

# WAREHOUSE & DC

Insights for today's distribution professional

## I can hear you now

*As the technology matures and ROI improves, the adoption rate for voice-recognition technology is rising.*

BY SUSAN LACEFIELD, ASSOCIATE EDITOR

Voice-recognition technology hit the warehouse scene nearly 15 years ago with major installations in the grocery and food industry, and companies such as Wal-Mart, Kroger, and Kellogg's have been successfully using it in distribution centers ever since. Yet even a few years ago, many warehouse operators still regarded this technology as experimental and esoteric. The idea of workers giving and receiving voice commands as they selected orders and replenished stock seemed more like *2001: A Space Odyssey* than *2001: A Warehouse Reality*.

That perception has started to change, and organizations

that were on the fence about the technology five or six years ago are now showing serious interest, says Aaron Miller, principal with the consulting firm Tompkins Associates.

Voice technology vendors agree with that assessment. Steve Gerrard, vice president of marketing for Princeton, N.J.-based Voxware, says trade show attendees who used to come by his company's booth and say, "That looks interesting, but I don't know if we would ever have a need for it," are now asking how to integrate it into their operations. "The market has definitely gotten over a critical hurdle," he says.



Voice-recognition systems improve ergonomics while boosting productivity. The reason: Users aren't constantly shifting their attention from printed pick lists to items on the shelves, and both hands are always free.

VOCOLLECT

**Voice technology, continued**

One look at the numbers confirms their observations. The annual growth rate for Vocollect, for example, has exceeded 60 percent in each of the last four years, and the Pittsburgh-based company anticipates its annual revenue will leap from \$40 million last year to \$75 million in 2005. Competitor Voxware's revenue rose 91 percent in just one year, from \$4.5 million in 2002 to \$8.6 million in 2003, and the company is projecting revenues in excess of \$11 million for 2004. And there's plenty of room for expansion: Gerrard estimates that just one percent of U.S. warehouses are currently using voice-recognition technology.

Why such rapid growth now for a technology that's been around for 15 years? Much of it is being fueled by vendors expanding their reach into new markets. Not only are they selling to other parts of the globe, but they also are seeing domestic sales take off. "We've seen an explosion into verticals outside of our traditional markets, including mass merchandising, specialty retailing, third-party logistics, consumer goods, and automotive aftermarket," says Tim Eusterman, Vocollect's vice president of marketing and business development. Technology providers, moreover, are adapting their products for uses such as cycle counting, receiving, and replenishment.

A third factor fueling voice systems' popularity is improved technology. "Four or five years ago, a lot of companies that I talked to that were looking at or experimenting with voice recognition just didn't think the technology was mature enough," says Steve Banker, service director, supply chain management at ARC Advisory Group. "That has changed in the last year."

According to Banker, the software has become better at reading workers' voices and screening out the noise of roaring freezer fans, rumbling conveyor belts, and slamming dock doors.

It's also become more flexible, so the software can be tailored to the way a company chooses to process its product, instead of the other way around.

But the biggest attraction for potential users may be a fast payback—a crit-

ical point considering that voice technology doesn't come cheap. Prices vary by type of implementation and order volume, but a ballpark figure would be about \$4,000–\$5,000 per operator, says Marc Wulfraat, managing partner of

**VOICE TECHNOLOGY 101**

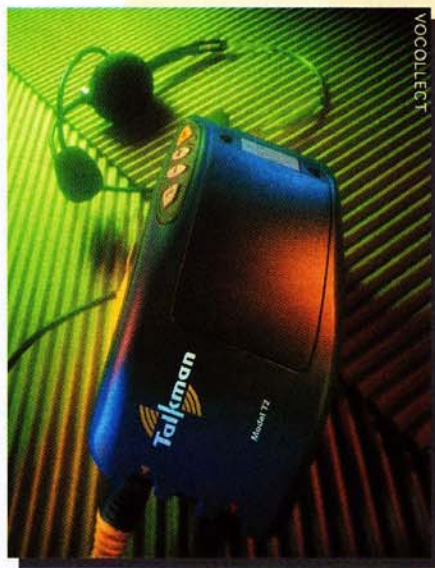
Most people have at least heard of voice-recognition systems, but few understand exactly how they work. Here's a quick overview of the technology and what it does:

Voice-recognition equipment consists of a headset with a microphone and a small battery-powered computer with audio capability that's attached to a waist belt. The computer interfaces with the DC's warehouse management system (WMS) or enterprise resource planning (ERP) program through radio frequency transmissions and a "middleware" server, which captures data and uses software to relay that information in a form that can be understood by the main operating system.

The most common use of voice technology is for order picking. In this application, the system converts text instructions, such as a pick list, into spoken commands. For example, the system tells the employee, "Go to location 123." When the employee arrives there, he or she says, "At location 123." The system then says, "Pick three units." When that task has been completed, the employee replies, "Three units picked." Some ware-

houses also use the technology for managing receiving, replenishment, cycle counting, package sorting, and returns processing.

The two most common voice-recognition solutions, Vocollect's Talkman and Voxware's VoiceLogistics, both use speaker-dependent technology, meaning that each operator must record a voice "template" of 125–200 words. This template allows the system to understand the speaker's specific language, dialect, accent, tone, and voice pattern. The operator records template first in a controlled environment and then in the noisiest part of the distribution center so that the system can be tuned to filter out background noise. The template is then stored as a computer file. At the start of a new shift, the user downloads his or her individual voice template



onto the wearable terminal before heading out into the aisles.

To learn more about voice systems, read the following articles:

Miller, Aaron. "Order Picking for the 21<sup>st</sup> Century: Voice vs. Scanning Technology," Tompkins Associates, 2004. [www.tompkinsinc.com](http://www.tompkinsinc.com)

Wulfraat, Marc. "Voice Technology in the Distribution Center," KOM International, 2002. [www.komintl.com](http://www.komintl.com)

Cooke, James Aaron. "Vocal Minority," *Logistics Management*, October 2002. [www.logisticsmgmt.com](http://www.logisticsmgmt.com)

Trebilcock, Bob. "Raise Your Voice: Voice Recognition Gets Traction in the Warehouse," *Modern Materials Handling*, March 2004. [www.mmh.com](http://www.mmh.com)

## Voice technology, *continued*

consulting firm KOM International. By comparison, radio frequency/barcode scanning runs \$2,500–\$3,000 per person. (That's in addition to overhead for the RF network infrastructure, software, support, and service.)

Despite that initial cost, companies usually see a return on that investment within the first year. "We started to get a payback right away," says Ken Collins, project manager for St. Albert, Alberta-based Connect Logistics, a third-party logistics provider. "But it was six months before we had all the training and processes in place where we could track a significant improvement and prove it to management."

What makes it possible to achieve ROI so quickly? With voice technology, order pickers aren't laden with

paper pick lists, labels, or scanners. Nor are they shifting their attention between a paper list or tiny computer screen and the items they're picking.

As a result, both order accuracy and productivity rise. According to Eusterman, it's not unusual for companies to see 50 percent reductions in errors. Some users see even greater improvements: Wholesale food distributor U.S. Foodservice, for example, reduced picking errors by 70 percent when it rolled out Voxware's VoiceLogistics solution in 24 of its distribution centers.

For high-volume operations, even small improvements in accuracy can produce a substantial payback. Miller reports that Associated Wholesale Grocers' Kansas City warehouse improved its order-accuracy rate from 99.52 percent to 99.64 percent after implement-

ing Vocollect's Talkman solution. At 62 million cases a year, that translated to an additional 74,000 cases picked correctly and a \$1.5 million savings, he says.

More accurate picking can create a ripple effect that benefits other areas. U.S. Foodservice found that increased accuracy reduced off-day deliveries and returns while increasing customer satisfaction. "We track the number of errors, and we show large improvements there," says Jack Granahan, the company's director of voice deployment. "However, those aren't the true gains," he adds. "The true gains come from saving miles, reducing fuel costs, and customers getting their orders on time by reducing the number of off-day deliveries."

Voice technology has also boosted productivity for 99-Cent Only Stores

## COOPERVISION LISTENS TO A VOICE FOR CHANGE

Last year, Joe Stannard, vice president of logistics for contact lens manufacturer CooperVision, was tasked with automating the company's Rochester, N.Y., distribution center. He chose voice-recognition technology because it fit the requirements for that particular facility at a reasonable cost. Complicating the selection was the fact that CooperVision's DC focused on "each" picks, such as a 3 x 5-inch package of contact lenses, rather than full-case picks. But voice technology worked well with the DC's location-based system, which assigns an identification number to every aisle and thousands of bins. "With 48,000 locations, if we used a pick-to-light system, we would need two more warehouses because of all the wiring and infrastructure involved," says Stannard.

Voice technology also seemed to fit the bill because it had a proven track record of increasing productivity and being easy to learn. Even so, Stannard knew that changing from paper pick lists to voice-recognition head sets was not going to be an easy sell. "[Our order pickers] were nervous at first," he recalls. "They wanted to know, 'Is this going to replace us? Is this going to be too hard? What if it's too complicated and I can't handle it?'"

To allay their concerns, managers began to talk up the technology early on. After selecting a system from Princeton, N.J.-based Voxware, they hung a

banner that proclaimed, "We speak Voxware" in the warehouse and started training sessions two months before the implementation.

That early introduction paid off. Because employees were comfortable with the technology before the launch date, Stannard says, picking efficiency almost doubled and CooperVision saw a return on its investment only nine months after piloting the technology.

The company's success with voice technology has fulfilled a dual purpose. It has allowed the distribution operation to keep pace with rapid sales growth without significantly increasing the workforce. At the same time, CooperVision's warehouse employees have become more comfortable with change and new technology.

CooperVision is building on this success as it adds more automated equipment, such as complex sorters. "Now we're not as scared of change," says Stannard. "It's a challenge that we've undergone and accomplished. We still have that banner up so that we can point to it and say, 'Look at what we've done, and we're proud of it.'"



**Voice technology, continued**

at its Texas distribution center, and that's translated into big savings and a quick ROI, says DC Manager Don Arter. The fact that voice-directed picking is easy to learn helped to speed that payback. "The training is just unbelievably simple," says Arter. "What we like about it is, if we have someone who is lift-certified, we can have them trained on voice and out on the floor picking on the first day."

**IS VOICE THE RIGHT CHOICE?**

In some cases, using voice-recognition technology is a "no brainer." For example, it's ideal in cold environments, where employees must wear gloves that make it difficult to use handhelds. Another application is full-case picking of heavy items. When pickers are lifting 30-pound boxes for eight hours, having both hands free makes good ergonomic sense.

But no technology is appropriate for every company and every situation, and

voice technology should be thought of as just another tool in the paperless picking toolbox, says Wulfraat.

Voice vendors are now moving into broken-case and individual-item picking, where the technology choice can be complicated. "Once you open up the brown box and start dealing with individual SKUs, you need to look at what the most productive and accurate technology is going to be," says Wulfraat. "Is it RF scanners? Is it voice technology? Is it pick-to-light? The answer is no longer clear."

Wulfraat recommends comparing the cost for each of those technologies to the projected savings. "Companies need to ask, why pay the extra capital for voice? What's the added advantage if hands-free is not an issue?"

Even if hands-free picking is needed, voice technology isn't the only way to go. A pick-to-light system, for example, might be more appropriate for high-speed picking. "The human eye can see a light faster than it takes

for the brain to interpret a voice command," observes Wulfraat.

In some cases, voice technology may not be accurate enough. Voice systems typically use short location IDs instead of lengthy item numbers because they're easier to understand. If an item has been misplaced in the wrong bin or slot, however, the operator will unknowingly select an incorrect item.

When it does make economic sense to implement a voice-recognition system, though, it's likely to pay for itself by improving order-picking accuracy, productivity, ergonomics, and customer satisfaction—and do it in record time. That's why for more and more companies today, voice-recognition technology is no longer the stuff of science fiction but has instead become a financially rewarding reality.

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