

Robo Crop

Latest generation of **robotic solutions** is making DCs more efficient

BY CRAIG GUILLOT

With the cost of technology decreasing and the need for operating efficiencies increasing, robotic solutions are becoming attractive options for retailers. From warehousing to order-picking and distribution, robots can eliminate the need for some labor, maximize distribution efficiencies and even create a more enjoyable warehouse work environment.

Retailers like Walgreens, Staples and Giant Eagle are experimenting with robots as a means to streamline and maximize the efficiencies and effectiveness of their distribution channels. Offering flexibility at relatively low cost, robots are expected to play a larger part in materials-handling in the coming years.

Robotic solutions have long been implemented in manufacturing and warehousing operations, but new technologies have allowed robots to become smaller and more mobile and to perform more complex operations.

Woburn, Mass.-based Kiva Systems has been at the forefront of modular robotic systems that can be easily installed in warehouse environments, furnishing solutions for Staples, Walgreens and Zappos.com. Mitch Rosenberg, vice president of marketing for Kiva, says that until recently, most robotic solutions have been expensive, bolted-down pieces of machinery that could only optimize one particular piece of the distribution process.

Kiva's Mobile Fulfillment System approach is to use simple, stand-alone robots that can provide a complete fulfillment system that stores, sorts and moves inventory on its own. Products are stored in inventory pods in the center of the warehouse while operators stand at inventory stations around the perimeter of the warehouse. When an order is received, robots retrieve the appropriate

pods and bring them to the worker, who picks the item and places it in the carton.

When it comes to order-picking and distribution operations, robotic solutions can significantly increase efficiency, Rosenberg says.

"Almost all of the work that costs money — the walking and waiting — is done by robots," he says. "It is no longer a serial process. It makes the whole pick-

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— Mick Mountz, Kiva Systems



Photograph supplied by Kiva Systems



ing process much faster and creates lower costs per order."

Kiva systems were installed at a Walgreens distribution center in Mt. Vernon, Ill., in late 2007. Walgreens' challenge was a common one for large retailers — keeping the shelves of so many stores stocked with so many SKUs. Using split-case picking — a method whereby full cases of items are split and certain numbers distributed to individual stores — provides just-in-time inventory, but it can take time and money to sort at DCs.

"What we have shown Walgreens and others is that using the Kiva approach to case-picking, you can actually do it with the same amount of workers and twice the number of lines per hour than they would do otherwise," says Kiva founder and CEO Mick Mountz.

Founded in 2003 as a spinoff of Carnegie Mellon University's Mobile Robot Lab, Pittsburgh-based Seegrid uses intelligent software and its Industrial Mobile Robotics (IMR) technology to provide low-cost, adaptable robotic solutions for warehousing. Seegrid's flagship robot, the GT3, is a vision-guided automatic tug/tow tractor

that has a 3,000-pound capacity and uses no tapes, lasers or wires.

The GT3 is capable of storing 15 miles of routes, and software allows the robot and operators to know where the GT3 and the products are at all times. Unlike conveyor systems, nothing is permanently anchored to the warehouse, so paths and operations can be easily changed as SKU counts grow.

Giant Eagle utilizes Seegrid robots at a distribution center, and spokesman Daniel Donovan says that the robots have increased efficiencies and created a safer working environment.

Efficiency, reduced labor costs

Grimsby, Ontario-based RMT Robotics uses gantry-style robots for a Robotic Picking System that automatically picks layers from palletized products and builds rainbow pallets. Suited for high-rate, high-SKU layer-picking applications, it touts efficiency and reduction in labor costs.

Bill Torrens, RMT director of sales and marketing, says that in conventional warehouses, picks are typically made in a sequence that is easier for the human picker. In an automated warehouse, picks are made in a manner that is best for trailer and pallet loading. Robots allow a vast inventory of forward picked products to be released in whatever sequence is desired, maximizing efficiency throughout the line.

“One of the advantages of automation is that SKU growth is seamless,” Torrens says. “We can keep track of hundreds or thousands of SKUs. In the manual situation, you need more labor, more manpower and more physical space to accommodate [picking and distribution] requests by the retailers.”

Robots are generally cheaper than traditional conveyor systems. Seegrid’s units



start at \$45,000 and, while a large warehouse could use dozens of robots, the costs are still small compared to other options. “All of that hardware and software has just gotten cheaper, faster and much more affordable,” says Seegrid executive vice president Greg Cronin. “Robots used to be a lot more expensive but prices are really coming down.”

Because of their flexibility, the capacity of robotic solutions can be changed without significant capital investments. In the past, retailers like Walgreens managed growth through large-scale projects that required planning for new buildings three to five years in advance. A modular approach allows retailers to start small and grow robot-by-robot.

“It’s a very flexible way to add capacity to your distribution network,” Mountz says. “For a company that is growing year in and year out, adding hundreds of stores per year, the ability to have something that can grow as your business grows is a huge strategic part of staying on top.”

Humans vs. robots

DC and warehouse workers may become defensive at the idea that they will eventually be replaced by robots. Therefore, education and training for working with and among robots is critical to successful implementation, Rosenberg says. He points out that low-level warehouse workers typically have a high turnover rate and that many customers find they are limited in their growth because of labor availability.

Humans who remain in the factory often report a less stressful and less hectic work environment because the robots are the ones doing the grunt work, often in a more efficient and timely manner than human workers.

“It creates a better work environment and it’s much more fun,” Rosenberg says. “Go to a Kiva factory and it sounds like a library because there’s nothing but electric battery-powered robots running around.”

Seegrid robots typically handle the mundane, non-productive work like moving something long distances across the warehouse on a regular basis, Cronin says. He points out that new technologies and software will continually allow robots to become better, faster and smarter.

Robots also can work endless hours at a constant level and don’t get bored, tired or frustrated. Cronin said that human workers in the factory can leverage and manage robots to take less work out of their own jobs.

“It’s not a human replacement, it’s just adding increased productivity for the human,” he says. “Everywhere we grow, workers have become attached to their robots because it just keeps working and does the work that people don’t like to do.”

And, as the cost of doing business grows in North America and throughout the western world, automation will become even more important, Torrens says. “The automation is actually keeping many of these companies viable,” he says. “They might have one of the most efficient factories in the world and it’s in Pennsylvania. The only way they can stay competitive and prevent the operation from going offshore is to become more efficient, and automation facilitates that.”

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