

FORTNA

Thought Leadership Series

High-Density Storage Solutions for Brownfield Facilities



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Executive summary

Rising SKU counts, higher fulfillment volumes and skyrocketing customer expectations are putting pressure on distribution operations to add capacity. However, meeting that demand doesn't necessarily mean expanding into a new facility.

High-density storage offers a practical path forward. By making better use of floor space and vertical storage, organizations can increase capacity, improve inventory management and create more productive operations without expanding their existing footprint. For brownfield facilities, the right strategy can work within existing building constraints while creating a foundation for greater efficiency, throughput and long-term growth.

Key takeaways

- **Create capacity without expanding:** High-density storage can help accommodate more inventory within an existing warehouse footprint by making better use of available space.
- **Improve fulfillment performance:** The right storage solution can reduce travel time while improving inventory control, picking speed and labor productivity.
- **Build for what's next:** Modular, scalable solutions can help brownfield facilities address today's capacity challenges while creating a foundation for future automation and growth.



A new approach to brownfield warehouse automation

Today's distribution operations are being asked to balance competing priorities: increase throughput, control operating costs, accommodate more SKUs and meet increasingly demanding and complex fulfillment expectations.

At the same time, expanding into a new facility isn't always realistic. Breaking ground on new construction requires significant capital and time, while relocating operations can introduce additional disruption and complexity.

That puts greater emphasis on the question many supply chain leaders are asking: How can we get more out of the facility we already have? The answer starts with looking at warehouse space differently.

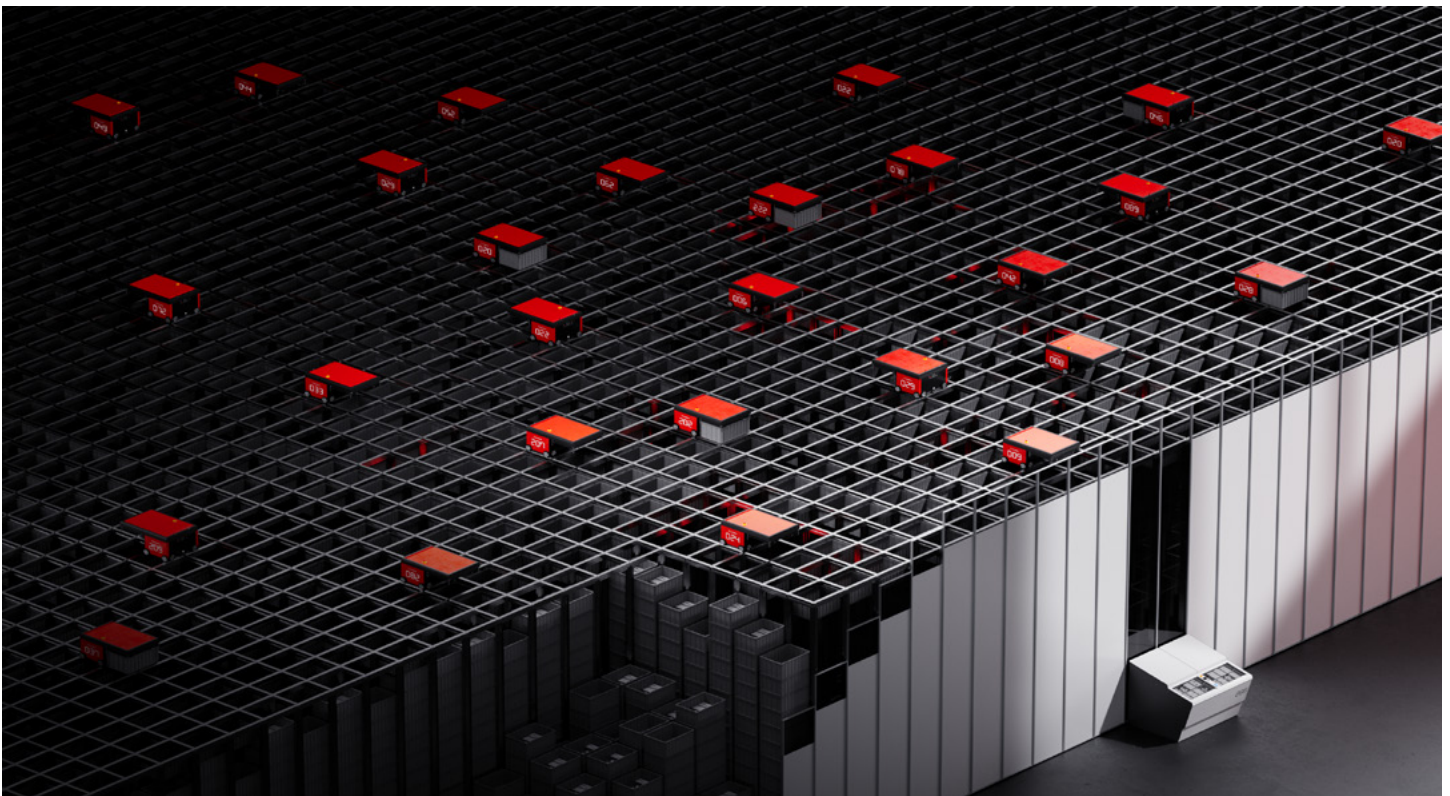
High-density storage: more capacity in the same footprint

Traditional storage methods can leave valuable vertical space unused and dedicate substantial floor space to aisles and inventory access. High-density storage approaches the problem differently, optimizing available space.

Warehouse high-density storage can take many forms, from traditional solutions such as pallet racking, push-back racking and mobile shelving to automated storage and retrieval systems (ASRS) and goods-to-person (GTP) technologies.

FORTNA develops automation strategies that leverage advanced technologies, including AutoStore and Hai Robotics solutions, which use different approaches to high-density, goods-to-person fulfillment. These technologies can help organizations make more effective use of available space while reducing storage footprints by up to 75%.

But density alone isn't the objective. The most effective storage strategy balances capacity with accessibility, throughput, workflow, inventory mix and long-term operational requirements. This becomes increasingly important as SKU counts grow. A well-designed high-density storage strategy can accommodate a larger inventory assortment within an existing facility while supporting the throughput levels required by the operation.



The benefits of high-density storage

When the storage strategy is aligned with the broader operation, it can influence everything from space utilization and inventory control to labor productivity, order-picking performance and the ability to adapt to changing demand.

Better use of available space

High-density storage can increase storage density by reducing unnecessary walkways and making better use of vertical space.

For brownfield facilities, high-density storage can create more usable space without the cost and disruption associated with expanding the building or moving to a new facility altogether. The additional capacity can also free up valuable floor space for other workflows or future automation.

Inventory control

As SKU counts increase, maintaining accurate inventory becomes more challenging and crucial. High-density storage systems can provide greater control over where inventory is stored and how it moves through the fulfillment process.

When integrated with intelligent software, real-time inventory data can further improve visibility and support more informed decisions. Better inventory control reduces searching, improves order accuracy and gives operators greater confidence that the right products are available when they are needed.

Faster, more productive order picking

The right storage strategy considers not only how much inventory can fit into a facility but also how quickly that inventory needs to be retrieved. When inventory is efficiently delivered to operators at goods-to-person stations, facilities can reduce the travel and searching associated with traditional picking.

This can help reduce pick time, increase picking speed and make better use of available labor. For operations managing high order volumes or large SKU assortments, these improvements can have a meaningful impact on overall fulfillment performance.

Labor productivity

Labor remains a critical consideration for distribution operations. Talent acquisition and workforce challenges continue to rank as the top supply chain challenge.¹

¹ <https://www.mhi.org/annual-industry-reports>



Rather than attempting to scale labor in proportion to order volume, organizations can use automation and improved storage strategies to enable existing employees to process more work safely and productively.

Beyond headcount, labor productivity is also influenced by how much time employees spend walking, searching, replenishing and handling inventory. High-density storage and goods-to-person solutions can shift that equation by reducing non-value-added travel and bringing inventory closer to the point of work.

Increased flexibility

Seasonal fluctuations, promotions, changing customer preferences and new product introductions can change the way inventory needs to be stored and picked.

High-density storage solutions can provide the flexibility to respond to these changes within existing facilities. Modular systems can be configured and scaled to accommodate evolving storage requirements, throughput demands and product mixes, addressing changing storage requirements without requiring a major facility redesign.

Proximity to customers

For organizations operating multiple facilities or serving customers across different geographic markets, high-density storage can also support a more distributed fulfillment strategy.

By increasing capacity within smaller or existing facilities, organizations can position inventory closer to customers, reduce fulfillment distances and respond faster to demand.

Sustainability

Using space more efficiently can also contribute to more sustainable operations. Avoiding or delaying facility expansion can reduce the additional resources associated with building and operating new space, while automated high-density storage can reduce unnecessary travel and material movement within the warehouse, potentially reducing energy consumption.

Designed for brownfield facilities

The shift toward automation is already underway. According to the 2026 MHI Annual Industry Report, 56% of organizations expect to increase spending on supply chain innovation, while 73% anticipate increased adoption of robotics and automation over the next five years.¹



But the goal isn't simply to introduce more automation. It's to determine which technologies can solve the most important operational challenges and how they should work together within the existing facility.

A high-density storage solution doesn't require organizations to start from scratch. Instead, the system can be designed around the existing facility infrastructure and integrated into the broader operation. This requires more than evaluating the storage technology itself. Building constraints, existing material handling equipment, warehouse management and execution systems, workflows and future automation plans all need to be considered together.

This is where an experienced systems integrator can play a critical role. By evaluating the facility and technology ecosystem, an integrator can help ensure that new automation works seamlessly with existing systems and processes rather than creating another operational silo.

Without a broader integration strategy, organizations can end up with technologies that improve an individual process but create new bottlenecks or data gaps elsewhere in the operation. The result is a more connected operation that can add capacity and capabilities over time without requiring a complete redesign.

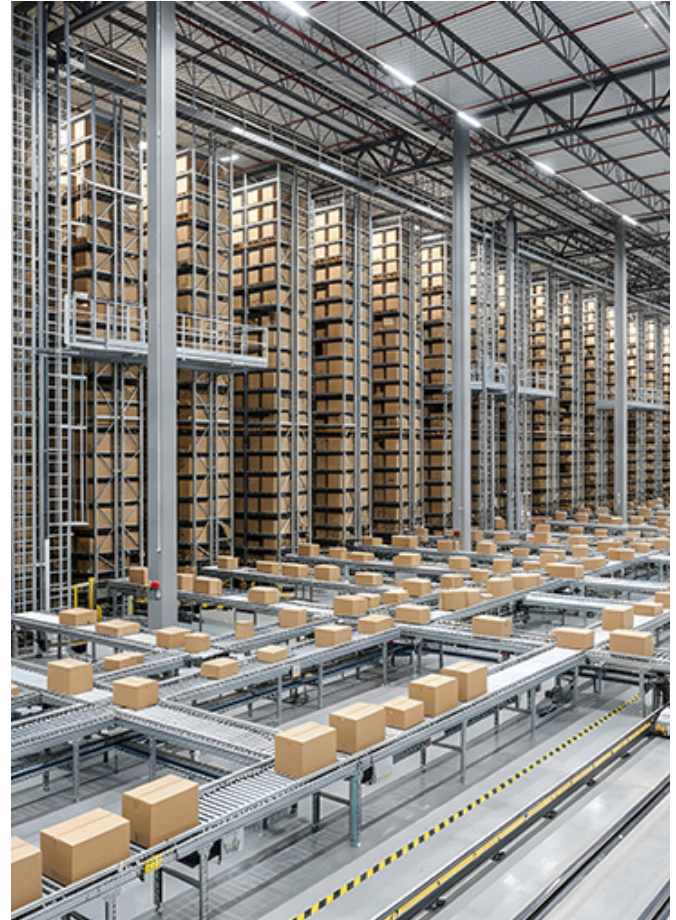
Scalable today. Ready for tomorrow.

The right high-density storage solution should do more than solve today's capacity constraints. It should also give your operation the flexibility to adapt as SKUs, order volumes, labor needs and automation requirements change.

A long-term strategy should account for:

- **SKU growth:** How will the operation accommodate an expanding product assortment?
- **Order volume:** Can the solution support projected throughput requirements?
- **Picking requirements:** Will the system improve pick time and order-picking productivity?
- **Available space:** How effectively can the operation use both floor space and vertical space?
- **Labor:** Can the solution reduce dependence on manual travel and hard-to-fill roles?
- **Integration:** Will new automation and software work seamlessly with existing systems and provide a foundation for future technologies?
- **Scalability:** Can capacity and throughput be expanded without requiring another major facility redesign?

Modular high-density systems provide the flexibility to scale as needs change. When processes, automation and software systems are designed to work together from the beginning, organizations can add capacity and capabilities over time without requiring major redesigns.



The bottom line

For brownfield facilities, the path to greater capacity doesn't always require more square footage. The opportunity is to make better use of the space already available while creating a flexible foundation for what's next.

High-density storage can help organizations increase capacity, improve inventory control and accelerate order picking. When combined with goods-to-person automation and intelligent software, it can also become a starting point for broader warehouse modernization.

The goal isn't simply to store more. It's to create a more productive, connected operation that can scale with business growth.

FORTNA

FORTNA CAN HELP

Every brownfield facility has different constraints, product characteristics, workflows and business objectives. That's why the right high-density storage solution starts with understanding the operation.

FORTNA evaluates business requirements, models operational performance and identifies best-fit automation technologies and intelligent software. As a proven systems integrator, FORTNA also considers how those technologies need to work together and with the systems already in place to create a cohesive fulfillment environment.

Contact us today at www.FORTNA.com