

STATUS REPORT: Warehousing/Material Handling

AS/RS SYSTEMS

Eliminate Forklift Labor, Inefficient Double Picking

Automatic results: AS/RS finds a home in the food industry, a fit in supply chain demands.

BY AMANDA LOUDIN

For Gardetto's Bakery, a Milwaukee-based snack food company that joined the General Mills portfolio in 1999, rapid growth is part of day-to-day operations. But while growth is something for which all companies strive, it also can come with growing pains. For Gardetto's, those growing pains came in the form of ineffective material flow.

Working with what was then ESKAY Corp. (now SK Daifuku) the company aimed to automate its processes to allow for smooth material flow. The team determined that the solution should include a method for receiving pallet loads of materials from suppliers and then moving those loads to the production area. Key to achieving this was a six-aisle unit-load automated storage and retrieval system (AS/RS).

Gardetto's set up the new system so that pallet loads of material are received on conveyors and then delivered to the AS/RS on sorting transfer vehicles (STVs). When replenishment is needed, the pallet loads are retrieved by the AS/RS and moved to the production area on STVs.

With the new system in place, Gardetto's has been able to continue its growth.



THE RIGHT PRODUCT AT THE RIGHT TIME: A common use of AS/RS is in the support of manual picking operations.

In addition, the company can now meet stringent customer demands for just-in-time delivery of big orders. The AS/RS is controlled by sophisticated software, allowing for a first-in-first-out approach and ensuring product freshness.

Gardetto's is among a

growing number of food companies turning to AS/RS for material handling needs. "AS/RS can provide both automatic unit load handling and case handling and is being applied in food manu-

ter (DC) must become more flexible to become more customer-centric, adds Bruce Boldrin, corporate accounts manager at SK Daifuku in Salt Lake City. "The supply chain is shrinking and speeding up," he says. "Speed of inventory flow is a necessity, as is flexibility. This drives technology solutions—you must do more with less material, faster."

Why AS/RS

The benefits of AS/RS in food distribution are many, say its proponents. Chief among them is a reduction in labor, providing savings and reducing human error. "AS/RS will perform all of the designed functions automatically, methodically and consistently with the least amount of human intervention," says Tom Woodson, regional sales manager with Murata Machinery USA, located in Charlotte, NC. "This helps process and ship a consistent product offering, and reduces operating costs 24/7, while maintaining the processing volumes required to maximize the plant capacity and maintain leadership in the industry."

John Hinchey, sales manager at York, PA-based Westfalia USA, says that if a company has sufficient throughput and multiple shifts, the potential for AS/RS is high. "A general rule may include warehouse operations with more than 40 pallets per hour throughput, that operates two shifts per day," he says.

A clear target for AS/RS is to eliminate forklift labor,

facturing distribution, retail distribution and food service for dry grocery, deli and frozen product," says Chris Siegart, AS/RS product specialist at Siemens Dematic, based in Grand Rapids, MI.

As food supply chains evolve, the distribution cen-

which can be costly. "Labor reduction is the number-one solution from AS/RS," says Keith Swiednicki, partner at KOM International, Montreal, Quebec.

"Depending on where you are, your forklift operation may be very expensive."

Ed Romaine, director of marketing at Remstar International, Port Murray, NJ, suggests that when considering AS/RS, take a look first at your head count and productivity. "At the end of the day, how many lines per operator do you have," he says. "Is that an acceptable number based on your circumstances? If you find you have too many people, AS/RS might be a good way to reduce that head count."

AS/RS, rather than requiring lots of people to move product along aisles and into racks, allows companies to simply employ enough people to "feed" the AS/RS. It takes over from there, replenishing product in racks.

"A common use of AS/RS is in the support of manual picking operations providing replenishment that provides the right product at the right time to the picking operations," explains Siegwart. "Received product is stored by the AS/RS in the integrated pick module. The AS/RS replenishes the pick faces as required. Sensors installed in the rack pick faces along with the software provide near real-time requests for replenishment."

This can replace inefficient double-picking, which often occurs in conventional DC environments due to timing issues with the replenishment request and the execution of the replenishment move, says Siegwart. "The inefficient second move occurs when a pick face stock-out occurs, which then requires a return to the pick face at a later time to complete the pick, or when the lift truck arrives early with replenishment and a load is placed in temporary storage."

AS/RS also has clear advantages in the freezer environment. "If you put an AS/RS in the freezer instead of people, you'll have happier employees and less turnover," says Boldrin. "It also will increase your productivity, because your staff won't need to take breaks every hour to warm up. And because you don't need to cool as much space because of the density of AS/RS, you save on energy costs."

Do you need it?

While the benefits of AS/RS may be promising, it's not for every application. So how can you determine if it's right for your operation?

Woodson recommends getting help in making that decision. "The best way to make the right decision the first time is to solicit the services of an AS/RS company, an industry-specific architectural engineering firm, or a combination of both," he says. "Utilizing their expertise will guide the end user through 'what not to do' and create an AS/RS design best suited for that application."

Hinchey says that it is also key to check warehousing statistics. Among them, look into:

- Throughput—defined as the number of unit loads moved in and out of the warehouse per hour.

- Storage requirements—Throughput is more important than capacity, however, it is typically easier to justify a large capacity AS/RS vs. a smaller-capacity system.

- Multiple-shift operations—The

more the machines operate, the easier the justification.

Another factor to consider when determining AS/RS needs is the types of products you handle. "AS/RS is good if you're shipping multiple stock-keeping units (SKUs) at lower quantities," says Romaine. "Split case is also a good fit, where full pallets are not."

Siegwart suggests applying the following criteria to any evaluation:

- Clearly define what your business goals and objectives are in the short term and long term so that the technology fits today and in the future.
- Determine how you plan to operate the business and manage your supply chain and distribution network. Create a detailed operating plan for each facility.
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- Perform a detailed analysis of the operating data.

If the decision has been made to implement an AS/RS, you need to deter-

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Pitfalls To Avoid In Implementing An AS/RS Solution

You've done the analysis and sold the idea of an AS/RS to senior management. Now it comes down to implementation and operation. If carried out correctly, all those numbers should add up; if not, you could be headed for trouble.

One common pitfall, unfortunately, goes right back to cost justification. "It's easy to over-simplify the flow of materials and assume AS/RS is the right solution," warns Bruce Boldrin, corporate accounts manager at SK Daifuku. "You must design your system to your peaks."

That accomplished, you're still not out of the woods. Chris Siegwart, AS/RS product specialist at Siemens Dematic, recommends avoiding the following mistakes:

- Failing to clearly define the product format, including pallet overhang and required system design tolerances.
- Failing to manage the inbound product integrity.
- Failing to ensure that the upfront functionality planning that AS/RS requires includes plans for every anomaly.
- Failing to evaluate what modifications or enhancements are required to your warehouse management system to handle the automation and anomalies.
- Overlooking the training requirements for AS/RS.
- Failing to ensure that the goals of the distribution center are met within the design of the automated concept, including product category, planogram and aisle-friendly palletized load goals.
- Not simulating high throughput AS/RS systems and systems that interface with multiple technologies or have complex conveyor systems, and
- Failing to ensure that in refrigerated operations the motors, drives, lubricants and other components are designed for that environment.—A.L.

mine which type of system is right for your application. "The AS/RS is designed to perform a storage/retrieval task," says Woodson. "The task may be work-in-process, raw material storage or finished good storage. The end user defines the product size, weight, throughput, handling and processing requirements. The AS/RS design then takes the appropriate shape."

"The majority of AS/RS installations in the food industry include single-deep and double-deep storage configurations," says Hinchey. "This is due to the fact that many AS/RS installations are in food distribution warehouses, where the average inventory is, in many cases, as low as three or four pallets per SKU."

Siegwart adds that, "Food production facilities, which often have low SKU count and high volumes of each, often use flow-through storage AS/RS. A food production finished goods AS/RS often is required to accommodate both floor loading and palletized loads. A combination of unit-load AS/RS and mini-load AS/RS can be the matching solution."

Most high-end technology comes with a big price tag, and AS/RS is no exception. It's important, therefore, to perform a detailed analysis to determine if the justification for the expenditure is there. "If you do a detailed evaluation, the savings can be anywhere from

up to 25-30 lift operators in a big operation, which can amount to a net annual savings of over a million dollars," says Swiednicki.

In general, it's easier to justify an AS/RS for a new, greenfield DC than an existing one. "Because AS/RS is customized, it's easier to lean towards a new DC than for an existing one," says Swiednicki.

Still, even retrofits can be justified, according to Siegwart. "The justification case can be made on the operating costs involved in putaway and replenishment of manual picking operations," he says. "Manual operations can range from pick to a double-bottom pallet jack, to picking at an ergo station for higher volume case requirements and to pick-to-belt. AS/RS can also support further automation like the picking of cases by layer with robots."

Woodson says that the justification of an AS/RS can be straightforward. "Tangible savings are found in the building construction cost and depreciation, and reduced operating costs," he explains. "Intangible savings are found in things like land utilization, reduced employee risk, consistent product offerings and greater market share. An evaluation of these variables often reveal a rack supported AS/RS will pay for itself in three years and will add to corporate profitability for decades."

Romaine adds that, while AS/RS and other types of automation have much to offer, it's important not to "fall in love" with any one system. "Understand your SKUs and profile, and then figure out which equipment to use," he recommends.

Woodson also suggests thoroughly testing the system before forging ahead with official operations. "All equipment must be tested as a functioning unit, then using mock product, the units must be tested as a system for both reliability and system throughput," he says. "After the mock product testing is successfully completed, a ramp-up with actual product can begin—moving from slow-moving products to fast-moving products."

"This commissioning process takes time and costs money, both of which are scarce at this stage of the project. To ignore or shorten this stage can and usually does result in operator frustration, equipment failure, overtime costs and product damage. Anyone who has experienced shortcuts during the commissioning process knows that the extreme expense of this approach far exceeds any gains."

In short, any big-ticket expenditure, such as AS/RS, requires a great deal of homework if it is to achieve its potential in your operation. But when done right, says Romaine, AS/RS can "make good business sense." ❖

■ CASE STUDY: FREEDOM FRESH

Monitoring Truck Whereabouts Produces Real-Time Results

Pasta maker lowers material, product and logistics costs with optimization software.

BY ROBERT BARRESE

For one produce wholesaler, making on-time local deliveries was like clockwork, but as the delivery radius increased, so did the dependence on a reliable fleet tracking system.

"As the deliveries started going out further and further, it became a lot harder to gauge how much time a driver should take. We didn't know if the driver pulled off on the side of the road to take a nap for an hour or two," says Jorge Vazquez, senior vice president, CFO, Freedom Fresh, a Miami-based wholesale distributor of fresh fruits and vegetables.

Freedom Fresh handles more than 700 varieties of produce, including conventional, organics and exotics, as well as specialty items and herbs, out of its 70,000-square-foot Miami distribution center. Freedom Fresh services more than 200 customers as far south as Key West and as far north as Tampa on the West Coast and Jacksonville on the East Coast. Customers include supermarkets, retail outlets and small to mid-size gourmet niche markets, as well as the cruise ship industry, including Carnival Cruise Lines.

"Perishables are a ticking time bomb from the time we get it to the time we sell it. We needed some sort of fleet management tool that would help us on two fronts," Vazquez explains.

First from an operational standpoint, Freedom Fresh needed to be able to keep track of where its drivers and trucks were in a relatively large territory.

"It's always been a big issue. Drivers used to call in on the radio after each stop, but with 18 trucks out there on the road, it became very tedious. We needed to be able to track where our trucks were, what was going on and how long they were at each stop," Vazquez says.

The second issue was from a customer service point of view. Freedom Fresh needed to know where its trucks were



CAREFREE RIDE: Freedom Fresh is tracking its fleet in real-time via the FleetDirector from Teletrac.

at all times in order to address customers' concerns in a timely manner. "Customers want their deliveries as early as possible, so we get calls asking 'Where's my delivery?' and 'How long before it gets here?' etc.," Vazquez says.

As a result of its search for a fleet tracking system, Freedom Fresh chose FleetDirector from Teletrac Inc., Garden Grove, CA, a developer of wireless location information systems.

"For us, the Teletrac system was a great solution for both of those issues. Just by looking on the computer we are able to determine accurate distances to tell approximately when the truck will arrive at its destination," Vazquez says.

FleetDirector is an Internet-enabled system designed to track the location of commercial vehicle fleets in real time, streamlining operations and giving fleet owners the tools to ensure that drivers remain productive and fulfill the needs of their customers. It also increases security by enabling fleet owners to locate and recover stolen vehicles.

A small transmitter with an antenna was installed on the windshield of each truck. The software installed on the PCs at the distribution center worked on the company's existing Windows-based system. "As for the drivers, they really don't know it's there. They don't really interact

with it. It's more from a management side to be able to track where everyone is," he adds.

Freedom Fresh began using FleetDirector in the fall of 2002. From the time that the contract was signed to when the produce distributor was up and running took about a week, according to

Vazquez. "Teletrac first installed the transmitters on the fleet. Then they uploaded the software into our network, trained us how to use it, and we were ready to go. Once we started looking at the system, we discovered advantages that we weren't expecting," he says.

Vazquez refers to customized alerts that can be setup into the system. For example, if a truck exceeds a certain pre-set speed limit, a message box would pop up on the fleet manager's PC alerting him that a particular truck was speeding. Also, if a truck is idle for more than a pre-set amount of time, a message alerts the fleet manager. The fleet manager then contacts that driver on the situation.

"Those are little added perks that we weren't looking for but were very pleased to find them and use them extensively now," Vazquez adds. "In terms of being able to cut down on the time it takes the fleet manager and the dispatcher to contact all the drivers to constantly find out where they are, I would think that the return on investment was very high."

As Freedom Fresh's fleet grows, the company will expand the use of FleetDirector, Vazquez says.

"As with any system, it is very important how you communicate it to your employees. You don't want them to feel that big brother is watching," he adds. ☛