

Warehouse Automation: Each Picking

Selecting Automation That Fits Your Operation



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Introduction

THE REAL QUESTION IS BALANCE



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Automation is transforming warehouse operations across industries. But despite the flashy demos shown at trade shows, most companies are asking the grounded questions: **How do we justify automation? What do we attack first? Which specific technologies strike the right balance of investment, risk, and reward for our company?**

The warehouse automation landscape is vast and fragmented, which makes those answers complex. This paper is designed to simplify the path forward, helping you identify where to start, evaluate your options, and make confident, data-driven investment decisions.

Why Automate?

The most common reasons companies automate include:

- Labor availability is declining or poor
- Labor costs have become extreme
- A need to improve service levels - accuracy or order fulfillment speed
- Space constraints are inhibiting growth
- Processes are antiquated and/or need significant updating
- Cash flow needs

The value proposition for automation lies in how much your company has to gain from investing or lose from doing nothing.

Where to Start?

When Zion designs or redesigns a distribution center, we typically begin with picking, then expand outward. Picking, specifically **“each picking,”** can be the most labor-intensive warehouse function with the highest opportunity for ROI. Improvements here extend beyond labor savings, **influencing order turnaround speed, pick accuracy, inventory control, space utilization, and more.**

It is essential to note that, although you may start with picking, it is crucial to understand the downstream and upstream implications of changes made in picking. For instance, decisions on how much inventory to keep in forward pick locations impact reserve storage needs.

But first... lay a solid foundation with a thorough **Discovery process.**



Discovery

BEFORE YOU EXPLORE SOLUTIONS



Analyze and Summarize Data

- What story does the data tell?
- What story does the data miss?



Document Baseline Costs

- Real estate costs per square foot, including operating expenses.
- Labor costs, error-related costs, etc.



Explore Risk

- Where are you vulnerable?
 - Labor availability.
 - Customer loss due to accuracy, order fulfillment times, or shipping costs.



Leadership Readiness

- Do you have team members who have lived through an automation project before?
- Do you have trusted external partners to augment your team?



Technology Infrastructure

- What systems do you have in place today, and what are their limitations?
- How strong is your IT team, and do they have the capacity to support the project?



Financial Strategy and Buy In

- What ROI does your company expect?
- Is your business capex- or opex-focused?
- Consider all stakeholder angles. While a VP of Supply Chain might prioritize throughput, a CFO will evaluate capital outlay, depreciation, and long-term financial risk.



Timeline

- When does the system have to be operational?



Considering Your Options

STRATEGICALLY CHOOSING THE RIGHT SOLUTION

There's no one-size-fits-all approach to warehouse automation, which is why we recommend evaluating a spectrum of solutions, from manual to automated. The goal is to strike the right balance between ROI and risk.

Below simplifies the primary categories of each-picking automation. A data-driven, methodical approach to technology selection considers multiple variables, including SKU Pareto, product characteristics, order profiles, volume peaks, timelines, budgets, and operational constraints (e.g., hazmat, security). The process is complex and requires both technical experience and creative problem-solving.

Each Picking – Balancing the Variables

	Basic/Manual			Mid-Level		Advanced-Level	
	Manual Pallet Jack or Picking Cart (Paper, RF)	Manual Pallet Jack or Picking Cart with Lights or Voice	AGV/AMR (point-to-point)	Person to Goods	Rack/Shelf to Person	Goods to Person (AMR)	Goods to Person (Shuttle)
Manufacturers (Examples)			<ul style="list-style-type: none"> MiR Addverb Dynamo 	<ul style="list-style-type: none"> Locus Vector and Origin Robust.AI Six River Systems 	<ul style="list-style-type: none"> Geek+ PopPick Geek+ P-Series 	<ul style="list-style-type: none"> Locus Array HAi Exotec AutoStore OPEX Infinity 	<ul style="list-style-type: none"> TGW Knapp OPEX Perfect Pick Addverb MLS
Presentations/ Volume/Throughput	↓	↓	↓	→	→ ↑	↑	↑
Space Optimization	↓	↓	↓	↓	→	↑	↑
Labor Efficiency	↓	↓	↓	→	→	↑	↑
Flexibility	↑	↑	→	↑	↑	↓	↓
Complexity	↓	↓	→	→	→	↑	↑
Cost	↓	↓	↓	→	→	↑	↑
Leadtime Needed	↓	↓	↓	↓	→	↑	↑
SKU Counts	↓	↓	↓	↓	→ ↑	↑	↑
Lifetime Services (Maintenance Budget)	↓	↓	↓	→	→	↑	↑

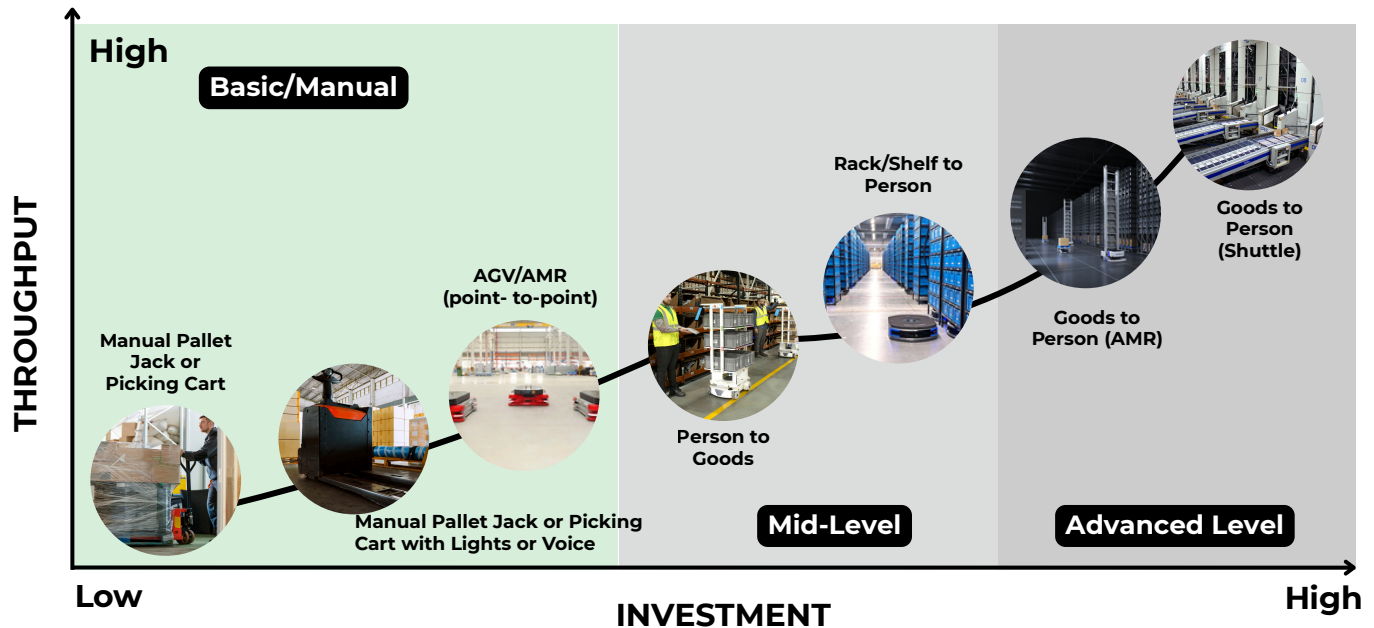
KEY: ↓ LOW → MEDIUM ↑ HIGH

Comparison

THE TRADE-OFF CURVE

As systems become more advanced, both performance and complexity rise. These directional curves are meant to guide discussion and highlight where incremental investment delivers increasing returns.

Throughput vs. Investment



**READY TO RETHINK
WHAT'S POSSIBLE IN
YOUR FACILITY?**

**Request a
Free Consultation**



(Image Source: Geekplus)



Manual & Basic Automation

LOWER RISK • LOWER COST • FOR LOWER THROUGHPUT

Each Picking Automation doesn't have to be all-or-nothing. Sometimes an operation's volume or complexity doesn't warrant a high level of automation. In these situations, the focus is to create efficient processes and possibly augment them with appropriate levels of technology.

Manual & Basic Options to Explore:

- Manual Pallet Jack or Picking Cart with Paper or RF
- Manual Pallet Jack or Picking Cart with Lights or Voice
- AGV/AMR (point-to-point)
- Some operations greatly benefit from the use of Warehouse Execution Systems (WES), which can optimize work processing without requiring physical changes.



Mid-Level Automation

MODERATE RISK • MODERATE COST • MODERATE THROUGHPUT

These each picking systems combine humans and machines to reduce travel time and improve accuracy.

Mid-Level Options to Explore:

- Person to Goods
- Rack/Shelf to Person
- Others
 - Carousels
 - Vertical Lift Modules



Advanced-Level Automation

HIGHER COMPLEXITY • HIGHER COST • HIGH THROUGHPUT

For operations ready to redefine efficiency, transformative automation turns technology into a strategic advantage. These systems synchronize every movement, SKU, and task at scale.

As a result, these systems drive throughput, accuracy, and speed while maximizing available space.

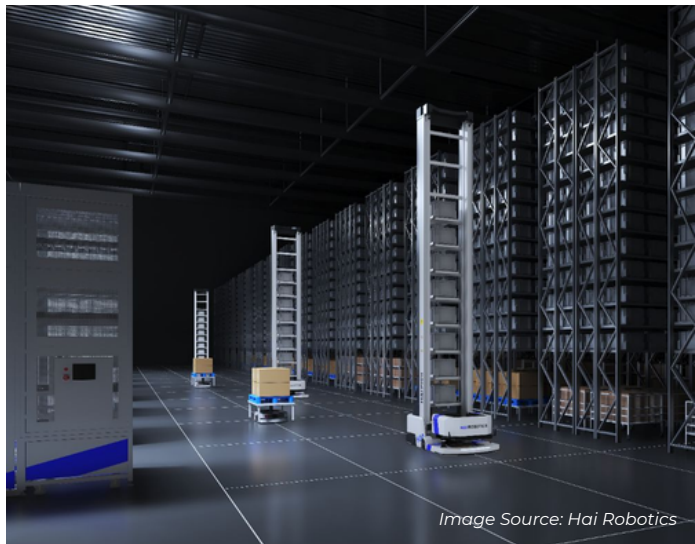
Advanced Options to Explore:

- Goods to Person (AMR)
- Goods to Person (Shuttle)

Critical Success Factors:

These systems are complex and require the collaboration of multiple equipment manufacturers and software providers. A single mistake by a vendor can cause significant delays or additional costs.

A synchronized approach to integration is critical to success. Vendor relationships, project management, and communication are paramount.



Goal:

Improve Accuracy, Speed, Volume, AND Space



Additional Tips



➤ Risk Mitigation

- **Start Small:** Pilot programs in controlled environments
- **Partner Carefully:** Select vendors with proven track records and support capabilities. Make sure the “product” that you are buying is a core product for the manufacturer or integrator.
- **Manage Closely:** One small mistake by one critical vendor can create major delays or increased cost. Thoroughly communicate and double check important details

➤ Don't Forget

- Include total cost of ownership in financial planning
 - Fully understand maintenance plans and costs
 - Include spare parts costs
 - Plan for system upgrades



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**NO B-TEAM.
NO HAND OFFS.**

ZION BRINGS SENIOR-LEVEL LEADERSHIP TO EVERY PROJECT.



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Return on Investment

Many organizations look at capital investments as a traditional cost of labor versus cost of investment. This is typically a 24 – 36 month expected window for the return (hard costs, not including soft costs such as savings in software licensing, internal HR costs, etc.)

Total Headcount Saved: 10	
Annual Loaded Cost Per Teammate:	\$70,000
Total Headcount Savings:	\$700,000
Total Capital Investment:	\$1,750,000
ROI in Years	2.5
ROI in Months	30.00

1

While this is a powerful metric to track, the story has evolved....

Labor may not tell the entire story. What if the investment allows you to save space as well?

Total Headcount Saved: 10	
Added Cost Per Teammate:	\$70,000
Total Headcount Savings:	\$700,000
Space Saved: 25,000 SF	
Cost Per Sq Per Annum:	\$12.50
Total Space Savings:	\$312,500
Total Savings:	\$1,012,500
Total Capital Investment:	\$1,750,000
ROI in Years	1.73
ROI in Months	20.74
New Revenue Created:	\$450,000
New Profit Created:	\$79,412

2

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Total Headcount Savings:	\$700,000
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3

What if you can generate revenue and margin from the newly “gained” space?

Other Items to Consider

- Financial Modeling - Depreciation, Robot as a Service (RaaS), etc.
- Competitive Advantage - SLA strategy, getting product to shelf, customer experience, etc.
- Quality/Risk Mitigation - Right Order Delivered (Medical Device, Healthcare), retail compliance chargebacks, etc.



Conclusion



When it comes to distribution center automation, success doesn't come from technology alone; it comes from clear planning, informed decisions, strong leadership, and prepared teams working with the right partners.

While this paper focused on picking, that's only the beginning. Once a picking strategy is defined, the same disciplined approach can extend to storage, sortation, packing, shipping, receiving, and supporting areas such as value-added services and returns.

As you embark or continue on your automation journey, remember:

- Automation is not “one size, fits all”
- Understand the entire flow and holistic impact of any automation before investing
- Enjoy the wins along the way – including the small ones
- ROI is bigger than just a dollar-for-dollar headcount comparison – try to understand the entire picture to justify capital investment for a more accurate return

Transformational supply chain leaders view their distribution centers as interconnected systems in which people, processes, hardware, software, and controls work together. They see automation not as a single project but as a continuous journey, a strategic driver of growth, agility, and competitive advantage.



Company Overview



➤ About Us

We are a Systems Integrator that designs, procures, and implements automated solutions to optimize Distribution Centers.



➤ Our Core Values

To leave a positive impact on the lives of those we touch.

Be Bold

We possess the passion, creativity, confidence, and innovation to do and be more for our team, partners, customers, and community.

Unwavering Commitment

We are committed to building and maintaining long-lasting relationships by being trusted advisors in our industry and stewards of our culture.

Better Together

We believe in the power and responsibility of trust, teamwork, and collaboration in pursuit of a greater purpose.





Contact Us

Schedule a complimentary automation readiness consultation.



Website

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Social Media

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Memorable Experience, Intelligent Change