



Highly Flexible Erect, Pack & Seal System Answers Co-Packer's Needs

Bottles of Vitamins & Supplements

Project Overview

Following an acquisition that had new leadership urging the company to automate their packaging line, this South Carolina-based contract manufacturer came to Pearson to improve the overall efficiency of their operation and keep up with their expanding customer base.

They needed an erect, pack, and seal solution able to sustain aggressive production rates while providing a high level of flexibility to handle the hundreds of different SKUs manufactured. They also intended to install a fourth line and a centralized palletizer within the next 1-2 years, and the ability to work with the same OEM for the subsequent project was preferred.

Customer Objectives

Consistent production independent of manual labor

With three lines executing forming, loading, sealing, and palletizing functions entirely manually, the challenge of finding and maintaining enough labor for each shift was growing, as was the cost of repetitive motion injuries.

High throughput in a restrictive footprint

Load rates of 240 products per minute would need to be achieved within an extremely narrow space allowance.

Flexibility to handle & manage hundreds of SKUs

Packaging under a multitude of brand names and supplying to retailers nationwide, the company produced more than 175 SKUs, and anticipated adding as many as 300 more within the next 1-2 years. Since their vitamin and supplement products were packaged in individual bottles, shrink-wrapped bundles, and cartons - all ranging in size and pack quantities, the solution would need to be highly flexible.

And, with four changeovers needed on average for each of their three daily shifts, the ability to swap tools and make adjustments easy and quickly would be crucial.

Pearson Solutions

Three CE25-T tape case formers, three robotic top load case packers, and three CS25-T tape sealers automated some of the most mundane tasks on the line, freeing up 36 workers per shift.

To accommodate the available space, each line has a long, linear layout. Typical packer design principles were slightly modified using cutouts and part nesting to keep machine widths to a minimum and provide sufficient user access.

To achieve the desired throughput rates, the M-710iC FANUC robots needed to operate continuously without any wait periods. Product diverters and dual product lanes/load stations accomplished that by allowing one pack pattern to be picked and placed into the case, while the next one is being formed simultaneously.

To handle the large amount of SKUs, each robotic case packer was outfitted with (13) end-of-arm tools (EOATs) that can be quickly swapped out without using tools. Designated EoAT storage racks offer easy access to ensure changeover time can be kept to a minimum. Each tool features a large foam pick surface with vacuum plenums and check valves that provide optimal suction based on the cap circumference/carton top dimensions.

Operators receive further assistance in managing the enormous number of SKUs through an easy-to-use recipe selection tool that guides users as they search for existing recipes based on product type and pattern specifications, verify if new SKUs will fit into pre-existing setups, and make recipe adjustments or add new recipes.

Sequence of Operation:

A Pearson CE25-T Case Erector uses a vertical magazine pickoff and opposing vacuum to erect knockdown RSCs (regular slotted containers). The minor and major flaps are closed and tape is applied to the bottom of the case as it moves in the machine. The erected cases are discharged upright and conveyed to the robotic packer.

At the packer, loose bottles are received standing up in a single row, while packs/cartons enter narrow side leading. A servo diverter separates products evenly onto two infeed conveyors. Product rows are conveyed into the load position and side referenced onto a dead plate one at a time. Once the correct number of rows have been accumulated and referenced, a clamp compresses the pattern down.

Simultaneously, cases are conveyed into the cell either one at a time or in sets of two. Next, they advance into the load position where flap control plates engage to secure the case flaps during the loading process. A FANUC M-710iC robot picks and places the entire product pattern from the infeed conveyor into the cases. If a product formation is incomplete, the robot picks the product group and releases it into a project reject station for quality control. The case loading process repeats, alternating between the two pattern forming infeed positions as needed.

Once complete, the cases are released to the takeaway conveyor and route to the CS25-T Case Sealer. The top minor and major case flaps are folded and tape is applied to the top of the box as it is conveyed through the machine.

- 1 Pearson CE25-T Case Erector
- 2 Pearson Robotic Case Packer
- 3 EoAT Storage Rack
- 4 Pearson CS25-T Case Sealer

