GreyOrange

Efficient Putaway Using Smart Intralogistics Automation

Introduction

In warehouse management, each step in the intralogistics process is pivotal in determining overall efficiency. Putaway sits at the center of these processes. The seemingly straightforward action of placing received goods into storage often proves to be a bottleneck, consuming valuable time and resources.

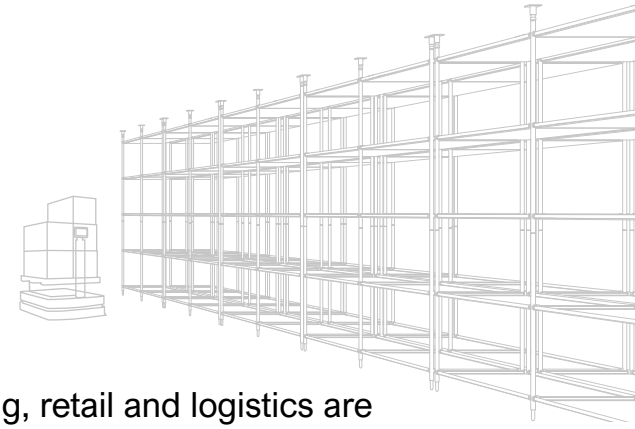
This ebook delves into the transformative effects of intralogistics technology on the putaway process. Herein, we explore how innovation can seamlessly integrate and highly optimize this crucial component of warehouse operations.

Smooth putaway is the gateway to organized and accessible inventory, ensuring that goods are not only received but strategically placed for swift retrieval. Traditional methods, laden with manual equipment, multiple touchpoints and a high potential for errors, have become inadequate to keep up with modern demands.

Starting with current market dynamics, we will shed light on the growing influence of smart robotics and the imperative for change in the face of labor shortages. We will also explore new consolidation techniques that redefine the rules of the game and uncover the complexity-to-opportunity narrative, unveiling how intralogistics automation contributes to the elimination of manpower and certain infrastructure components. Lastly, we will touch on practical use cases, with a spotlight on Pallet Putaway, Returns and Replenishment.

Welcome to a new era of "Efficient Putaway."

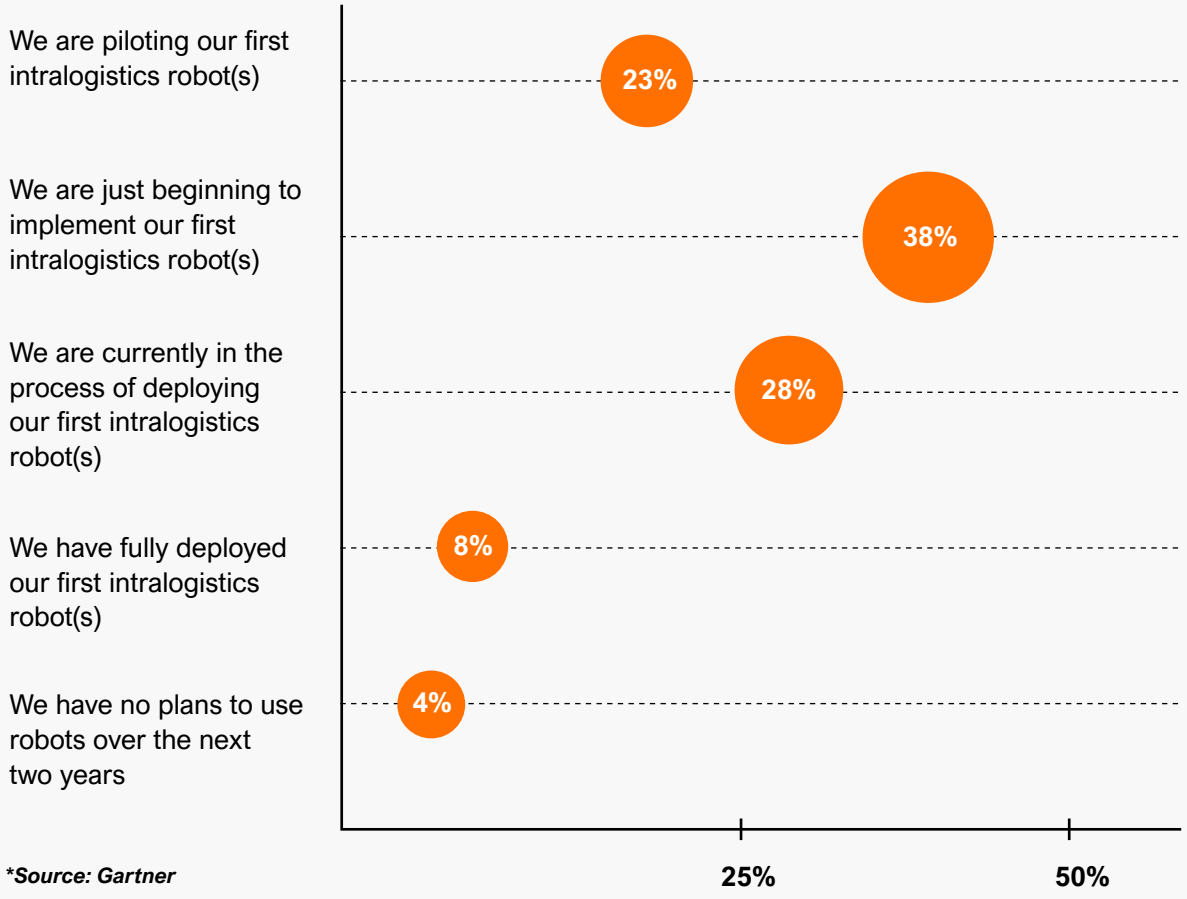
Intralogistics Smart Robot (ISR) Landscape:



Labor shortages and rising costs in manufacturing, retail and logistics are steering the industry towards a robotic revolution. According to Gartner, by 2028[1], the number of smart robots is projected to surpass frontline workers due to these challenges. With over 2 million industrial robots deployed, the intralogistics smart robot (ISR) segment is experiencing a robust growth rate of over 10% CAGR. A Gartner study[2] reveals that 38% of respondents are implementing their first intralogistics robots, while 23% are piloting their initial projects.

Plan to deploy Intralogistics Smart Robotics within operations over the next two years

Percentage of respondents

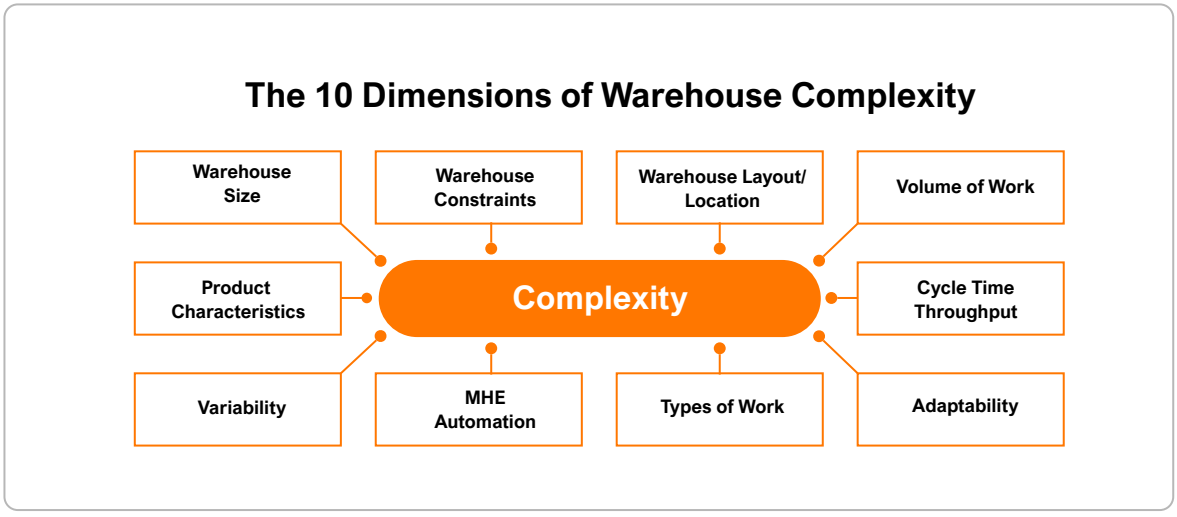


Source: Gartner

As companies grapple with labor shortages and increasing costs, the intralogistics market is evolving to incorporate smart robotics to maintain efficiency and competitiveness.

Navigating the Present Complexities in Putaway Operations

Warehouse complexities pose multifaceted challenges like manual operations, extra steps in putaway, infrastructural complexities, weak consolidation, excess requirement of manpower and inefficient returns handling. An automated putaway solution tackles each dimension of these problems (see figure below), enhancing overall efficiency.



Source: Gartner

1. MANUAL OPERATIONS FOR PUTAWAY

Manual warehouse processes increase the likelihood of errors and slow down the overall workflow. Relying on manual labor for putaway can lead to inconsistencies and inaccuracies, impacting the overall precision and speed of warehouse operations.

The inclusion of unnecessary steps in the putaway process introduces delays and complexities. Each additional step, from manual handling to multiple touchpoints, extends the cycle time and increases the chances of errors, hindering the flow of goods within the warehouse.

Impact: Increased processing time, increased error rates, reduced workflow efficiency

2. INFRASTRUCTURAL COMPLEXITIES

The need for specific infrastructure, such as additional Pick Put Stations (PPS) and staging areas, can pose challenges. Adding stations is expensive and contributes to space constraints, limiting the scalability and adaptability of the warehouse layout to changing operational demands.

Impact: Higher costs, limited scalability, compromised operational flexibility

3. LACK OF CONSOLIDATION

Inefficient consolidation processes can result in wasted storage capacity and makes it challenging to locate and retrieve goods swiftly, impacting the overall efficiency and responsiveness of the warehouse.

Impact: Suboptimal space utilization, difficulty in locating inventory, decreased operational efficiency

4. EXCESS MANPOWER REQUIREMENTS

The need for an extensive workforce amplifies operational costs and introduces the risk of errors associated with human interventions.

Impact: Increased labor costs, higher likelihood of errors, operational inefficiencies

5. INEFFICIENT RETURNS HANDLING

Poorly managed returns cause inventory discrepancies, impact customer satisfaction and require warehouses to expend extra resources to rectify errors, all of which affect the bottom line.

Impact: Extended processing times for re-induction, dissatisfied customers, additional resource allocation

6. REPLENISHMENT PUTAWAY

Traditional replenishment processes often lack real-time adaptability. Relying on pre-planned strategies may lead to suboptimal use of storage space and inefficiencies in adapting to fluctuating inventory demands.

Impact: Ineffective space utilization, potential stockouts, decreased adaptability to real-time inventory dynamics

Exploring New Horizons:

Revolutionizing Consolidation Techniques with Intralogistics Automation

In the ever-evolving landscape of intralogistics automation, a disruptive wave is sweeping across the upstream ecosystem. Traditionally, the process of unloading and sorting pallet cases involved multiple stages, including the staging of inventory at PPS before putaway using manual equipment such as forklifts. However, the advent of **automated inventory putaway** through intralogistics automation has reshaped this landscape.

In a normal scenario, the process initiates upon the arrival of inventory at inbound docks where the intralogistics system, in collaboration with an operator, places the inventory into Mobile Storage Units (MSUs), Mobile Case Units (MCUs), or Mobile Pallet Units (MPUs) based on the specific scenario and retailer requirements. Then, the automated system transports the MSU directly to the Goods-To-Person (GTP) area, eliminating the need for traditional PPSs.

An automated putaway method revolutionizes the process, streamlining operations and eradicating the necessity for manual intervention and PPSs in the GTP zone. Typically, two individuals are needed for a putaway operation. With automation, the need for manual stations becomes obsolete, resulting in substantial cost savings across manpower and physical infrastructure.

Note: This application is most effective for user-directed putaway, where the entire putaway process is based on the user's input.

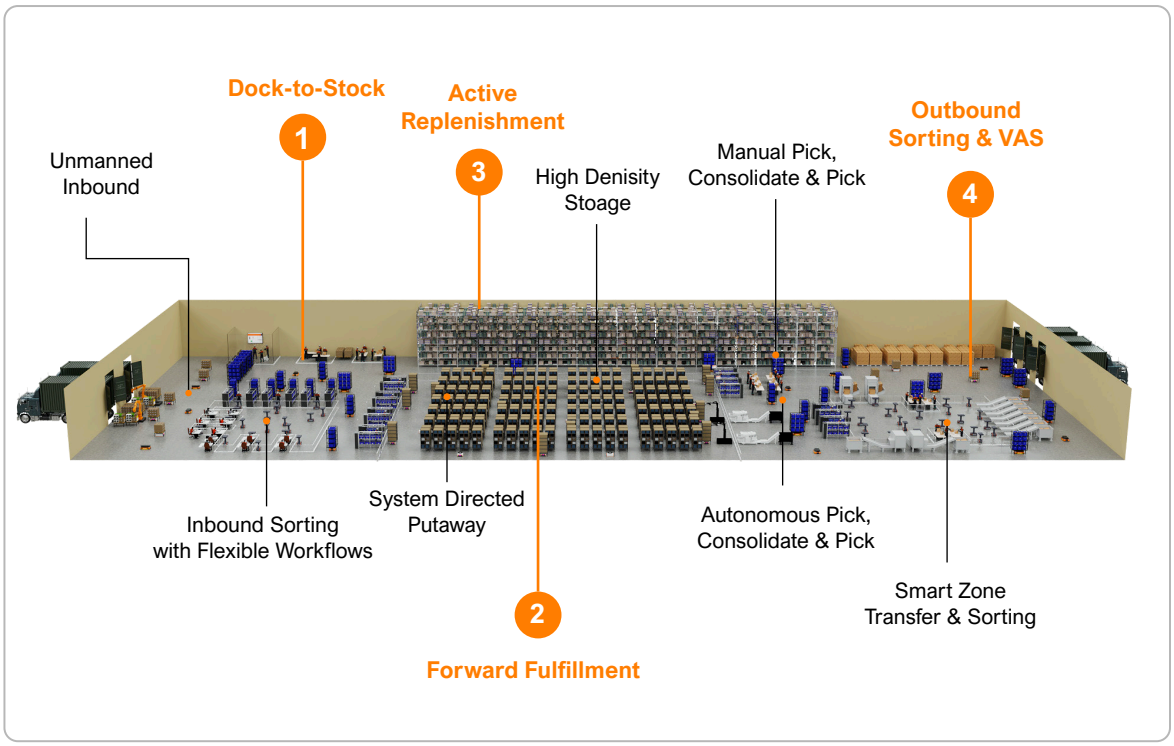
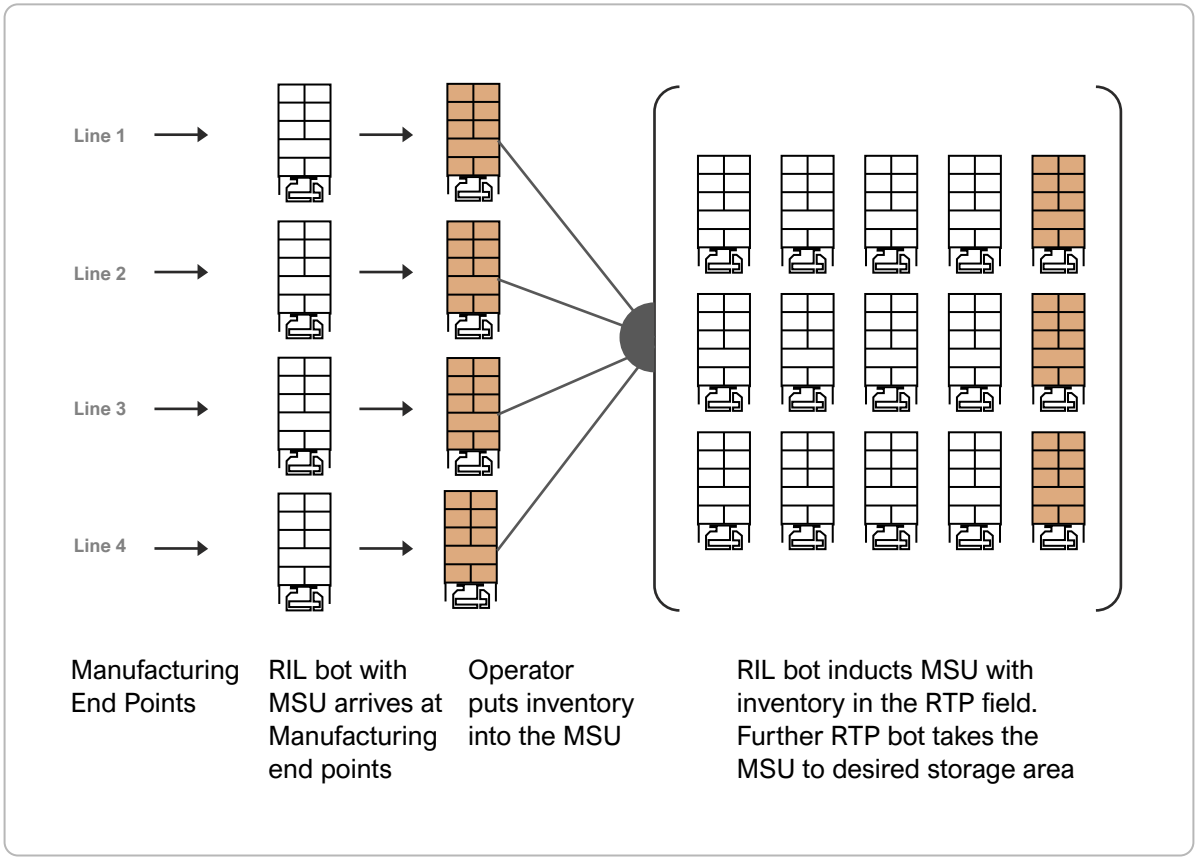


Figure: A Typical Inbound Process in a Distribution Center

INDUSTRY SCOPE: TRANSFORMING MANUFACTURING WITH AUTOMATED PUTAWAY

The impact of automated putaway goes beyond conventional boundaries, reshaping consolidation methodologies within the manufacturing industry. When finished goods reach manufacturing end points, an automated intralogistics system takes over. This system, equipped with an MSU, simplifies the process. The operator places inventory into the MSU, the automated system inducts the closed MSU into the GTP field, and then an autonomous bot transports it to the designated storage area.

In scenarios requiring immediate consolidation at manufacturing end points, the operator scans and places items into the MSU. Once closed, signifying there will be no additional inventory, the automated system expeditiously inducts the MSU directly into the forward area. This fluid integration, spanning across intralogistics maps with overlapping areas exchanging information, guarantees a clean transition between the no-man zone (GTP) and the manned zone (intralogistics automation). This approach significantly enhances efficiency between the manufacturing and warehousing processes.



STREAMLINING MANPOWER AND INFRASTRUCTURE IN INTRALOGISTICS

Historically, intralogistics operations have struggled with problems stemming from heavy reliance on manpower and the need for extensive infrastructure. Automation disrupts the conventional approach and opens avenues for increased efficiency, cost savings and operational optimization.

ENHANCING FACILITY LAYOUTS

Intralogistics automation presents a massive benefit to manufacturing facility layouts, particularly for those handling warehousing and fulfillment within the same space. Automated putaway eradicates the necessity for certain infrastructure components, leading to a leaner layout and improved operational flow. The elimination of intermediary points like PPSs, which traditionally served for inventory staging before putaway, exemplifies this shift.

In a standard configuration, PPSs act as go-betweens for inventory transfer. However, with the implementation of automated inventory putaway processes, these intermediary stations become obsolete. This simplifies the overall layout and frees up the physical space previously occupied by these stations. The outcome is a more adaptable and space-efficient facility.

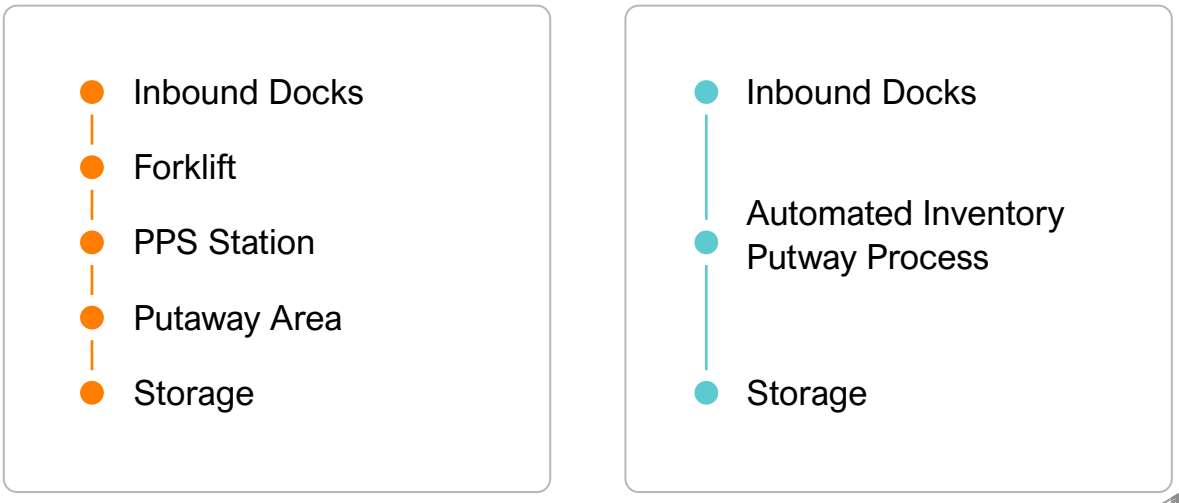
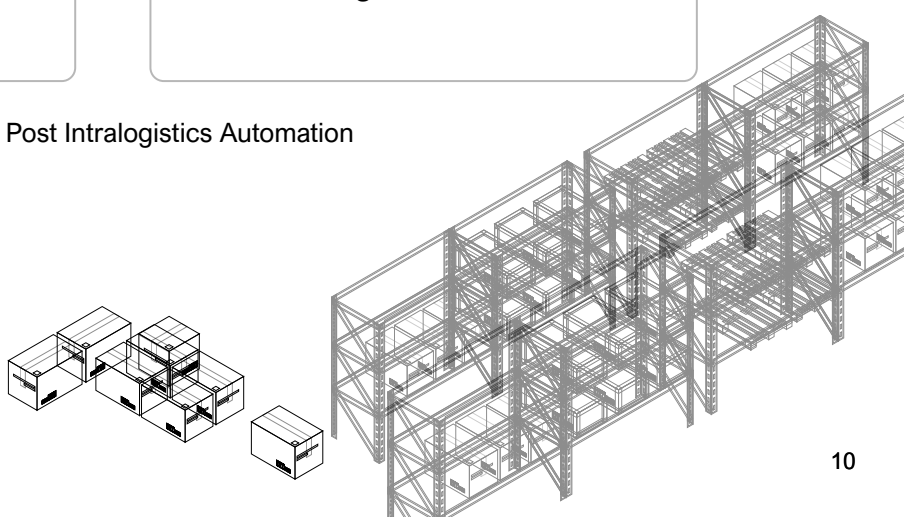


Figure: Pre and Post Intralogistics Automation



SIGNIFICANT COST SAVINGS

The removal of intermediary touch points equates to considerable cost savings within intralogistics robot deployments. Intralogistics robots facilitate a direct route from the staging area to the GTP zone, eliminating manual intervention and the need for extra infrastructure. This approach results in potential savings of up to $550,000 per deployment, encompassing the reduction in both additional manpower and the infrastructure/hardware associated with PPSs.

These savings extend beyond infrastructure costs. By minimizing manual touchpoints, the requirement for additional manpower decreases, leading to significant reductions in labor costs and the potential for errors in manual processes.

ENHANCED OPERATIONAL EFFICIENCY

Intralogistics robots, beyond tangible cost benefits, improve operational efficiency. Removing manual touchpoints not only mitigates the risk of errors but also accelerates the entire putaway process. The integration of autonomous robots into the intralogistics ecosystem ensures a rapid, accurate transfer of inventory from inbound docks to the GTP zone.

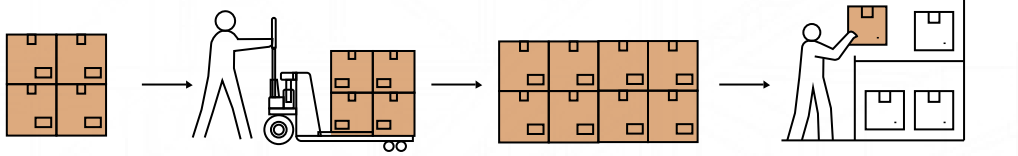
Use Cases for Automated Putaway using Ranger Intralogistics (RIL)

1. PALLET PUTAWAY

The traditional journey of a pallet, from the inbound dock to its designated storage area, has been marked by multiple touchpoints and manual interventions. The Ranger Intralogistics (RIL) solution introduces an automated, more streamlined approach to pallet putaway. RIL is GreyOrange's adaptive autonomous mobile robots (AMR) solution designed to improve labor intensive workflows related to material movement and case picking.

THE TRADITIONAL PALLET PUTAWAY PROCESS

Upon receiving inventory at the inbound dock, the pallet goes through various stages. A forklift at the RTP junction lifts it and transfers it to a Pallet Pick Put Station (PPP), where an operator scans and loads items onto the pallet. Subsequently, the Rack-to-Person (RTP) bot takes the pallet to its storage destination.



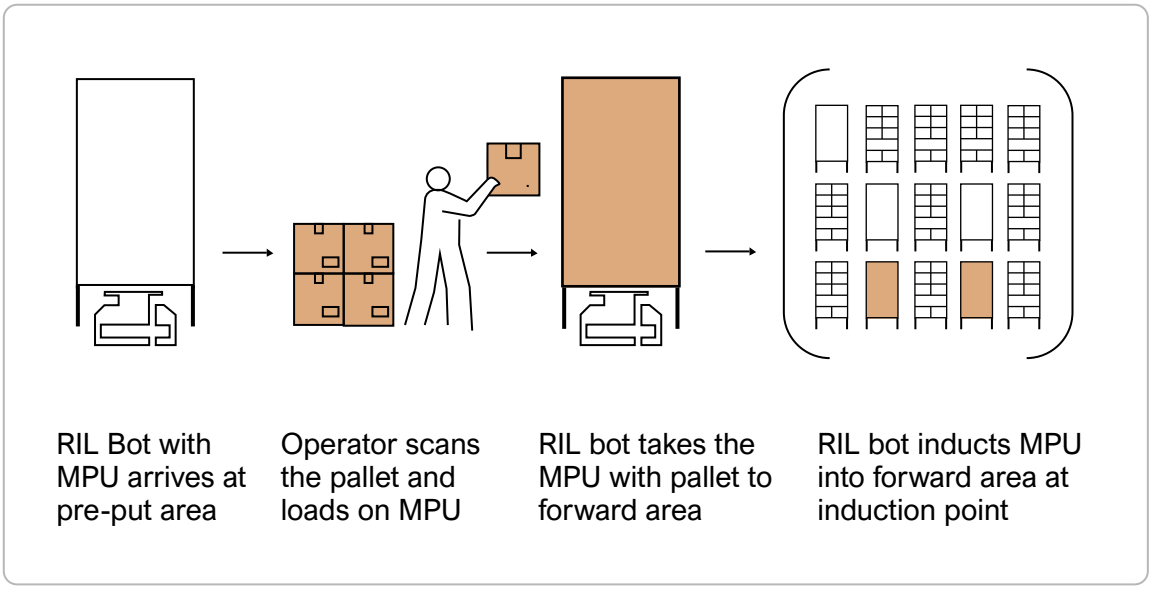
Scan pallet and transfer to PPP

Transfer of pallet via forklift/pallet jack

THE AUTOMATED PALLET PUTAWAY APPROACH

Using intralogistics (IL), AMRs eliminate PPSs and create new workflows. An operator hands over the entire pallet to the MPU. Accompanied by a bot, the MPU proceeds to the staging area for sorting and quality control activities.

After completing these essential tasks, the fully loaded MPU advances to the induction station. Here, an RTP bot inducts the inventory, guiding the MPU to its final storage location.



RIL Bot with MPU arrives at pre-put area

Operator scans the pallet and loads on MPU

RIL bot takes the MPU with pallet to forward area

RIL bot inducts MPU into forward area at induction point

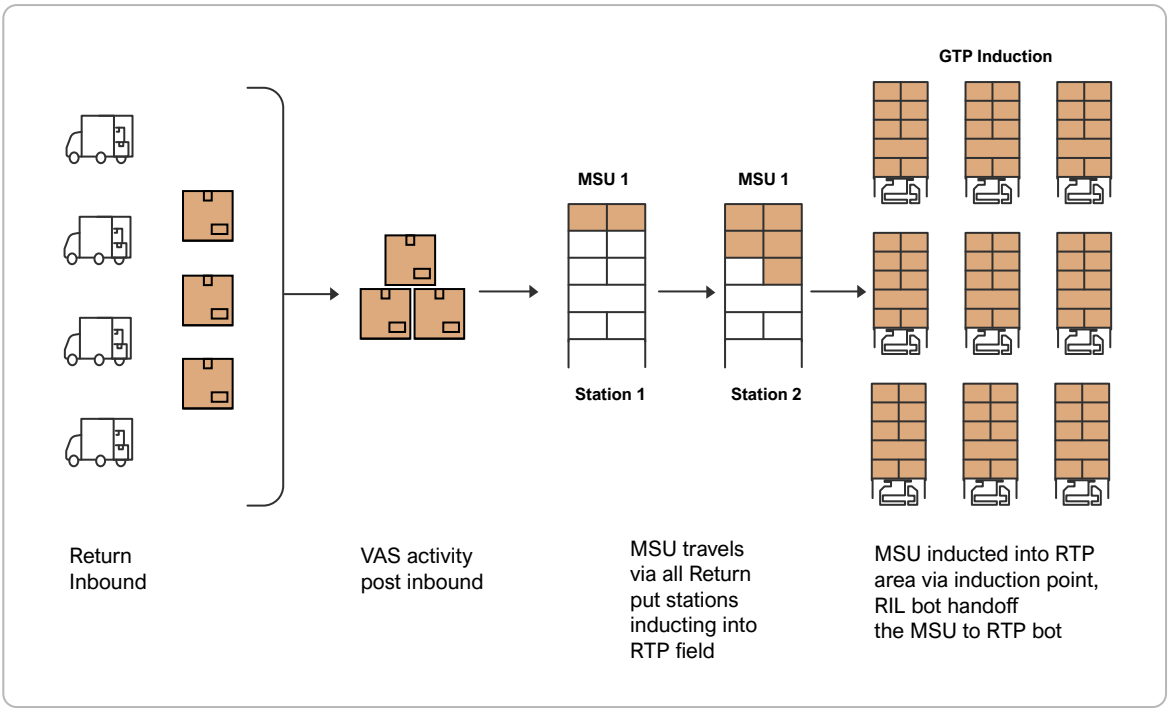
2. RETURNS HANDLING MODULE

In the traditional returns process, items undergo the routine of inbound processing– quality control, Value-Added Services (VAS), and induction into returns MSUs— through the aid of intralogistics bots.

Formerly, the bots navigated the returned items to stations where operators manually loaded items onto MSUs. The new approach eliminates these manual steps, allowing the entire storage rack to be autonomously inducted directly into the RTP or GTP induction area.

The handoff between the IL and RTP bots requires no operator. Subsequently, the RTP conveys the consolidated MSU to its designated storage location directly. This smart approach guarantees a precise and error-free returns handling experience without the extra touchpoint.

GreyMatter, GreyOrange's multiagent orchestration platform (MAO), possesses a specialized Returns Handling Module, which optimizes the reverse logistics process for a streamlined, automated workflow.



3. REPLENISHMENT

In the dynamic realm of warehouse operations, replenishment stands as a critical process, ensuring the flow of inventory from bulk storage to active picking zones. An intelligent, automated approach leverages real-time stock accuracy to elevate replenishment into an agile and automated operation.

AUTOMATING MCUs IN THE FORWARD AREA ECOSYSTEM

This action begins as the IL bot retrieves MCUs from the forward area and transports them to the reserve area. At the reserve retrieval locations, an operator initiates a case putaway, efficiently loading cases into the MCUs. Once completed, the RIL bot swiftly returns the loaded MCU to the active inventory zone.

The strategic handoff between the IL and RTP bots eliminates the need for traditional Put Stations. In a typical case putaway setup, the requirement for a PPS becomes obsolete. This streamlines the replenishment process and minimizes manual interventions, reducing operational complexities.

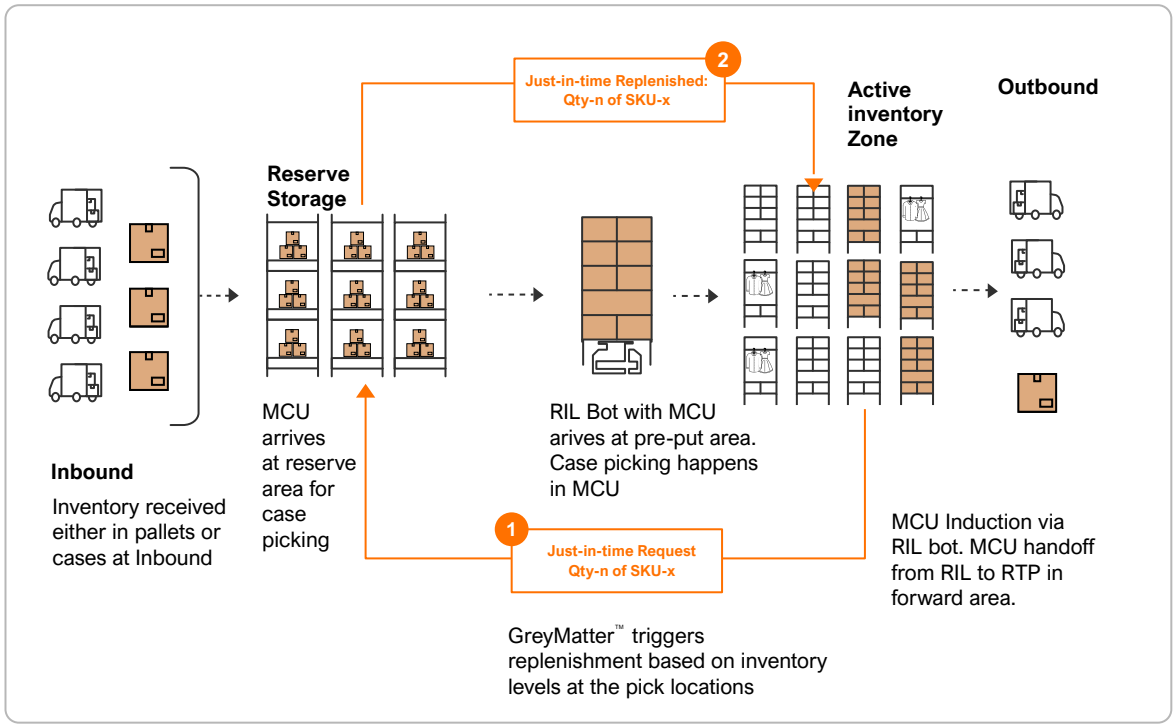
PICKING EFFICIENCY WITH GREYMATTER™

GreyMatter,™ our intelligent system, enhances replenishment further. By categorizing items based on popularity, it can intelligently construct MCUs tailored for A, B, and C type movers. This ensures that the most frequently picked items are readily available in strategically organized MCUs, optimizing the picking process.

CONSIDERATIONS FOR EFFICIENT STAGING

Adequate staging areas within the warehouse are essential. This ensures that when a container is emptied, it doesn't occupy an entire MCU, preventing unnecessary delays and improving overall inventory flow.

Our automated replenishment use case showcases a future-ready approach, combining the precision of RIL with the intelligence of GreyMatter.™ The result is an agile, error-free and efficient replenishment process that adapts to real-time stock dynamics, transforming the conventional replenishment paradigm.



CONCLUSION

Through smart intralogistics robots, we can achieve streamlined replenishment, better pallet putaway, improved returns management and increased picking efficiency with fewer errors. With Ranger Intralogistics, warehouses can improve their precision, speed and cost-effectiveness. If you are interested in learning more about RIL or our other solutions, please follow the link below to book a demo with us.

BOOK A DEMO

Sources

1: Gartner, Inc., Predicts 2024: Supply Chain Technology, Dwight Klappich, Rick Franzosa, Carly West, Simon Tunstall, Brian Schultz, Jose Reyes, 26 October 2023.

2: Gartner, Inc., Use the Right Software to Support Warehouse Automation and Robotics, Simon Tunstall, Dwight Klappich, Rishabh Narang, Federica Stufano, 20 November 2023.