VERTICAL LIFT MODULES AND VERTICAL CAROUSELS: WHICH IS BEST FOR YOU?

Thinking of making the leap into automated storage with either a vertical lift module (VLM) or a vertical carousel? Good news — your storage situation will definitely be looking up.

Only now you have the daunting task of choosing which one of these technologies to invest in, install and use daily. This guide will help you understand the differences between the two technologies as the first part of making your decision.

Vertical Lift Module

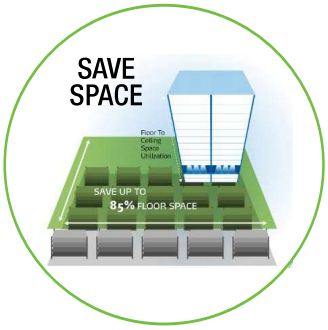
Vertical Carousel

A SIDE BY SIDE COMPARISON

WHAT ARE THE BENEFITS OF VERTICAL CAROUSELS AND VLMS?

As two types of goods-to-person automated storage and retrieval machines, vertical carousels and VLMs both offer:

- ***High-density storage of slow - to medium-velocity items.*** *(a 20 foot tall machine can provide anywhere from 5,000 to 7,000 locations (each roughly 6" x 6" x 4").*
- *Automatic delivery of required items to a waist-high window for **ergonomic, high-throughput picking** in just a few steps.*
- *Full enclosures and **lockable access for security.***
- ***Maximized storage in a compact footprint** by leveraging a facility's overhead space.*



HOW DO THEY STORE ITEMS?

Vertical carousels are built with a series of carriers attached in fixed locations to a chain drive. Movement is powered by a motor, which sends the carriers in a vertical loop around a track in both forward and reverse directions — similar to a Ferris wheel.

VLMs consist of two columns of trays with a mechanical inserter/extractor positioned in the center. The inserter/extractor travels up and down between the stored trays, automatically locating and retrieving them as needed – similar to an elevator with doors that open on both the front and rear.

HOW DO THEY MEASURE UP?

FOOTPRINTS

Both technologies span roughly the same range of widths, not much of a differentiator. When it comes to depths, VLMs can be about twice as deep as vertical carousels – giving vertical carousels an overall narrower footprint.

A standard VLM unit is roughly 5- to 15-feet wide by 7- to 10-feet deep. The trays that store the inventory range from 4- to just over 13-feet wide by 2- to 3-feet deep, with a max product height of just over 28 inches. (ergonomics: You don't want the trays to be too deep or the operator won't be able to reach items with minimal effort.)

In comparison, vertical carousels range from 6- to 13-feet wide by 4- to just over 5-feet deep. Designed for smaller product sizes, the carriers that store the inventory measure from 4- to almost 12-feet wide by 16- to 24-inches deep, with a product height up to 18.5 inches.

HEIGHTS

VLMs start at 8-feet tall and can be installed up to 98-feet high. In contrast, carousels start a little shorter, at just over 7-feet, and can reach up to 32-feet tall.

Although both machines can reach straight up to your ceiling, it doesn't mean they always should. Often, the taller the machine, the slower the throughput. So it's really up to you to determine the machine height that gives you the perfect mix of space savings and throughput. There are plenty of experts in the material handling field that can help you figure out the throughput rates of different-sized machines.)

LOAD CAPACITIES

The latest vertical carousels handle up to 1,430 pounds per carrier. VLMs can be outfitted with trays that handle up to 2,200 pounds each; for applications with heavier loads, lift-assist equipment can be added to a VLM. This is a major difference between the two machines: vertical carousels are more difficult to fit with ergonomic lifts and cranes – so if it's heavy loads your looking to store the VLM if probably the choice for you.

VERTICAL CAROUSELS IDEAL FOR SIMILARLY SIZED PRODUCT MIX

Conversely, in vertical carousels, the carriers are spaced evenly in fixed positions. The shelf levels within the carrier can be adjusted up or down to compress the vertical space – but not automatically, adjustment is a manual task. Because nobody wants to pay to inventory air, it's critical to know the heights of your stored items when specifying the machine so as to get those shelves as close together as possible. That makes vertical carousels an ideal choice to store products that are similar in height (usually under 8'"), and whose sizes do not often change.

That said, every carrier in a vertical carousel can be subdivided further (both vertically and horizontally) to maximize storage density within the unit. In fact, they are frequently divided into two or three shelves to separate items for slotting and organization. Adjusting those dividers—while possible to do — is a tedious task that requires all the product to be removed first, then the dividers unbolted, moved and re-attached in a new position.

Vertical carousel fixed location spacing

While it's not a big deal to change one carrier, if inventory changes frequently enough that a new carrier configuration is required often, a lot of labor hours will be spent to maximize the machine's storage density. That's why vertical carousels are a great choice if your product mix is pretty consistent in size.