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autonomy that works *with you*

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Scalable AMRs: Application Playbook

Delivering Scale and Rapid ROI

Inbound Staging to Putaway Workflows

A PROVEN BLUEPRINT FOR SCALABLE AUTONOMY

Inbound staging to putaway is one of the most essential and repeatable workflows in modern industrial facilities—and it's also one of the most overlooked opportunities for mobile automation. Nearly every facility follows the same core process: receive inbound goods, stage wrapped payloads, and put them away into storage racks. Yet despite its consistency, many companies still rely on high-cost manual forklift drivers to perform these repetitive movements between staging zones and storage locations. These tasks—while necessary—do not require real-time operator judgment and pull critical labor away from higher-value activities like loading/unloading trailers and/or navigating and stacking in complex racking environments.

This playbook introduces a scalable, proven approach to automating the inbound staging to putaway process using Seegrid's pioneering lift truck AMRs (Autonomous Mobile Robots). By integrating seamlessly with WMS systems and leveraging automated pallet scanning, this solution enables modern warehousing and manufacturing facilities to increase throughput, improve safety, and redeploy labor more strategically—all while following a repeatable autonomous model that's ready to scale. Whether you're optimizing a single facility or building a network-wide automation strategy, this playbook provides a blueprint for long-term autonomous success in today's fast-paced, labor-constrained fulfillment industries.

REAL-WORLD ROI: QUANTITIVE WINS

Implementing Seegrid AMRs to automate long-haul, non-value-added transport tasks delivers immediate labor efficiency—and **long-term financial gains**. For example, in the 3-shift operation described in the example below, using autonomy for the inbound staging to putaway workflow enabled the **reallocation of over 10 full-time employees (FTEs)** from repetitive, low-impact movements to higher-value tasks such as trailer loading/unloading and racking. At an average **fully burdened annual labor cost of $60,000 per FTE**, the financial impact of labor reallocation alone is substantial.

While throughput improvements are possible over time, the initial driver for autonomous solutions is clear: eliminate wasteful manual movements, improve process predictability, and address growing challenges with turnover, absenteeism, safety, and inconsistent operator performance. By requiring a more structured and reliable material flow, Seegrid's autonomous system helps enforce process discipline and mitigate costly human variability—factors especially critical in high-volume environments.

Financial Highlights: 5-Year Outlook

- ROI (Lease): **$1.9M (115%)**
- ROI (Purchase): **$1.7M (93%)**
- Net Present Value (Lease): **$1.4M**
- Net Present Value (Purchase): **$990K**
- Payback Period (Lease): **2 weeks**
- Payback Period (Purchase): **<24Months**

Internal Rate of Return (IRR): 35%

Beyond the numbers, facility leadership identified automation as a strategic priority—not just for cost savings, but for reducing safety risks and increasing labor reliability. This repeatable application serves as a proven playbook to improve operational performance while meeting autonomy mandates from the top.

Cumulative Financial Impact Over 5 Years

QUALITATIVE WINS

While the ROI is compelling on its own, the qualitative benefits of implementing autonomy for inbound staging to putaway are just as impactful. Modern facilities face several common challenges, including high employee turnover, absenteeism, inconsistent performance, and workplace damage due to rushed or careless forklift operation. With the deployment of Seegrid AMRs, operations become more predictable, safer, and easier to manage.

- **Improved Labor Utilization:** Skilled forklift operators are no longer pulled into monotonous, non-value-added tasks, freeing them up to focus on high-impact work like loading and unloading trailers or navigating racking systems.
- **Higher Workforce Reliability:** Reduces the day-to-day variability caused by absenteeism, new hire ramp-up time, and disengaged workers.
- **Safer Operations:** Automating long-haul material transport significantly lowers the risk of forklift-related incidents and congestion in shared traffic zones.
- **Greater Process Discipline:** Autonomous workflows naturally enforce a level of consistency, helping to build a more structured and efficient material flow.
- **Operator Morale Boost:** Removing repetitive, physically draining routes from human responsibility can improve employee satisfaction and reduce burnout.

APPLICATION IN ACTION:
AUTOMATING LONG-HAUL MATERIAL MOVES FOR INBOUND TO STAGING WORKFLOWS

Inbound goods follow a process common to nearly every industrial operation. The primary focus at the dock is speed—getting trailers unloaded quickly to avoid extra fees and keep docks clear for the next truck arrival. As a result, operators prioritize moving palletized materials from the trailer and staging them nearby, rather than taking them all the way to their final destination. This results in 3–4 manual touchpoints between trailer unloading and racking—each adding time, cost, and risk of error.

Seegrid's autonomous lift trucks are deployed to automate the repetitive, long-haul shuttle moves between the inbound receiving buffers and the staging lanes at the base of the racking. For instance, instead of relying on valuable manual forklift operators to complete non-value-added transport of potentially 600+ pallets per day, AMRs now handle the 1,200-foot round-trip journey—freeing skilled drivers to focus on high-lift work up to 50 feet, trailer interface, and precision racking.

This is especially impactful in a multi-shift, multi-day operation that sees spikes in incoming volume, operational efficiencies due to misplaced material from operator error, and the costs and time associated with seasonal hiring. By introducing AMRs, facilities reduce its dependency on manual labor—lessening touchpoints and errors, and improving overall operational efficiency and safety.

How the System Works

Inbound Receipt and Inspection: Manual operators unload trailers and stage palletized materials in the receiving buffer zone for inspection and validation.

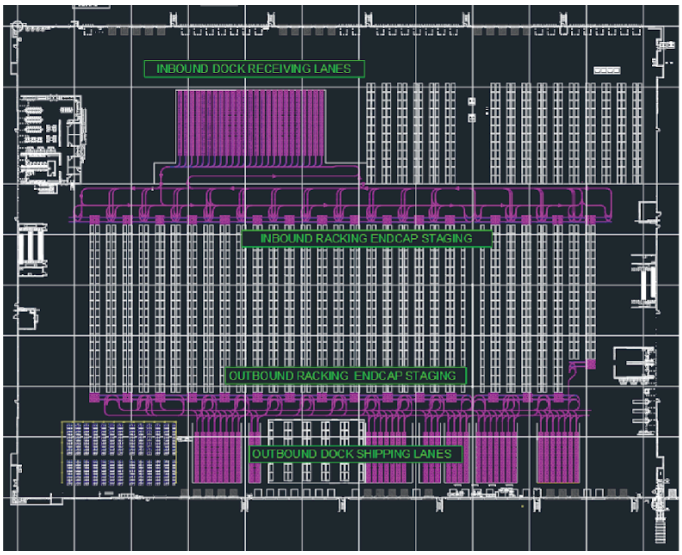
WMS-Driven Task Assignment: Each pallet has a barcode that will be scanned by Seegrid AMRs. The scanner communicates with the customer WMS to determine the correct destination location and lane for staging. This can be upwards of hundreds of potential destinations.

Autonomous Long-Haul Shuttle Movement: Seegrid autonomous lift trucks transport the palletized materials from the buffer zone to the designated staging lane at the racking or endcap. This reliably replaces a time-consuming, non-value added repetitive manual task and thus reduces risk of operator error.

Final Putaway: Once autonomously staged, a separate manual lift operator will rescan the materials as the WMS logs the transaction, freeing up the staging location and directing the operator to put the pallet into the appropriate storage location.

Operational Impact

- **Labor Optimization:** Reduces unnecessary manual touchpoints and reallocates labor to critical areas.
- **Process Accuracy:** Ensures pallets are delivered precisely where they're needed—reducing lost inventory and search time.
- **Scalable Efficiency:** Enables consistent material flow without needing to scale labor during peak seasons.
- **Improved Safety:** Lowers operator congestion in shared aisles and removes human error from long-haul transport decisions.



Best practice: Keep your high-cost, skilled operators focused where they drive the most ROI—in and out of trailers and racking.

Manual drivers are most valuable when performing complex maneuvers that require judgment and precision. Let autonomous mobile robots (AMRs) handle the repetitive, non-value-added "in-between" moves—like long-haul pallet transport—so your team can stay focused on the work that matters most.

SCALABILITY ACROSS ENVIRONMENTS NATIONWIDE

This intro to AMRs roadmap can be repeated across single and multi-facility environments nationwide. The inbound staging to putaway workflow is nearly identical across all, making it a natural fit for scalable autonomy.

- **Universal Application:** Nearly every industrial facility receives inbound goods, stages wrapped payloads, and puts them away using the same process.
- **Modular Deployment:** Start with a few AMRs and scale as needed—whether by zone, shift, or facility.
- **Minimal Operational Disruption:** Seamless integration into existing WMS and PLC systems for a flexible AMR fleet that adapts to changing floor layouts.
- **Leadership Alignment:** Many retailers are already prioritizing autonomy and forming internal Automation Teams, and this application playbook provides a fast, low-risk way to begin or expand that journey.
- **Built for Network-Wide Standardization:** With the same autonomous strategies replicated across sites, leadership can enforce consistent safety, labor efficiency, and throughput standards company-wide.

LET'S BEGIN YOUR AUTONOMOUS JOURNEY

The key to a successful autonomous journey is starting with the right win—an application that's proven, scalable, and delivers immediate impact. With the right technology and a mindset built for change, your operation can gain measurable value from day one. Seegrid's team of autonomy experts will partner with you to assess your facility, align with your unique goals, and customize an AMR solution for your inbound staging to putaway workflows that sets the foundation for long-term success.