolley with assisted positioning and quick or automatic hook-release operations.
- “Two-Boom” version: the palletizing column and the pad feeder column rotate independently - flexible solution.
- “Twin-Boom” version: the palletizing column and the pad feeder column have a joint rotation - compact solution.
- The components are sized for long term reliability.
- Independent centring of pallet, layer and layer separators.
- Counterbalanced vertical axis to improve functioning with minimal power consumption.

TWIN BOOM PALLETIZING VERSION



TWO BOOM PALLETIZING VERSION





- Palletizing column and pickup head supporting arm
- Layer pickup position
- Pickup head change-over position
- Palletizing station
- Flat board pickup position
- Inverted tray pickup position
- Tray pickup position
- Layer separator column and head supporting arm

MULTI WORKSTATION OPERATION



Focus on

- The machine flexible version (palletizing column and pad feeder column rotating independently), together with the modular construction design lead to a very flexible and "clean" layout.
The multi workstation operation of each column permits several advantages:
 - a dedicated position for every type of layer separator;
 - several layer pickup and deposit positions;
 - a dedicated position for the palletizing head adjustment or change over;
 - easy access to all the machine parts.
- The rotating column can house various layer handling systems:
 - pickup head with inflating tubes;
 - pickup head with vacuum plate;
 - MPH – Multi Purpose Head.
- The design concept of the machine allows for subsequent step upgrades of the automation degree.

- The peculiarities of the new **MPH Multi-Purpose Head** enable the safe transfer of the layer for almost all types of containers even in the absence of space among the container necks:

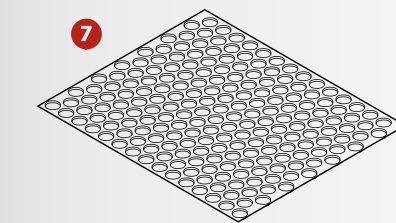
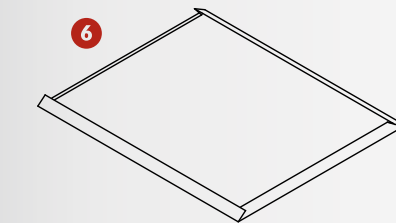
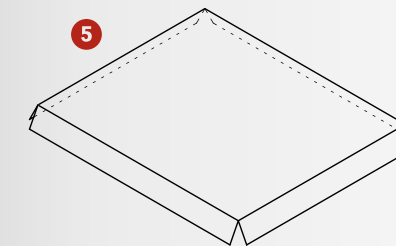
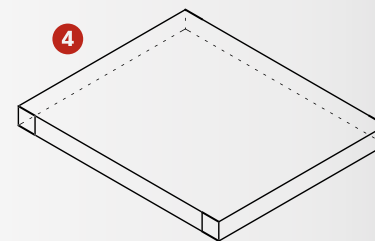
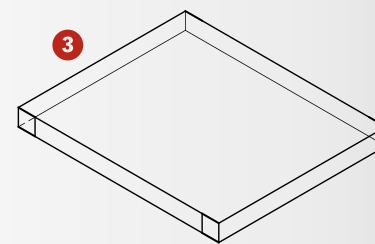
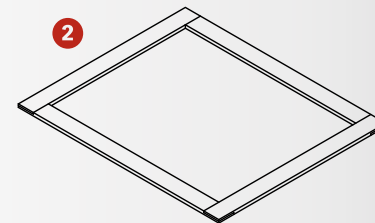
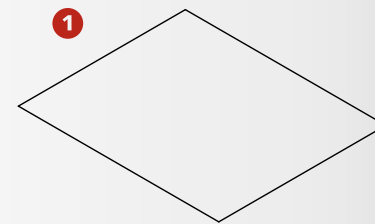
- pick-up/deposit slat plane, very thin and highly smooth;
- during the layer pick-up phase the plane replaces the table mat with zero jumps for the containers;
- the layer transfer is possible both with the table running and with the stationary table without constraints whatsoever for the stacker;
- during the layer deposit phase the slat plane flexible tip lays the bottles onto the layer separator with zero jumps for the containers;
- possibility of transferring strapped layers;
- possibility of transferring layers of cartons or bags;
- tool-free format change over;
- quick format change-over (automatic format change-over on request).

- Operator interface with colour touch screen and **Zecchetti supervision software**:

- 6 password levels independently settable;
- synoptic layout;
- automatic, manual and "zone" controls;
- alarm diagnostic with integrated help and alarm history;
- efficiency parameters diagnostic;
- recipes with graphic setting of layer, pallet and main features;
- possibility of remote control of the system.

Options

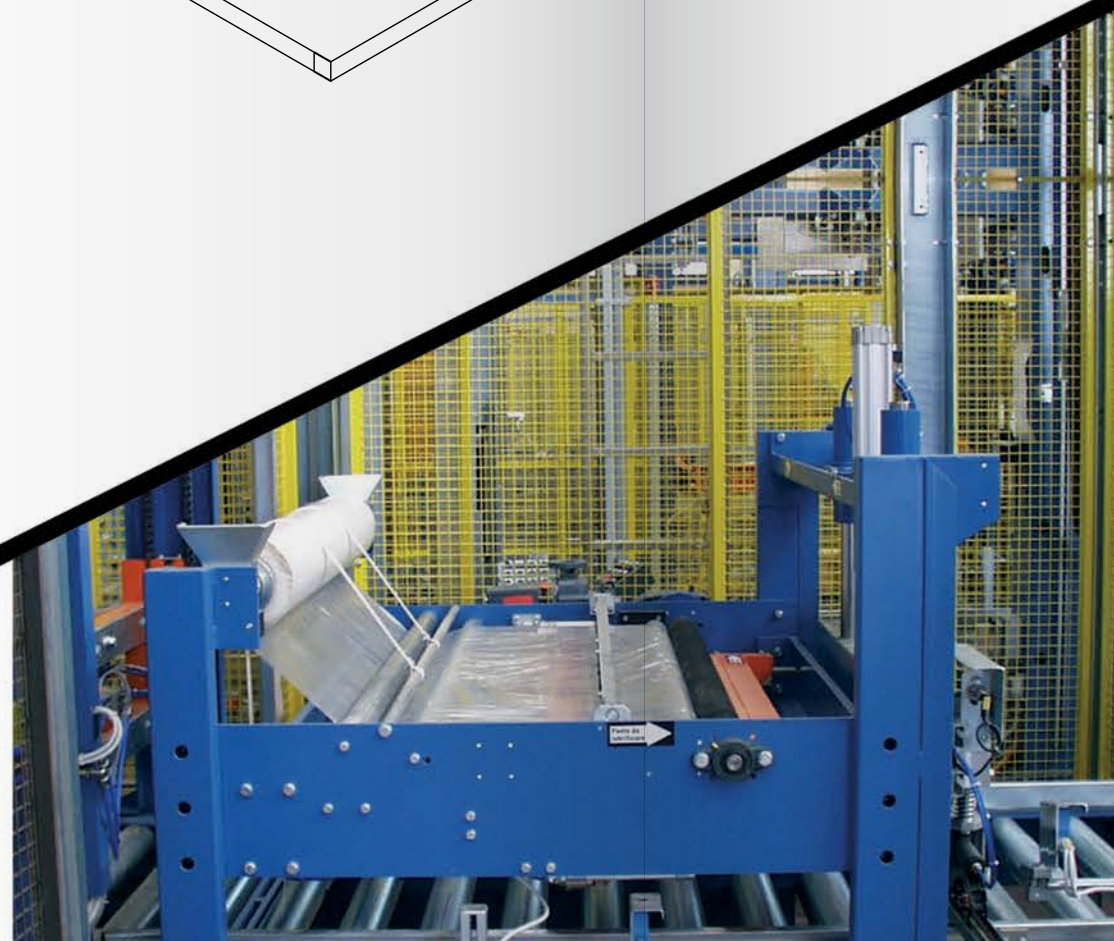
- Static or automatic **magazines** for flat boards, trays, inverted trays, inverted trays with reduced dimensions, top blanks, thermo-formed plates, partitions, top frames, etc.
- Insertion and fixing of **film** on the empty pallet and/or between layers.
- Hand wheel or driven **adjustments**, on request, in alternative to the traditional easy made adjustments carried out by means of handles and gauges, for all the components involved in the format change-over (guides, photocells, etc.).
- MPH Multi Purpose Head equipped as centring and/or as pad feeder to save cost and space.



- 1. FLAT PAD (PLASTIC-CARTON-MASONITE)
- 2. TOP FRAME (TIMBER-PLASTIC)
- 3. TRAY
- 4. REVERSED TRAY
- 5. "LOOSE-FLAP" TRAY
- 6. PREFOLDED TRAY
- 7. THERMOFORMED PAD

Benefits

- A unique machine for all palletizing modes:
 - easy change, immediate or future, of the palletizing mode;
 - handling of all types of containers;
 - easy access for rapid and efficient interventions;
 - high-level electronic control for high-precision, high performance and long life;
 - user friendly.



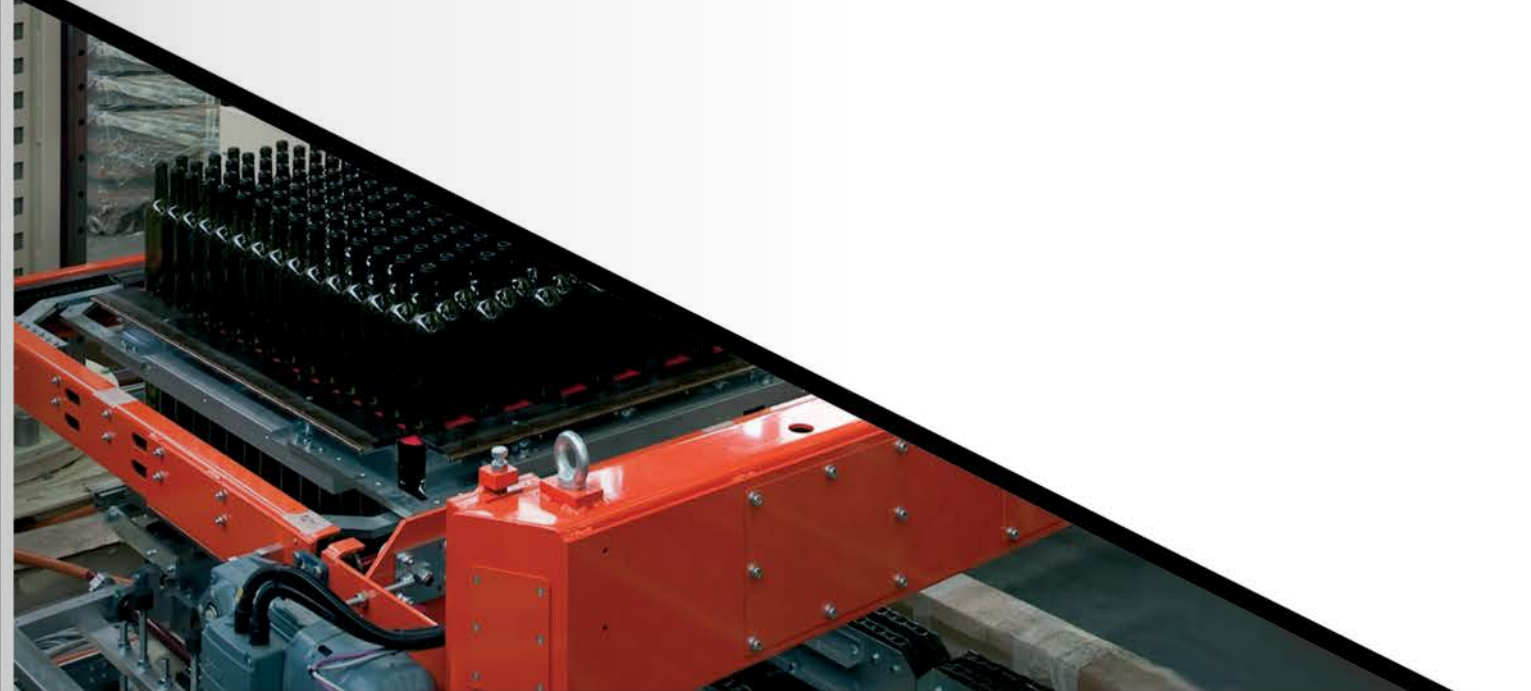


T-PAL MULTI-PURPOSE IN-LINE PALLETIZER

SPACE SAVING FOOTPRINT SUBSEQUENT UPGRADES

The in-line type palletizer mod. T-PAL represents an alternative to the rotary column machine and is, of course, equally valid. A static column supporting a horizontal beam is the core around which the machine may be composed following available space, requested automation degree, necessary palletizing mode/s.

The T-PAL modularity is the ideal solution for short, medium and long term investment.



Main features

- The 2-axis palletizing system is realized with a robust lifting column and a solid horizontal beam. The use of robust mono-structures makes the system robust and accessible at a time as well as **absolutely versatile in the layout design**.

- Operations carried out at low level further improve the **accessibility** especially in case of manual feeding of the layer separators.

- 2 basic OPERATION MODES are possible and both of them can be tailored to match with the various needs.

LAYER T-PAL (1 full layer at a time)

- Sweep-off mode: using the MPH Multi-Purpose Head;
- Pick-and-place mode: using a pickup head equipped with vacuum plate or with inflating tubes.

The Layer T-Pal can house all the various layer handling systems.

- Several layer formation systems are available:

- row pickup directly from the conveyor chain;
- spontaneous formation;
- 1-lane pushing unit;
- 2-lane compact stacker;
- modular multiple lane stacker.

- Several solutions for layer and layer separator centering:

- manual;
- mobile guides fixed to the pickup head;
- centering frame fixed to the horizontal beam for operator assistance during the manual layer separator feeding;
- independent centering frame with dedicated lifting system and mobile guides.

- Various solutions for the layer separator feeding:

- manual;
- layer separator feeder fixed to the horizontal beam;
- independent rotary layer separator feeder.

- The modular design and price are the real strength points of Zecchetti T-Pal





RBR T-PAL (ROW-BY-ROW)

AUTOMATIC CHANGE OVER. NO INTERMEDIATE TABLE. NO STACKER.

Among the different versions of Zecchetti BEAM PALLETIZER, the RBR T-PAL is the most recent evolution particularly indicated for those bottles which, due to their shape, cannot be accumulated:

- Single rows of bottles are picked-up from the infeed conveyor(s) and directly placed onto the pallet, without the stacker and the table intermediate passage.
- The row palletizing head picks the bottle rows up, drives the rows to the right pitch (row compaction) and deposits them onto the pallet already in the right setting which guarantees their stability.
- A special centering unit guarantees a constant control and a safe and careful squaring of bottle rows, bottle layers and layer pads.

Strong points

- Operatorless/fully automatic palletizing.
- Push button change over.
- Total bottle control.
- No bottle accumulation.
- Space saving footprint.
- Extreme flexibility for future formats.

The pickup system is chosen according to the bottle shape (pincers, inflatable fingers, inflatable tubes, vacuum cups etc.). The lifting column might be replaced, if need be, by a 4-axis robot.

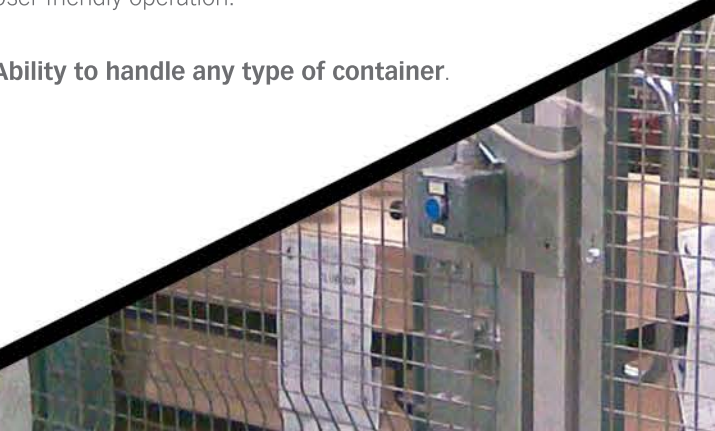


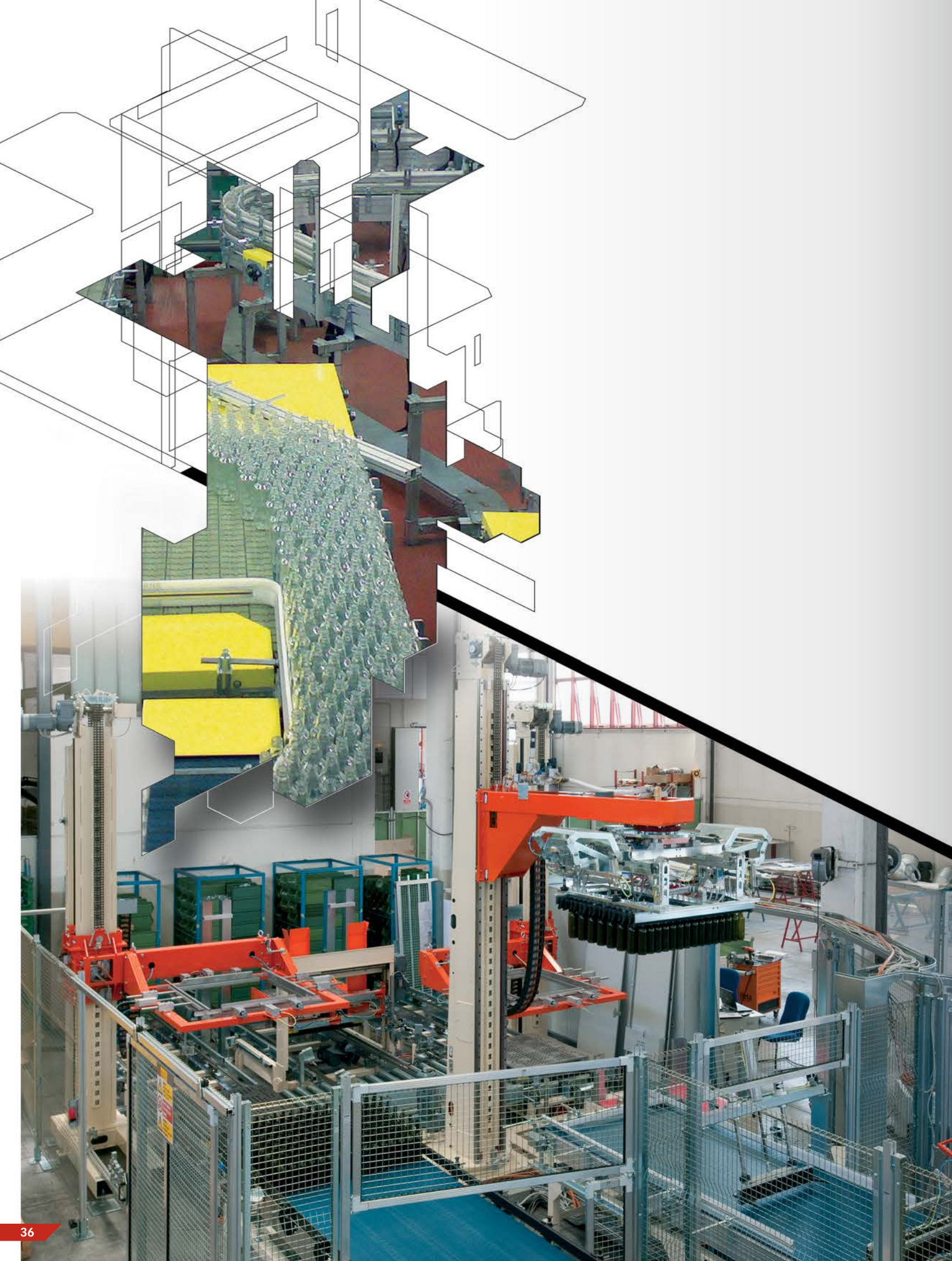
Options

- All the accessories and solutions generally applied to empty bottle handling are available.
- Static or automatic magazines for flat boards, trays, inverted trays, inverted trays with reduced dimensions, top blanks, thermo-formed plates, partitions, top frames, etc.
- Insertion and fixing of film on the empty pallet and/or between layers.
- Hand wheel or driven adjustments, on request, in alternative to the traditional easy made adjustments carried out by means of handles and gauges, for all the components involved in the format change-over (guides, photocells, etc.).

Benefits

- **The opportunity to buy, at the right price, exactly what is the present necessity but taking into consideration what might be the future necessities.**
- Excellent accessibility especially designed to make the manual operations easier.
- User friendly operation.
- **Ability to handle any type of container.**





SOLUTIONS FOR SORTING AND DECORATING

COMPACT AND FLEXIBLE

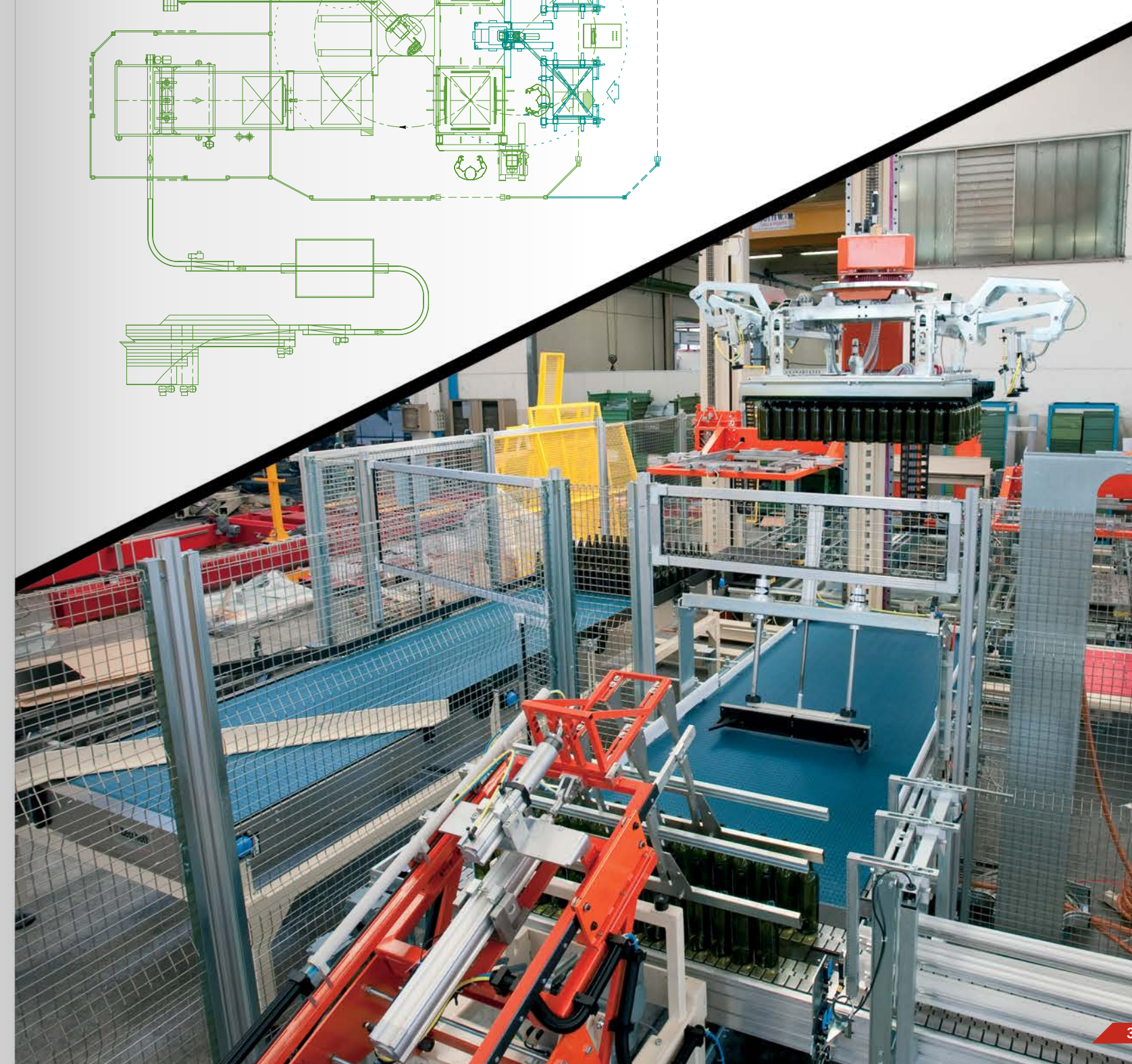
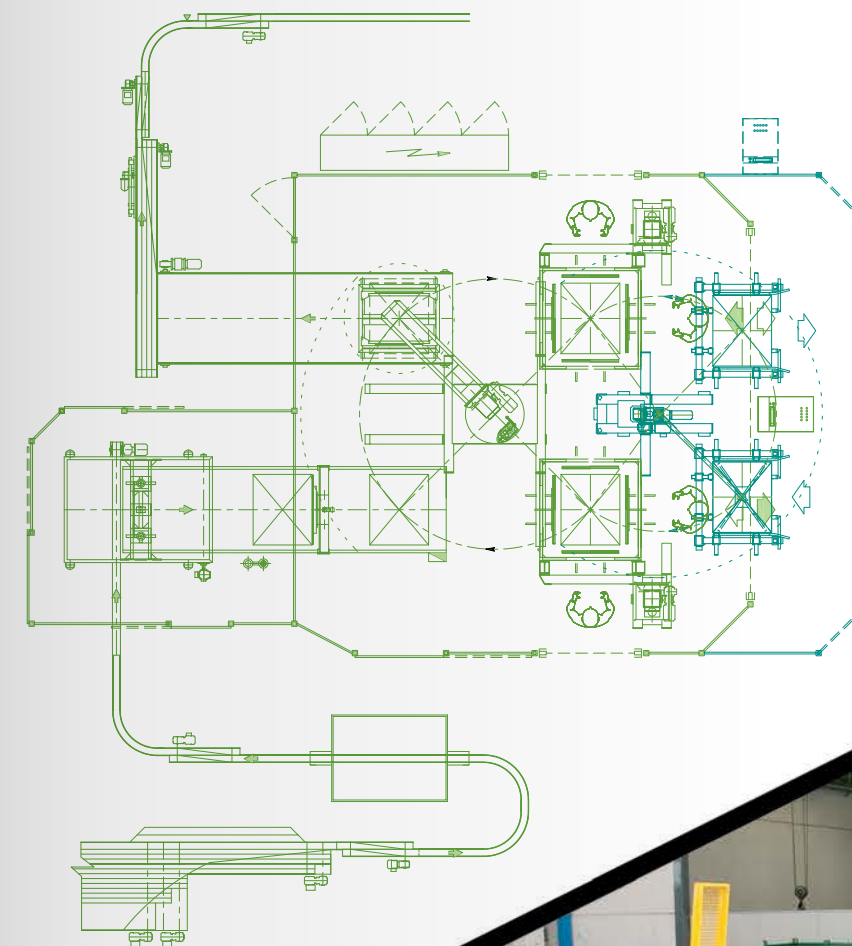
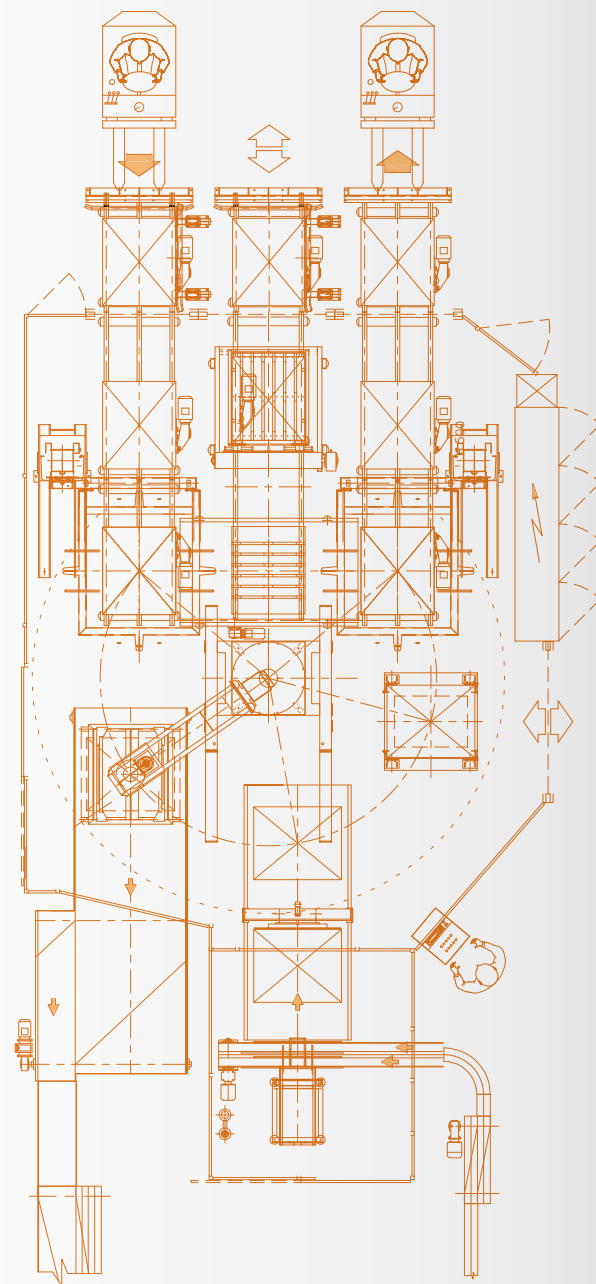
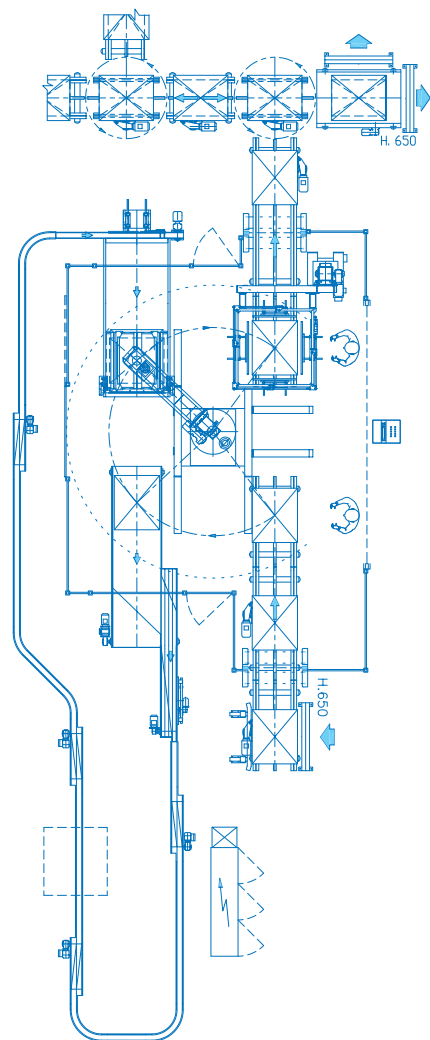
Thanks to the wide range of palletizers and depalletizers developed in the 50-year-long-activity Zecchetti can provide interesting solutions for the sorting and decoration processes. In particular, the flexibility and modularity of the rotary column permit to create, with a unique machine, multifunction isles, extremely compact and functional for palletizing and depalletizing. The degree of automation too can be tailored to specific needs without preventing a future automation upgrade. These features make the Zecchetti solutions ideal for the sorting and decoration processes.

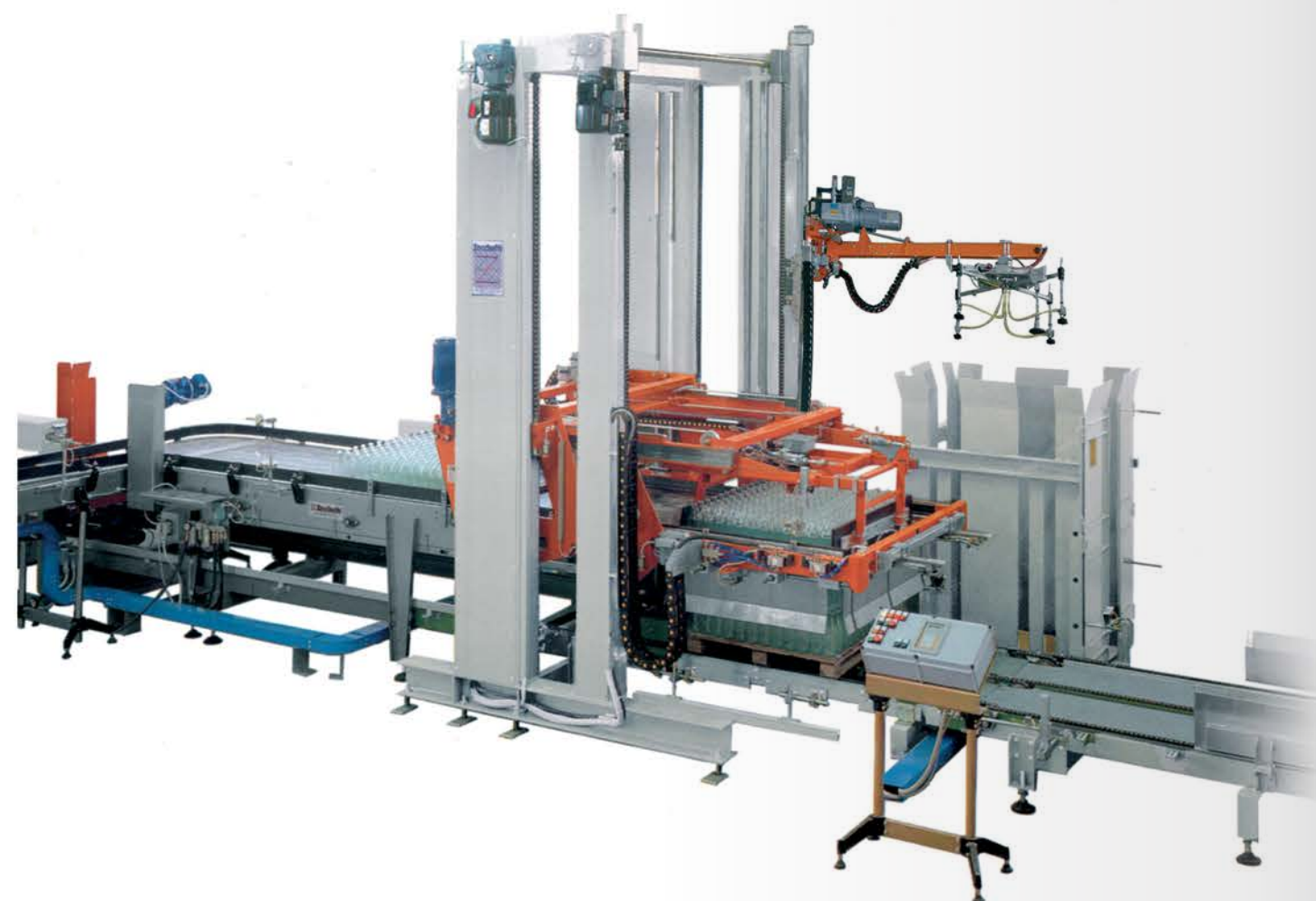
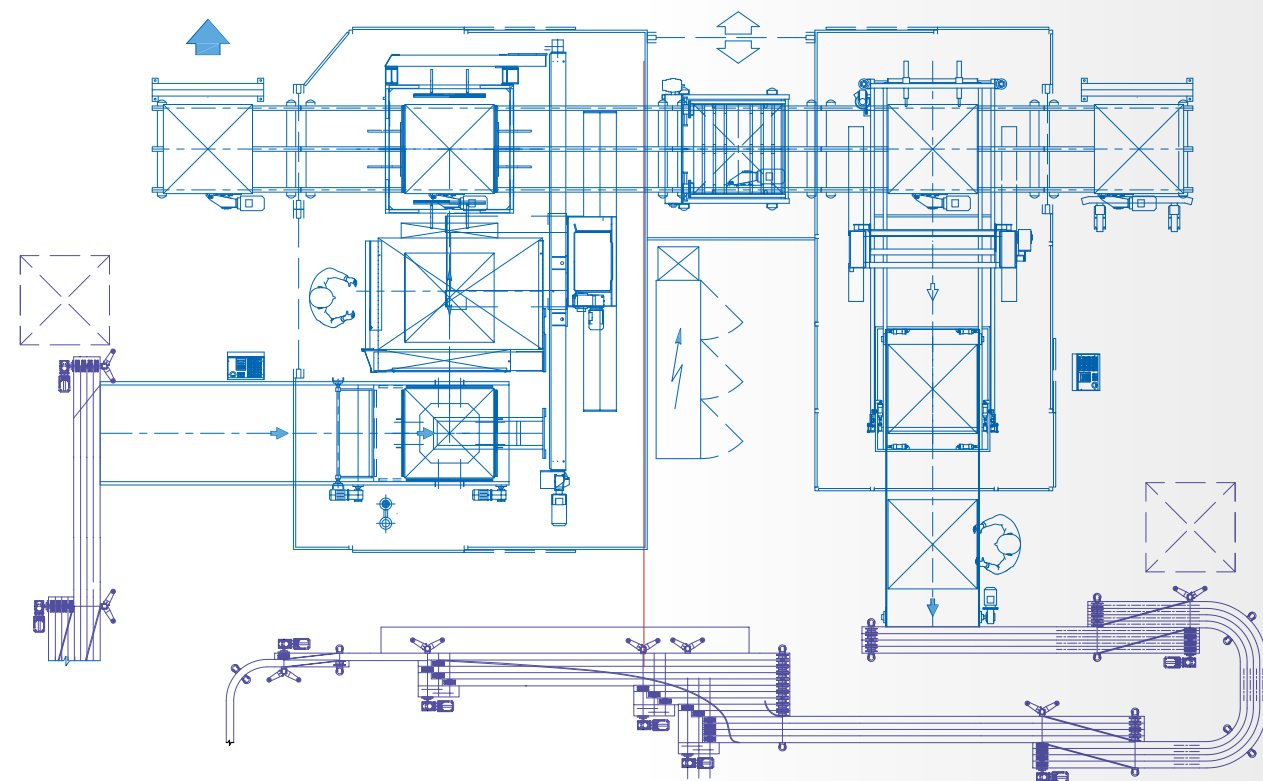


Equipment

■ ROTATING COLUMN PAL-DEPAL ISLE

One single pick-up and drop-off head applied to the rotating column transfer system makes this solution extremely compact, flexible, accessible and adaptable to customer needs. With the same design principle it is possible to create Pal-Depal isles featuring fully automated operations such as pallet handling, insertion/remotion of layer separators, etc. with solutions tailor made for different speeds, or semi-automatic isles where the operator can perform all its jobs, both in palletizing and in depalletizing modes, by staying at his own position. This feature makes the Zecchetti machine **extremely efficient and economically adaptable to the customer needs without jeopardizing possible future automation upgrades.**





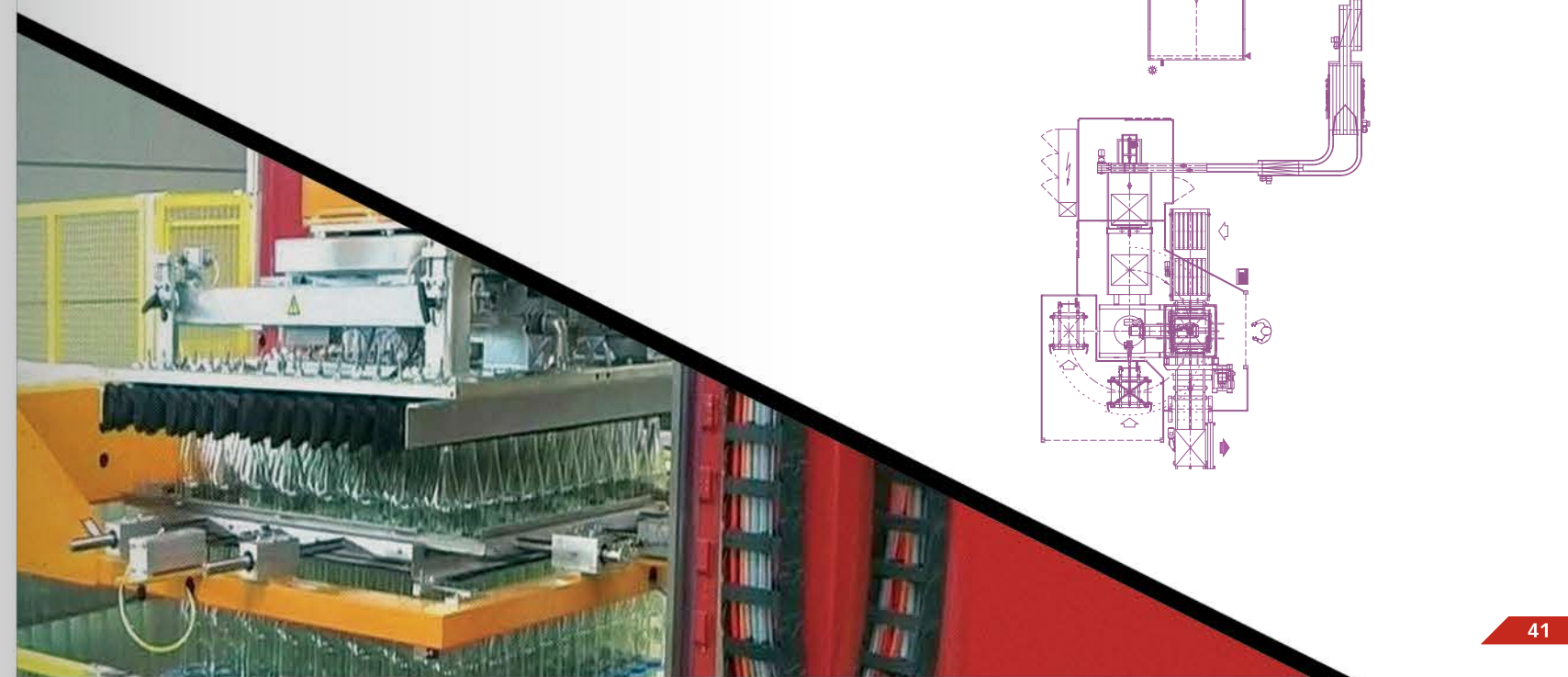
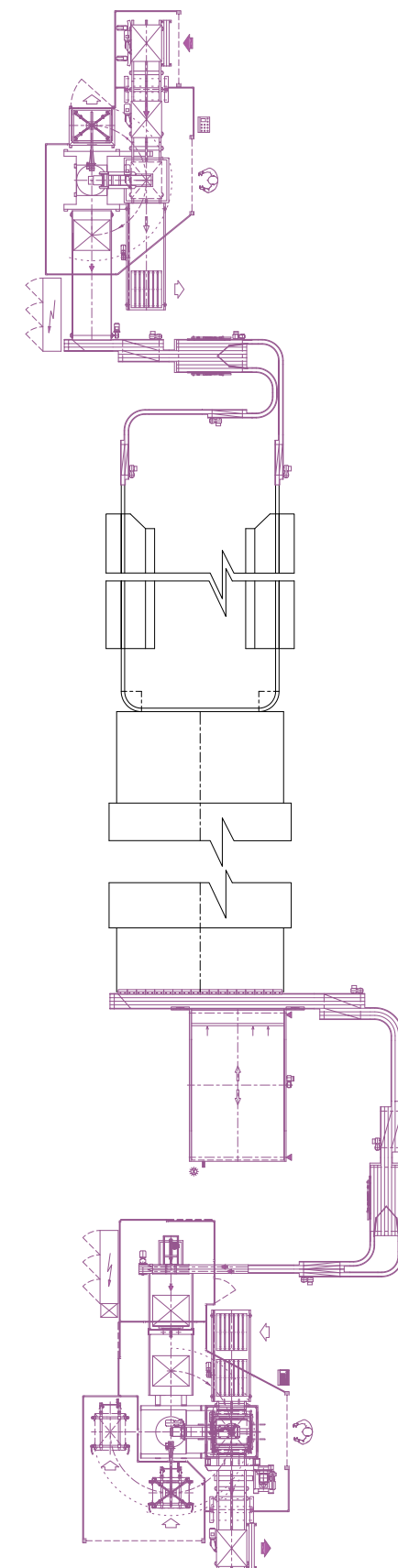
Equipment

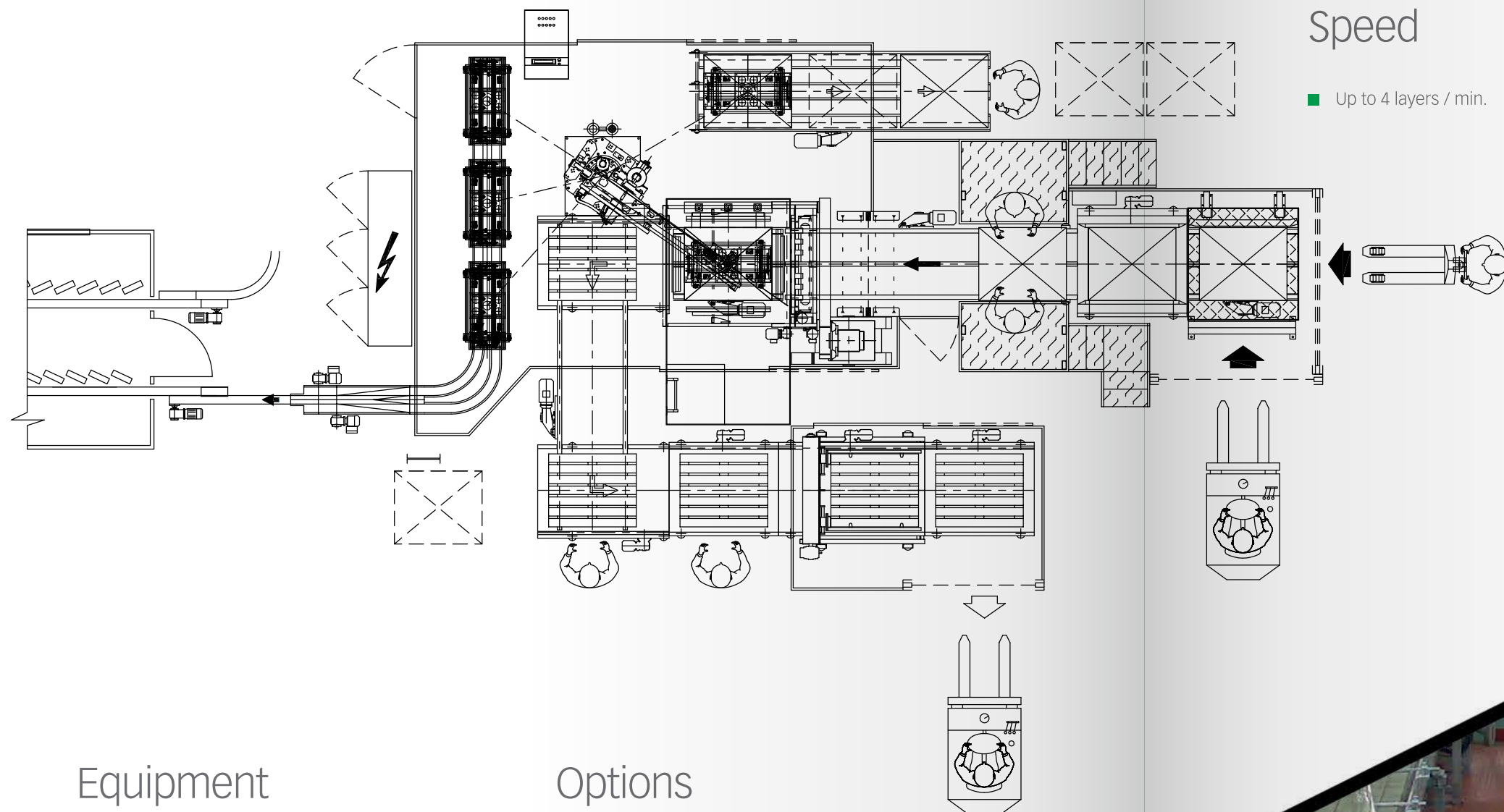
■ COMBINED PAL-DEPAL ISLE

This is the ideal solution for those cases where the speed is particularly high or in case of containers which cannot be handled in pickup mode. In fact, while maintaining some common groups, the depalletizing and palletizing operations are carried out by independent machines. In this way it is then possible to combine different layer handling systems (pickup and sweep-off) both on palletizer and depalletizer. **The automation degree can be adapted to the customer needs without precluding future upgrades.**

■ INDEPENDENT PAL-DEPAL SYSTEMS

The numerous Zecchetti **solutions for palletizing/depalletizing can be applied independently** to the various needs of the glassworks, either individually or incorporated into depalletizing / palletizing systems, in case of sorting or decorating lines. The Zecchetti range includes, in fact, pick-up and sweep-off depalletizers as well as pick-up and sweep-off multi-purpose (MPH) palletizers with various levels of automation. The various possibilities enable the creation of perfect solutions for the customer needs.





Speed

- Up to 4 layers / min.

Benefits

- Compact solutions ideal for sorting and/or decoration lines.
- Easy accessibility mainly directed to facilitate the manual operations.
- Specific solutions for each speed range or need.
- The opportunity to buy at the right price what is needed today by thinking about what will serve tomorrow.

Equipment

- SPECIAL SOLUTIONS
In particular for the depalletization Zecchetti can propose several special solutions for the handling of containers with special shapes or palletized in special ways (oval or shaped containers, containers palletized into thermoformed layer separators, containers palletized into partitions, etc.). **These applications are developed, each time, together with the client** to match with specific needs.
- BOTTLE HANDLING CONVEYORS
The entire range of Zecchetti Cold End Conveyors is used to complete the PAL-DEPAL Systems so to connect them to inspection machines and/or decoration machines with dedicated solutions for each handling requirement, also for special products.

Options

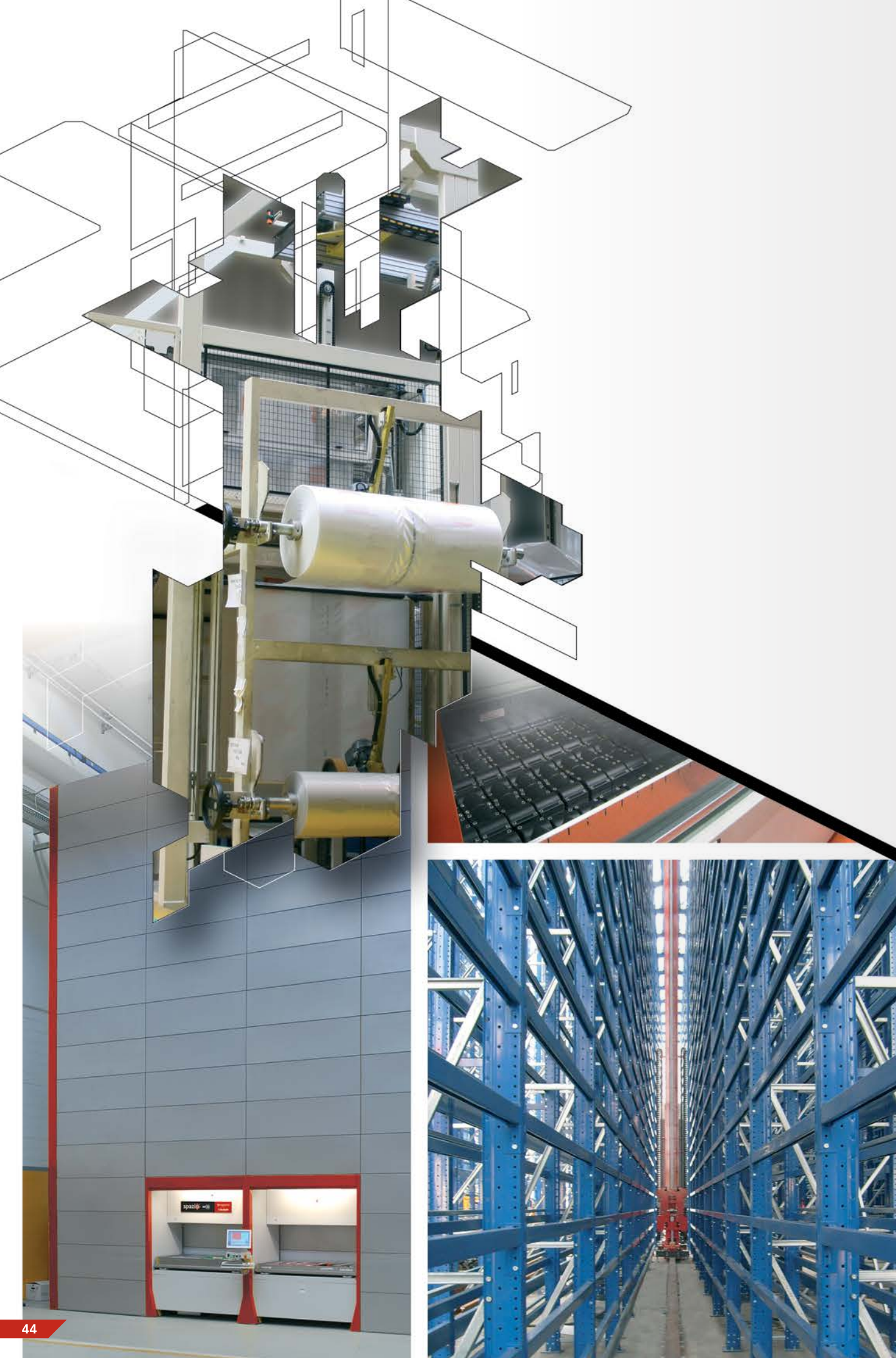
- Various degrees of automation.
- Various types of adjustments: manual, by hand wheel or automatic.
- Management of all types of layer separators.
- Possible application of all the accessories normally employed in the cold-end lines.



ACCESSORY EQUIPMENT - SPECIAL, COMPLEMENTARY SYSTEMS

THE RIGHT SOLUTION FOR EVERY NEED OF THE GLASS FACTORY

50 years of experience in manufacturing automated machines allow Zecchetti to present a range of equipment able to cover all needs of the glasswork cold area and more. Zecchetti can provide therefore turnkey lines, from the Lehr discharge to the Warehouse, even in case of special requests. Namely, all the equipment demanded by the glassworks for their specific automated handling of empty and full pallets. Moreover, thanks to their Logistic Division "Zmagazzini", Zecchetti can also propose automated solutions for the full pallet storage and their loading on lorries. Of high interest are also the Vertical Automated Warehouses, used for the storage "in good order", in optimized spaces and in a guarded way of spare parts, change parts and IS molds.

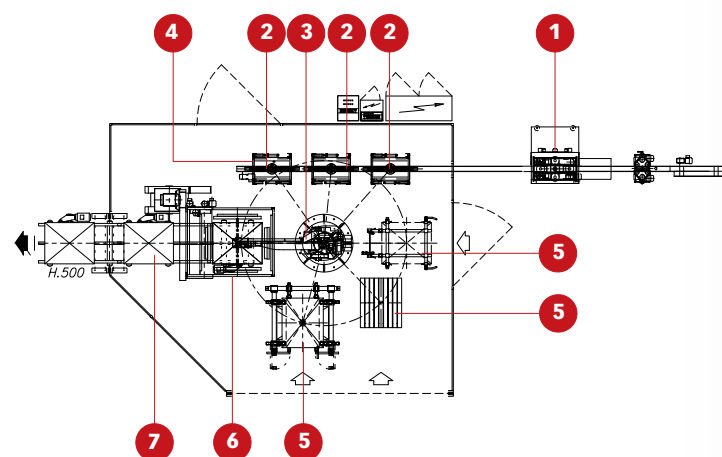


Equipment

SPECIAL PALLETIZING ISLES

For special needs, particularly **in case of shaped containers**, possibly **palletized in a singular way**, or in case of **very tight environments**, Zecchetti propose several solutions employing either Industrial Robots or their own manufactured Robots. The use of robots

enables in fact to perform several operations by means of the same pickup system serving several stations, thus minimizing the space and allowing the insertion of various layer separators. The long experience in the automated handling enables Zecchetti to study and develop the right solution tailor-made to the customer needs.



1. Bottle orientator.
2. Row formation stations with direct pick up of the single bottles.
3. 4-axis industrial Robot.
4. Multi-function layer pickup head.
5. Multi-function magazines (partitions, tier sheets, thermoformed sheets, trays, inverted trays, thermoformed cover).
6. Centering unit.
7. Empty/full pallet handling.

BOTTLE PACKAGING into CARTONS/SHRINK WRAPPED TRAYS



Tray-Carton Packer including:

- continuous flow splitter for the row preparation;
- packer for tray/carton filling.



Tray Shrink-Wrapping Machine

to prepare the final Bundle.



Based on the requested speed, various system versions are available.

PALLET HANDLING CONVEYORS

To complete the automated lines, the insertion of several modules for the pallet motion is necessary. It is essential that these conveyors are designed to match with all the existing pallet types and to respond to the specific needs of the glass works. It is in fact important that such conveyors cover their way to the dressing station in a soft and smooth manner. Only in this way the load will be protected by preventing the fall of containers, particularly the external ones, which would damage the pallet integrity at the expense of the product quality. It is also extremely important that their design makes them well protected from the introduction of debris, let them being crossed by the operators, where necessary, and make them shielded for the FLT "attacks". At the same way, the type and level of protection of wiring is essential to avoid risk of damages in case of accidental bottle fall. Many solutions are available to respond to every need:

- simple or double chain conveyors (2-3-4-5 and 6 lanes);
- driven roller conveyors with various pitches;
- gravity roller conveyors;
- 90° lateral transfer units composed of rollers+chains or chains+chains for any need and any load;
- roller or chain turntables;
- roller or chain lifting platforms for change of level;
- more level combined conveyors.



SHUTTLE CARS

Generally, a cold end system needs to automatically feed and extract empty and full pallets to and from various palletizing lines, towards the dressing or loading bays. To perform these operations by keeping the access to the lines free, Automatic Linear Shuttle Cars are normally used. The reliability of these Shuttle Cars is just as important as that of the palletizers, if not superior; the whole production of the glass works travels on such equipment. The experience has brought Zecchetti to adopt the best and most advanced solutions: positioning through laser systems, power to the on board cabinet through bus-way, Wi-Fi signal transmission, accident prevention through PLS protection. The construction range includes:

- 1-2-4 pallet stations;
- with or without top press;
- with or without approaching.



Equipment

HOODING/SHRINK-WRAPPING OVENS

It is the most widely used system in the glass works to isolate the pallet and the product from environmental pollution and weather events while ensuring maximum stability of the packaging during transportation to the final customer. The full pallet is slightly raised and hooded by means of a tubular polyethylene shrink film sealed on one side (thickness: 80/200 micron) that closes up the pallet bottom as well. The narrowing of the tubular film till coming in contact with the product and the complete wrapping of the pallet are achieved by burners usually employing natural gas or propane and emitting hot air which is directed across the whole surface. In case a dressing film has been previously placed on the empty pallet, this film is welded to the bag thus creating a completely sealed environment. Once cooled, the housing becomes rigid to ensure maximum stability to the pallet. Various versions are available with one or more tubular film coils of different formats. This means **it is possible to wrap two packages of different sizes**, also fed in random order, since the machine automatically chooses the coil which matches with the packaging. Zecchetti may include in their lines Ovens of the main brands such as OMS, THIMON, etc.



PALLET WRAPPING BY STRETCH FILM

In some situations, and usually on pallets previously strapped, the load stabilization is done by wrapping the pallet with various spirals of polyethylene stretch film. In addition to that, usually, a top cover is also included in order to protect the pallet from weather agents. Zecchetti may include in their lines Stretch Wrapping Equipment of the main brands such as Robopac, OMS, Strapex, etc.



LAYER HORIZONTAL STRAPPING (on the layer forming table)

Each Zecchetti palletizer may be equipped with different strapping systems which can be positioned at various zones, to match with the customer needs and according to the various situations:

- strapper placed at the head of the table (pivoting version or fixed version);
- strapper placed at the middle of the table next to a separator or far away.

Zecchetti may include in their lines strappers of the main brands such as: OMS, Strapex, Endra, Signode, Delonca, Etc.



TRAY LABELLING

A solution to label the trays coming out from the Tray Former. Labels generally show the information about the pallet being formed. Some of the possible options:

- label size: A4, A5, etc.;
- label position: on one or more tray sides.



PALLET LABELLING

Various solution are also available to label the finished pallets. Some of the possible options:

- label size: a4, a5, etc.;
- label position: on one or more pallet sides; at a fixed or variable height;
- labelling: before or after the pallet hooding, with information tracking.



TRAY FORMERS

The Zecchetti Tray Formers are able to match with all requirements for the formation of trays or specific top covers to serve one palletizer or to work as a part of a centralized systems common to various palletizers. A wide range of adjustments is guaranteed, for the tray sizes and for the flap sizes. Several versions of Tray Formers are available such as:

- flap closure: by glue, by staples, by click-in system;
- format change over: manual, by hand wheel, automatic;
- configuration: movable on wheels, fixed with manual loading of the blank pallet, with automatic loading;
- speed: up to 5 trays/ min.



PALLET HORIZONTAL OR VERTICAL STRAPPING

Various strapping systems for the full pallet can be proposed, both vertical and horizontal. It is possible to place the strapper either at the palletizer outfeed or at a common area to serve several lines. In both cases, it is possible to decide which pallet to strap and how. Some selections for the horizontal strapping:

- which pallet to strap;
- which layers to strap etc.

In case of vertical strapping, a high pressure top to preserve over time the tension of the strap is always included. Some selections for the vertical strapping:

- number of straps on each pallet side;
- which pallet to strap.

Zecchetti may include in their lines strappers of the main brands such as: OMS, Strapex, Cyclop, Messersì, etc.



AGV (Automatic Guided Vehicle)

To complete the automation of the glassworks, Zecchetti can extend their own supply to the automated storage of pallets in the warehouse, through the provision of AGV or LGV vehicles.

Equipment

■ PALLET SORTING / DRESSING LINE

The checkout of the pallet quality and their dressing are essential operations to ensure efficiency to the palletizer and quality to the finished product.

To perform these steps in an automatic mode, Zecchetti proposes their multipurpose isles which are able to:

SORT

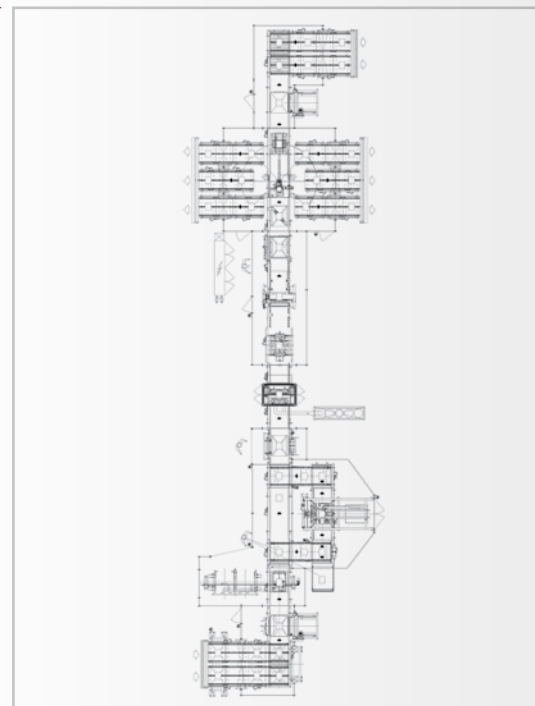
- Automatically remove the film by means of hot air blowers;
- Clean the pallet by means of driven brushes;
- Identify humidity degree and colours;
- Check the pallet Integrity;
- Check the pallet perimeter

IDENTIFIABLE CATEGORIES:

- 1) 1st choice pallets;
- 2) Pallets with "out of tolerance" height;
- 3) "Out of shape" pallets;
- 4) Pallets to be repaired;
- 5) Pallets with "out of tolerance" height and to be repaired;
- 6) Pallets to be discarded;
- 7) Pallets with "not acceptable" humidity degree";

DRESS

- Insert the film.
- Shrink, glue or fix the film by staples.
- Insert the layer pad.
- Glue or fix the layer pad by staples.



■ PALLET AUTOMATED WAREHOUSES

The reduction in warehouse space, the total interface with the production and control systems and the complete automation of full pallets and dunnages loading/unloading make the Zecchetti automated warehouses an ideal solution for the glassworks. The rapid pay back of the investment is even more interesting in those situations where the available space is quite reduced, particularly during the production facilities expansion. The system, besides the usual loading bays for the order shipping which foresee the extraction and the trucks loading by means of forklifts, can be completed with **fully automated truck loading systems**.



■ VERTICAL AUTOMATED WAREHOUSES (with trays)

A major problem of the glassworks is the storage of all the accessories for the various production equipment such as spare parts, change parts, moulds, or consumables. With the Zecchetti vertical automated warehouses with trays it is possible to protect and monitor all the stored material by identifying in real time the available quantity, the reorganization needs, the value of the stored goods, regardless of their location. By suitably equip the trays, the storage and retrieval of moulds can be carried out in an ideal mode, and the trays themselves can be directly placed in the preheating. Thanks to their flexibility in terms of dimensions and construction, the Zecchetti vertical automated warehouses are the ideal solution **to solve in one go all problems of space, security, protection and efficiency** of the glasswork internal warehouse.



Options

- All solutions can be adapted to the specific needs of the glassworks in terms of space, complexity, speed and degree of automation.

Speed

- According to the specific needs.

Benefits

- All equipment are designed and tailored to the needs of the glassworks thanks to Zecchetti expertise in the hollow glass.
- Possibility of extending the automation to all the company departments.
- Product quality guaranteed at every stage by eliminating human errors.
- Quick return on investment.



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