Material Handling MANAGEMENT


# Sorting Out Sortation

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*Methods and technologies for sorting products is no longer just a hardware issue. The key thing is to understand the ultimate goal: customer service.*

The starting point of the sorter-purchasing decision process has nothing to do with hardware. It begins with bringing information gathering together with flexibility to changing market pressures, product changes and customer demands. There is no right and wrong way — just different ways of sorting; each with advantages and disadvantages.

Product sortation in distribution centers got a major boost years ago with the implementation of bar code technology. All indications are that radio frequency identification for collecting data will eventually be a catalyst in sorter purchases, but not yet.

How to collect and process information has become a driver in many material handling equipment business decisions. The warehouse management system (WMS) is the information conduit to sortation equipment that allows it to understand which direction to ship orders. The WMS can be designed to do anything from collecting data as a carton is moved around the warehouse, or to notify a customer or carrier that an order has been shipped.

It could be the WMS as well as product mix that establish criteria for order picking and eventual sortation. What that criteria is will depend on a company's business plan.

A common challenge users report is understanding induction technology: How are a variety of case sizes, or products, merged at high speeds? Every manufacturer has its take on this problem and it appears there is no one-size-fits-all solution.

Depending on carton length and weight, line and packing speeds, and numerous other factors, homework needs to be done to get the right sorter. Control systems for carton release algorithms are getting more sophisticated allowing the software and hardware to do their jobs.

As a business grows, the need for automation becomes more apparent. Such was the case for this retailer. When the distribution center served 150 stores, labor could be managed to keep up with orders. Bob Edwards, senior vice president, distribution, at the Finish Line ( Indianapolis), a footwear and apparel retailer, says, "We pick product for every store location, every third day. We were planning, on expansion to 800 or more stores, plus adding product items beyond our normal footwear and softgoods mix."

For Finish Line, the solution was to work with engineers from Advanced Handling Systems (Cincinnati), a company with experience in retail sortation.

The sortation system, which came on line May 2004, uses Crisplant (an FKI Logistex Company) tilt-tray sorters to move a mix of footwear and softgoods from four induction platforms as part of the order fulfillment process. "We use the system to induct merchandise both manually and automated," says Edwards.

Footwear is selected and placed on a belt conveyor, which takes the carton to the tilt-tray system. Apparel items, however, are manually scanned before they are placed onto a tray. Trays circulate through the system until they reach the correct chute where they tilt, diverting the item to the packing station.

Edwards says the company opted for a tray that is a bit larger than might otherwise be used for footwear products because they planned to use the system for footwear and apparel. Currently, small, more fragile accessory items, such as drinking glasses or bobble-head dolls, which make up less than five percent of Finish Line's product mix, are not placed on the tilt-tray sorter.

Edwards says that the system is designed to allow for expansion of two more banks for apparel and footwear picking modules.

## Will RFID change business?

The use of radio frequency identification (RFID) in sortation is still more talked about than applied. More companies are debating RFID's additional costs versus its benefits. The general feeling among manufacturers of sortation equipment is that a cost-efficient RFID-controlled sortation system is still in the future.

The first step toward bringing RFID compliant — and more flexible — systems to customers, is modification of installed systems. Companies, such as HK Systems, have modified current sorter product line-ups in the induction areas and the accumulators to handle and control products as small as six inches in length. This appeals to online and catalog retailers.

Another way for companies to work around the RFID challenge is to add a loop of conveyor to existing systems. These loops have RFID readers that scan the packages sorted from the main stream of cartons flowing through distribution. When the RFID tag is scanned, the cartons merge back into the flow.

What are the benefits to the end user of applying RFID to a sortation system? In high speed applications, the ability to read cases moving at more than 200 per minute with only a gap of six inches is a plus for high-volume distribution. This gives users of the system greater visibility into the inventory as the more versatile RFID tags replace bar code labels as the way to manage assets and track products.

## What to do first

Along with major decisions surrounding data collection technology, here are a few more evaluation points to consider along the way to selecting the right sorter:

- What is the expected goal of the sorter system?
- Will incoming product move from the material transfer zone to the racks, or will it be cross-docked?
- If put away is the decision, does it go to static or dynamic storage?
- Is product received or shipped in pallet loads, cases or eaches?
- Will shipping data be collected manually or automatically via scanner tunnels?
- Will the system sort for individual items, randomly sized or known-dimensioned cases?
- Who is the customer and what does the customer want?

One decision does not necessarily follow another, nor depend on another. There are other factors not mentioned above that can steer the sorter decision, such as price, the need to have more than one sorter in case of a breakdown, and the challenge of adapting new equipment to legacy software systems.

*Footwear at Finish Line is picked to belts, then diverted onto the Erisplant tilt-tray sortation for delivery to the order packing stations.*

## Consider throughout

Edwards says Finish Line designed its sortation to meet peak periods of back-to-school and holiday shopping. "We designed the hardware for those peaks, however we're flexible with the labor so we staff for peak hours."

Depending on how quickly the product will move through the system impacts the type of sorter selected. Coupled with throughput is the volume of product that is moving.

*Softgoods items are manually scanned and placed on the tilt-tray sorter, then moved to the order packing stations.*

## Human factors

Ergonomic factors are another consideration in many distribution centers. While there will always be noise generated by plastic totes being diverted onto metal rollers, the machine noise can be reduced with powered rollers or narrowbelt sorters.

## What's ahead in sortation

Without doubt, users of sortation technology will continue the quest for higher speeds. As ergonomics and workplace rules change, sound levels will become a factor in sortation choice where equipment and humans share the space.

As distribution strategies change and companies move from shipping in pallet loads to shipping in single units, small-component equipment will get a boost. When RFID becomes more prevalent, sortation equipment to orient the case as it passes through a scanner won't be as critical as it is currently.

Throughput, along with faster and more accurate material handling, is always an issue. Everyone is more sensitive to downtime, predicted or not, because of their customers' lean manufacturing schedules. In addition, as users look for more flexibility along production lines, more modularity and adaptability in conveyors and sortation will be required for quick changeovers.