Robotic Automation

Egg Packing and Palletising Case Study

Customer Requirements

To improve production speed and efficiency in a busy packaging facility.

The previous manual egg carton packaging operation consisted of many employees standing at the end of egg carton lanes, packing a maximum of 70,000 eggs per hour.

Palletising and forklift operation was also a manual task carrying a risk of staff injury, damaged product and incorrect orders.

These repetitive tasks no longer requires large amounts of manual labour.

Robots embedded with AGVs have been utilised to complete the entire process increasing production efficiency and reliability whilst simultaneously removing risk of human error and injury.

Instant Benefits

Output has increased from 70,000 eggs per hour to 180,000 eggs per hour - over 250% increase in production as well as cost reductions and reliability improvements.

MOTOMAN
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Packaging Facility Optimisation

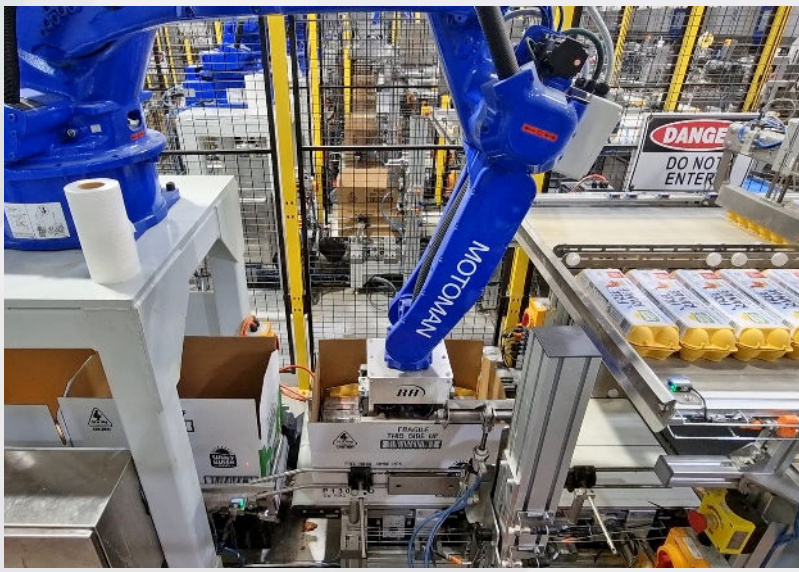
Smart – Intelligent – Versatile – Flexible – Intuitive

Watch the system in action.

The System

Shipper cartons are erected and packed by Motoman robots, before moving through an automatic closing machine. Barcodes are used to distribute the cartons down sorting lanes to each palletising position. Palletising is carried out by 2 Motoman robots which move on servo tracks allowing them to service 7 palletising positions.

Full pallets are collected by dual fork AGVs (Automated Guided Vehicles) and placed onto the out-feed conveyor. The dual fork design of the MAXAGVs allow them to carry an empty pallet on the lower set of forks to exchange the full pallet in one singular motion. The AGVs also pick up an empty pallet when delivering a full pallet to the out-feed conveyor where they are automatically wrapped, labelled, and taken to the storeroom.



Challenges & Solutions

Space Constraints
The total footprint for the entire system was limited and required an intuitive, ergonomic design.

Multi-Carton Flow
Maintaining a constant flow of specific carton types to each cell was overcome using cell counters.

Carton Packing
The cartons needed to be held in position more effectively for packing using a clamp system which could also retract out of the way for each carton exchange.


The dual fork design of the AGVs allow full pallet exchange in one singular motion.

System Benefits

Production Speed
Over 250% increase in production speed with minimal staff intervention.

Staff Health
Robotic handling greatly reduces the risk of staff injury and RSI.

Efficiency and Reliability
Barcodes eliminate the risk of human error.

Damage Prevention
The use of robotics and AGVs has greatly reduced the risk of product damage.

Manual Labour Reduction
The repetitive task of packaging and palletising cartons no longer requires large amounts of manual labour.

Future Proof
The system is adaptable to allow the addition of new product lines in the future.

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