Autonomous inventory tracking for retailers

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Today's must-have warehouse technology

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For retailers, inventory automation is the new must-have warehouse technology

Traditional retail is in the midst of a renaissance. The culmination of changing pressures has created significant disruption, forcing retailers to rethink nearly every aspect of their operations. Thankfully, **significant technological advancements** have come to fruition at just the right time to support a successful transition to this new retail landscape—including solutions that enable a **better**, **faster**, **less costly method of tracking inventory** in warehouses of every size.

When the pandemic hit in 2020, retailers' focus on addressing the massive ecommerce paradigm shift turned to an even greater challenge: supply chain disruptions that brought the reality of supply chain vulnerabilities and global dependencies into the spotlight. As consumers experienced shortages of everything from toilet paper to Tylenol to eggs, the need for retailers to provide reliable, rapid order fulfillment—and to deliver on time, every time—became necessary to ensure customer loyalty and remain competitive. Doing so required pristine, optimized inventory operations.

Since then, the quest for inventory planning excellence has become a top priority, with an increasing number of retailers turning to automation and the power of inventory drones to enable more agile, efficient, and cost-effective inventory planning. A recent joint survey by *Modern Materials Handling* and *Logistics Management* highlights the massive shift in retailers' attitudes toward utilizing robots and automation in their DCs and warehouses. According to the resulting report, only "a stunning 4% of readers said they have no plans to use robots in their warehouses." This is a remarkable shift compared to the 40% of retailers who replied that they had "no plans to use robots at this time" in the survey just one year ago. That change in attitude is in sync with MHI's 2023 Annual Industry Report which states that 90% of supply chain leaders are planning to spend over $1M in supply chain technology and innovation investments—with 36% planning to spend over $10M.

Cycle counting and inventory data collection

It comes as no surprise that retailers are including autonomous inventory drones in the equation. In the 2023 survey, more than **17% of respondents pointed to the use of drones** for cycle counting and data collection as a near-term priority. Often seen as the low-hanging fruit of warehouse automation thanks to their **ease of implementation, exceptional benefits, and uncommonly rapid return on investment**, inventory drones are already helping forward-thinking retailers achieve some of their most critical business objectives, including:

Improving supply chain flexibility and resilience

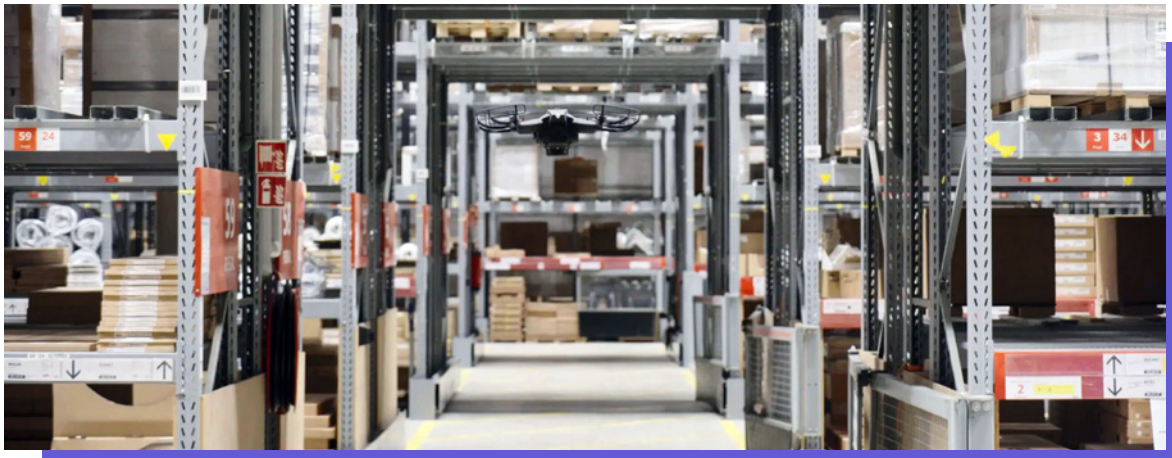
The disruptions caused by COVID-19 highlighted vulnerabilities in rigid supply chains. Retailers are continuing to focus on creating more flexible and resilient supply chains that can adapt to sudden changes or disruptions. Inventory drones support that effort by enabling retailers to scan and count inventory at speeds much faster than humans, allowing for quicker inventory counts and real-time inventory updates.

Minimizing the impact of inventory errors

As product moves through the warehouse, inventory errors are inevitable. And though many warehouses achieve inventory accuracy of 95% or higher, achieving that level of precision without automation requires immense effort and depletes two highly valuable resources: labor hours and time. Automated drone systems address this dilemma by identifying putaway errors before they escalate into larger issues, enabling retailers to correct all errors promptly and ensure that the location of every pallet is accurately reflected in the Warehouse Management System (WMS).

Enabling more frequent, real-time data collection

With integrated cameras and sensors, inventory drones can relay real-time data to the WMS. This allows managers to make immediate decisions and adjustments based on live insights. With more frequent counts and the ability to perform spot checks in real time, retailers can better understand sales patterns, allowing them to optimize inventory levels, reduce holding costs, and improve cash flow. Additionally, that real-time data helps eliminate the need for safety stock and reduces stockouts to further drive customer experience improvements.



Optimizing labor resources & productivity

The challenge of attracting and retaining skilled labor makes it critical that warehouse employees stay focused on tasks that add the greatest value—and that only humans can do. By completely automating the task of scanning inventory, self-flying inventory drones optimize labor resources by freeing up workers to focus on other tasks, reduce the impact of human error, and increase four-wall productivity. Users report that workers actively choose to work in facilities equipped with inventory drones, a fact that contributes to the successful recruitment and retention of experienced warehouse personnel.

Reducing costs and improving margins

As inflation continues to pressure profit margins, cost savings in other areas can help offset that challenge. Inventory drones lead to labor and productivity savings, especially during extensive stock-taking activities or peak seasons. While there is an initial investment, the long-term operational cost reductions have proven to be significant. This, of course, varies depending on the specifications of the solution, with heavier, bulkier applications typically costing much more to ship, maintain, and upgrade than lighter, more nimble solutions that can be easily shipped, upgraded, and replaced as each project evolves.

Increasing warehouse sustainability

While consumer interest in sustainability has been increasing for years, that focus has intensified in the face of extreme climate change. In response, retailers are adjusting their inventory planning to prioritize sustainable products and ensure ethical supply chains. By increasing inventory accuracy, a fully automated drone system can reduce CO2 emissions in a warehouse with 100,000 pallet locations by as much as 20,000 tons—a savings equivalent to taking up to 5,000 cars off the road.[1]

Creating consistent workplace safety

Drones are particularly useful in large warehouses with high shelves. They can easily access and scan items in places that might be difficult or dangerous for workers to reach, eliminating the need for ladders or lifts. By taking over tasks that require climbing or accessing tight spaces, drones can reduce workplace accidents and related liabilities.

Extending competitive advantage

Reinforcing customer loyalty is increasingly dependent on the ability to excel in social commerce by delivering a seamless and reliable shopping experience. Early adopters of inventory drone technologies set themselves apart from competitors, offering faster and more reliable services to their customers and gaining a reputation for innovation.

Integrating inventory drones into retail warehouses offers a transformative approach to traditional inventory management. As technological advancements continue and drones become even more sophisticated, retailers stand to benefit greatly from enhanced efficiency, accuracy, and overall operational improvement.

[1] "An Unlikely Pair: How Indoor Drone Systems in Warehouses Can Reduce CO2 Emissions"

A win-win for retailers and their customers

A growing number of retailers in the US and Europe are already achieving these benefits today using **Verity's drone-powered inventory management system**. The drones scan inventory across warehouses of any size, typically during non-operational hours. As a fully autonomous system, inventory counts are completed without the assistance of a human operator, eliminating the tedious, often dangerous task of scanning inventory at heights, while enabling retail organizations to **cut inventory errors to zero**—regardless of how much inventory flows through warehouses en route to store locations daily.

In March 2023, one of the first retailers to implement the Verity system in its warehouses announced a key milestone: its 100th Verity drone had taken flight—part of a growing fleet that now supports 28 locations across the Netherlands, Switzerland, the US, Italy, Germany, Slovenia, Croatia, and Belgium.

At the company celebration marking the milestone, some of the most significant benefits of the installation were highlighted, including improved stock accuracy and the ability to maintain up-to-date item availability for both physical and online retail stores. "Introducing drones and other advanced tools—such as, for example, robots for picking up goods—is a genuine win-win for everybody," stated the company's Head of Retail. "It improves our co-workers' wellbeing, lowers operational costs, and allows us to become more affordable and convenient for our customers."

Flexibility to support any retail model

Retailers everywhere are continuously innovating to address their **specific inventory planning needs**. The changes reflect an emphasis on **flexibility**, **efficiency**, **safety**, and **speed**.

Traditional warehouses are being transformed into omni-channel distribution centers that can fulfill both online orders and restock brick-and-mortar stores. This means more segmented storage areas, dedicated packing zones for ecommerce, and quick-turnaround areas for store replenishments. Some retailers are establishing smaller and taller warehouses that are strategically located in urban areas to quickly fulfill online orders and replenish inventory at nearby high-traffic store locations. These micro-fulfillment centers allow for faster delivery times, often within hours. And as online grocery shopping grows (another outcome of the pandemic), more retailers are incorporating cold storage and temperature-controlled zones into their warehouses to effectively handle perishable goods. In every case, optimizing inventory management requires flexible systems capable of evolving in pace with new warehouse innovations and changing inventory tracking methodologies. In these warehouse configurations, regular and systematic inventory counts are essential for maintaining operational efficiency, ensuring customer satisfaction, minimizing losses due to shrinkage or errors, and ensuring that actual stock levels match those recorded in the WMS. Fully autonomous inventory drones deliver benefits to every type of inventory count.

Full facility (wall-to-wall) inventory counts

Counting every item in a warehouse manually is highly disruptive to operations, often requiring the warehouse to cease operations temporarily or reduce operations significantly. As a result, this type of comprehensive count is typically performed only once or twice a year. With fulfillment a pressing priority, workers tasked with the job are often under intense pressure, forcing them to focus on simply getting the job done rather than turning their attention to data accuracy. The process is limited because, though it provides a comprehensive snapshot of all inventory, this occurs only at a single point in time. Automating the process accelerates scanning, significantly reduces operational disruptions, and improves accuracy by eliminating human error. The result: a fast and easy method to identify and correct all discrepancies—with >99% data completeness and data accuracy. Combined with the reduction in labor requirements, this shift makes wall-to-wall inventory counts possible at any time to improve data accuracy and reduce the accumulation of errors over time.

Cycle counts

Less disruptive and more frequent than full inventory counts, cycle counts (or area scans) that track a subset of inventory on a daily, weekly, or monthly basis help identify discrepancies early to reduce the risk of issue accumulation. When done manually, the time and cost of the associated labor is high, again forcing a focus on data completeness rather than data accuracy. Automating manual cycle counts gives retailers the flexibility to easily assign cycle counts based on various criteria, such as counting only high value items (which are often counted more frequently) or focusing on specific zones on a rotating schedule—all with no added labor or operational costs. By increasing the frequency of cycle counts, retailers can achieve the key benefits of inventory tracking automation, including improved data completeness and data accuracy, less time for errors to accumulate and escalate, and more efficient utilization of human labor.

Spot checks

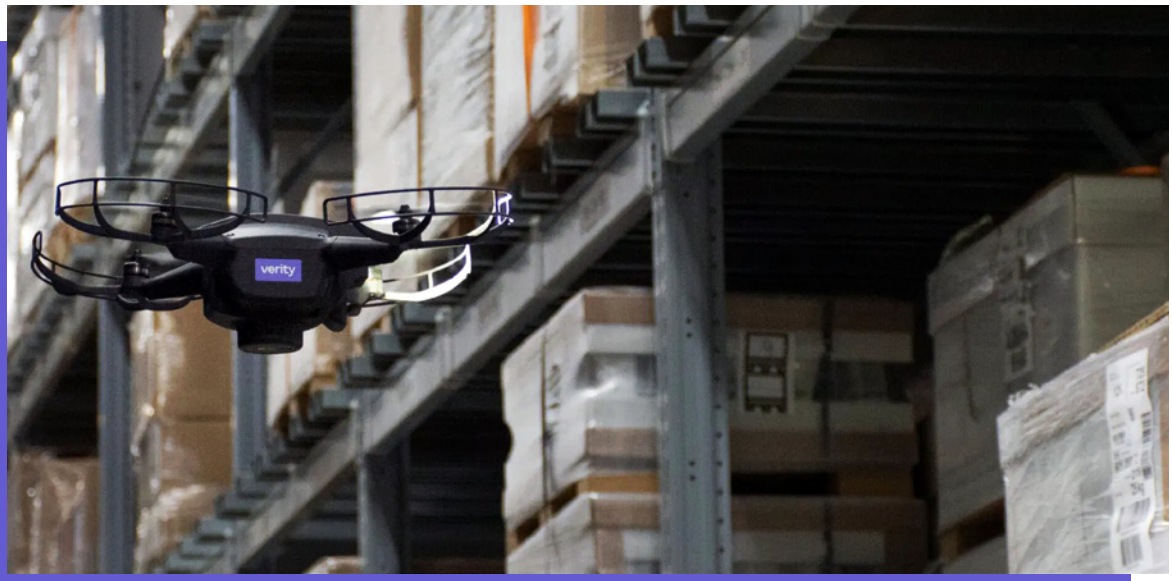
Often used in conjunction with cycle counts, spot checks are typically used when a discrepancy is suspected or when a particular item is selling much faster than anticipated and discrepancies are building. Manual spot checks take valuable time away from planned tasks, with forklift drivers or other workers often spending hours hunting for a lost pallet, item, or other discrepancy. Automating spot checks using self-flying drones accelerates the process of verifying inventory by scanning moved locations nightly and/or confirming empty locations on a weekly basis. Real-time spot checks help identify and correct discrepancies, and prevent errors from snowballing into significant issues.

Because different types of inventory counts are conducted based on the size of the warehouse, the number of pallet movements, the nature of the goods stored, and each retailer's unique operational requirements, the Verity system is designed to support a wide range of configurations and planning structures—both today and as retail warehouses continue to change and adapt over time to address shifting consumer demands.

By supporting all types of full-pallet inventory counts, Verity's self-flying drones enable retailers to cost-effectively increase scan frequency, achieve data completeness and data accuracy, and ensure physical inventory is fully aligned with inventory data stored in the WMS.

Self-flying drones

The next wave in retail innovation



For retailers, the need for **agility**, **resilience**, and **efficiency** is more pronounced than ever. By leveraging advanced technologies that enable **real-time inventory data collection**, Verity's fully autonomous inventory drones offer retailers a reliable and proven approach to navigating this new landscape successfully—and answering future calls for change and innovation whenever they may come.

Why Verity?

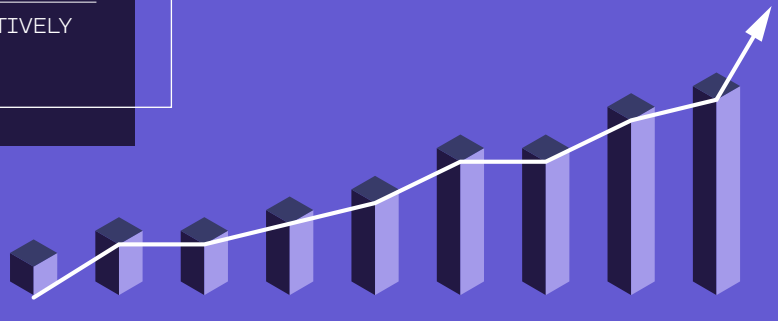
Founded in 2014, deep-tech scale-up Verity delivers **fully autonomous indoor drone systems** that are trusted in environments where failure is not an option. Based in Zurich, Switzerland, with global operations, Verity's system is used in warehouses to gather valuable insights that **enable greater operational efficiencies**. The Verity system is **built in Switzerland** and engineered to optimize **safety**, **reliability**, and **performance** from the ground up.

The Verity system has completed nearly 50 million inventory checks and is installed and delivering benefits at more than 65 sites across 13 countries on 3 continents.

Current projects include large implementations at DSV, KeHE, Maersk, and Samsung SDS. Verity has a strong track record in the warehousing and logistics industry, with its roots going back to Kiva Systems (now Amazon Robotics), which disrupted an entire industry and helped Amazon become the world leader it is today. Developed by the world's leading experts in robotics and machine learning. The company is dedicated to applying advanced automated systems to enable the zero-error warehouse.

VERITY'S MOST SUCCESSFUL CLIENTS SHARE 2 OR MORE OF THESE ATTRIBUTES:

- VALUE FREQUENT, ACCURATE INFORMATION ON STATUS OF GOODS
- MANAGE FACILITIES WITH INVENTORY STORED ON FULL PALLETS IN HIGH-BAY RACKING
- EXPERIENCE A RAPID FLOW OF GOODS OR HIGH TURNOVER OF INVENTORY
- HANDLE HIGH-VALUE GOODS
- LOCATED IN A REGION WITH RELATIVELY HIGH LOCAL LABOR RATES



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