

# Sleeve cartoner

## Machine Case Study



### ROBOTISED WRAP-AROUND CARDBOARD SLEEVE CARTONER

- Seamless integration of robots
- Electronic line-shafting control
- Format change at the touch of a button

# Robotised wrap-around cardboard sleeve cartoner

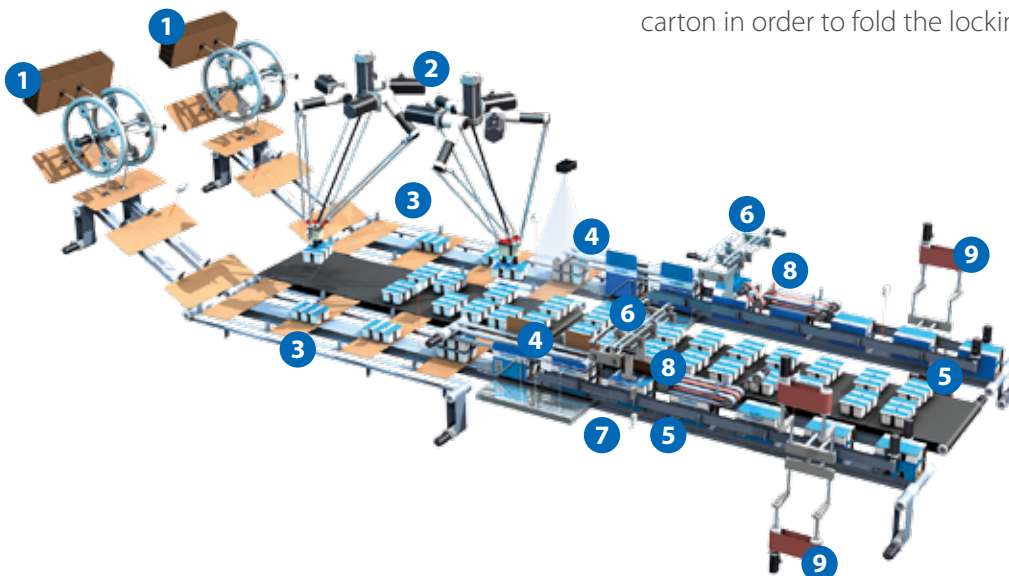
## Machine description

A cardboard is removed from the magazine via a rotary feeder and transported in a single lane via a lug belt conveyor up to the receiving position of the pick & place system. The article groups are picked by two independently working robots and stacked onto the cardboards. The loaded cardboard is then transported by means of the pressing belts into a folding station in which two lateral lug belts ensure precise positioning of the carton in order to deposit the glue, to tuck the top flaps and to fold the locking tabs. The result is an article group tightly wrapped in a cardboard sleeve featuring retainer tabs preventing the article group from sliding out from the carton.

## Machine Function

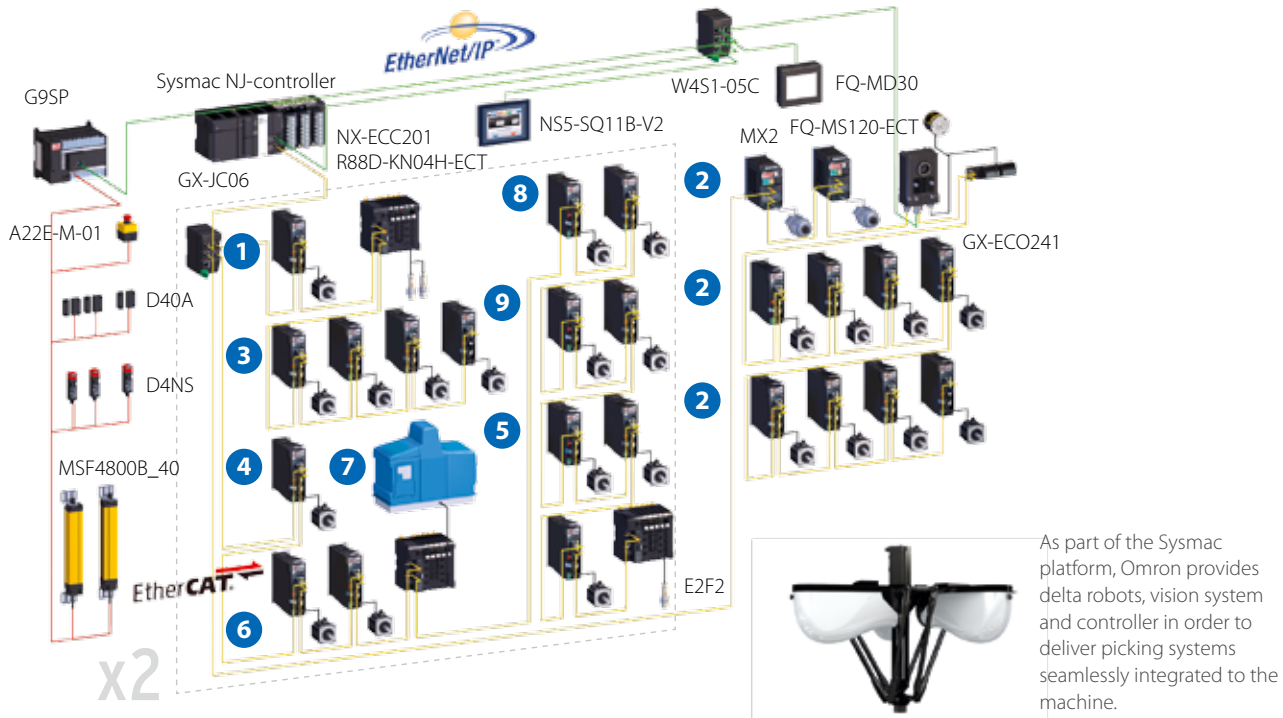
- 1 Rotary placer**
- 2 Robotic infeed module**  
A vision-guided robotic system gently transfers and stacks article group onto a flat cardboard blank.
- 3 Indexing lug belts**  
Two pusher lugs engage the rear side of the carton and drive the sleeve up to folding station.

- 4 Overhead pressing belt**  
Two overhead pressing belts grip the article group firmly to perform the lateral folding operation.
- 5 Lateral indexing lug belts**  
Two lugs engage the lateral rear side of the carton and drive the sleeve during gluing and flap closing.
- 6 Top panel closing unit**  
The top panels are folded by the alternating action of two flap folding plates. Each plate is mounted on a belt-driven linear axis.
- 7 Glue dispenser**  
As the individual cardboard advances with the lateral lug belts, limit switches fire outputs to turn glue guns on and off at precise positions in the cycle.
- 8 Overhead squaring system**  
Cartons are captured between pusher and retainer lugs. With 3 points of operation, the 3-belts system aligns the flaps to form a perfect square shape.
- 9 Perforating station**  
A rotary system punches the side wall of the carton in order to fold the locking tabs inwardly.



## Your automation partner in packaging

We Automate Machines! We supply all the automation products for the robotised cardboard sleeve wrapper including the logic and motion or hybrid controller. In addition we provide all motors, drives, position sensors, safety devices, temperature sensors and other panel components. All devices are easy to integrate and carry the Omron mark of quality and reliability.



As part of the Sysmac platform, Omron provides delta robots, vision system and controller in order to deliver picking systems seamlessly integrated to the machine.

### Seamless integration of robots

The integration of the robot kinematics into the main machine controller is a key factor of differentiation for OEMs who want to optimise the cost and performance of their machine. With Builtin kinematic algorithm, motion command and logic instruction in one controller, robotised cartoners can be designed and controlled as a single, seamless system rather than a chain of independent modules. The machine is entirely controlled within the program of the Sysmac NJ-controller. The robots are consequently highly synchronized with the rest of the packaging machine which greatly enhances the machine coordination.

### Electronic line-shafting control

With Sysmac NJ-controller and G5-servo-drives communicating over EtherCAT, servo-motors are electronically synchronised in speed, position and timing forming an ideal electronic line shaft. No

need anymore for complex mechanical coupling to synchronise the different operations of the machine. All real axes are slaved to a virtual master axis. The synchronization ratio can be easily changed and the axes connected or disconnected on the fly. Electronic line-shafting control greatly simplifies machine sequencing.

### Format change at the touch of a button

Automated changeovers offer dramatic improvements to line efficiencies and reduce operator errors. The Sysmac NJ controller provides recipe support for easy format changeover, allowing recipes to be stored on the controller and reloaded from the HMI. All transmission gear ratios, cam settings and motion profiles can be changed electronically – virtually at the touch of a button reducing product or format changeover to mere software commands.

*Would you like to know more?*

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