

# really fast food

In European DCs, bags of coffee and sugar are whipping out of highly automated storage and retrieval systems at a rate of 3,000 cases per hour. Is America next?

FOR MOST OF THE LAST 50 YEARS, THE GROCERY industry's war on labor costs has been waged at the check-out counter. The opening salvos came in the '70s, when grocers seized on the newly introduced bar codes and scanners to replace the labor-intensive process of ringing up purchases on a cash register. Next came self-checkout lanes, installed to encourage consumers accustomed to doing their own banking at ATMs and pumping their own gas to scan and bag their own groceries. Today grocers are racing to find ways to use radio-frequency identification technology to end the traditional checkout process once and for all.

But the money saved by eliminating all those checker positions over the years is just pennies compared to the savings grocers can realize by automating what goes on in their back rooms and DCs. Right now, order picking accounts for a whopping 70 percent of the average grocery distribution center's payroll. Automate that function, and a company could save serious money.

In fact, grocers are already doing just that—particularly in Europe. Dutch grocery retailer Albert Heijn, for instance, recently celebrated the first anniversary of its revolutionary DLS order release module (made by Nedcon). The system, which is currently installed in one-quarter of the grocer's 900,000-square-foot distribution center near Rotterdam, can ship up to 3,000 cases per hour. Late last year, the grocer announced that it would install a second module at the DC, which stores and ships about 2,000 fast-moving products like sugar and coffee. Once the DC is fully automated, it's expected to ship up to 6,300 cases per hour, or about one million cases of perishable and dry grocery products each week. "We are certain that this is a system for the future," Mels Koster, the company's vice president of supply chain development, told *DC VELOCITY* in the first interview the retailer has granted about the highly automated system.

## It's automatic

So what does the future look like? Big, shiny and complex, if Heijn's system is any indication. Its automated picking module is seven levels high, with 72 conveyor lanes on each level, for a total of 504 lanes. Each level has an inbound conveyor and an outbound conveyor running along the front and back.

The system performs its complicated ballet hundreds of times each day with virtually no human intervention. For example, on each inbound conveyor a pusher device rides up and down the lane. Upon receiving an order command from the warehouse management system (WMS), the pusher device moves to the correct lane and pushes a batch of the required product into the lane. After guiding a batch into a lane, the pusher sends a message to the WMS that it's moved a certain number of cases. (Bar codes are not used on full cases; the system relies on the WMS's information in combination with a counting photo sensor to ensure the number of cases entered into a lane is correct.)

Products ready to be picked are automatically fed from bulk storage to depalletizing machines. Once they're depalletized, the packaged items are transported via conveyor to one of the DLS module's seven-level input roller tracks.





As products are carried along on the input lane, an input trolley at each level sees to it that the items are routed into the correct storage lane. The storage lanes are typically 40 feet long, which not only allows for a large area of entry for each product, but assures timely replenishment. The system is designed to handle items of all sizes, weights, and packaging types, including fragile products. (Fast-moving items are assigned to more than one storage lane.)

Each storage lane is fitted with a universal computer-controlled dispenser, creating enormous release capacity, especially for fast-moving items. All items destined for a particular store are released in a predetermined sequence so that, say, bags of coffee beans come out before potato chips, ensuring the bags of chips don't arrive at the store as bags of crumbs.

#### Numbers game

Although officials at Royal Ahold, Albert Heijn's Dutch parent company, won't discuss specific productivity gains until later this year, their comments hint at the magnitude of the savings they're realizing. "What we have created is a system where you can turn out several thousand cases per hour," says Han Willemse, chief supply chain officer for Ahold, "not the 100 to 150 cases per hour that you see with normal order picking processes in conventional warehouses."

As the number of cases shipped per hour soars, labor needs will plummet. Once the DC is fully automated (the plan is to install a total of four order picking modules), the grocer will need roughly 100 associates spread over two shifts—a huge drop over the approximately 350 order pickers currently needed.

A 70-percent cut in workforce is staggering by any measure, but it's particularly significant in Holland, where (as in

many parts of Europe) DC workers command \$50 an hour or more. And that's assuming grocers are lucky enough to find workers willing to work in their DCs. During peak picking seasons like the Christmas and Easter holidays, Albert Heijn has been forced to bus in workers from Poland and East Germany.

What's not yet clear is whether a system that's all the rage in Europe will catch on in America. Unlike Europe, where land and labor are in short supply, America still boasts an abundance of both. And outside of the Northeast and the West Coast, land is still relatively cheap—particularly in Oklahoma and Texas.

Labor, too, remains readily available in the vast majority of markets across North America, says Marc Wulfraat, a senior partner at consulting firm KOM International Inc. who specializes in the grocery supply chain. In contrast to Europe's \$50 an hour, the going rate for DC workers in most parts of the United States is somewhere around \$15 to \$20 an hour, says Wulfraat, who points out that it would take an extraordinarily expensive labor market to justify a full-blown automated storage/retrieval system (AS/RS).

Certainly, automation doesn't come cheap. Though prices have dropped—an AS/RS that once cost as much as \$750,000 per crane can now be had for as little as \$200,000 per crane—one of these systems still represents a hefty investment. And enormous labor savings are by no means guaranteed. True, grocers may be able to get by with fewer manual laborers and forklift drivers. But cranes, like forklifts, require upkeep. Most facilities eventually find themselves hiring highly specialized—and highly compensated—technicians to maintain the cranes.

Still, a couple of grocers have taken the plunge. Stop & Shop has installed an AS/RS system (made by HK Systems) that uses 77 rotating fork cranes to perform put-away and replenishment functions in place of forklifts at its 1.3-million-square-foot facility in Freetown, Mass. And Kroger has installed a dynamic picking system (DPS) that integrates storage and picking into one module at a new distribution center in the Southeast. The first phase of the "goods to person" picking system engineered by Witron Integrated Logistics includes installation of an integrated conveyor network, 16 stacker cranes, 70 picking workstations, two order consolidation buffers and 175,000 tote locations.

Yet grocers lag well behind their counterparts in electronics and apparel. "When you take a good hard look at who has invested in automation in North America, the list is pretty short when it comes to food retailers and wholesalers," says Wulfraat. "This stuff is so expensive that it's very difficult to make a business case for it." □