

# Distribution Center MANAGEMENT

## Focus on activities that support the business

Too often today, supply chain executives are burdened by having to respond to daily operating problems, sales and marketing promotions, and customer service issues, resulting in "brushfire management," according to Princeton, N.J., consulting firm REM Associates.

REM recommends asking some key questions to focus your thoughts on "supply chain activities to support your business." For example:

- Has your company recently opened (or closed) new market areas generating need for additional product logistics and customer service capability?
- Have there been any additions and/or deletions to your company's product lines?
- Have customers indicated any service issues?
- Has the customer service complaint level increased?
- Has the profile of product shipments changed in terms of truckload, less-than-truckload, expedited shipments, UPS, etc.?

[www.remassoc.com](http://www.remassoc.com)

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## Technology/Equipment

### Gift distributor makes adjustments after new technology fails to create desired results

New technology and equipment are frequently hailed as a solution to enhancing productivity and efficiency. But technology is not a panacea. What happens if you make a huge investment in new equipment and applications, but you don't see the promised improvements?

At the Council of Logistics Management annual conference last month, Jeff Daemke, director of manufacturing and SE operations for Current Inc., and Mike Steffen, technical specialist with Current, discussed how their company reacted to less-than-satisfactory results fol-

lowing the implementation of a pick-to-light (PTL) system.

#### Paper-based picking proved time consuming, labor intensive

Current is a direct-market distributor of gifts for the home and greeting cards and other paper products. Its 780,000-sq.-ft. facility in Colorado Springs, Colo., includes about 120,000 sq. ft. of order fulfillment space. Faced with a dependency on temporary labor, high error rates, and a labor-intensive picking process, the company decided to

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## Material Handling

### Managing effective cross-docking operations

In order to reduce inventory in the distribution center and limit the movement of hard-to-handle or difficult-to-store items, some companies have adopted a cross-docking strategy. Cross-docked inventory isn't stored in the warehouse, but moved from an inbound delivery almost directly to an outbound shipment.

Third-party logistics provider USF Logistics operates many cross-docking facilities, and Gary Eubank, vice president of business development for USF Logistics, talks about some of the keys to managing effective cross-docking operations.

At USF, the locations have very

little of the storage capacity you'd see in a typical warehouse; most are flow-through facilities, Eubank says. The facilities have what he calls a "big box" design instead of the narrow dock squeezed in along the storage locations and picking area in an average DC.

This provides the company with space to unload the product, sort and stage the items on the floor, and assemble shipments, explains Eubank. "To sort properly and keep shipments contained and error-free, you have to have the room to accommodate the number of stores in a given pool or

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late truck arrives.

If you decide to hold the entire delivery, keep in mind that it may cause congestion in the warehouse to have those items sitting around (or block off a dock door if you load the partial shipment on a trailer), and you also need to check with the customer before you delay the entire shipment. If you are shipping JIT inventory to a manufacturing plant or shipping toys to the retail outlets for Christmas, for example, you may not be able to wait.

And what happens if the company was expecting one thing on a shipment and it receives something else — the wrong product, or product that belongs to another shipment, for instance? Scanning provides checks and balances, says Eubank. “If something comes in that’s not on the manifest, it creates

a report that we generate to the customer.” The customer then tells USF how to handle the issue.

### **Yard management, stable workforce lead to success**

Eubank points to a few additional areas that he says have played a role in USF’s success.

*Effective yard control.* “You need enough room to move trailers in and out and stage trailers on your lot,” says Eubank. Otherwise, congestion will hinder the cross-docking schedule and delay deliveries.

*Stable workforce.* Retain an experienced workforce that is familiar with the requirements and needs of the various customers.

“If you are moving different people in and out of processes and they aren’t trained properly, you’re more likely to have errors,” says Eubank. To minimize those errors, “we try to train all of our shifts to

the particular needs of that particular customer and keep the same employees working on the shipments for those customers.”

For example, some customers want early morning deliveries while others prefer afternoon deliveries. Some customers want product labels facing a certain way when they are unloaded. USF creates a detailed set of standard operating procedures for each customer so the process is exactly the same no matter who is performing the work.

*Security.* You must protect the integrity of the shipments. With the high volume of product moving through the facility and no dedicated storage locations, it’s easy for someone to take product without anyone noticing.

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### **Cross-docking requirements**

According to Maida Napolitano in *Making the Move to Cross Docking*, an effective cross-docking program has a number of requirements, including:

- The right products — The products that make the most sense to cross-dock are generally barcoded items with high inventory carrying costs and predictable demand that are received in premixed or consolidated pallets.
- The right suppliers — Work with suppliers that can configure products properly, and “have the right processes in place so that they can consistently provide the correct quantity of the correct product at the precise time when it will be needed,” writes Napolitano.
- The right information flow — This includes “timely, accurate, preferably paperless information flow among trading partners.” This data is used for scheduling by the logistics planner, and for coordinating inbound and outbound shipments.
- The right product flow — Facilities must be designed to enable smooth, continuous flow of product, with all of the necessary equipment, systems, and processes in place.
- The right people — Cross-docking “is carried out by personnel who recognize the urgency of moving product rather than storing it,” who look for continuous improvement, and who stay abreast of the latest in enabling technology.

*Making the Move to Cross Docking is published by the Warehousing Education and Research Council. Visit [www.werc.org](http://www.werc.org) or call 630-990-0001 for more information. Maida Napolitano is a senior industrial engineer with consulting firm Gross & Associates, [www.grossassociates.com](http://www.grossassociates.com).*

## **Gift distributor**

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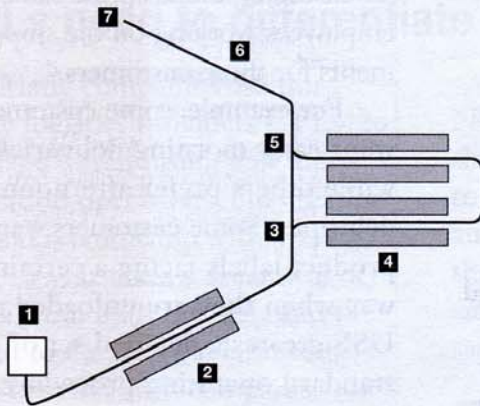
invest in a new picking technology.

Current had been using a paper-based picking approach. Pickers were assigned designated areas, and boxes would travel by conveyor past all of the racks. Employees had to look at the pick ticket in each box to determine if any items were needed from their specific area.

If any items were on the list, they would put them in the box. Otherwise, they’d simply let the box move along to the next area.

Once the orders were filled, the boxes continued on to the repack area for quality control. There, employees would take an empty carton, remove each item

## Recirculating through picking area causes congestion



1. Carton erector
2. Mirrored racking for fastest moving product.
3. Recirculation merge.
4. Additional picking locations.
5. Diverter back to picking area or on to quality control.
6. Quality control.
7. Shipping area.

This general diagram of Current Inc.'s order fulfillment area illustrates how congestion was caused in the recirculation area. After the cartons were built and put on the conveyor, they ran through the mirrored lanes containing the fastest moving items (mirroring the lanes allows items to be picked from either side, thus doubling productivity).

From there, the boxes moved to the next picking area, which contained fast and slow moving items. As the box went between each row of racks, it would travel along one side of racking or the other. If the order needed an item from the other side, the box would be recirculated back through the area until all the entire order was picked. That meant about 40 to 50 percent of boxes had to circle back around. By reslotting material so all boxes had to go past the fast moving items, the company was able to reduce that number to between 10 and 15 percent.

from the original box, and count and verify the items in the order, placing them in the new carton as they inspected the order.

"We did that on every single order. As you can imagine, that was fairly labor intensive," says Steffen.

Finally, the carton was sealed and the order shipped.

### Many problems to be addressed

"At that time, around 2000, we were looking at about 400 cartons per hour actually going through our picking process," says Daemke.

He notes that the company was able to reach 700 cartons per hour when it hit the November/December peak, but it required using temporary labor and running a day and night shift to meet demand.

"We had a tremendous reliance

on seasonal staffing and hiring, and that is such a drag," Daemke says.

And despite the 100 percent manual quality control, Current still had an error rate of around 15 percent.

Resistance to change in the organization was also high, and employee attitudes were poor.

"Almost all of the injuries and almost all of the morale [problems] that were occurring in our company relative to employee relations occurred in our fulfillment practice," notes Daemke. "It actually got around. People did not want to get hired at Current and go into order fulfillment."

### Initial project goals

The company had to find a better way to manage the operations, and management established some basic goals it wanted to

achieve. First, it wanted to improve throughput and reduce the need for two shifts.

The organization wanted to reduce the time through production from eight minutes to six minutes and set a goal of 600 cartons per hour. Moving to one shift would "release us from the temporary staffing situation," adds Daemke, while a more regular workforce would improve morale and build ownership in the area.

Current also wanted to improve quality and reduce errors, while at the same time eliminate the need for such stringent quality control methods. "We did not want this 100-percent touch. It was a waste of a lot of resources and time," says Daemke.

It kicked off the pick-to-light project in August 2001 with a pilot program.

### Disappointing initial results

Current had high hopes for the pick-to-light technology, but the results were very disappointing at first, says Daemke.

After analyzing the new operations and processes, management identified several issues. For instance, there was still a great deal of gridlock on the conveyor. More than 60 percent of cartons were recycled through the racks (see box).

There were also some issues with balancing employees' workload and with feeding the fulfillment lines. "It was very difficult for our employees and our actual leaders on the floor at that time to adapt to this new process," says Daemke. In fact, adapting to the new operations "was probably one of the more difficult things we had to overcome in the whole process."

In March of 2002, Current

was ready to begin fixing the problems. This included physical changes, process changes, and cultural changes.

### Adjustments to new technology

One of the problems it had to address was congestion on the conveyor. To help solve the problem, Current added electric eye counters to control the number of boxes that are in an area at one time. When the number of boxes hits a predetermined level, a gate closes to prevent more boxes from entering the area.

It was a simple approach, but “it actually accomplished more things than we thought it would,” says Steffen. “First of all, it prevented us from getting so full that we wouldn’t be able to move. Second of all, it told us, ‘Hey there’s a problem.’ The only reason we would end up with too many boxes was we didn’t have our workforce distributed properly.”

Now, when the gate is activated, supervisors can look at who is so busy they are not keeping up, and where can they find other people who are being under-utilized to help out in the busy areas.

Another area that Current looked at was the first 15 to 20 feet of conveyor between the carton erectors and beginning of the picking line. This was enough room to stage about 30 boxes. But sometimes there were problems with the print-and-apply apparatus or the carton erector, and the line would run out of boxes. It was decided that the area needed to be expanded to handle 300 to 400 boxes, think-

ing that this was enough to meet production.

But management was concerned that if the print-and-apply mechanism got out of sync, there would be 400 mislabeled boxes before anyone even noticed.

To eliminate that potential problem, the company designed a triple verifier with a scanner on each side and one on top. The verifier scans the labels on each side of the box and the ticket on the inside simultaneously. If a label or ticket is missing or if there is a mismatch, the box is automatically kicked off. If multiple consecutive cartons are rejected, the line shuts down so the problem can be resolved.

This greatly improved productivity. Previously, the first picker was responsible for verifying that the labels and ticket matched.

Once he was relieved of that responsibility, it greatly improved the speed of the entire process, and now the 400 boxes aren’t enough.

In addition, because it is using fewer inexperienced seasonal workers, the company gave employees more decision-making control.

Following these modifications, Current saw error rates almost immediately improve to 1.6 percent. It’s now at 1.3 to 1.4. That means there are fewer customer complaints, and the call centers can focus on taking new orders.

The company was also able to eliminate the night shift during the busy catalog sale season, and “regular employees started to feel good about what they were doing,” says Daemke.

From an initial rate of 400 car-

### Measuring error rates

Tracking error rates in your DC is vital to gauging the effectiveness of your operations and identifying areas for improvement. But Marc Wulfraat, senior partner with consulting firm Kom International Inc. in Montreal, says that many companies take the wrong approach to measuring errors.

For instance, if a picker is directed to pick two units of item A but picks two units of item B instead, many organizations count that as just one error. However, Wulfraat argues that the gross error rate approach gives you a better grasp of the impact errors make on your operations.

Using the gross error rate, the same picking mistake counts as four errors: The picker did not select two units of item A, which counts as two errors (one for each unit), and the two incorrect units of item B count as another two errors.

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tons per hour in the paper-based approach, the company now averages 1,300 to 1,400 cartons per hour, and has reached sustained rates of 1,500 cartons per hour during the busy season.

Perhaps the most impressive sign of success, however, is the results of the return on investment (ROI). The initial ROI on the project was calculated to be about two years.

Following the implementation and disappointing early results of the pick-to-light technology, however, the expected ROI was raised to seven years. After the process improvements, the payback ended up taking only seven months. **DCM**

“We did not want this 100 percent touch [on quality control]. It was a waste of a lot of resources and time.”