

Robo-Column

Automatic palletizer/depalletizer



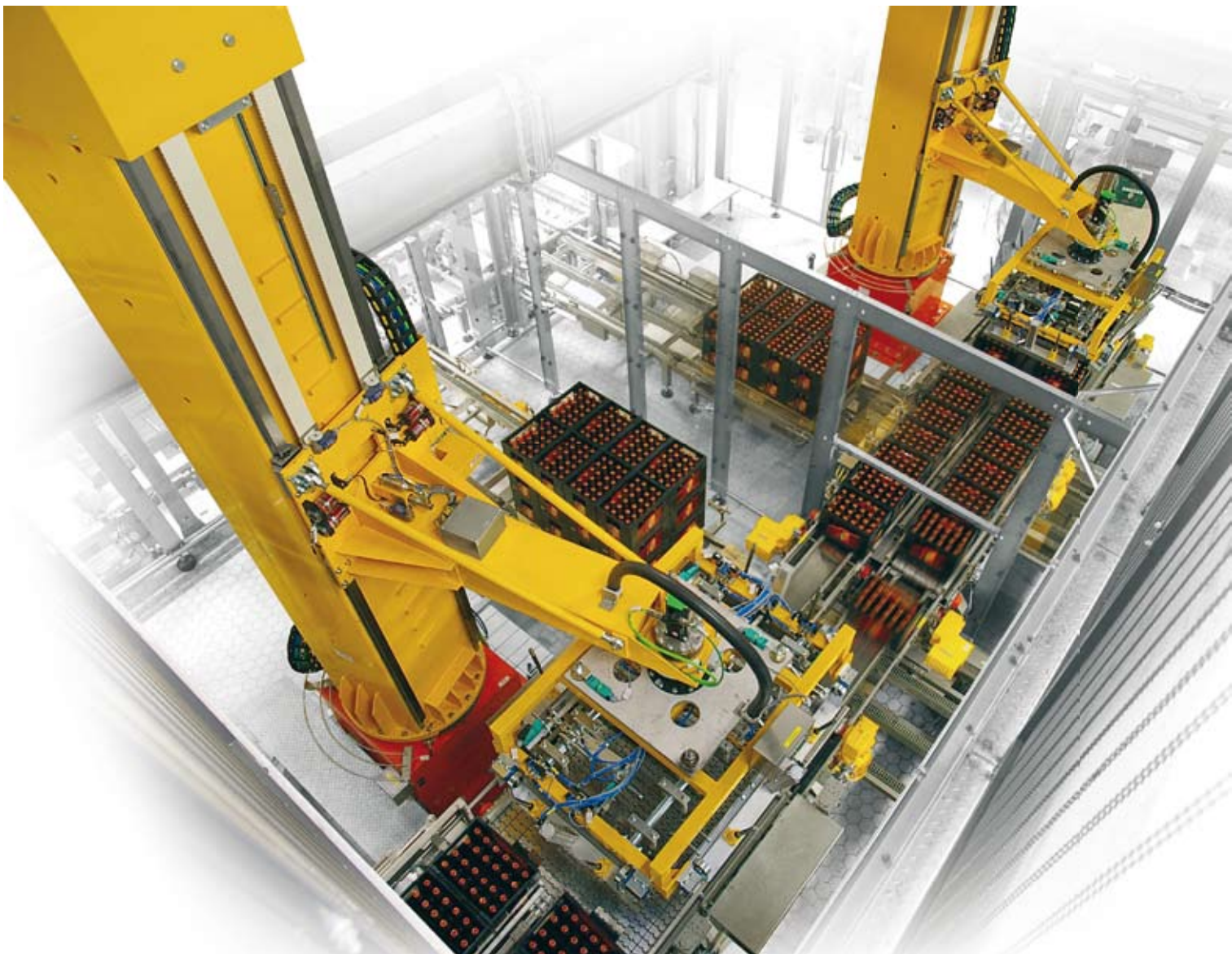
ROBO-COLUMN IS AN AUTOMATED PALLETIZER/DEPALLETIZER SUITABLE FOR CRATES, CARTONS, TRAYS, SHRINK-WRAPPED PACKS AND ALL TYPES OF PACKS IN GENERAL.

Robo-Column

Automatic palletizer/depalletizer

The movements of this automated machine are programmed to perform high-speed palletizing/depalletizing operations. Suitable for various applications, the machine is very flexible thanks to the modularity/orientation of the units, wide working area and combined operations.

Easy access on all sides and minimal floor space requirements mean it can be readily fitted into existing lines.



Main features

- Three continually controlled electric axes (CNC) with brushless self-braking motors equipped with an encoder; the rotation of the column, the vertical movement of the working arm, and the rotation of the motorized wrist are effected with interpolated movements; the control of the axes enables the operator to fix the points of differentiated trajectories both in the outward and return movement according to the work to be carried out and the product to be handled
- the column is mounted on a compact gear motor with reduced play and high rigidity
- toothed belts with internal strands (requiring no maintenance) for lifting are proportioned to ensure safe working conditions and safe dynamic working loads
- prismatic recirculating-sphere guides have an automated lubrication system (replaceable cartridge) with near-empty display (it can be connected to the machine PLC)
- the main single-column structure and lifting arm are made of painted steel, designed with the finite-element method, based on the greatest distortion in heavy duty working
- automatic format changeover system with tool area at the side of the machine can be supplied on request; the utilities (air and tension) can be connected automatically or manually.

AUXILIARY EQUIPMENT

- HMI with message visualizer or touch screen to link up with data acquisition network
- complete pneumatic and electric system, with the IP55 safety cabinet, and open electrical ducts
- operator protection shields around the machine according to the existing standard regulations
- grippers adapted to the format to be handled.



Robo-Column crate depalletizer



Robo-Column crate palletizer

Robo-Column system

The Robo-Column system can be used for various jobs: from handling crates and loose or packed bottles to complete layers and rows; the potential output is up to 450 cycles/hour with a payload of 750 kilograms at wrist. The main column is mounted on a motorized rotating table guiding its movements with extreme precision. On one side of the column, the lifting arm is worked by a counterweighted system of pulleys and belts; the gripping head is attached to a motorized wrist at the end of the arm.

The key equipment in the system is the gripping head. Its various configurations determine the robot's work method:

- head with hooks or lateral guides for handling crates
- multi-row head with plates made of steel or carbon fiber for packs or cartons
- head with individual tulip-shaped grips for loose bottles in crates and/or plastic trays
- head with guides or lateral closing for empty PET bottles.

The frame for the heads is made manufactured with a high ratio of allowable stress/weight material, suitably shaped to guarantee great rigidity and limited use of floor space. The heads are equipped with a security system to safeguard the equipment from collision with any extraneous or badly positioned objects. Each head may be equipped with an automatic grip changeover for very fast format changeovers with no operator involvement.

Consisting of a male grip (installed on the robot) and a female grip (on each head), the system is designed according to the concept of "intrinsic security." The presence of a dedicated tool area enables operators to carry out preparation and/or maintenance activities on individual heads off-line while the robot continues to work. The operator-machine interface consists of a touch screen, providing information about the state of the system peripherals, and a programming unit.



Toothed belt during lifting



HMI touch screen 12"



Single column main structure and lifting arm in painted steel



Transfer head with centering device and hooks for gripping crate layers at the sides

Technical features

Item		Specifications
Type		Column type
Controlled axis		3 axis (J1, J2, J3)
Working space	Angle J1	$\pm 165^\circ$ (total 330°)
	Abs. level J2	Min: 1,080 mm - max: 3,750 mm
	Angle J3	$\pm 155^\circ$ (total 310°)
Installation		Floor
Max. payload at wrist		750 kg
Weight		4,600 kg
Electric drive method		Servo drive by AC 400 V servo motor
Electrical data	Rated voltage	3 AC 380 ÷ 480 V (42 ÷ 62 Hz)
	Control voltage	DC 24 V (-15% ÷ +25) min 3 A - max 5 A

1	2
3	4
	5

- 1 - Suction gripping head for full containers
- 2 - Gripping head for empty PET bottles
- 3 - Side pressure gripping head for half depth crates
- 4 - Gripping head for kegs
- 5 - Supporting roller gate system

