VERTICAL LIFT MODULES

THREE BOTTOM-LINE BENEFITS OF A NONTRADITIONAL WAREHOUSE SOLUTION

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VLMS: THREE BOTTOM-LINE BENEFITS OF A NONTRADITIONAL WAREHOUSE SOLUTION

Over-ordering during the pandemic and post-pandemic stockpiling to lessen supply chain challenges have created crucial needs for better space utilization within warehouses and distribution centers. Additional pressure from an ongoing labor shortage and a tight warehouse market are taking conversations about automated solutions to a new level, according to material handling equipment suppliers.

An urgent need to maximize space is sparking new interest in automated storage and retrieval systems that many companies once assumed too costly to explore. As the price to purchase and rent warehouse space continues to escalate, companies large and small are exploring the benefits of vertical lift modules (VLMs).

AN URGENT NEED TO MAXIMIZE SPACE IS SPARKING NEW INTEREST IN AUTOMATED STORAGE AND RETRIEVAL SYSTEMS THAT MANY COMPANIES ONCE ASSUMED TOO COSTLY TO EXPLORE.

The warehouse automation market is predicted to reach **$69 billion by 2025** as the need to move more goods with less resources accelerates. For example, the need for better space utilization has opened the door for high-density storage solutions such as Modula, a vertical storage and retrieval system that houses and delivers parts to a stationary operator. Its use reduces the need for shelving and creates time efficiency when picking pieces or small components.

Carolina Handling, one of the Southeast's leading intralogistics solutions providers, broadened its technology portfolio in 2021 when it became an authorized dealer for Modula Inc., the Ohio-based manufacturer of VLMs and horizontal carousels. The exclusive Southeastern dealer of Raymond forklifts, reach trucks, order pickers and pallet jacks in the Carolinas, Alabama, Georgia and the panhandle of Florida, Carolina Handling has formed an Intralogistics Solutions Group to help customers identify and implement automated technologies for optimizing their operations.

VLMs are filling the bill for customers needing new solutions to support the global shift toward e-commerce-driven distribution models. A fully automated vertical storage and retrieval system, VLMs offer real-time inventory management and better pick accuracy.

This white paper examines three bottom-line benefits of this nontraditional warehouse solution that are ideal for industries such as automotive, electronics, food and beverage, pharmaceuticals and small parts distributors. Those benefits include:

+ **Maximized space utilization**
+ **Increased pick accuracy and security**
+ **Enhanced worker safety and job satisfaction**

MAXMIZED SPACE UTILIZATION

A recent study by commercial real estate investment firm CBRE Group, Inc. found that demand for industrial space remained high during the first quarter of 2020, with 3PLs, general wholesalers, food and beverage distributors, manufacturers and big box retailers collectively keeping the first-quarter vacancy rate at 3.1 percent—well below the historical average of 5.9 percent.

Rent for warehouse and distribution center space across the country increased almost 12.5 percent from the end of 2020 to the end of 2021, from $6.34 to $7.13 per square foot, according to market and consumer data company Statista. And currently, the average cost to build a turnkey warehouse—minus the cost of land and grading—is $55 to $70 per square foot, according to a survey of commercial builders.

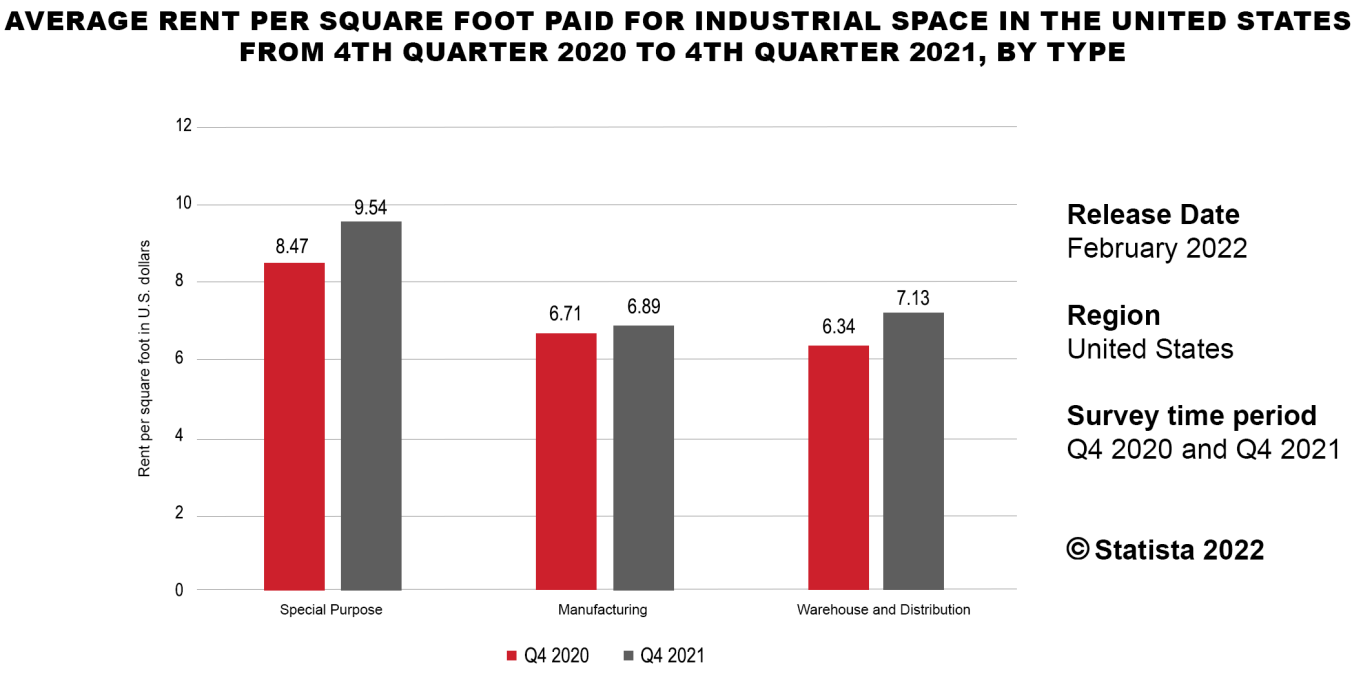

Figure 1: Average rent per square foot paid for industrial space in the U.S., Q4 2020–Q1 2021, by type. Source: Statista 2022.

Surging inventories and little storage availability to accommodate them are ongoing problems for which automated storage and retrieval systems are a feasible solution. VLMs can save companies up to 90 percent of floor space, compared with traditional storage methods, freeing up space in existing facilities and reducing the need for additional square footage that presently is scarce and costly.

Building up, not out, VLMs utilize the available ceiling height, compressing as much as 9,050 square feet of traditional shelving into a compact storage system with a footprint of 150 square feet. For example, Modula VLM heights go from 10.1 feet to 52.1 feet, keeping components in sturdy storage trays with a tray payload capacity of up to 2,200 pounds, depending on the VLM model.

Additionally, the vertical automated storage and retrieval system is an effective alternative for facilities where ceilings are not high enough for full vertical height utilization of swing reaches or order pickers, some of which reach up to 59 feet.

Owners of such a facility in Durham, NC, with a 20-foot ceiling height opted for two Modula units to store parts for a growing HVAC business. Shelves with bins of small parts were taking up half of the company's 20,000-square-foot distribution center, creating the need for additional space to house HVAC units waiting for installation. The $306,000 VLM investment eliminated the company's need to rent or build additional space estimated to total up to $2 million.

When considering return on investment, Modula automated storage and retrieval systems have an expected payback period of 6 to 18 months.

Figure 2: When considering return on investment, Modula automated storage and retrieval systems have an expected payback period of 6 to 18 months. Photo credit: Modula Inc.

Figures 3: VLMs can compress as much as 9,050 square feet of traditional shelving into a compact storage system with a footprint of 150 square feet. Photo credit: Modula Inc.

INCREASED PICK ACCURACY AND SECURITY

According to 2020 estimates, the average mispick costs a company as much as $100. While new technology in recent years has helped warehouses and 3PLs to drastically cut the number of mispicks, the average annual number remains around 7,500, according to "The Mis-Pick Effect: Threats Persist in 2021" by Jake Rhuede.

VLMs reduce handling errors, improve inventory management and help eliminate product damage or loss. Using a simple, visual picking aid, a VLM operator can quickly identify an item to be picked or replenished.

The system delivers selected items to the operator, saving the time that workers spend walking warehouse aisles in search of items and often climbing ladders to retrieve.

The automated storage and retrieval system also monitors all picking operations, documenting them for traceability. And because items are stored in a fully enclosed module, products are not exposed to dust and damage.

Figure 4: Simple, visual picking aids quickly guide operators to the parts to be picked or replenished, eliminating costly picking errors.
Photo credit: Modula Inc.

WITH PICKING SPEEDS OF 300 LINES PER HOUR OR MORE, VLMS ALLOW COMPANIES TO GET MORE DONE WITHOUT ADDING STAFF OR SHIFTS.

ENHANCED WORKER SAFETY AND JOB SATISFACTION

Not only do VLMs help ensure the safety and security of products, but also the safety and job satisfaction of staff.

The pandemic caused a major disruption in America's labor force as more than 47 million workers quit their jobs, with the manufacturing industry facing a major setback after losing 1.4 million jobs at the beginning of the pandemic. Since then, manufacturers nationwide have struggled to hire both entry level and skilled workers.

Likewise, durable goods manufacturing, wholesale and retail trade, and education and health services have a labor shortage, with more unfilled job openings than unemployed workers with experience in the respective industries.

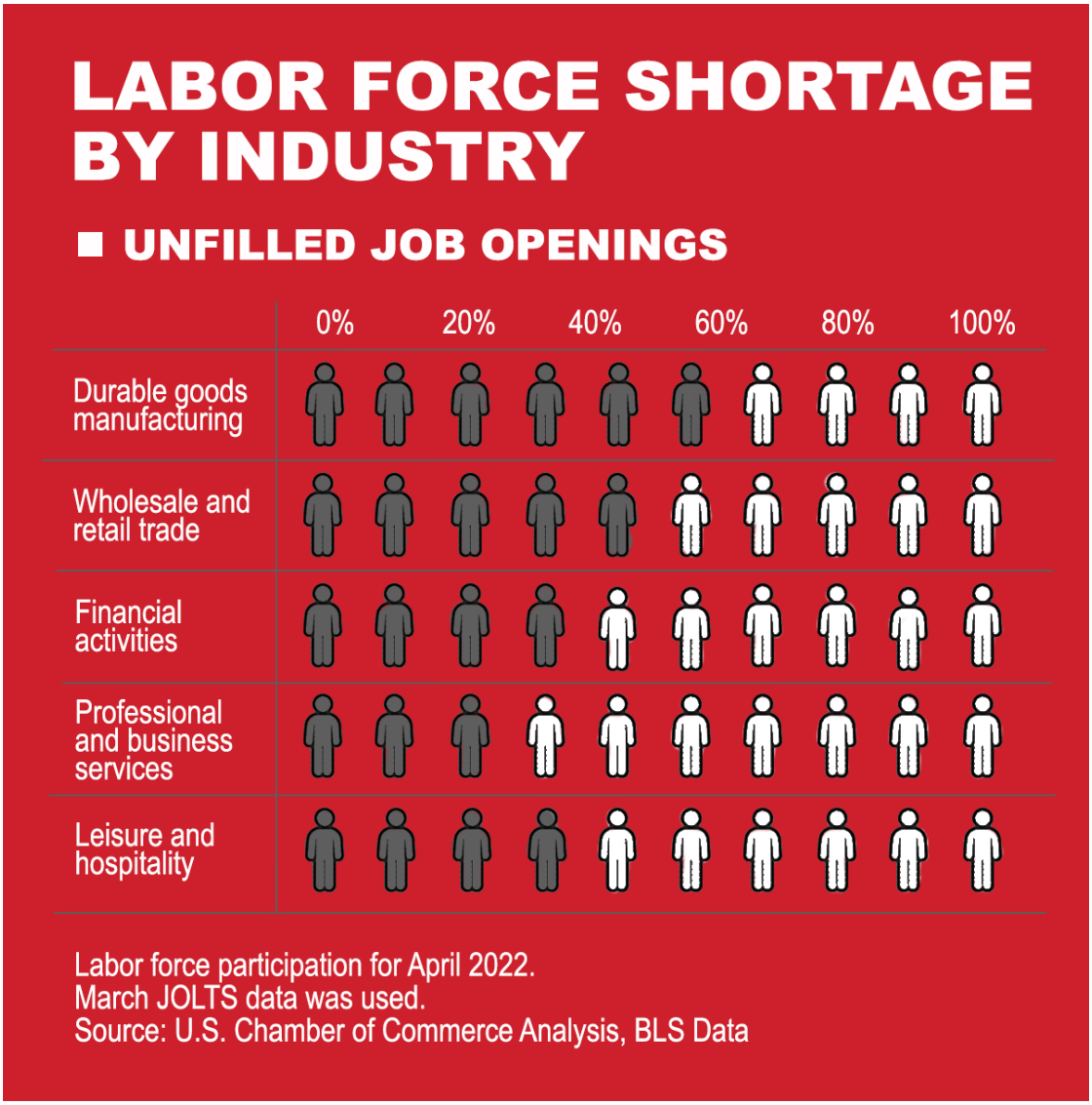

Figure 5: Labor force participation rate for April 2022. Source: U.S. Chamber of Commerce.

With a labor force participation rate hovering around 62 percent, there are not enough workers to fill the 11.5 million jobs now open across the United States. If every one of the 5.9 million unemployed workers in the country found work, there would still be 5.6 million jobs available, according to the America Works Data Center of the U.S. Chamber of Commerce.

Before the pandemic, 11 states had more than 200,000 job openings. As of October 2021, that number is 22 states.

The pandemic also triggered what labor officials have dubbed "The Great Resignation." With market conditions favoring job seekers, workers are quitting their jobs in near-record numbers in search of better opportunities, and they are costly to replace.

On average, it costs a company six to nine months of an employee's salary to replace him or her, according to the Society for Human Resource Management (SHRM). For an employee making $60,000 per year, that comes to $30,000 to $45,000 in recruiting and training costs.

"The Great Resignation Update," a study published by Limeade, an employee well-being company based in Bellevue, WA, said survey respondents cited burnout, lack of job flexibility and seeking a more caring company culture as the top reasons for leaving their jobs.

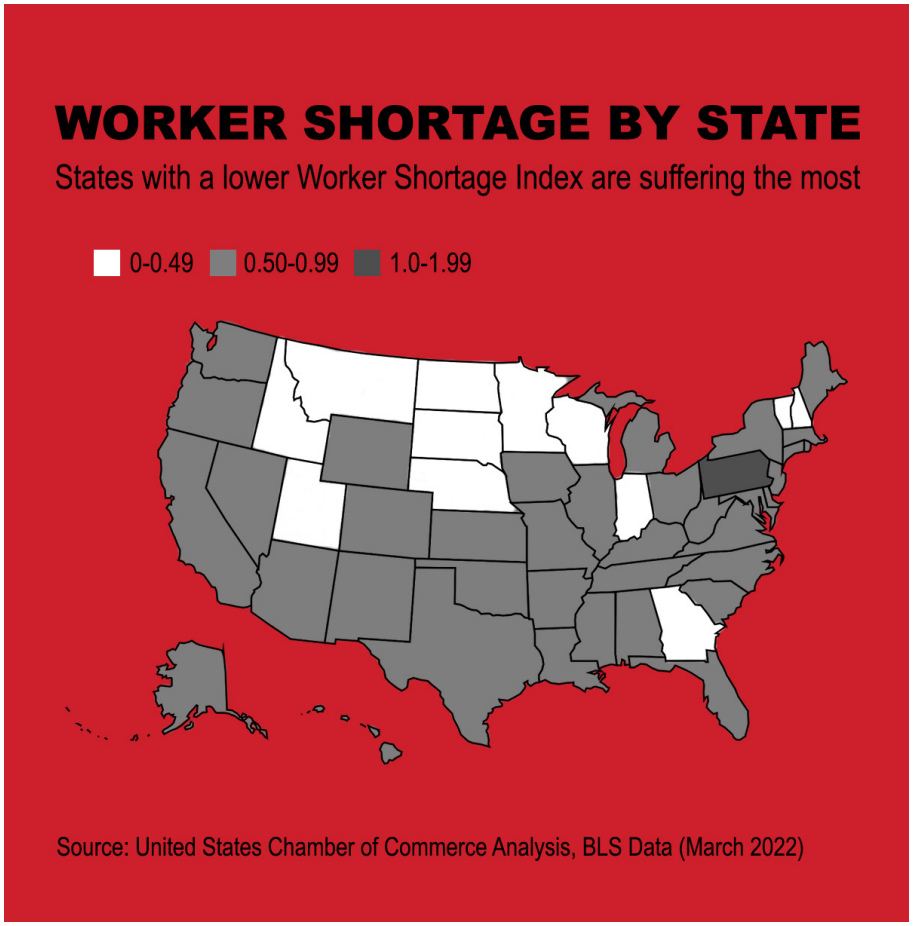

Figure 6: U.S. worker shortage by state for March 2022. Source: U.S. Chamber of Commerce.

Hiring woes likely will intensify in the coming years due to a slowing U.S. birthrate and the millions of Baby Boomers who retired during the pandemic who are not eager to return to the workplace.

Automation and employee satisfaction

It is a common misconception that automation replaces human workers. Rather, automation helps reduce workloads related to manual and repetitive tasks and frees up employees to focus on more innovative, rewarding responsibilities.

In fact, a recent survey by Salesforce, a San Francisco, CA-based customer relationship management software company, found that 89 percent of full-time workers are more satisfied with their job because of automation, and 91 percent say that automation saves them time and offers a better work-life balance.

Advanced storage and retrieval systems such as Modula have been designed using ergonomic principles to significantly reduce the strain and stress of manual material handling. Items are delivered to an operator at a comfortable height, eliminating the time and energy spent searching, walking, reaching and bending to pick components.

IN LESS THAN 30 MINUTES, EMPLOYEES CAN BE TRAINED TO OPERATE THE MODULA VLM SAFELY AND ACCURATELY, SO THERE IS NO LOST PRODUCTIVITY EVEN WHEN THERE ARE STAFFING SHORTFALLS OR RESHUFFLING OF SHIFTS.

Conclusion

VLMs have proven to be an ideal solution for optimizing parts and managing inventory in industries such as automotive, beverage and cellars, and medical and pharmaceutical.

It is an effective solution for manufacturers and distributors with an extensive number of SKUs or odd-shaped products that are hard to store on pallet racking. VLMs also are useful for large distribution facilities needing to store parts and components used for in-house repair of equipment such as conveyors or HVAC systems.

The Modula vertical storage and retrieval system also can integrate with a company's existing ERP, MRP, WMS or DMS system to provide real-time access to inventory status, maintenance requirements and other key operational metrics.

And while lead times on new lift trucks and other material handling equipment can be as high as 100 weeks, delivery time on VLMs averages 16 to 18 weeks.

For more information on automated storage and retrieval systems, contact:

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