

Reinventing beverage logistics: The rise of intelligent automation in South Korea

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Automation is reshaping the food and beverage supply chain across Asia, with South Korea now home to a landmark innovation. Lotte Chilsung, one of the country's leading beverage companies, has partnered with Dematic to implement the first fully automated mixed-case order fulfilment system in South Korea's beverage sector. Designed to tackle rising labour costs, space constraints, and the growing demand for smaller, more frequent, multi-SKU deliveries, the new distribution centre integrates advanced robotics, intelligent software, and high-density storage to achieve unprecedented efficiency. In this interview with NUFFOODS Spectrum, Michael Bradshaw, Vice President, Solutions Development APAC at Dematic, discusses the challenges that led to this transformation, the unique features of the system, and how it sets a new benchmark for beverage logistics in Asia.

What specific operational challenges at Lotte Chilsung's previous distribution facilities prompted the move to a fully automated mixed case order fulfilment system?

Lotte Chilsung was operating across four separate distribution facilities, which created inefficiencies in inventory management, labour allocation, and transportation. The strategic location chosen for the new DC was space-constrained with a limited parcel of land, so a certain level of automation was necessary to accommodate the required storage and throughput capacities within the available space. Rising labour costs, especially for night shifts, were becoming increasingly

unsustainable, and the repetitive nature of manual tasks raised concerns around worker fatigue and safety. At the same time, customer expectations were shifting. Convenience stores, e-commerce platforms, and food service providers were demanding smaller, more frequent deliveries with a mix of SKUs. The legacy systems simply couldn't keep up with the complexity and speed required. These challenges made it clear that a fully automated, high-throughput solution was necessary to future-proof operations.

This is the first system of its kind in South Korea's beverage sector. What makes it unique compared to other automated logistics solutions in the region?

This system is a true milestone for South Korea's beverage logistics. It's the first to fully automate mixed-case order fulfilment, from storage and picking to palletising and dispatch. The combination of intelligent software and advanced robotics enables the building of customer-specific pallets with multiple product types, tailored to each order. The high-density automated storage and retrieval system utilises the building cube within the 42m high facility, maximising space efficiency in the dense urban setting. What truly sets this system apart is the integration of advanced robotics and software, enabling real-time responsiveness, dynamic order sequencing and outstanding productivity. It's not just automation, its intelligent automation built for complexity and efficiency.

Can you walk us through how the integrated components, such as the AS/RS, Multishuttle, robotic layer picking, and RapidPall palletising, work together to streamline operations?

At the heart of the facility is a high-density Automated Storage and Retrieval System (AS/RS), capable of vertical storage up to 40 metres. This configuration maximises throughput and space utilisation within a limited footprint. When required, pallets are retrieved from the AS/RS and transferred to a layer picking robot, which automatically breaks down the pallets into individual product cartons to replenish a Dematic Multishuttle system for temporary storage.

The system uses advanced algorithms to determine the optimal stacking configuration based on product size, weight, and route delivery requirements, ensuring compact pallet build and integrity and minimising damage risk in transit. When an order pallet is ready for assembly, product cartons are retrieved at high-speed from the Multishuttle and delivered in precise sequence to a Dematic Rapid Pall palletising cell according to their pre-planned position on the pallet. The Dematic RapidPall palletising cell uses advanced robotics to automatically assemble the customer-specific, mixed-SKU order pallets.

The completed order pallets are then conveyed to an automatic dispatch buffer. Using shuttle technology, the system sorts and buffers pallets by truck, streamlining the loading process and reducing staging space requirements at the despatch area.

Overseeing this entire operation is the Dematic Warehouse Control System (WCS), which integrates directly with Lotte Chilsung's enterprise resource planning (ERP) platform. This connection enables real-time visibility of inventory and system performance, empowering staff with immediate insights and control over logistics workflows.

How has the new system impacted Lotte Chilsung's efficiency, accuracy, and capacity since going live? Do you have measurable results so far?

The impact has been significant. By consolidating four legacy facilities into one, Lotte Chilsung has dramatically improved operational efficiency. Order accuracy has increased, reducing errors, and boosting customer satisfaction. The system has also reduced reliance on manual labour, which lowers costs and improves workplace safety. Delivery times have shortened thanks to faster order processing and automated dispatch sequencing. In terms of measurable results, the facility now handles over 1.2 million cases annually, with real-time inventory tracking and enhanced quality control. It's a leap forward in both performance and reliability.

Given the growing demand for small-batch, multi-product orders, how does this solution future-proof Lotte Chilsung's logistics capabilities?

The system is designed with flexibility in mind. As demand for multi-SKU mixed case orders continues to grow, especially from convenience retail and online channels, Lotte Chilsung is now equipped to respond quickly and accurately. The mixed-case fulfilment capability allows for tailored deliveries without compromising speed. Real-time data integration supports predictive analytics and demand forecasting, enabling smarter inventory decisions. The system design has the flexibility to accommodate new product lines, different packaging types and changes in order profiles. It's a future-ready platform that can evolve with the business.

Do you see potential for similar fully automated mixed case fulfilment systems in other industries or markets across Asia, and what lessons from this project could be applied elsewhere?

Absolutely. The success of this project demonstrates that fully automated mixed-case fulfilment isn't just viable, it's transformative. Industries like food and beverage, pharmaceuticals, and consumer goods all face similar challenges: rising labour costs, SKU proliferation, and demand for faster, more customised deliveries. This system offers a blueprint for how to meet those challenges head-on. Key lessons include the importance of engaging early with the customer, investing time to fully understand the operational business requirements & objectives, designing for flexibility, and integrating software and hardware seamlessly. As markets across Asia continue to modernise, we expect to see more companies adopting similar solutions to stay competitive and resilient.

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