

FRAME-LESS CARTESIAN PALLETIZERS



The frame-less cartesian palletizer is a cartesian robot series DC with 3/4 axles and an axis on the ground that can reach 10 meters of the race, to palletize up to 7 pallets. This machine lacks a perimeter frame which is instead present in the palletizers series PCC and PCS.

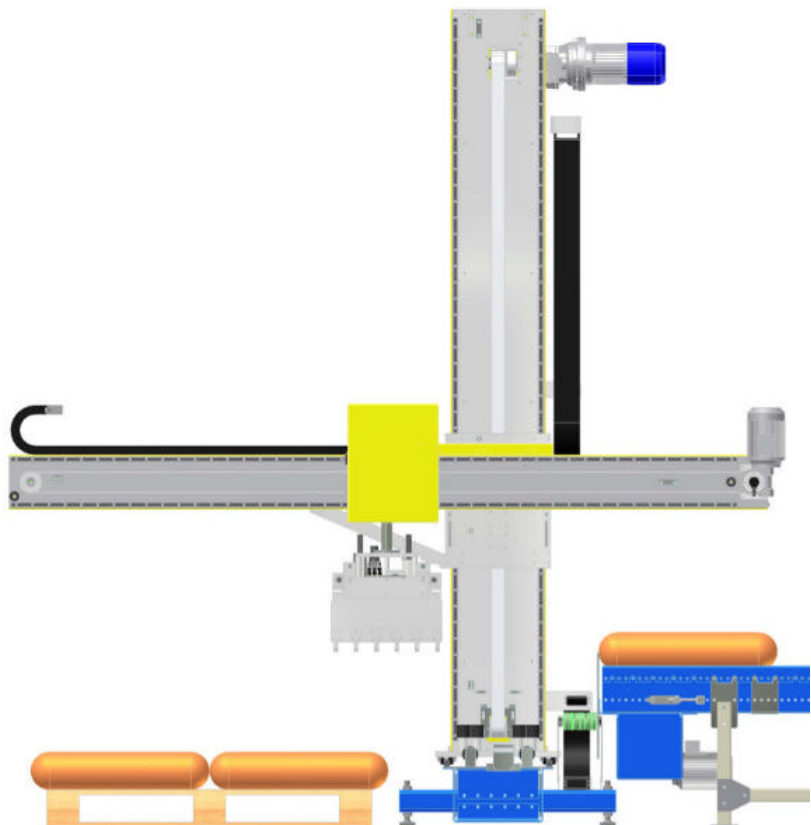
Features of the CC series frame-less cartesian palletizer

- ◆ Suitable to enslave more lines at low and medium productivity.
- ◆ Up to 7 palletizing bays.
- ◆ Maximum productivity of 12 retail /minute on a single pallet.
- ◆ Longitudinal axis to the ground.
- ◆ Using brush less servo motors and PLC Siemens S7-300 connected in network Profibus.
- ◆ Using asynchronous motors with inverter and PLC Omron CP1 for economic versions.
- ◆ Payloads 60, 100Kg for models with servo and 60 kg for asynchronous motors.
- ◆ Operator panel touch screen.
- ◆ Entering palletising formats in an easy and intuitive way.
- ◆ Autodiagnosis to report the fault or the malfunction of a component.
- ◆ Possibility to connect the machine to the network using a web server

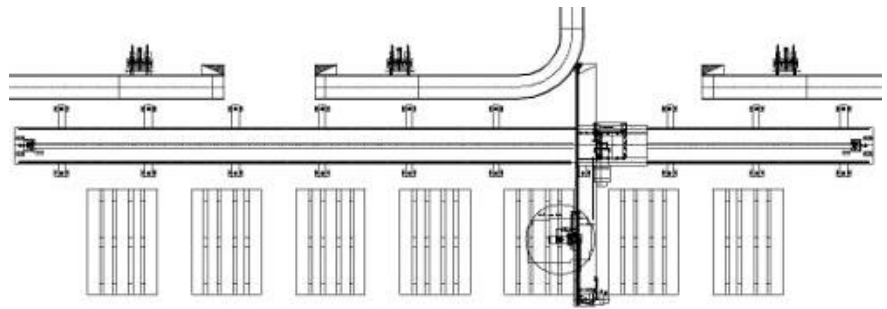
The machine is available in two models:

- ◆ CC using 3 or 4 servo motors for the movement of the axes (the three cartesian axes + possible rotation of the gripper).
- ◆ CCE economic model that uses 3-phase asynchronous motors with inverter to control the 3 cartesian axes.

Both models can be supplied with the Y-axis (transverse) protruding. The figure on the left shows a palletizer with the protruding Y-axis : this configuration allows to have the tapes that carry the products to be palletized on one side of the machine, while on the other side there are the pallets. This configuration allows a greater freedom in the arrangement of the machine and conveyor belts. The conveyor belts, to avoid that they can be struck by the robot palletising stage, must be positioned on the ground. Even the maximum height of the product must be compatible with the overall dimensions of the machine.

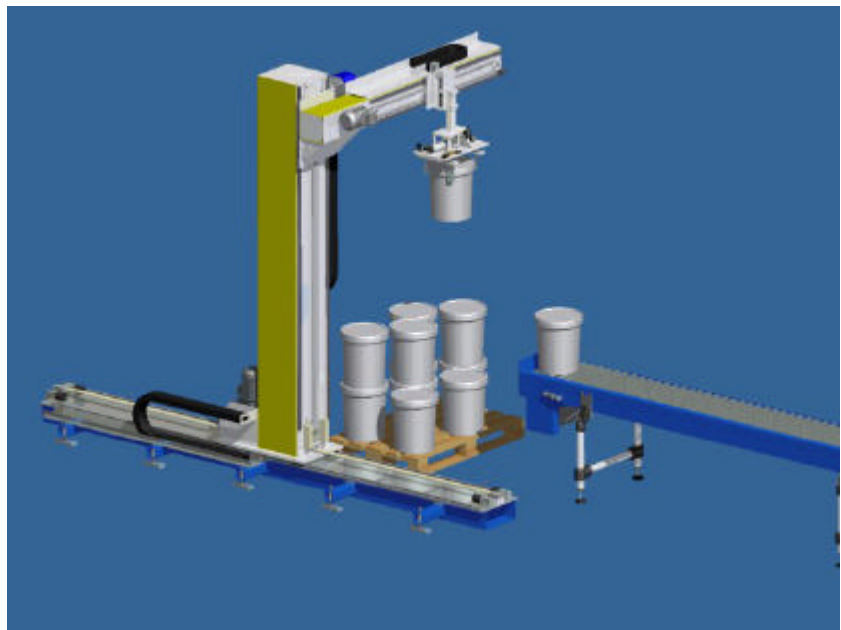


Where it is impossible to place the tape on the ground or the products to be palletised are too high, you have to place the tapes outside the bulkiness of the palletizer and insert the end of each tape retractable media that bring the product in place of the outlet, and completed the taken, may disappear from the area of robot movement.



Example of lay-out with 3 tapes and 7 pallet places.

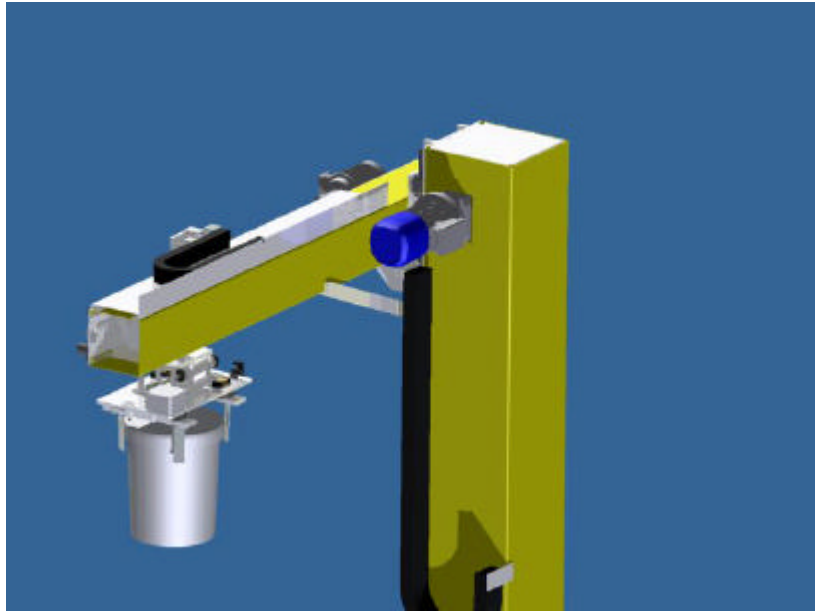
The Y-axis version with no protruding is shown in the figure. The conveyor belt is internal to the operating area of the robot. This solution is preferable for machines with one or two pallet places and with one or two tapes of product arrival.



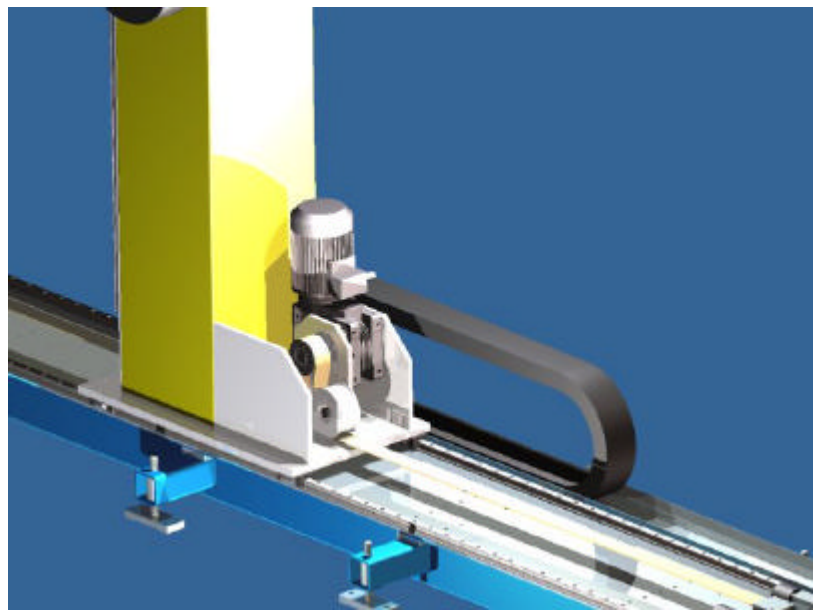
The Y-axis to the left has a stroke of 1250 mm that allows you to palletize on a Euro pallet positioned transversely. If there is the need to climb over a complete pallet with the product, the stroke can be increased by 400mm to allow to bring the gripper with the product aligned with the vertical beam, and then out the bulkiness of the complete pallet.



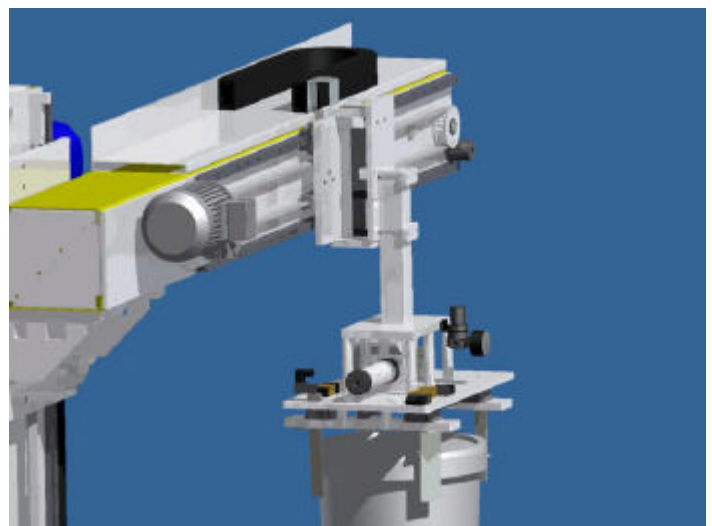
In order to minimize the vertical dimension, the gear unit of the vertical axis is integrated within the column. To reduce energy consumption, and the gear used to spur gears with high efficiency ($> 95\%$). The motor car is braking with power of 1.1 kW for the model with inverters and 1.5 kW for the model with servo motors.



To allow a high stiffness of the transmission longitudinal axis X, the gear motor is installed on board of the mobile part of the robot.

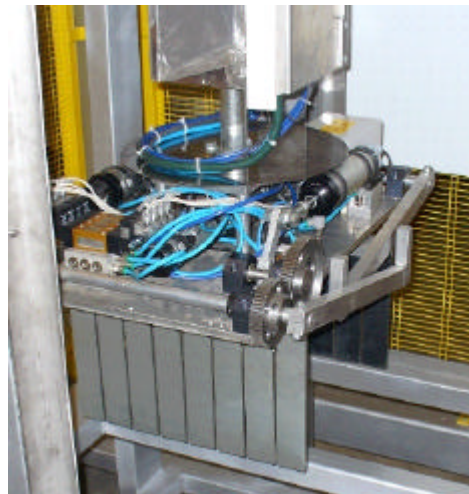


The gripping unit is mounted floating vertically: the sleeve that supports the gripper, is constrained to the cart of the Y axis by means of a trolley with guide ball. If the clamp in motion down an obstacle, the trolley runs on driving operating a sensor that stops the machine immediately. The free travel vertical is 100mm. This device limits the damage to the products in case of impact with the caliper.



On the palletizer can be installed all grippers of our production:

- Gripper with a movable flap and with a fixed one.
- Grippers with self-centering flaps.
- Grippers with hooks for pallet gripping (fig. on the right)
- Grippers with suction cups for interleaf gripping
- Grippers for rigid bags
- Grippers for soft bags
- Gripping elements with suction cups



Particular gripping gripper

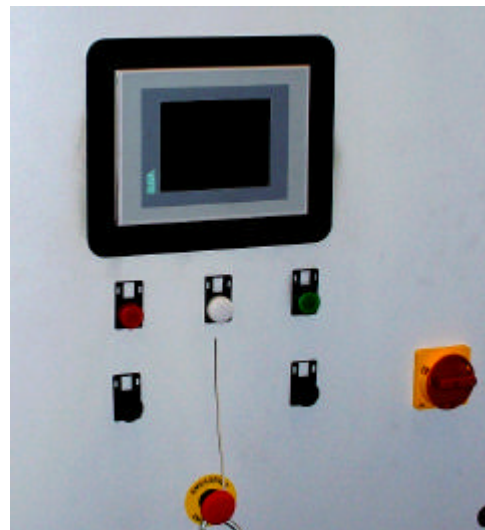
The electrical panel is separated from the machine: we have the operator panel on the door with some spies, the start button, the emergency stop and the main disconnect.

A luminous column with an acoustic signaller is positioned over the chest.

Within the framework is present the PLC, drives or inverters of the robot, a control unit for the management protections.

The machine has no perimeter safety protections: the protections can be installed by the customer or may be provided separately.

The framework is capable of controlling also the conveyor belts for the product and for the pallets.



Particular electric panel

TECHNICAL SPECIFICATIONS

| Model | RCC | RCCE |
|---------|-------|-------|
| | | |
| Feeding | 400 V | 400 V |
| | | |

| | | |
|------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------|
| Type of vertical axis | In the encumbrance of the machine | In the encumbrance of the machine |
| Useful payload, gripper included | 60, 100 Kg | 60 Kg |
| Pallet orientation | Whatever | Whatever |
| Gripper with pallet hooking | Installable | Installable |
| Gripper with interleaf hooking | Installable | Installable |
| Motors | Brushless | Asincronous + inverter |
| Reducers | Planetary and coaxial for the vertical axis | Worm screw-coaxial |
| Productivity | 12 cicli / min su singolo posto pallet | 6 cicli /min su singolo posto pallet |
| Maximum palletizable height | 3000 | 2000 |
| Useful longitudinal stroke | Standard up to 10000 (7 bays). Longer strokes on request. | Standard fino a 10000 (7 baie). Longer strokes on request. |
| Useful transversal stroke | 1250 - 2400 | 1250 - 2400 |
| Useful vertical stroke | Max 3050 | Max 2050 |
| Useful stroke for head rotation | 0-90° o 0-360° | 0-90° |
| Longitudinal speed | 2 m/s | 1.5 m/s |
| Transversal speed | 1.4 m/s | 0.8 m/s |
| Lifting speed | 1.5 m/s | 0.8 m/s |
| Head rotation speed | 350°/s | - |
| Floating gripper along the vertical axis | Yes, 100mm | Yes, 100mm |
| PLC | Siemens S7-300 | Omron CP1 |
| Axes | 3/4 | 3 |
| Perimeter protections integrated | No | No |
| Type of perimeter protection | Steel mesh panels | Steel mesh panels |
| Electical panel | Separated | Separated |
| Protections of pallet exit | Light curtains or door, optional | Light curtains or door, optional |
| Gripper | Depending on the application | Depending on the application |
| Gripper rotation | 0-90° pneumatic control or dedicated axis | 0-90° pneumatic control |
| Pallet warehouse | Excluded | Excluded |
| Transport of empty pallet | Excluded | Excluded |
| Transport of full pallet | Excluded | Excluded |
| Entrance transporters | Excluded | Excluded |