PEARSON
PACKAGING SYSTEMS

Side-by-Side Robotic Palletizers

Cases of Medical-Grade Breathing Equipment

Project Overview

This Pennsylvania-based manufacturer of CPAP, ventilator, and respirator equipment was faced with an explosion in demand in the wake of the 2020 Covid-19 pandemic. Transitioning to 24/7 operations to keep up, they would also need to replace their highly unreliable palletizer with a centralized solution that could handle their large number of SKUs, support frequent random inspections, and provide flexibility for future expansion or operational changes.

Customer Objectives

Handle a large number of SKUs + a new product

The line would need to handle as many as 30 different SKUs each day, stacked in a wide range of patterns.

Plus, the customer had recently launched a new product, which was too wide for their existing conveyors to handle.

Pearson Solutions

To handle the many SKUs and pallet stack variations, two side-by-side cells are each equipped with a FANUC M-410iB/185 palletizing robot, each recieving cases from four elevated infeed conveyors and stacking up to four different pallet stacks at ground level.

A sortation conveyor uses a barcode scanner to route cases to the appropriate lane for picking, and is sized to handle all the various case sizes.

Support quality assurance & continuous operation

Due to strict industry regulations, quality control measures would be critical to ensure product and case integrity was maintained prior to shipping. Frequent, random inspections would need to be carried out, with the ability to re-introduce cases into the line after passing a manual check. Unassigned cases or those with unreadable barcodes would need to be dealt with in a similar fashion, requiring manual intervention in order to be corrected, then a means to be placed back into production.

Additionally, the solution would need to have a seperate means of case accumulation for SKUs routed to full lanes until the previous SKU is cleared.

With cases being received from a mezzanine, a spiral conveyor is utilized to transport cases from the elevated sortation conveyor to ground level for manual intervention. Operators are able to put cases back into the line at ground level via a re-introduction conveyor, routing them upwards to merge with the incoming product flow.

On-hold cases route to a re-circulating conveyor that loops around before feeding back into the incoming product stream when the designated palletizer is ready to accept them.

Provide flexibility for future capacity

The customer wanted the ability to install a third robotic palletizer in the future, and in planning ahead, hoped to make it's integration as quick, smooth and cost-effective as possible when the time comes.

The necessary conveying was purchased and integrated for use whenever the customer was ready to purchase an additional robotic palletizer. In order to get use out of the lanes in the interim, they were designed to accommodate hand palletizing of small batch stacks when necessary.

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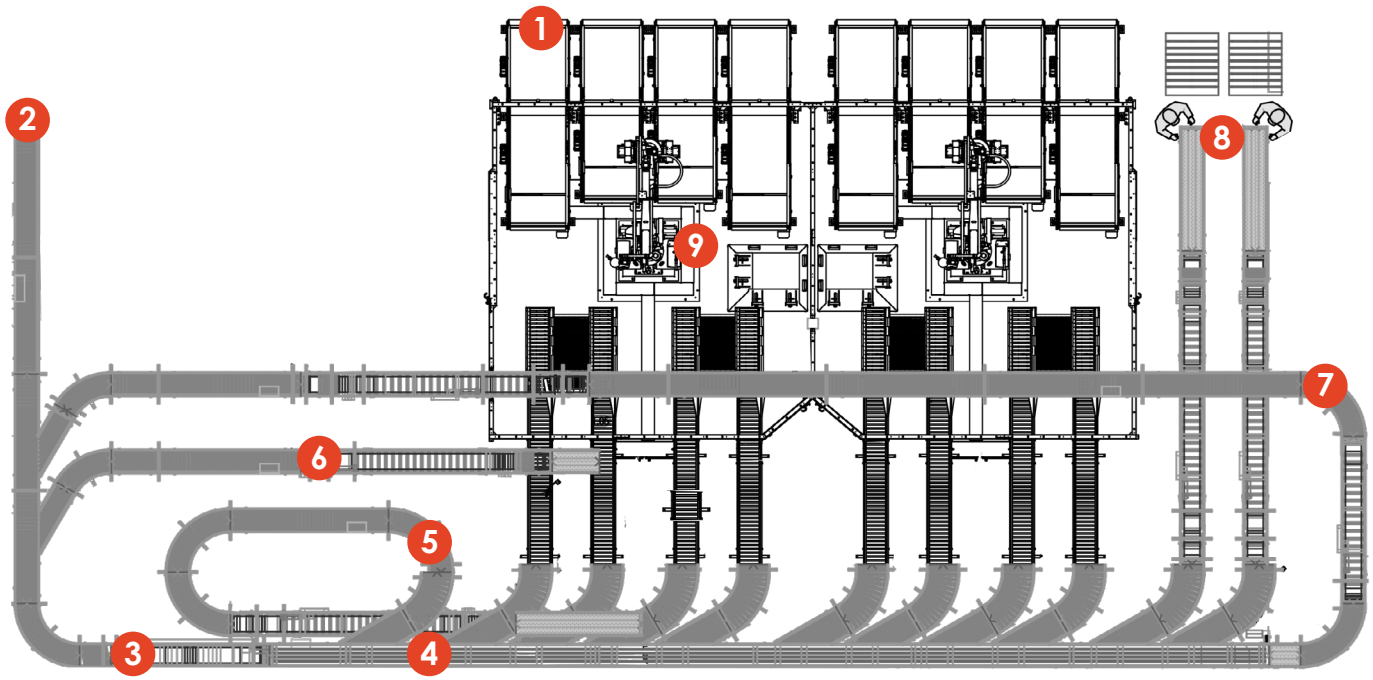
Sequence of Operation:

Empty pallets are placed on the **1) reversing pallet conveyors** manually by an operator and inducted into the cell via pushbutton signal. Cases are received in random order on a **2) common conveyor line**. A **3) barcode scanner** reads the incoming cases and compares them to the list of SKUs assigned in the system. Cases are transported via a **4) powered roller sortation conveyor** where case metering, alignment and diversion to the appropriate palletizing infeed lane occurs. If the barcode is unreadable, unassigned, or randomly selected for quality control, the case is transported to the lower level for manual intervention via a **5) spiral conveyor**. Cases with re-printed bar-codes or that pass QC are reintroduced into the system at ground level and elevated to merge with the incoming product flow via the **6) re-introduction lane**. In the event that an infeed lane is full or there are SKUs that have not been cleared of the previous SKU, cases accumulate on an **7) elevated re-circulating conveyor** section before being fed back into the incoming product stream. Small case batches may also route to the **8) hand palletize stations.**

The **9) robotic palletizer** picks the cases using a vacuum tool and places them on the correct pallet in the corresponding pallet pattern. Full pallets are discharged out of the cell through the light curtains and a beacon will signal an operator that the load is ready for pickup.



1. Reversing pallet conveyor
2. Case conveyor
3. Barcode scanner
4. Sortation conveyor
5. Spiral conveyor
6. Re-introduction lane
7. Re-circulating conveyor
8. Hand palletize station
9. Pearson Robotic Palletizer