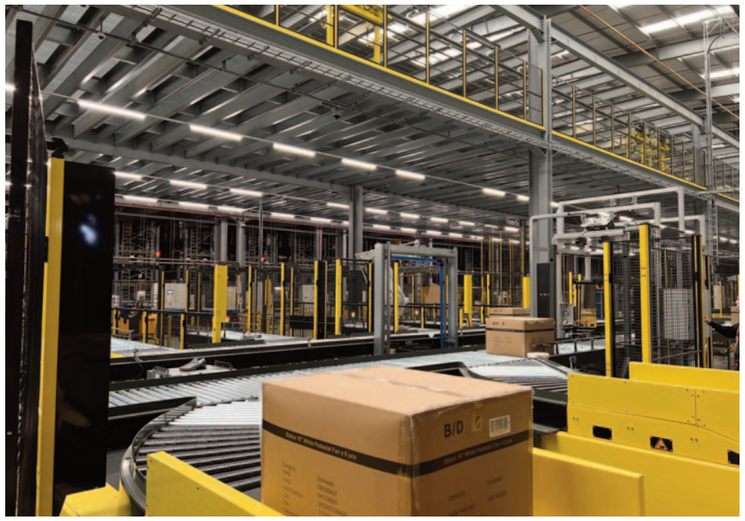
L-A-C Doubles Productivity with Robotic Palletiser

In the rapidly evolving landscape of modern warehouses and distribution centres, deploying robotics in intralogistics automation has emerged as a transformative force, revolutionising material handling and optimising warehouse operations in complex environments.

Within this arena, automation and robotics play a pivotal role in delivering unparalleled efficiency, accuracy, and cost-effectiveness. These technologies powered by the right intelligent software present possibilities of significant performance gains and relieve labour of repetitive, strenuous tasks, to focus on higher-value activities in order picking, inventory management and other functions within the warehouse.

The benefits of robotics in intralogistics are compelling: increased productivity and throughputs, enhanced operational agility, reduced labour costs, improved accuracy and order fulfilment rates, as well as a safer work environment. Companies across industries are embracing robotics to leverage its benefits and gain a competitive edge, reduce total cost of operations, and be flexible to respond quickly to dynamic market demands and raise customer satisfaction.



Productivity Key for Food Sector

In the dynamic and highly competitive grocery market, one such case is a leading supermarket whose requirement was to enhance productivity and throughput within their inbound-to-put-away and palletising operations. Automating these processes would not only mean faster deployment, but also provide the opportunity to reallocate staff to engage in other value-added activities.

L-A-C Logistics Automation worked alongside the customer to address the complex demands of palletising an ever-evolving range of their distinct SKU profiles, to deliver a bespoke solution that has doubled overall productivity.

Overcoming Complex Operations

The customer's existing distribution centre inbound and palletisation operations were highly reliant on labour, presenting a valuable opportunity for boosting performance through the integration of an automated solution. The trailer unloading, inbound, receiving and palletisation operations before put-away were labour intensive and time-consuming, causing frequent errors. Cartons had to be manually unloaded from 40 ft trailers across different warehouse bays with barcode scanning, quality checks, and goods received note processing, all taking significant time and workforce input.

The dynamic nature of product dimensions and throughputs, influenced by market demand, seasonality, and country of origin, further added to the complexities for this project. With an ever-expanding assortment of carton sizes and the addition of new distinct SKUs, the pallet matrix became a puzzle for L-A-C to solve. The manual processes affected the pallet matrix and the palletisation throughput; as a result, only 50 pallets per hour were transferred to put-away. It also required a significant workforce, leading to errors, reduced productivity, and worker fatigue. This scenario presented an avenue for the customer to leverage the benefits of automation and robotics and streamline their intralogistics operations.

Game Changer Solution

Meticulously designed to suit the customer's unique requirements, L-A-C Logistics Automation provided an innovative solution to tackle the challenges.

The implementation of the design featured two inbound and robotic palletisation systems with four telescopic boom conveyors for efficient trailer unloading, laser-based product profiling and scanning, diverters and four ABB 4-axis robotic palletisers. Fully synchronised with real-time stacking patterns generated by ABB Palcon 2 software, the robots were equipped with bespoke, adaptable grippers, able to palletise each and every new SKU.

The unloading process began with telescoping conveyors to inbound cartons which fed into a conveyor loop with barcode scanning stations to capture essential SKU information, dimensions, and weight, ensuring accuracy and traceability. To further guarantee precision, a Keyence laser scanning module verified actual measurements against the barcode while conducting thorough checks on the picking surface and carton quality. 90-degree transfers within the conveyor loop intelligently directed cartons to respective robot-picking and palletising positions via control system algorithms. The system also promptly identified and diverted misreads and non-compliant cartons to the reject line and provided real-time human-machine interface (HMI) annunciation.

For new SKUs, the sophisticated ABB Palcon 2 software algorithm seamlessly generated optimal stacking patterns utilising scanned data, while the equipped RAPID robot programming capabilities enabled the system to palletise any SKU according to the new stack pattern. Operating in a highly efficient one-in-three-out configuration, each of the four ABB 4-axis robots - with versatile, adaptable grippers capable of handling multiple cartons - worked in tandem to simultaneously palletise three individual SKUs, achieving unparalleled efficiency and throughput. The system integrated with the customer's own WCS and ERP enabling seamless traffic management and material flow optimisation.

The solution allowed the customer to adapt and handle a diverse range of products with precision and agility. With cutting-edge robotics for palletising and AI for real-time programming to suit SKU dimensions, the customer witnessed a staggering daily throughput of 450 pallets, revolutionising their operations.

Clockwork Perfection

The L-A-C system, which was designed and simulated with data-driven application engineering, has provided a throughput of 450 pallets daily, enabling them to process over 250 containers per week to meet customer demands effectively.

The fully automated solution palletised one pallet every 3 minutes without manual intervention. As a result of this solution, the entire inbound and palletising process has doubled productivity with twice the throughput. Additionally, the floorspace required within the distribution centre for this process was halved, and two-thirds of the workforce could be deployed for other operations.

Their investment in the robotic palletising system showcased a projected return on investment of three years, further demonstrating its cost-effectiveness and viability for their long-term operational needs.

Robotic Solutions Gather Pace

Across industry sectors including food, manufacturing and 3rd party logistics, the integration of robotics and automation solutions is directly impacting warehouse operations with staggering outcomes. Be part of our Robotics Revolution, contact L-A-C today to find out more. ■