# 2012 Productivity Achievement Awards

Each year, *Modern's* Productivity Achievement Awards honor companies that have been featured as system reports on *Modern*'s cover in the previous year. These companies have made outstanding strides in improving operations through materials handling and related information systems.

The categories of *Manufacturing* and *Warehousing/Distribution* recognize companies for their ability to provide outstanding customer service, quickly respond to changing business conditions, deliver orders that meet customer requirements, and improve operations. The *Innovation* category honors a company that successfully employed a solution that defies convention.

This year's panel of Productivity Achievement Awards judges includes: Bryan Jensen, vice president with supply chain consultancy St. Onge; John Ling, executive vice president of global operations and supply chain management for Crate and Barrel; and George Prest, chief executive officer for the Material Handling Industry of America (MHIA).

**Feedback on our winners from this year's panel of judges...**

## MANUFACTURING

### Otis Technology

*"Otis Technology pursued the path less traveled in a small manufacturing concern, drove a fiscal and competitive advantage from it, and more importantly, redirected the labor savings into further process improvement energy."*

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## WAREHOUSING/DISTRIBUTION

### Oriental Trading Company

*"Oriental Trading achieved extraordinary improvements in its operation through thoughtful and substantive materials handling equipment investment in high volume, cycle-time-sensitive environments. Its volume, almost exclusively all in broken case volume, warrants particular notice."*

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## INNOVATION

### Coca-Cola Refreshments U.S.A.

*"Coke brought very high levels of innovation to its applications that provided value across a massive supply chain and inside the four walls of more than 100 locations, with the potential for movement to applications outside those walls. That elevated and enhanced the impact of their innovation dramatically."*

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MANUFACTURING WINNER

## Otis Technology:

# Manufacturer goes lean with materials handling

***Mobile robots, an AS/RS and supply chain software transformed this manufacturer's processes.***

Conventional wisdom holds that robotics and automated materials handling systems are for the industry's big guns, not for the little guys.

In the case of Otis Technology, conventional wisdom is wrong. A manufacturer of firearms cleaning systems in upstate New York, Otis Technology has installed three mobile robots (ADAM Robots, adamrobot.com) in a manufacturing and distribution facility that measures just 80,000 square feet.

The company began to install automation in 2008 with two primary purposes in mind—to enable Otis Technology's implementation of lean manufacturing processes and further a philosophy that employees matter.

But its automated materials handling wasn't limited to mobile robots. Otis Technology has also installed a warehouse management system (WMS) and enterprise resource planning (ERP) system, automated data collection, a wireless voice over Internet protocol (VoIP) communications system, and a two-aisle automated storage and retrieval system (AS/RS). One aisle features 512 pallet positions for unit load storage while the other aisle includes 3,240 positions for mini-load storage.

Since going live, the results have been impressive:

- On-time deliveries increased from 85% to 99.92%.
- Otis Technology has saved $2 million in inventory.
- Mobile robots are saving the company an estimated 94.2 hours a day in time employees used to spend walking back and forth in the operation. That's roughly 1 hour per day per employee.

### Growing a business

Otis Technology is unique in a number of ways. For one, the 26-year-old company is female-owned and operated, with Doreen Garrett, founder and CEO, at the helm and her siblings also involved in the business.

Early orders were produced at the family's kitchen table. In 1996, the company moved into its current offices, and in 2004 it broke ground on the manufacturing plant. Otis Technology is now the largest employer in its part of the county.

The company is also unique in that it remains a vertically integrated company, with some 31 work centers on the floor. "We produce 90% of what we kit," says Mike York, director of operations. "As a result, we have multiple work centers going into work-in-process, followed by work-in-process going to other work centers."

### Getting lean

The seeds leading to lean manufacturing were planted in 2008, when the company added 22,000 square feet for the unit and mini-load AS/RS. Prior to that, raw materials, work-in-process and finished goods were stored on the floor in the manufacturing area, in traditional warehouse racking or in an off-site warehouse, which was inefficient and costly.

In 2009, a group of Otis Technology's manufacturing operations employees attended a White Belt class in lean


**Mobile robots are saving Otis Technology an estimated 94.2 hours a day in time employees spent walking back and forth.**

manufacturing where they examined the non-value-added steps in their processes. That led to discussions about changing the plant layout to set up processes closer to one another and improve the flow through the facility.

While these discussions were happening, an Otis Technology executive discovered a system for mobile robots that could transport totes and containers and the laser-based guidance system used to direct the mobile robots.

**Going live with robotics**

Mobile robotics was also an ideal technology for Otis Technology's new lean manufacturing strategy.

In the old strategy, materials for a day's production were stored in a work center and associates would retrieve the material as needed.

Now, to eliminate wasted steps, the mobile robots shuttle containers and totes through the facility delivering kanban totes and containers from the AS/RS to work centers in the manufacturing area. When an item runs out, an associate presses a call button for a mobile robot. When it arrives, the empty container, any waste cardboard and a kanban card are placed on one of the robots. The robot automatically delivers these back to the AS/RS system.

There, an associate scans a bar code on a kanban card. That signals the AS/RS to retrieve and deliver the replenishment items. Meanwhile, the robot gets an opportunity charge. Once the product is delivered to the operator, it's loaded onto the mobile robot and delivered to a workstation.

In addition, the robots are also used to deliver work-in-process from work centers to the AS/RS for temporary storage; to deliver finished goods from the packing area to the AS/RS for temporary storage; or from the line or the AS/RS to the shipping area.

Down the road, if products or processes change, there is an infrastructure in place to adapt. "All I have to do is add another robot," says York. "I have flexibility that I didn't have before."

## System suppliers

**Mobile robots:** ADAM Robots, adamrobot.com
**AS/RS:** Daifuku, daifuku.com
**WMS:** Accellos, accellos.com
**ERP:** Sage, sageproerp.com/products
**Lift trucks:** Linde Material Handling, lmh-na.com
**Bar code scanning:** Motorola Solutions, motorolasolutions.com
**Stretch/shrink wrap equipment:** Belco Packaging Systems, belcopackaging.com
**Wireless/IP phones:** Cisco, cisco.com
**Appeared in the April 2010 issue. Read the complete article:**
mmh.com/article/otis_technologies_goes_lean_with_materials_handling

WAREHOUSING/DISTRIBUTION WINNER

# Oriental Trading Company:
# A warehouse under control

***The large, direct-to-consumer retailer's new warehouse relies on a sophisticated warehouse control system to pick up to 400,000 items a day.***

As the nation's largest direct-to-consumer retailer of value-priced party supplies, toys and novelties, Oriental Trading Company (OTC) is best known for products associated with fun and games. Perennial bestsellers like whoopee cushions reflect the play. The company's new 750,000-square-foot distribution center in LaVista, Neb., reflects the hard work. When the facility went live in 2007, OTC transitioned from a conventional, paper-driven DC to a highly automated facility that manages more than 30,000 SKUs. In 2010, the facility picked and packed 78 million units a year.

To hit those numbers, OTC implemented:

- a 250,000-square-foot fulfillment area featuring a three-level mezzanine,
- voice recognition technology to automate picking,
- a sophisticated double-density tilt tray sorter and conveyor system that feeds 600 packout stations, and
- a secondary sortation system to deliver packages to carrier trailers.

The engine behind those improvements is a warehouse control system (W&H Systems, whsystems.com) that has taken on many of the functions more typically associated with a warehouse management system (WMS).

In addition to controlling conveyor and sortation systems, the warehouse control system (WCS) optimizes picking and packing waves, sends pick information to voice picking, and directs the packout operations. The WMS, meanwhile, is primarily in charge of inventory management and communication with the host system.

The result has been an impressive 45% increase in productivity and a 60% reduction in pick errors. Accuracy has improved from 99.25% to 99.9%.

**Party on**

Founded in Omaha in 1932, Oriental Trading continues to grow, employing 3,000 associates, mailing nearly 300 million catalogs a year and handling more orders for out of season products offered on the Web compared to catalog customers who ordered from whatever items were offered in the book.

A typical order consists of six to

seven line items and 14 units that were being picked across 24,000 possible SKUs. With those order profiles, the paper-driven, pick-to-cart fulfillment processes in the old facility were manual and physically taxing.

"In our old facility, we had a capacity for about 24,000 SKUs," says Deon Wagner, director of warehouse operations. "We simply didn't have the room to add the new SKUs that our merchandising team wanted to bring in to continue to grow our business."

The combination of physical constraints and the physicality of the job led to the design of the new facility. "We wanted to support SKU proliferation with a pick zone that could hold up to 50,000 SKUs," Wagner says. "And we wanted to drive pick density in our picking processes to minimize travel distances and pick times."

### Explode and assemble

The solution was a highly integrated and flexible picking methodology that brings together an order management system, WMS, WCS, conveyor and sortation system, and voice recognition technology to find the optimal way to pick and assemble a wave of orders.

With this new 'explode and assemble' methodology, orders still begin at the WMS, but the system creates a wave of 8,000 to 10,000 orders and 100,000 units to be picked. That wave is passed to the WCS which determines the best way execution based on the order profile, item locations and the sorter workload.

The WCS creates four picking and packing subwaves; picking assignments are assigned to an induction location on the double-density tilt tray sorter, and orders are assigned to a chute leading to one of 600 packout locations.

The WCS plans the work based on several criteria. It looks at which items will consume the entire contents of a case. Those tasks are sent to a case break area. The idea is that associates will pick by location rather than fill all the items of an individual order. That way, a location is only visited once for each wave.

While picking, associates are directed by the voice system to pick to up to 16 different totes until a case is consumed. Filled totes are held in a pick module until the sorter is ready for a subwave. Then the associate releases a tote to the takeaway conveyor, which sends it to an induction point.

That's the explosion piece. For the assemble part, the tilt tray sorter identifies the items for a single order and sends them to a packout chute. After an order is packed into a shipping container, it is conveyed to an automatic tape and sealing sorter and scanned again. If the carton is 100% complete, it is sorted to an automated tape-sealing machine and continues to the shipping sorter.

### Smooth transition

The transition to automation was smooth. Associates have gone from walking many miles a day to less than one, which has significantly reduced staff turnover. What's more, associates are cross trained to ensure execution of the wave plan.

But the most important benefit may be for OTC's DC to support 50,000 SKUs in the future.

**Items are picked to totes from a number of different picking zones and then conveyed to one of the sorter induction areas, where they are placed on the tilt tray sortation system.**

## System suppliers

**System design, integration and warehouse control system:** W&H Systems, whsystems.com

**WMS:** Interlink Technologies, interlinktech.com

**Conveyor/tilt tray sortation:** Beumer, beumer.com

**Conveyor/sortation:** Intelligrated, intelligrated.com

**Voice recognition technology:** Lucas Systems, lucasware.com

**Picking rack and mezzanine:** Unarco Material Handling, unarcorack.com

**Pallet racking:** Interlake Mecalux, interlakemecalux.com

**Lift trucks:** Crown Equipment Corp., crown.com

**Bar code scanning:** Motorola Solutions, motorolasolutions.com

**Radio frequency system:** Psion, psion.com

**Appeared in the September 2010 issue. Read the complete article:** mmh.com/article/oriental_trading_company_gets_its_warehouse_under_control

INNOVATION WINNER

## Coca-Cola Refreshments U.S.A.

# New take on voice technology

***To revitalize its distribution processes, Coca-Cola Refreshments U.S.A. implemented a VoIP-based voice technology that enables 3,000 warehouse associates in 100 facilities.***

Everything about Coca-Cola Refreshments U.S.A. (CCR), the subsidiary that manufactures and distributes Coca-Cola products in North America, is big.

The company is the largest manufacturer and distribution point in the world for the largest soft drink producer in the world. CCR manages some 600 Coca-Cola brands and thousands of different beverages, producing 5.3 billion cases a year. It has some 65,000 employees working in 630 facilities around the country and makes more than 50,000 deliveries a day with a fleet of 30,000 vehicles.

And some 3,000 of those employees, working in 100 facilities that each handles more than 7.5 million cases a year, are directed by a voice over Internet protocol (VoIP) voice recognition system (Datria, datria.com) when they are picking orders.

Yes, one voice system. And CCR intends to enable more workers across the enterprise and more tasks down the road. "Basically, anything you can do on a keyboard in our SAP enterprise resource planning (ERP) system can be done in voice, including picking and putaway, shipping, and directing our drivers and service techs in the field," says Rick Gross, director of supply chain development.

The results are big: "We are maintaining the 99.8% shipping accuracy that many of our large customers require, and we are 100% accurate in a number of our facilities," says Mike Jacks, CCR's senior manager of logistics systems.

Here's how CCR decided on a VoIP solution and why this unique approach meets its needs.

### Driven by accuracy

For more than 100 years, the Coca-Cola bottling system in North America relied on a manual pick operation. Order selectors swiped an ID card at a kiosk to receive a paper printout of their work assignments. Filling orders meant pulling full pallets from a storage location and delivering them to the shipping dock.

But, full pallets are no longer CCR's operating environment. Over the last decade, beverage producers have added more products in more packaging configurations. At the same time, retailers want mixed pallets with enough of each product to satisfy demand in the short run. And, they increasingly demand accuracy rates of up to 99.8%, as shippers pay dearly for order mistakes.

With 80% of its volume being mixed case pallet loads, CCR's warehouses had manual handling and throughput issues. Additionally, complex order requirements made it more costly to maintain the accuracy rates required by CCR's biggest customers.


**CCR's voice system uses VoIP phones.**

### Selecting voice

In 2007, CCR began to investigate technologies to improve accuracy without sacrificing efficiency. Since they wanted a solution that allowed heads-up, hands-free operation by the order selectors, voice seemed to make the most sense.

The company's initial investigation led it to the leading providers of traditional voice solutions for the warehouse as well as tours of food warehouses using traditional voice solutions. At the same time, CCR had made a corporate commitment to a VoIP infrastructure for its business. Then, CCR's strategic partners for its voice infrastructure decided to create their own solution.

In the spring of 2007, several CCR team members attended SAP's user conference where they learned about Datria's VoIP voice solution. That was followed by a challenge to the voice provider to develop a server-

based solution that would integrate with SAP, deliver instructions to workers within CCR's workflow structure, use off-the-shelf hardware and leverage CCR's existing VoIP infrastructure. Six weeks later, Datria came up with an application.

**Going live with voice**

The primary difference between CCR's solution and a traditional voice solution is where it resides. In a traditional voice application, an instance of the software resides on every operator's mobile computer, which is typically worn on a belt. In a VoIP solution, one instance of the software is loaded onto a central server. Instead of a mobile computer, a mobile worker dials into the solution with a VoIP handset—in essence, an industrialized cell phone.

Where many voice solutions use proprietary mobile computing devices and headsets, a VoIP solution works with off-the-shelf handsets. These are less expensive, but there is a tradeoff. A company may need to build out a WiFi infrastructure to accommodate the VoIP solution. Indeed, CCR realized it would have to provide additional access points in each facility to work with the new system. However, since CCR had already committed to VoIP on a corporate-wide basis, most of the infrastructure was already in place and paid for.

Despite Datria's quick turnaround, CCR wanted to prove the solution before committing to an approach that hadn't ever been done on this scale. The bottler launched two 60-day pilots and had enough data to commit even before the second concluded. CCR identified 23 sites for the initial roll out and organized four deployment teams. The actual deployments got underway in September and by the end of December, 25 sites were up and running. By the end of 2008, it was up and running in 100 facilities.

Now that picking operations have been enabled, CCR is developing a strategic roadmap for extending voice to other processes in its distribution and logistics operations, like route delivery and field service. □

## System suppliers

**Voice recognition technology:** Datria, datria.com

**ERP:** SAP, sap.com

**Voice mobile devices:** Cisco, cisco.com

**Electric pallet jacks:** Cat Lift Trucks, cat-lift.com

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**Read the complete article:** mmh.com/article/cokes_new_take_on_voice_technology/D1