



Case Erecting, Packing & Sealing

Juice Cups

Project Overview

This juice cup manufacturer's aging erect, pack and seal equipment was constantly going down and requiring frequent manual intervention to correct issues. Needing to increase throughput in the midst of growing labor shortages, it was time to invest in new automated machinery.

The equipment would need to be highly reliable and designed to handle the cups without damaging their foil lids. To justify the total cost of ownership, reducing the time investment of operators and maintenance technicians would be crucial and line downtime would need to be minimal.

Customer Objectives

Reliably increase throughput

The case packer would need to reach rates of 360 products per minute, ideally with the capacity for growth.

Sustain product integrity

The foil lids of the juice cups are highly susceptible to puncture and spills, possibly leading to product loss, damaged boxes, and sticky build-up causing downtime and premature machine degradation. To save both time and cost, the packing solution would need to maintain the highest level of product integrity.

Minimal total cost of ownership (TCO)

The line should require limited human oversight/intervention to operate. Tasks including basic operation, changeovers, and consumable restocking should be simple and quick to execute.

Additionally, rare spills would need to be easy to clean up.

Pearson Solutions

To achieve rates up to 500 products per minute, the top loading cell utilizes two FANUC robots with more than 100,000 hours Mean Time Between Failure (MTBF). A M-710iC/50 packing robot uses an end-of-arm vacuum tool to pick and place layers of up to 24 cups at a time into one or two cases. Operating simultaneously, a M-10iD/12 robot picks chipboard dividers from a magazine and places them between product layers.

Rounded stainless steel lane rails guide the juice cups into the packing cell, allowing enough space to prevent cup shingling and snagging. Case gaps are created at the infeed of the packing cell so only one or two product layers (depending on the selected recipe) can enter at a time. The end-of-arm tool on the packing robot gently picks product layers by their lids using vacuum.

A consistent Human Machine Interface (HMI) on each piece of equipment enables a single operator to learn and oversee all of the machinery. Changeovers are tool-less and can be executed in under 10 minutes on the case erector and case sealer, while no manual adjustments (only layer count adjustments via the HMI) are necessary on the case packer.

Restocking can be carried out without disrupting the packing process. Chipboard dividers are housed in two drawer-style magazines, which are accessible from outside the cell.

Should a spill occur, the packing cell has a washdown frame and food-grade packing robot with a removable tool so it can be hosed off. And, the plastic product conveyor is equipped with an undercarriage wash system.



Sequence of Operation:

Cases are formed and bottom sealed with tape on a Pearson CE25-ST erector (1), then conveyed into the packing cell (2). They are singulated and indexed into the load station (3) where flap guards deploy to prevent product snagging.

Simultaneously, products are received from the customer's accumulation system in four lanes (4). They transport into the cell where a full pattern of product is conveyed onto the pick conveyor against a backstop. Upstream product is retained by metal fingers as a M-710iC/50 packing robot (5) picks a layer of cups using a vacuum end-of-arm tool. Depending on the selected recipe, the robot will load the products into a single case, or the tool will split apart to load two cases at once.

A M-10iD/12 robot (6) picks dividing sheets from two magazines (7) and places them directly in the case between product layers to aid in stack stability. Full cases are conveyed to the CS15-ST case sealer (8), where they are top sealed with tape.

- 1 Pearson CE25-ST Case Erector
- 2 Pearson Robotic Case Packer
- 3 Case Load Station
- 4 Product Infeed
- 5 Robot #1 (product packing)
- 6 Robot #2 (divider placing)
- 7 Divider Magazines
- 8 Pearson CS15-ST Case Sealer

