

Case Study

Tom Turner

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From Manual Distribution to High-Rate DC

Founded in 1942, Liberty Hardware Manufacturing Corporation is one of the industry's leading manufacturers of high-quality decorative and functional hardware solutions, home organizational products, bath safety and decorative accessories for the home.

Liberty Hardware recently converted its West Coast distribution center from a manual operation to a highly automated high-rate distribution center, and in the process reduced its labor hours by 40 percent, while speeding product delivery to its customers in one-third the time.



The challenge

The concept for building a DC in Ontario, California was born out of an analysis they conducted to serve their West Coast market more efficiently.

They designed the DC to consolidate the distribution of other Masco company products, in addition to Liberty.

The flexibility was built into the DC to route through it one order of multiple products and brands. Although all products are inventoried in the same locations and use the same conveyors and sorter, they are waved separately and shipped separately by brand. This system is really retail driven, that is the way the orders flow in from the retailers, by brand, so the DC ships them out by brand. But, within the DC, much of the handling is not brand discriminate.

Our solution

Dematic was brought in to help the Liberty team and TomZosel Associates to develop a new design for handling the volumes of product types from Liberty's different company divisions. Dematic determined the layout for the product flow, defining the type

of system and equipment needed to handle their projected volumes over a five-year horizon. Dematic was also responsible for managing the installation, the contractors and the construction licensing for the site. This included providing engineering services, the sortation equipment and conveyors, including scanning systems that were integrated with the conveyors, and the warehouse control system (WCS) for running the conveyors.

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The DC receives import containers, as well as domestic receipts from vendors in trailer loads. Everything coming in gets palletized and put away. The DC has roughly 35,000 pallet locations, in a seven pallet high-rise, with a 32-foot clear ceiling.



Design

The pickers are picking from case flow locations, with eight roller-lane picking, as well as full pallet locations. 85 percent of the picking is full-case picks to the belt. 15 percent is off-line picking, which is not routed through the conveyor system.

From the picking areas, a belt conveyor threads through each of three-level pick modules, then proceeds to a merge subsystem. Label printers at each module produce shipping labels for the pickers, and bar code labels are manually applied to cartons during the picking process. A five-sided vision scanning system on the conveyors checks the shipping label on the case to provide automatic quality control, and the system updates the order status in inventory.

The DC has the ability to wave by customer, by ship date, by cancel date, and by ship-to, although typically they wave by ship date.

A Dematic RS Series sliding shoe sorter with photo-eye accumulation and controlling software allows high-rate, accurate package handling up to 150 cases per minute. Interleaving extruded aluminum slats provide a wide flat carrying surface that prevents jams. It allows the sorting of a wide range of product sizes and types - with quiet and positive sortation and ultra-high throughput.

Coming off of the sorter, automatic pressure accumulation conveyors (APC) are used to temporarily stop, hold, and release material. They allow product accumulation along a line without pressure buildup. They provide quiet, zero-pressure action with electronic sensing and pneumatic components, eliminating the noise of standard mechanical rollers. The DC is also equipped with 10,000 linear feet of conveyor composed of two-inch roller centers, optimum for handling smaller cartons.

Each order is sorted out by ship-to location. Once at the end of the line, they palletize and shrink wrap the orders, and ship.

Dematic's SortDirector® is being used for the warehouse control system (WCS) which provides state-of-the-art graphic system monitoring for the entire conveying operation. It gives operators real-time control of product movement, and real-time reporting.

The Payoff

"Since the DC opened in September of 2006, we have cut our order turnaround time to one-third of what it was with the manual operation," says Tom Turner, Vice President, Global Logistics, for Liberty. "Now, we are operating from receipt of order out to the customer in less than 72 hours. We are handling an average of 350,000 cases a month, and have had peak months of as many

as 440,000 cases. From a service perspective, we have been able to gain significant labor efficiencies. We have cut our labor hours by 40 percent."

"What was critical is how quickly we were able to come up with a design and turn the entire project around," says Turner. "From operating in a manual environment, then merging several divisions together, and building in a high-rate automated system, while maintaining our level of service. Total turnaround time was within 18 months."

"At the end of the day what really made this project a success was the team that we had working on the project," Turner explains. "Both internally and externally, the integration of the team made the project run very smoothly, and proved to be a very successful switch for Liberty to a much more efficient distribution center."

Customer benefits

- Order turnaround time to one-third of what it was with manual operation
- Less than 72 hours from receipt of order to shipment to the customer
- Reduced labor hours by 40 percent
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