

# Eliminating inefficiencies through automation

Consolidated handles more SKUs with greater accuracy and lower costs

**COCA-COLA BOTTLING CO. CONSOLIDATED IS THE UNITED STATES' SECOND largest producer and distributor of Coca-Cola products, and also distributes Dr Pepper and several other beverage brands in its selected territories in 11 states. Consolidated's bottling facility and warehouse in Charlotte, named the Snyder Production Center after one of the company's founding families, is one of the largest bottling facilities in North America, and arguably one of the most complex.**

The Snyder Production Center operates four PET bottling lines, two can lines and a premix line, which combined handle the approximately 180 SKUs produced in Charlotte. This year, the plant is budgeted to run about 44 million cases. The distribution facility has another 320 SKUs that it is cross docking, and in total the facility distributes on average 615 SKUs.

The plant encompasses 650,000 square feet on a 46-acre campus. Consolidated also occupies an adjacent 350,000-square-foot sales center.

Consolidated's Charlotte facility is governed by The Coca-Cola Management System, which guarantees The Coca-Cola Co.'s standards are met in the management of product quality, environment, and health and safety. In 2008, the Charlotte facility achieved certifications for all three in one year. Last August, the facility also was certified to Safe Quality Food standards by the Global Food Safety Initiative.

The Snyder Production Center continually advances its bottling and packaging capabilities to provide new product and packaging opportunities. In June 2009, the facility converted one of its PET bottling lines to produce Coca-Cola's 2-liter contour bottle. About four years ago, Consolidated also did a major conversion on one of its can lines to be able to run six can sizes, ranging from 7.5-ounce slim cans to 16-ounce cans. The line on average runs 1,300 cans per minute.

## WAREHOUSE AUTOMATION

In addition to being the first Coca-Cola plant to bottle Dasani water and the first plant to produce a fridge pack, the Charlotte facility is the first bottler in the industry to have a Vertique automated picking system.

The decision to move to an automated picking system came from a combination of factors, including SKU proliferation, the need for greater accuracy and the increasing costs of manually building pallets.

"As we added more and more SKUs and the amount of volume that went through our building, the complexity continued to grow to the point that training people and getting the right product on the right load was becoming very difficult," says Dave Hopkins, vice president of logistics at Consolidated. "So we wanted to get a system that would simplify that entire process and make



sure what we sent to the customer was the product the customer ordered. We wanted to make the process of training people very simple, and Vertique made that possible."

Implementing the Coolift Delivery System, in which orders are palletized in the warehouse to fit a pallet on the delivery cart, also contributed to automating the warehouse.

"Prior to Coolift delivery folks were performing order assembly in the customer's parking lot," says Bill Elmore, Consolidated's president and chief operating officer. "With Coolift, we just moved it from the parking lot back into the warehouse. We didn't eliminate an inefficiency; we just moved it. With Vertique, we eliminated it."

Consolidated's warehouse normally has 1.5 million cases on the floor. Its total warehouse is approximately 400,000 square feet with 100,000 square feet dedicated to the automated picking system. The system currently is built to handle up to 750 SKUs, and is easily expandable, Hopkins says.

In March 2008, Consolidated started the automated picking system.

"It's like going through a grocery store," says Janko Mandakovic, project manager and Snyder Production Center's warehouse manager. "You have to go through multiple lanes to pick up what's on your list."

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## PROFICIENT DELIVERY

Dealing with SKU proliferation led to several revolutions in the beverage industry, one of them being the Coolift Delivery System. Swift Water Logistics, Coca-Cola Bottling Co. Consolidated's supply chain and logistics subsidiary, created the Coolift Delivery System, which it commercialized in 2006.

"We delve into any process improvement across the supply chain operating system, including network planning, which is how do you establish, sell and deliver your products from a strategic standpoint?" says Steve Golladay, president of Swift Water Logistics.

Because Swift Water Logistics core competency is in direct-store-delivery supply chain management and not in manufacturing, in 2008 the company partnered with Magline Inc., Pinconning, Mich., to produce the Coolift delivery carts. To make Coolift more viable for distributors outside the soft drink business, in 2009 Magline released a new model that replaced Coolift's original carbon-dioxide power source with an electric hydraulic-powered lift system. This move also trimmed the now 195-pound cart's weight by more than 200 pounds. Designed to fit between the aisles of a standard convenience store, the new Coolift delivery cart also has two pallet platforms — 43-inch and 53-inch pallet sizes. **BI**



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## FLEET MAXIMIZATION

Coca-Cola Bottling Co. Consolidated moves 130,000 loads a year of product. Consolidated developed Red Classic Brokerage, a transportation brokerage service, to maximize its fleet usage. Currently, Consolidated ships freight through its fleet of 268 trucks and ships 50 percent of its freight through contract carriers.

Consolidated began by filling excess capacity within its fleet, but when customers needed fleet services beyond what the bottler could provide, it began the business of brokering, says Dave Hopkins, Consolidated's vice president of logistics. The subsidiary now is in the business of matching companies that wish to ship goods with trucking companies that move goods.

Red Classic Brokerage ships anywhere in the continental United States, which is driven in part by the distribution of BYB Brand's portfolio of beverages. Currently, Red Classic Brokerage's largest client is the Coca-Cola system and its bottlers, but also provides its services to retailers, consumer product goods companies and suppliers.

"We want to make certain anything that we handle on our trucks is a food-grade product, something that mixes well with our product when we unload that truck," says Rodger Likens, Consolidated's director of transportation.

In two years, Red Classic Brokerage went from having 70 carriers under contract to more than 700 carriers that each meet the company's stringent safety standards.

"By simply marketing what we have, we are able to find people that are in the area that need a load out, and by that we are able to leverage the price to get a better deal to move your freight," Likens says.

The ultimate goal of Red Classic Brokerage is to fill Consolidated's trucks.

"We're helping the environment by moving trucks that are full vs. moving trucks that are empty up and down the road," Hopkins says. "By looking at these other folks that we're brokering through, we're also making sure that their trucks are full." **BI**

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In short, the automated system works by taking full pallets of product, breaking the pallets down by case and product, traveling the items through multiple conveyors with merges and diverts to arrive at their final palletizer in order of delivery for each route. The products all want to get to their final destination, Mandakovic says.

"The system knows what it has to build, when it has to build, in what sequence and what order," he explains. "The system itself will release a case at the point in time when it needs it."

Every single unit released into the system is assigned a position in the flow. Multiple check points take 3-D pictures of items, and can detect if an incorrect or damaged product is placed into the system. If it senses something is wrong, it will flash and stop the line from running. One of the system's four operators can read what the system determines is wrong, and exchange the items or fix the issue. The system is said to have an accuracy level of 99.9 percent.

"It's like a social security number," Mandakovic says. "We can track it. We know it's in the system, where it's going and what customer ordered it. Everything gets built in order. Once it gets built, we know that there are no changes. Everything is in order in the tractor trailer for the stops."

The system is fed through four sources of supply, with all products in the system stored vertically. First, products travel through the system via the semi-automated towers. Three towers feature three levels of product with 245 locations. Products are placed in the towers by volume with the top level offering the highest volume because more products can be stored. In the semi-automated towers, pallets of products are manually broken down and placed into the system. When the system needs a case, it will release the case, which automatically travels down the towers through cascading levels of rollers that use gravity to pull them into the system. The system always works ahead of what it needs, Mandakovic says. Six lanes of conveyors feed the system from the semi-automated towers, and travel up spiral conveyors to reach additional roads to travel to the palletizers.

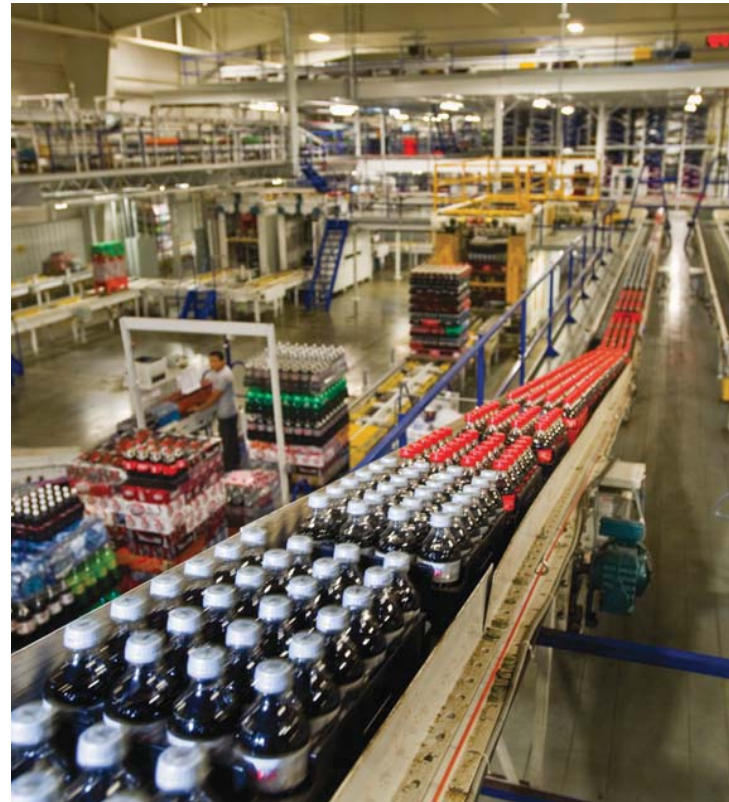
Six employees, two employees per level, work in the semi-automated towers filling in product when needed. What used to take employees two or three months of training to be efficient now takes people days, Mandakovic says.

"They used to have to know every single flavor — all 600 plus SKUs that we carry," he says. "Now, they don't need to know any."

Instead, each location is labeled with what the product should be, and also features a product sample. The system assumes that it is full, and when it needs a product a section's light will illuminate to indicate that. Employees working in the semi-automated towers fill locations with blinking lights. Employees also fill locations when radioed by an operator that the system is waiting for a product.

The system also can be fed through the fully automated towers. The automated towers function the same as the semi-automated towers, but are reserved for the highest volume products. In addition, the automated towers feature an automated depalletizer.

For the facility's slower moving SKUs, Consolidated has flow racks that can carry more quantities of



different SKUs. The system indicates on a monitor in the flow rack area what products need to be placed in the system.

The fourth area the system can receive products is from pallets. If a customer orders a full pallet of one product or a full pallet of even layers, it is not run through the system. The company uses a forklift claw to pick up layers at a time to build the pallets. These pallets are then placed into the system on pallets, and eventually may have other cases or products placed on top.

Products are conveyed through numerous lanes to one of Consolidated's three palletizers or for uneven layered pallets to one of three hand-stack locations. At the hand-stack locations, load sheets inform the hand-stacker about the pallet that is going to arrive and any extra cases that will need to be hand stacked on the pallet.

In March, Consolidated plans to make its automation system even more efficient by installing three new robotic arm palletizers. Of Consolidated's current palletizers, only one of them can produce Coolift pallets and the other two create bulk pallets. "It actually slows us down because of that," Hopkins says.

The new palletizers with robotic arms will allow the company to switch between Coolift pallets and bulk. Consolidated processes on average 4,200 cases an hour, and with its new palletizers hopes to be running 6,000 cases an hour.

To continue to grow its distribution efficiencies, Consolidated's objective is to install several more automated picking systems throughout its footprint during the next few years. The automated picking system also provides the bottler with additional opportunities to deliver other products that go through direct store delivery, particularly for products that lend themselves to be co-merchandised, Elmore says. In addition, the next frontier for Consolidated with its automated picking system is building algorithms to provide a generated projected order, and have real-time placement of those orders in the system, he says. **BI**