

## TECHKNOWLEDGE

### The State of Warehouse Automation

*by Ned Bauhof*

Because of the complex business strategies and supply chain structures in many organizations, making a case for automation in the warehouse can be a difficult endeavor. Notice that I said “in the warehouse.” Automation has existed for decades on the other side of the wall in manufacturing, and today, it is rarely given a second thought when new production, and packaging and filling lines are installed. Air conveyor, case conveyor, packaging equipment, and high-speed palletizers are all forms of automation, which by definition means “the removal of human intervention to complete a function.”

When evaluating automation as part of the overall supply chain strategy, companies need to be creative and must consider all aspects of the business, not just how to reduce cost as a means to profitability. Consideration should be given to facets of the business that will simultaneously reduce cost while putting the company at the forefront of the industry, maximizing customer service, and positioning the company for growth in the years to come.

In order to best evaluate automation, it is important to understand a few of the primary areas of warehouse automation, such as information technology, full-pallet handling, and case handling. Be aware of the fact that new technologies are emerging, and are gaining significant attention in the marketplace.

Many people view automation as moving product automatically via some form of mechanization. What they may not consider is the information technology component. Interestingly, information technology, like warehouse management systems (WMS), is the only form of automation utilized in conjunction with conventional and automated material handling systems.

Information technology automates the organization and dissemination of information within a warehouse, based on a defined set of rules. WMS technology allows companies to efficiently manage inventory, space, and resources. Some will focus solely on labor reduction when evaluating WMS technology. The value proposition of WMS is much broader when you consider the ability to maximize resources (people, equipment, and docks) and increase accuracy (inventory and order fulfillment).

Although radio frequency (RF) terminals are the predominant delivery mechanism for WMS work instructions, voice technology is rapidly gaining popularity. Voice technology delivers commands using audio (so it is hands-free) and works in conjunction with WMS technology or by itself. The primary benefits of voice technology are the hands-free picking and order accuracy. Independent studies show that mispicks can be reduced by as much as 25%.

Pick-to-light technology, which has been around since the 1980s, is also becoming more popular. Pick-to-light directs operators to locations using lights at the individual locations. When a location is lit, the operator goes to the location, picks the quantity displayed, and places cases onto a takeaway conveyor. Although there are conflicting studies, picking productivity can reach 400 to 600 cases per hour.

New to the full-pallet handling scene are automated-guided vehicles (AGVs), capable of performing virtually all functions that have typically been reserved for forklifts. AGVs have received somewhat of a bad reputation in the past, primarily due to a perceived lack of flexibility.

Several manufacturers including Jervis B. Webb and Elettric80 are trying to change that perception. The latest laser-guided vehicles (LGVs) can maneuver freely throughout the warehouse, performing the same functions as AGVs, but also with the capabilities of placing pallets into storage locations, retrieving pallets, and loading trailers. Prototype vehicles have achieved lift heights of 342” with double-wide loads and interface with racking systems, including double-wide drive-in racking.



Although various systems can be engineered to achieve similar throughput rates, storage capacity varies widely between technologies. Within the same footprint and clear height, deep-lane automated storage and retrieval systems (ASRSs) can have 30% to 35% more storage capacity than rack solutions supported by LGVs. If minimizing or eliminating outside storage is a main driver to justifying an automated solution, then these storage capacity differences definitely come into play. To this point, companies must clearly define their goals for automation.

To many, automated case picking is the holy grail of warehouse operations. Numerous attempts have been made in recent years to create a breakthrough technology. One equipment supplier's solution seems to have taken root and is growing rapidly. That company is Vertique, Inc. Using a traditional pick-to-belt concept, the Vertique system resembles a giant automated vending machine that combines proven computer-controlled technology with the basic law of gravity.



Cases are replenished automatically or manually into the top of its storage towers. They cascade down the tower until they are dispensed, upon demand, onto a conveyor belt at a rate of up to 10,000 cases per hour. The intriguing part of Vertique is the simplicity within the design and that a Vertique system can be implemented into roughly the same space as a conventional pick area.

In addition to death and taxes, one certainty in life is that the demands in the warehouse will continue to increase. Companies striving for best-in-class service and cost cannot abandon the search for the right automated solution. Be creative and consider all facets of improvement opportunity. Opportunities go well beyond labor when considering automation.

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