Food & beverage

An appetite for savings

Competition in the food and beverage sector is intense and profit margins are wafer thin. Here's a look at how technology and materials handling equipment can keep your operation healthy and competitive.

By Lorie King Rogers, Associate Editor

You know the old saying: Too many chefs in the kitchen spoil the broth. The same is true in the world of materials handling, especially in the food and beverage sector. You want to streamline the process and enhance the end product.

While operations try to manage a proliferation of SKUs, labor costs, space utilization and health and safety issues, managers must also find ways to increase performance and decrease costs to remain competitive and profitable. "The goal is to use the least amount of labor to get the best rate in a small space and spend the least amount of money," says Paul Laman, vice president of W&H Systems.

That's no easy feat in today's marketplace. Today's food and beverage industry is faced with fewer and larger distributors; SKU proliferation as manufacturers pump out more and more variations of a product; and a demand for smaller, more frequent store-friendly deliveries. Together, they add up to a challenging equation, says Laman.

Failure to deliver can mean stockouts, and that's the worst thing that can happen to a retailer, says Albert Fong, corporate communications manager for RedPrairie. "If that happens, the consumer will just go someplace else and may not come back again."

To keep retailers' shelves stocked, food and beverage companies rely on the following best practices.

Building store-friendly pallets

The emphasis on smaller, store-friendly deliveries from the DC to the store means that each pallet must include a variety of product so clerks can not only replenish directly to the shelf, but also in alignment with the store layout. That makes their jobs easier, but it can make building a pallet harder.

"Worker injuries go up tremendously when building mixed SKU pallets," says Brian Keiger, global technology sales leader for Kuka Systems. "This is because people are moving many different package types that aren't handled the same way."

Ergonomic stations: While there have been many advancements in automation, manual palletizing operations are still the norm in most food and beverage warehouses. In those situations, an ergonomic palletizing workstation can make building a mixed pallet safer. Product comes out of the storage system and is delivered to the workstation in the exact sequence it will be placed on the pallet. The operator loads product onto a pallet then lowers it as the pallet is built. Keeping the work area at a comfortable height with less lifting and bending translates into fewer injuries.

The demand for more frequent mixed case pallets is driving this technology in the food and beverage sector, but it's a viable materials handling solution that works well across multiple markets, explains Ken Ruehrdanz, warehousing and distribution market manager for Dematic. "Semi-automated systems can accommodate throughput capacity at an investment level that many customers are comfortable with," Ruehrdanz adds.

Robotics: A second way to ease the burden of building mixed SKU pallets is to use robots build the pallets. Robotic gantry systems are engineered to meet the food and beverage industries' need for high SKU mixed product distribution while eliminating 100% of the labor involved with building a mixed SKU pallet. Today's gantry systems can be half a football field long and accelerate to tremendous speeds. In one example, a multi-gantry system can pick 300 concurrent SKUs at more than 250,000 cases per day.

Another solution combines robotics and materials handling equipment to build mixed pallets a layer at a time. One layer picker uses a low-vacuum chamber principle to gently lift the layer. This type of picker can effectively lift 98% of the products in the retail sector, including diverse products with

Warehouse automation can putaway, store and retrieve product in order to satisfy the demand for smaller, more frequent store-friendly deliveries.

varying surfaces like loose produce, six-packs of bottled beverages or smooth cartons.

Using technology

Regardless of who *or what* builds the pallet, product placement decisions are predetermined. In fact, few decisions in today's DCs are left to chance; they're left to the warehouse management system (WMS). "The WMS takes away the chance for bad choices," says Bill Leber, who is responsible for business development at Swisslog. "The program tells you how to build the pallet, how to load it into the truck and doesn't leave the decisions to workers. The more you plan and eliminate the source of a potential error, the better."

Let the WMS be your guide: From receiving to shipping, decision-making responsibilities lie with the WMS. "Software controls the movement of inventory through the entire process and allows for complete visibility at any point in the supply chain," explains RedPrairie's Fong.

But software doesn't get created in a year, it evolves over time and gains maturity and functionality to manage the processes well, says Dan Labell, president of Westfalia. The trick, he adds, isn't just to have a database that can organize and release orders, but to have the ability to interface with automation to execute commands in a timely fashion.

The WMS begins the receiving process by capturing product data from variable fields like expiration dates and lot numbers then directs inventory to its next destination. In some cases product may be diverted to quality control, crossdocked for an emergency order, or putaway and stored. Putaway and storage in the food and beverage industry is crucial.

"By understanding the attributes and needs of a particular SKU, the system will direct it to the right temperature zone," explains Fong. "This also ensures that products that shouldn't be close (think rat poison and cereal) don't end up next to each other."

Using an articulated arm and end effector that performs a pick-and-place action, robotic layer palletizers are capable of building multiple pallets at one time.

Optimize the ice cube: High-density automated storage and retrieval systems (AS/RS) with multiple deep designs can maximize the cube, which is especially important in refrigerated or freezer environments. "It costs more to cool than to heat," says Swisslog's Leber, "so it's better to keep the facility footprint small and go up."

Westfalia's Labell concurs. The strategy is to use high-density AS/RS rack-supported systems within an existing structure to make better use of available space. For example, Labell says, an aisle in a high-density system is able to store 10 pallets deep.

This storage strategy will become even more important in the future because, according to Leber, "Freezer is growing everywhere because more people are eating at home and choosing frozen food over canned goods."

New food bill on the table

Signed into law on January 4, 2011 by President Obama, the new Food Safety Modernization Act (FSMA) is designed to protect and ensure the safety of our nation's food supply. The new legislation is broad, but among other provisions, FSMA gives the Food & Drug Administration authorization to issue food recalls. It also means that handlers must have plans in place to deal with safety and security concerns.

To learn more about the FSMA, go to www.fda.gov/ForConsumers/ConsumerUpdates/ucm237758.htm

Going paperless

It's one thing to go the grocery store with a paper list, it's quite another to go into a warehouse with one. Many DCs are scrapping the paper in the picking process and moving toward other solutions.

There's a lot to keep track of in the food and beverage sector. With all the variable captured product information in the system, the WMS can direct pickers based on rules defined by the trading partners and can ensure compliance. For example, explains Fong, "Many customers don't want to receive a product with an expiration date that is 'x' days away. The system knows the expiration dates of all products and will ensure the picker doesn't break these requirements."

As with other materials handling solutions, pick-to-light and voice are good strategies that cross over vertical industries. Both of these hands- and eyes-free solutions work well for high-volume SKUs, but pick-to-light is faster than voice. Unfortunately, it's also more expensive, so many operations are mixing the two and creating a hybrid solution, says Dematic's Ruehrdanz.

Pick-to-light: A pick-to-light system with dynamic dual-shelf pick face and replenishment slotting capability works for dense flow rack picking and put

applications, or general merchandise operations that require dynamic slotting of a variety product sizes. A system like this provides end-to-end shelf coverage for a dynamic pick face, with the ability to slot product widths ranging from 1 inch to several feet. Dual-shelf configuration for independent upper- and lower-shelf slotting maximizes SKU density, decreases storage cost per SKU and increases picks per foot. To enable multiple order fillers per zone, multicolor hardware directs simultaneous filling of multiple orders.

Voice: Voice-directed systems in general are a proven and widely applied solution that allow real-time control of the warehouse, increase order and inventory accuracy, and have a positive effect on productivity, says Dematic's Ruehrdanz.

Voice-directed picking is an especially good idea in cold environments. With refrigerator temperatures hovering between 35 and 40 degrees and freezers going as low as 30 degrees below zero, gloves are a must and finger dexterity is diminished, so voice-directed picking keeps the workers focused on the picking task at hand.

Moving materials

Beyond storage, material movement is important inside a food and beverage DC.

Laser-guided pallet truck: If a food distribution operation has an application for a voice picking solution, it may be enhanced with a laser-guided pallet truck system, says Dematic's Ruehrdanz. A laser-guided pallet truck system can automatically move to the correct picking location and move the completed pallet to the shipping dock without the picker, allowing the order picker to continue picking operations. This prevents the picker from having to get in and out of the truck repeatedly, which saves time-consuming steps.

RFID technology: Also assisting the picking process is a semi-automated solution that combines RFID technology, a mapped route of the facility and the operator in the lift truck. Once an order from the WMS is accepted by the operator, the truck will automatically drive to location and lift the fork to the right height at the right time.

Hands-free technology like voice-directed picking is a good solution for workers in refrigerated storage areas where manual dexterity can be affected by the cold.

Grocery is not a high margin business, says Swisslog's Leber, so when people are involved in the process every step is choreographed.

"We map out warehouse, identify areas of concern, program logic into the system, then rely on the truck, not the operator, to be aware of surroundings," says Perry Ardito, general manager of the Jungheinrich Warehouse Product Group. "Not only does this prevent harm to the facility, the product, and the operator, it increases throughput. Productivity gains are realized because the truck knows the best path and operator decisions are taken out of equation. With the right WMS, it's all managed behind the scenes. As long as operators follow steps everything should run smoothly."

Think electrics: There is a movement toward electric trucks in the food and beverage sector because of concern for the environment and the health of workers, says Ardito. Even though food and beverage items are securely packaged and wrapped for transport, environmentally friendly thin plastic makes it easier for emissions to permeate packaging. However, emissions from electric lift trucks are cleaner, so they don't pose a problem for people or product.

Track and trace

In food and beverage, managing recalls is an unfortunate must. The new Food Safety Modernization Act authorizes the U.S. Food and Drug Administration to issue food recalls. In the event of a recall, an operation has to put its hands on product quickly. "Without appropriate tracking in your WMS you don't know where the recalled product is, if you have it, if you've shipped it, or who you shipped it to," explains Chad Collins, vice president of marketing and strategy for HighJump Software. "The number of man hours dedicated to a product recall can be a nightmare."

But even before the new law, product tracking and tracing was an industry focus. "Companies are realizing that any type of safety or security concern can be very damaging, and even one recall can hurt a company's brand reputation," says Collins.

It's not a penalty to pay for traceability in your WMS, says Collins. It means you get the best of both worlds: better track and trace operations as well as operational efficiencies that pay for themselves through better space and labor utilization.

No matter where your operation invests in technology, it's worthwhile says RedPrairie's Fong, "You can only use the same equipment for so long without falling behind because the technology is constantly changing." ☐

Companies mentioned in this article

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HighJump Software: *www.highjumpsoftware.com*

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