



Erect, Pack & Seal System

Medical-Grade Wet Wipes

Project Overview

This medical resource provider's existing system included outdated equipment that no longer fulfilled their needs. With a desire to be involved in the development process, they communicated their need to replace their aging equipment—including a 2004 Goodman Gantry—with a higher rate line that was flexible enough to accommodate multiple product sizes and pack patterns.

Customer Objectives

Flexibility

- A solution that could accommodate large- and small- scale operations
- The ability to quickly scale production anticipating rapid market acceptance of test product
- The Gantry's speed limitations were due to a dual belt product collator that couldn't achieve rates over 120 products/minute, and the customer required the proposed solution to meet rates of 150 products/minute

Minimize manual interference in production

- Overcoming labor shortages, frequent training requirements and associated costs were necessary to reduce total cost of ownership (TCO)
- The customer needed a solution that simplified and accelerated frequent changeovers, reduced downtime, and had low maintenance requirements
- The Gantry's limited two-axis movements often caused the product corners to catch on the corrugate during packing and slow production

Competent, single-source supplier

- Collaborative partner to find the right solution and overcome previous product handling issues
- Continuity of the human machine interface and operation
- Durable machine design optimized for 24/7 production time
- The customer found value in our User Centric Design (UCD) philosophy that makes machine operation and maintenance efficient and easy to learn

Pearson Solutions

- Using Pearson robotics allows flexibility in product types, rates and pack patterns
- The customer's previous two-axis solution couldn't accommodate necessary rates—incorporating three FANUC 6-axis M10 robots with line and vision tracking and continuous motion conveying resulted in exceeding customer expectations with rates of 160 products/minute
- The 2-axis robot had a large footprint and speed limitations due to product shingling at increased rates—Pearson's 6-axis robotic line, which requires significantly less space, eliminated the shingling by controlling product transfer and picking products in a single layer

- Automatic tool changover provides fast, accurate and repeatable product changeovers to accommodate multiple pack patterns and product formats
- Robotics provides greater speed, consistency, and reliability with a Mean Time Between Failure (MTBF) of 80-100,000 hours (approx. 10 years)
- U-shaped floor plan allows operator to visually access all stages of the line process while also remaining conscious of available footprint
- Continuous motion enables smooth operation, leading to less wear on the equipment and decreased instances of product damage
- End-of-arm tools (EOAT) nimbly articulate product into tight spaces, resolving issues of snagging during packing

- The customer's tour of Pearson's R&D department built confidence in our proposed solution and allowed us to demonstrate our capabilities as an established supplier of robotic and integrated solutions
- Pearson's capabilities include Erect, Pack, Seal and Palletize, placing us in a unique position as a single source supplier and allowing future automation projects with one point of contact and continuity of machine design and interface
- A positive relationship was developed when Pearson inherited the Aftermarket services of the customer's Gantry with the acquisition of Goodman in 2008—our proposed solution further established their confidence in our robust 24/7 multi-shift machine design philosophy
- Our proprietary UCD simplifies machine learning and operation, leading to intuitive maintenance, quicker fault recovery, and better operator task efficiency

Sequence of Operation:

Knockdown regular slotted containers (RSCs) are stacked into the extendable horizontal case magazine of the CE15-T. Blank suction cups advance to select the case, which is then indexed into the case feed rollers and transferred into the case flight system. Opposed vacuum cups engage the case and a pneumatic-operated set-up arm erects the case. The minor flaps are then closed and sealed with pressure sensitive tape. Empty erected cases exit the machine upright to be conveyed downstream to three FANUC six-axis M10 RTL Case Packers.

While cases are being erected, a Flexlink prefeed conveyor transports product—seam up and short dimension leading—through the product conveyor. A regenerative vacuum blower jump transfers product onto the vacuum infeed conveyor. As the product passes over the backlit conveyor with translucent belting, the FANUC vision system determines the position and orientation of the product as it moves upstream toward the packers. Rejected product runs off the end of the product conveyor and collects in a discharge bin.

Three RTLS using custom end-of-arm tools (EOATs) fitted with vacuum cups pick in groups of two, three or four. The product is rotated 90 degrees and, using articulated motion to eliminate snagging, placed in a single-layer pattern to maximize space. Each EOAT allows operators to modify pack sizes and patterns, reducing changeover time.

Full cases are discharged from the cell via the full case conveyor and conveyed to the CS25-42T Case Sealer. The minor and major flaps are folded and the case is sealed with pressure sensitive tape. Finally, the cases are conveyed to an unpowered gravity conveyor where they are transported to the palletizing area for shipping preparation.

