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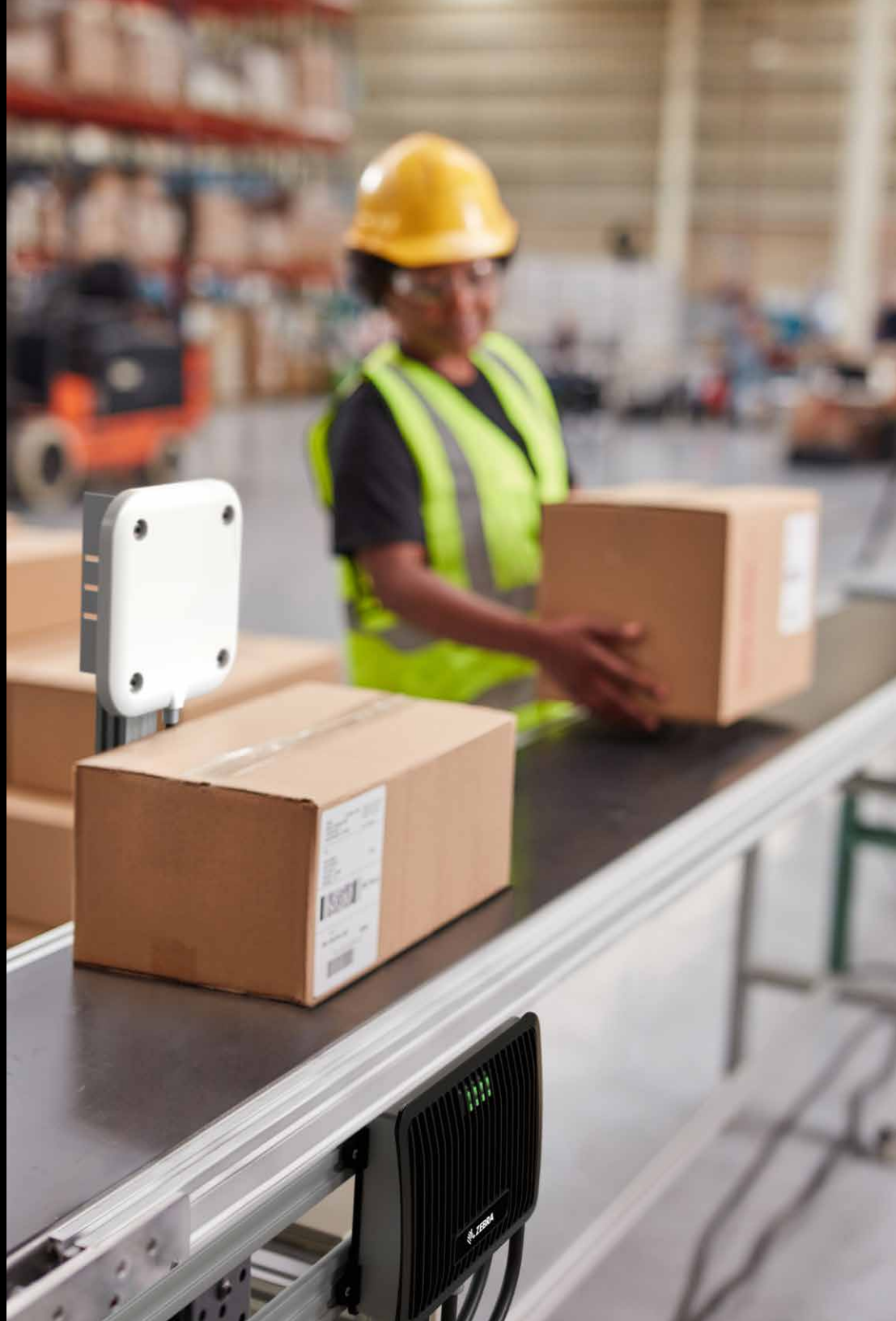
Warehouse Automation Strategies and Technologies

3 Proven Ways to Dramatically Improve Fulfillment and Inventory Management Efficiency

ZEBRA



Getting an Edge with Warehouse Automation

The warehouse industry is booming, but so are the demands of the on-demand economy. As order volumes, SKUs, and demand for fast and accurate delivery keep increasing, many warehouses are struggling to keep up.

However, with automated RFID inventory tracking, hands-free and wearable picking solutions, and robotic technologies, many warehouses are enabling massive increases in fulfillment efficiency and accuracy while managing orders and inventory with significantly less labor and cost.

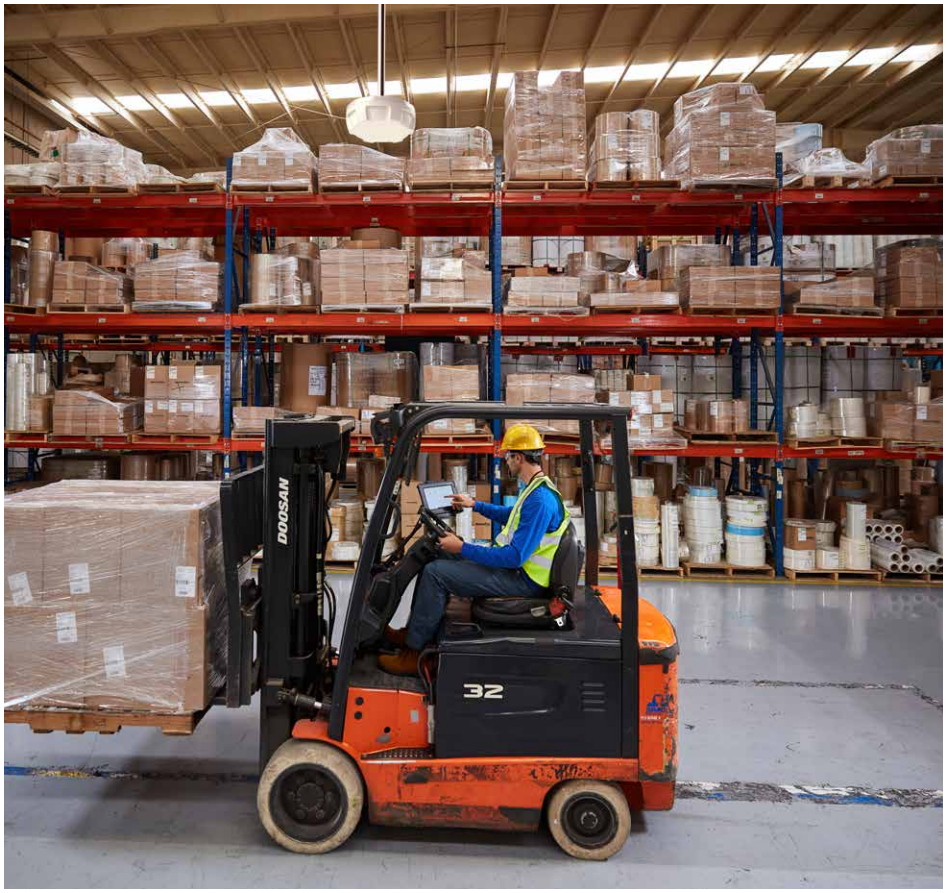
In this quick overview, we'll explore three key automation strategies that many warehouses are implementing in order to automate order fulfillment and inventory management workflows and enable more efficient and cost-effective operations.

If your warehouse needs to find new ways to fulfill more orders faster and more accurately, with less labor and cost, these strategies should definitely be on your list of potential improvements. Let's get started and take a look.

1 Automate Your Inventory Tracking with RFID.

Inventory visibility, traceability and accuracy are crucial to every step and every area of the warehouse, from the dock door and receiving to put-away, storage, picking, packing and shipping. But many warehouses struggle to maintain accurate inventory and to find, pick and replenish the right materials and products to fulfill orders with maximum speed and accuracy.

This is where an RFID inventory tracking strategy can help you get to 99% or better inventory accuracy while automating your warehouse processes for vastly faster, more efficiency and more error-free performance.



How RFID Works

- Instead of having to manually scan barcodes and have line-of-sight access to the barcode, RFID identifies, locates and tracks inventory wirelessly and remotely, with the ability to track an entire pallet's worth of inventory in a single read.
- Each item you need to track is tagged with an RFID tag. Each tag contains a microchip for unique identification and other information as well as two tiny microtransmitters for communicating wirelessly with RFID readers via radio signals, much like the way that Wi-Fi works.
- Tags are read wirelessly and remotely with a handheld RFID reader for mobile tag reading, or a fixed-position RFID reader placed at a dock door, at a doorway, in a warehouse aisle, or in virtually any other strategic location. In some warehouses, fixed RFID readers are installed on robots to create a mobile RFID reading process that doesn't require a human user to perform handheld reads.
- As RFID tags come within range of the reader, it works together with built-in or nearby RFID antennas to precisely identify and locate each tag, and RFID software can then be used to automatically update each item's status, quantity and location in your warehouse management systems in databases.

Benefits of RFID Inventory Tracking

- RFID slashes the amount of time and labor required to manage inventory as it moves through your processes. It enables up to 99% or better inventory accuracy in a fraction of the time it normally takes to scan barcodes, track items, and conduct cycle counts or inventory audits.
- Automated, remote and wireless RFID inventory tracking enables real-time and accurate visibility into your inventory, so you always know what you have on hand, what's moving through your operations, and what needs to be replenished.
- Instead of wasting labor and time trying to find or verify inventory availability, and instead of struggling with inventory inaccuracies or errors, you can maintain an accurate account of your inventory, its status and location, without manual scans and without high risks of human error.
- With fixed RFID systems, an entire warehouse worth of inventory can be accurately tracked in real-time across all of your warehouse processes, from your receiving dock door all the way through put-away, picking, packing, shipping and replenishment. Fixed RFID readers can track items on the move and at rest, with machine automation and precise accuracy.

  This way, at any moment, you can know exactly what you have, where it's located, and where it is in your warehouse processes, with virtually zero human labor required. Fixed RFID systems are the most expensive, but they also deliver the largest possible automation benefits for your warehouse.

- With handheld RFID technologies, you can achieve similar results, albeit with a bit less automation and less real-time insight. For example, you can use a handheld RFID reader to read and identify RFID hundreds of tags in a receiving area or during picking and automatically update inventory status and quantities using your RFID software connected to your warehouse management system. Or you can conduct an inventory count by walking an RFID reader down warehouse aisles and reading tags to update their location, quantities and status in your system.

  As a result, you can always know the last-known location of your inventory, and you can automate more of your tracking, fulfillment and inventory management processes. Since they require less hardware and less expensive RFID tags, handheld RFID solutions are more affordable than fixed RFID systems, so they're a great way to get started with RFID and start achieving benefits on more of a budget.

Why Now is an Ideal Time for RFID

RFID is a proven technology that has been continually perfected as thousands of warehouses have implemented RFID solutions over the past decade. Thanks to this increased adoption, costs have come down dramatically, and it now costs as low as 10 to 15 cents per tag to track inventory with RFID. ROI is achievable in as little as a few months, thanks to dramatically improved warehouse productivity, efficiency, reduced errors, and less labor costs.

RFID Technologies and Solutions

A typical RFID system consists of RFID readers, antennas, an RFID tag printer, RFID tags, and RFID software that runs on a handheld RFID reader, rugged warehouse tablet, and/or a desktop PC. For best results, our RFID system designers recommend Zebra RFID technologies and tablets.

- Zebra RFID readers are available in fixed-position or handheld varieties, with handheld options that include combination RFID readers and mobile computers, or RFID sleds that can be used with smartphone-style devices or industrial touch handheld computers.
- Zebra RFID antennas communicate with RFID readers and help locate tagged items and assets to an accuracy of within a few feet or better.
- Zebra RFID tags are available with different types of radio frequency technologies, ranges and power methods. Tags can be self-powered with their own micro-batteries, so they can periodically wake themselves up and send signals to nearby readers at time intervals you specify, or you can use passive UHF RFID tags where the reader sends a wireless signal to each tag to wake it up, provide power, and help transmit its ID and location data.
- Specialized Zebra RFID tags have also been developed to provide reliable reads in environments that were traditionally challenging for wireless radio signals, such as warehouses with a high density of metals or the presence of significant volumes of liquids. As these could sometimes interfere with radio waves, Zebra and its partners developed new technologies to ensure that signals can pass through or near metals or liquids without significant interference.
- Zebra RFID printers print RFID tags, and they’re available in industrial, desktop and wearable mobile varieties. The printer prints and encodes the tag with a unique identifier, and additional information such as barcodes can also be added. RFID printer types include industrial printers, desktop printers for use at a workstation or on a mobile warehouse cart, or mobile printers that can be worn on a shoulder or belt strap for on-demand tag printing from virtually anywhere.

2 Crush Picking Inefficiency with Wearable Technologies.

Labor shortages and increased wage costs have made it increasingly harder for warehouses to hire and train enough workers to keep up with growing demand. Thus, the old strategy of throwing more people at problems is no longer a viable solution.

To boost fulfillment output and efficiency, the key is to automate more of the process and create more streamlined and efficient workflows. One ideal way to do this is to implement hands-free wearable technologies and voice-directed picking software.

How Voice-Directed Picking Saves Time and Labor

Voice-directed picking uses software and wearable mobile technologies to automatically notify workers of each order to be picked, direct them to the correct warehouse locations along the most efficient paths, and help them pick each order and verify correct picks.

A typical voice-directed picking system includes a wrist-worn or hand-worn mobile computer to run voice-directed picking software, plus a headset and a ring-style finger-worn barcode scanner, you can create picking workflows that dramatically reduce picking time and errors through intelligent routing, hands-free efficiency, and barcode scans to verify each correct pick.

The software runs on a wrist-worn or hand-worn mobile computer, and it cues up each order and pick list to be filled. It also tells the picker where to find the required items and which route to take. The software provides audio and visual instructions on the picker's wearable computer and a headset. Once the picker arrives at the correct item location, they can easily pick the item because their wearable technologies keep both of their hands are free. Once they've picked the item, they use a barcode scanner built into their mobile computer or worn on their finger to scan item barcodes and verify that the pick matches the order.

In real-world applications, this voice-directed process typically increases worker productivity by 15% and reduces picking errors by 39%. It typically saves minutes on every order, resulting in dramatic increases in picking speed and efficiency and corresponding reductions in labor and costs.

Additionally, since the software directs pickers to follow the most efficient routes to each item location, it typically saves miles of walking each day and helps minimize the wear and tear on their bodies. By providing a seamless digital process that makes picking easier and less physically demanding, it helps warehouses attract, train and retain workers.

Wearable Technologies and Solutions

Wearable warehouse picking technologies are multi-modal, so you have different options and configurations for how to set up your preferred system. But here are some of the devices from Zebra that we typically recommend:

WS50 Android Wearable Computer

Zebra's WS50 is the world's smallest all-in-one Android enterprise class computer that can be worn on the wrist or two fingers. It combines wearable mobile computing, 1D/2D barcode scanning and optional UHF RFID in a single device. Despite its small size, it provides full-shift battery power, quad-core processing, 1 GB of RAM, and Wi-Fi, Bluetooth and USB-C connectivity for seamless hands-free workflows.

WT6300 Wearable Computer

Zebra's WT6300 is a wrist-worn mobile computer with an optional keypad that you can use to run your voice-directed picking software and mobile warehouse management apps. It's a rugged warehouse device with octa-core processing, 3 GB RAM, and Wi-Fi, Bluetooth and USB 2.0 connectivity, so you can easily connect to all your wearable devices and run your picking apps with very fast response times.

RS6100 and RS5100 Wearable Scanners

Zebra's RS6100 or RS5100 is an ideal option if you need a separate wearable scanner that's small and practically weightless and can be worn in five different ways. Available in corded or cordless Bluetooth models, these devices provide fast, reliable and high-performance 1D/2D barcode scanning with the flexibility to wear them on a single finger, two fingers, a wrist strap, and more.

HD4000 Enterprise Head-Mounted Display

As light and easy to wear as safety glasses, Zebra's head-mounted display puts picking information in your workers' real-time field of view while keeping their hands and eyes free to focus on the task at hand. To retrieve and display data, it communicates with the workers' wearable mobile computer via Wi-Fi or cellular, and power is provided via a lightweight cable that connects to the host computer.

HS3100 and HS2100 Rugged Headsets

Zebra's headsets deliver HD quality audio with extreme noise cancellation, so workers can easily hear audio cues and communicate with co-workers when needed. Available in a corded or cordless Bluetooth models, these devices are also available with Zebra's TekSpeech 4 software, so workers can use their own voice commands to perform software functions and interact with your mobile apps, creating even further hands-free efficiency in your picking.

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3 Take Your Automation to the Next Level with Robotics.

As labor shortages and turnover plague warehouses, autonomous mobile robots (AMRs) are proving to be a great way to optimize human labor and create robot-assisted workflows for more efficient warehouse operations. AMRs help automate, streamline and orchestrate a variety of workflows, including:

- Each and batch picking
- Case picking
- Pallet picking
- Put-away and replenishment
- Returns
- Dunnage removal and recycling

Up to 300% Greater Picking Productivity with Robotic Assistance

By integrating AMRs with your warehouse management system and workflows, you can create automated processes that help your human workers pick faster and more accurately with less physical demand and risk, resulting in up to 300% productivity improvement. You can also create fully autonomous processes where robots are able to perform key functions on their own, such as transporting totes, bins, packages and palletized loads, or picking up and dropping off rolling warehouse carts.

By leveraging these capabilities, you can create a hybrid warehouse where humans and robots work together to fulfill orders and perform put-away, replenishment and returns faster, more accurately, and more efficiently.

Two Methods of Robot-Assisted Picking

❶ Pick-to-Robot

How it Works

- Associates receive instructions from the WMS or WES via device or from the screen of a robot
- Items are picked and placed directly on the robot, tote, bin, or shipping box.
- The robot automatically moves to the next pick and then transports items to the packout or consolidation area once complete.

Benefits

- Improved speed, accuracy and productivity
- Enables workers to pick and sort multiple orders at once via visual prompts
- Reduces dwell time spent waiting for robots

❷ Pick-to-Cart

How it Works

- Associates stay in their pick zones and receive instructions from your WMS via device or robot.
- Items are picked and placed directly onto the FetchCart, which supports boxes, totes or bins.
- The robot picks up the loaded FetchCart and drops off the cart at next picking zone or transports cart to the pack-out or consolidation area once complete.

Benefits

- Improved speed, accuracy and productivity
- Keeps workers in a specific zone to reduce congestion in aisles
- Enables workers to pick and sort multiple orders at once via visual, voice, or RF prompts
- Robots show up only as needed to move carts.
- Reduced dwell time spent waiting for robots

Robotic Warehouse Solutions

Zebra's Fetch robots are designed to work alongside your workers and help them rather than replace them. This provides a great way to unlock the benefits of robotics without a negative impact on your workers or the extremely high cost of solutions designed to replace human labor outright.

FlexShelf

FlexShelf autonomous mobile robots autonomously travel to the correct picking locations and automatically deliver pick lists and picking instructions via visual cues, LED lights, and software that guides pickers to what they need to pick and where to find it. Each robot also has a built-in tablet computer and barcode scanner for viewing pick information and verifying correct picks. It also provides multiple shelves and can accommodate multiple bins to help pickers load and carry the correct items for each order.

HMIShelf

The HMIShelf is an all-in-one transport with operator touch interface. It carries a wide range of bins, totes and packages in a fully configurable and customizable shelving system that's ideal for picking, put-away and replenishment, and other warehouse processes. The robot is an AMR that handles the heavy lifting, transport and carrying, so warehouse workers can stay focused on specific tasks in specific zones, and save up to 50% of their time that's spent on walking.

A fully customizable touchscreen allows warehouse workers to easily interact with the robot, issue commands, and send it on its way after loading or unloading, all with virtually no training required. FetchCore software makes it easy to program complex tasks and to track, analyze and optimize your robot's workflows and performance with drag-and-drop simplicity and easy touchscreen or desktop interactions and metrics.

RollerTop Guide

The RollerTop Guide AMR is designed to maximize the productivity and efficiency of your picking operations when you're using conveyors, sortation, or other mechanized automation as part of the process. The RollerTop Guide directs your associates to which items to pick, autonomously transports the load to a powered or non-powered conveyor, and automatically discharges the tote.

With a RollerTop AMR, warehouses, there is no need for long stretches of fixed conveyor, and you can conserve warehouse space. Plus, your associates can achieve higher pick rates without needing to manually move totes and bins to the next stage of order processing. Each robot also has a built-in tablet computer and barcode scanner for viewing picking instructions and verifying correct picks.

CartConnect 100

The CartConnect AMR automatically moves to cart pick-up areas, docks with loaded or emptied FetchCarts, autonomously transports them to selected drop-off areas, and automatically detaches from carts—all without human intervention. It's a great way to save time and labor by having robots automatically move loaded or unloaded carts to wherever you need them in the warehouse, with full automation and the ability to accommodate a wide variety of payloads such as boxes, bins, totes and materials. You can also create your own cart design with bases and single or multi-shelf and multi-bin configurations.

ABOUT OMNIQ

omniQ is a manufacturer and provider of business solutions. We are proud to offer warehouse and supply chain systems integrations with a focus on the design, delivery, deployment, and support of efficiency-boosting technologies. Whether it's through our technology or our partner's, we offer end-to-end solutions through a consultative and collaborative approach, helping you choose the right strategies, hardware, software, and services to tackle your biggest business challenges and realize your business goals.

Our highly tenured team of professionals has deep knowledge and expertise to solve problems, apply the right technologies, and simplify the integration process for our customers. Our work is backed by numerous customer references as well as a firm commitment to delivering measurable results and putting your business first.

Deploy the Right Automation Strategy for Your Warehouse.

To explore any of these strategies in more detail and get professional guidance on the right choices and recommendations for your warehouse, connect with our supply chain technology experts at omniQ

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