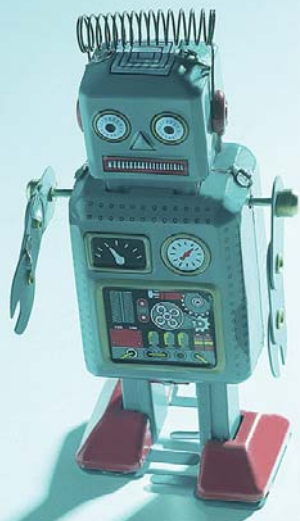




“Roger, Will Robinson”

Once a thing of the future, robots are making their way into the DC with affordable, efficient solutions.



“Robots can cost just 30 to 40 cents an hour to run. Plus, there’s less wear and tear on the employees.”

Don Vincent

It hasn’t been all that long since robots were considered something out of science fiction rather than as a tool that could help in both industry and households alike. Times have changed, and today robots can be found in a wide variety of applications, warehousing included.

An example of robots making an impact in the distribution center can be found in the Chambersburg, Pa. fulfillment center of Staples, Inc. After testing a cutting edge robot system from Woburn, Mass.-based Kiva Systems, Inc., Staples is preparing to go live with the system in order to boost productivity on orders going to home

office, small business, catalog and corporate customers.

The Kiva system, known as the Kiva Mobile Fulfillment System (MFS), employs hundreds of low-cost mobile robots to bring inventory shelving pods directly to operators. The potential result? Tripling the number of orders per hour per person.

Staples conducted a pilot test of the Kiva system in their Coppell, Texas, fulfillment center, where office supply orders are packed for delivery to business and home office customers. Staples was so pleased with the results that it moved forward with a permanent installation in its Chambersburg facility.

Rob Stevens, vice president of business development at Kiva, says that the system was designed with the idea of driving down costs through automation. “The thinking was that money could be saved by bringing inventory to the employees rather than having the employees travel to static locations,” he says.

Users of the MFS can achieve infinite pick-face density with zero walking, concurrent picking and replenishment, pick-to-light across all product velocities, potential for real-time order processing and zero location profiling or re-slotting.

The system also offers flexibility because of its modular design. “You can install the number you need today with the potential to expand and reconfigure with very little effort,” says Stevens.

A wide variety of SKUs can fit the system. Stevens says that the ideal candidates for the MFS are direct-to-consumer, direct-to-business and retail store restocking. Full case operations, however, are not well suited to the system. The system is priced depending on how many pods and robots are needed and tends to run a bit less than traditional AS/RS or conveyor/pick-to-light systems.

In the warehouse

While there will undoubtedly be more news about robotic systems in the future, robots are just now gaining a foothold in warehousing operations. Don Vincent, executive vice president of the Robotic Industries Association, based in Ann Arbor, Mich., says that much of the industry’s business still stems from manufacturing, particularly automotive manufacturing. In those sectors, business is booming. “We broke records for orders in 2005 with growth 30 percent higher than the year before,” he says.

Growth in the warehousing industry, while slow, falls into material handling applications, which account for some 44 percent of growth in the robotics industry. “The most common applications include loading, unloading, packaging and palletizing,” says Vincent.

Within the DC, robots can be found in a variety of applications. When used for palletizing, the robots take over once an employee unloads crates onto a conveyor. The robot then palletizes the crates. This may include product mixing or random palletizing, where the robot takes loads and creates pallets based on delivery schedules.

Productivity and savings

When robots find a fit, the savings can be significant. "Robots can cost just 30 to 40 cents an hour to run," says Vincent. "In some cases, companies will experience double savings and productivity. Plus, there's less wear and tear on the employees."

Bryan d'Ouille, account manager at FANUC Robotics America, based in Hoffman Estates, Ill., agrees that robots are only just beginning to be considered in the warehouse. He says, however, that they are a very practical solution, especially as their capabilities have improved and costs have come down. "Their speed is faster than ever and they now have vision capabilities, which allow them to look at a box and 'know' what it is," he points out. "The accompanying software can also help companies build pallets."

Another benefit, d'Ouille says, is fewer mistakes. "Unit loads are generally perceived as being of higher quality," he says.

Stevens says the same of the Kiva MFS. "There is 100 percent quality control because after the picks, the items are run past a scanner to confirm they are correct," he says. "Quality control is happening right there at the station."

Most companies look for a return on investment (ROI) of 18 months in order to justify the investment in robots. d'Ouille says that a ROI can be expected between

12 and 18 months. "Most applications run three shifts in these cases, but robots can also be justified at two shifts," he explains.

d'Ouille is optimistic that robots will become more and more common in the DC in the future. "This is a fast growing segment for us," he says. "The warehousing customers we have are doing really well with their systems and getting a great payback."

With innovative systems like Kiva's MFS making their way into the DC, acceptance of robots can only accelerate, especially with companies like Staples getting on board. "This is a simple piece of equipment that is good for a variety of systems," says Stevens. 📦

*Copyright ©2006, Warehousing Education and Research Council
Bryan d'Ouille, FANUC Robotics America, Inc.,
www.fanurobotics.com*

Rob Stevens, Kiva Systems, www.kivasystems.com

*Don Vincent, Robotic Industries Association,
www.roboticonline.com*

"Their speed is faster than ever and they now have vision capabilities, which allow them to look at a box and 'know' what it is."

Bryan d'Ouille



The Kiva Mobile Fulfillment System in use at the Staples pilot site in Coppell, Texas.

The Kiva Mobile Fulfillment System (MFS) is a type of automated storage and retrieval technology that brings any item to any operator at any time, regardless of the breadth of inventory or the throughput of the facility. Operators stand at pick stations along the perimeter of the facility where they use an innovative pick-to-light, put-to-light process to select items and place them in the correct shipping container.

The software for the Kiva system sits "under" a warehouse management system (WMS) and receives orders from the WMS as they are processed. The WMS transfers the orders to the Kiva software, which in turn tells the robots where to go. There are three pieces to the system—the software, the inventory pods and the robots. WiFi (wireless) receives the orders via stickers on the floor, directing the robots around the DC.