From Chaos to CaseFlow™

Reinventing Case Picking for the Modern Warehouse

VECNA ROBOTICS

INTRODUCTION

Case Picking is the Bottleneck No One Talks About

In a world where automation has redefined everything from inventory management to last-mile delivery, case picking has remained remarkably manual—and remarkably problematic. It's the most labor-intensive task in most warehouses, yet it's often the last to be optimized.

Nearly half of all warehouse labor is spent on case picking, and most of that labor isn't even spent picking—it's spent walking, pushing, searching, and staging. In fact, 55% of labor time in case picking is wasted on travel—adding up to 22,880 hours per facility per year, or over half a million dollars in avoidable costs for a typical operation running two 8-hour shifts with 10 associates per shift[1]. The average associate might log miles per shift moving from one pick to the next, yet only a fraction of that time adds value. These inefficiencies have been tolerated for years, seen as too complex or too costly to fix.

But that status quo is no longer sustainable. A shrinking labor pool, volatile demand, and rising fulfillment expectations are pushing logistics operators to a breaking point. You can't keep throwing labor at the problem. You can't afford to delay automation another year. And yet—most automation options on the market either fail to deliver impact or require a level of disruption that no high-throughput operation can stomach.

The question isn't if case picking should be automated. It's how to do it in a way that works with your existing operations, not against them.

1. Bartholdi, John J., and Hackman, Steven T. (2020). Warehouse & Distribution Science. Estimated for a two-shift operation with 10 associates per shift.

ONE

The Case Picking Status Quo is Broken

Let's be clear: warehouse leaders have done their best with the tools available.

You've likely deployed some combination of:

- Voice picking or RF scanning systems
- Pick-to-cart or pick-to-conveyor workflows
- Or even considered goods-to-person systems or mini-load ASRS units

These solutions offer incremental gains. But none of them solve the full equation. Travel remains high. Fatigue stays high. Labor churn persists. And optimization? It still largely depends on your most experienced supervisors managing workflows manually.

Meanwhile, the expectations are growing. Order profiles are more complex. Peak seasons hit harder. And your customers demand speed, accuracy, and transparency in every shipment.

In short: **the pressure is up, but the tools haven't evolved.**

The industry is stuck with a case picking approach that:

- Relies too heavily on tribal knowledge and manual prioritization
- Wastes over half of a worker's shift on unproductive travel
- Forces workers into high-strain, low-reward roles
- Offers little visibility into performance beyond basic pick rates

To break this cycle, logistics leaders need more than just automation. They need intelligent orchestration—a new playbook that coordinates people, robots, and systems in real time, while adapting to the changing demands of the floor.

Why Case Picking Is the Last Frontier for Automation

Several factors make case picking uniquely resistant to automation:

High-touch workflows with complex pallet-building logic

Legacy facilities with narrow aisles and non-standard layouts

Variable SKU dimensions and packaging types

Human-centric exception handling still required in most operations

In many ways, the lack of progress isn't due to lack of interest—it's a lack of solutions that can flex with the realities of high-throughput, mixed-SKU operations.

TWO

What Modern Case Picking Requires

The demands placed on today's warehouses and 3PLs aren't just increasing—they're evolving. It's not enough to pick faster. You have to pick smarter. That means:

- Reducing wasted human travel time
- Working within existing infrastructure
- Coordinating people and machines seamlessly
- Managing dynamic workflows that adapt in real time
- Making decisions based on live data—not gut feel
- Reducing fatigue, improving safety, and training faster

True optimization happens when the entire system—robots, pickers, supervisors, and WMS—operates as a single, orchestrated unit. Not as siloed tools. Not as standalone workflows.

Unfortunately, most automation strategies fall short. Fixed infrastructure like ASRS or goods-to-person systems are costly, slow to deploy, and disruptive. Semi-autonomous vehicles help, but without real orchestration, they're just smarter forklifts.

Modern case picking needs flexible automation that works inside your current facility, integrates with your existing systems, and elevates both human and robotic performance. That's where a new model is emerging.

The Evolution of Case Picking

Case picking is not a new workflow. For decades, warehouses have relied on manual labor to fulfill cases, with workers using paper-based systems to track orders and relying on basic tools like forklifts and hand trucks to move cases around. It wasn't until the late 20th century that significant technological innovations began to emerge to optimize case picking operations.

Even with the emergence of technologies like RF scanning, basic Warehouse Management Systems (WMS), and voice-directed picking to help, the heavy lifting—particularly the walking, staging, and pallet building—remained in human hands. Despite being the most labor-intensive process in the warehouse, case picking has long been considered too complex, variable, or costly to automate effectively.

THREE

A New Playbook for Case Picking

Industry leaders are moving away from fragmented tech stacks and toward intelligent orchestration. This approach:

- **Puts robots in charge of the travel**, eliminating the majority of non-value-added movement
- **Guides workers via wearables**, dynamically assigning tasks based on

location, workload, and real-time system priorities

- **Continuously adapts** to congestion, task availability, and changing demand
- **Leverages data** to balance workloads, manage fatigue, and pinpoint bottlenecks before they occur

This isn't theory. It's already happening at some of the largest and most complex 3PL facilities in North America.

And it's delivering results that traditional approaches simply can't match.

Benchmarking the Status Quo

Modern case picking operations are still plagued by inefficiencies:

Average productivity:
100–125 units picked per hour, per worker

Training time:
2–4 weeks to fully onboard a new picker

Turnover rates:
Often exceed 30% annually in warehouse labor roles

Injury rates:
4.8 nonfatal injuries per 100 full-time workers (majority tied to overexertion and repetitive motion)

1. Modern Materials Handling, "Order Picking Methods and KPIs," 2023
2. Prologis Research, "Logistics Real Estate and the Future of Work," 2022.
3. U.S. Bureau of Labor Statistics, Job Openings and Labor Turnover Survey (JOLTS), 2023.
4. U.S. Bureau of Labor Statistics, Injuries, Illnesses, and Fatalities (IIF) Program, 2022.

Introducing CaseFlow™

CaseFlow™ is Vecna Robotics' response to the decades-long challenge of case picking. It's an end-to-end orchestration system that reimagines how people, robots, and software work together on the floor.

What it does:

- **Uses robotic pallet jacks** to automate pallet travel
- **Guides pickers** through wearables or voice UI, enabling efficient picking across multiple orders
- **Reduces travel time** by keeping workers in smaller, dynamic zones
- **Dynamically assigns and reassigns tasks** throughout the shift based on live priorities
- **Connects directly to your WMS** to orchestrate every step—from pallet pickup to outbound dock

CaseFlow™ isn't just automation. It's real-time orchestration. It's flexible. It's fast to deploy. And it's built to deliver value from day one—not years down the road.

2x	50%	<1	0
Productivity increase	Reduction in training time	Year to positive ROI	Reported injuries

FOUR

The CaseFlow™ Architecture

At the core of CaseFlow™ lies Pivotal™, Vecna Robotics' powerful orchestration software. Pivotal™ acts as the intelligent control layer that unifies every element of the system—robots, human workers, task logic, and data—into one seamless workflow.

Rather than layering automation on top of existing challenges, Pivotal™ reimagines the case picking process from the ground up. It transforms static operations into dynamic, real-time systems that continuously adapt to the environment, priorities, and throughput needs of your facility. CaseFlow™ is more than just a fleet of robotic pallet jacks—it's a full-stack architecture that tightly integrates:

How is CaseFlow™ Different?

- Uses existing infrastructure
- Less pickers /higher UPH in dynamic zones
- Rapid deployment in <4 weeks
- Automates pallet travel
- Low up-front investment
- Optimizes all case picking resources
- Super-easy training in <2 weeks
- Simply scaled up/down to your seasonal needs
- 24/7 remote monitoring

The BRAINS

Pivotal™ Orchestration Software
Orchestrates real-time coordination between pickers and robots for optimal throughput.

- Integrates with most major WMS platforms
- Handles intelligent order release, routing, and dynamic task allocation
- Manages congestion, traffic patterns, and re-assignments in real time

The BRAWN

Vecna Robotics CPJ
Autonomous pallet jacks that execute 90% of the travel.

- Designed for co-bot operations - simple switch between manual and autonomous mode
- Handles up to 3,300 lbs with hot-swappable batteries
- Navigates intelligently through tight warehouse aisles

The PICKER

Connected Associates
Associates outfitted with wearables receive real-time instructions.

- Intuitive UI for precise pick direction
- Optimized pick paths reduce travel and fatigue
- Workers can report pick exceptions or reroute to available robots based on proximity or urgency

The DATA

CaseFlow™ Console
Operational insights that fuel continuous improvement.

- Live location view and status of robots and workers
- Identifies bottlenecks and high-impact optimization opportunities
- Historical analysis

The MONITOR

Pivotal™ Command Center
Provides 24/7 remote oversight and intervention as needed.

- Keeps robot fleets running with <4% local intervention
- Allows remote error resolution and performance tuning

FIVE

A Day in the Life of CaseFlow™

To understand how Vecna's CaseFlow™ orchestrates human and robotic workflows in real time, let's walk through a typical case picking cycle in a facility powered by CaseFlow™. This closed-loop system minimizes associate travel, eliminates confusion, and accelerates throughput—all without reconfiguring your facility or retraining your team from scratch.

WMS Integration & Order Release 1
The Orchestration Engine receives picklists directly from your WMS and intelligently optimizes order release based on priority, route efficiency, and available resources.

CPJ Pallet Retrieval 2
Autonomous Co-bot Pallet Jacks (CPJs) begin the cycle by picking up an empty pallet from the designated initiation area. If necessary, they also get a fresh battery.

Optimized Travel & Picking Route 3
Each CPJ follows a fully optimized travel path that minimizes distance and avoids congestion. It visits all pick stops assigned to its route.

Connected Worker Engagement 4
Wearable UIs instruct associates where to meet the next CPJ, which cases to pick, and what items to scan. The direction is dynamic, zone-based, and easy to follow.

Pick Completion & Handoff 5
CPJs wait at each pick stop while associates complete the pick, then continue autonomously to the next stop on the route.

Final Drop-Off 6
Once the pallet is full, the CPJ delivers it to either a stretch wrapper or the outbound dock, completing the loop before returning to initiation to start another pick list.

Real-Time Reprioritization & Exception Handling

CaseFlow isn't just a one-way command system—it's dynamic and adaptable. As workers and robots move throughout the facility, the orchestration engine continuously monitors conditions and can re-prioritize pick tasks in real time.

If a worker is near a robot that is not on their assigned task schedule, the system allows them to interact with the closer CPJ and take over its next pick—reducing idle time and optimizing flow. Similarly, if an item becomes temporarily unavailable, the associate is able to report a pick exception, and it will be handled automatically based on the site configurations.

This exception handling capability gives workers autonomy without sacrificing coordination, ensuring both flexibility and throughput in even the most dynamic environments.

SIX

Is CaseFlow™ Right for You?

CaseFlow™ is a purpose-built system designed for high-throughput environments where labor is scarce, travel time is excessive, and productivity gains are overdue. Whether you're a 3PL under pressure to win competitive bids, a CPG brand facing seasonal spikes, or a retailer looking to maximize throughput without reconfiguring your floor, CaseFlow™ may be your fastest path to scalable efficiency.

Vecna Robotics has developed a clear profile of the environments where CaseFlow™ delivers maximum ROI and operational uplift. If your facility meets the following criteria, you could be an ideal candidate for deployment:

- Pick >2 million cases per year
- Operate 5+ case picking days per week
- Run multi-shift operations with 10+ pickers per shift
- Operate 80% of more pick-to-ground
- Run on a major WMS (SAP, Manhattan, Blue Yonder, Korber, Oracle, etc.)

CaseFlow™ in Action at:

GEODIS

When GEODIS partnered with Vecna Robotics to deploy CaseFlow™ at their Indianapolis site, the goals were clear: improve productivity, reduce physical strain, and ensure safer working conditions.

The results exceeded expectations:

- 117% increase in productivity
- Zero turnover among pickers post-deployment
- >250 units per hour, per picker
- Faster, safer, more intuitive onboarding for new hires

Workers reported feeling safer, more effective, and more empowered. Managers saw better pallet quality, reduced training time, and lower incident rates.

For a site moving 2.5M cases per year, the ROI was fast and tangible—and they're already planning expansion.

GET STARTED FAST

1 Discover
Identify and prioritize your pain points, choose workflows to focus on, get initial quote.

2 Design
Design solution, approve requirements, obtain sign-offs, and establish start date.

3 Deploy
Rapidly install, run a limited-scale demo that meets KPIs and familiarizes users, on-site training.

4 Learn
Ramp up to full production, customer success provides bi-weekly analytics and training.

5 Scale
Expand automation to new workflows at the existing site and identify new sites for program growth.

CONCLUSION

You don’t need more workers. You need smarter workflows.

For too long, case picking has relied on a fragile balance of tribal knowledge, walking-intensive labor, and systems that were never truly built to scale. When demand spikes or labor walks out, the cracks show. Most operations respond by throwing more bodies at the problem—but that only treats the symptoms, not the cause.

What today’s high-throughput warehouses need isn’t more people. It’s a smarter way to work—one that eliminates the inefficiencies of manual travel, guides workers with real-time intelligence, and coordinates every resource in the building around a shared goal: more throughput, with less effort. That’s where CaseFlow™ comes in.

CaseFlow™ is how you:

- **Automate the grunt work, not the core work.** Let robots handle the long hauls so your team can focus on the value-added task of picking.
- **Empower people to pick better, safer, and faster.** Wearable UIs and zone-based workflows reduce strain, shorten training time, and boost accuracy.
- **Orchestrate performance—not just automate parts of it.** Dynamic task allocation, intelligent order release, and real-time optimization ensure your operation runs at peak efficiency, all shift long.

If your warehouse has been stuck with legacy workflows, tribal knowledge, and travel-heavy case picking, this is your invitation to break free. Let’s move beyond incremental change. Let’s create flow.

See how Vecna Robotics can help your business today.

VECNA ROBOTICS

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