Case Study

Pick, Pack, and Ship System Brings Smiles to Dental Professionals

Benco Dental – Flower Mound, Texas

Benco Dental is a full-service distributor of dental supplies, equipment, and furniture. The company offers a comprehensive suite of service, supply, and equipment options including office design, equipment repair, and technology solutions.

Its Flower Mound, Texas distribution center uses a Dematic convey and sort system to facilitate piece and case picking. Components of the system include order induct, zone route conveyor network, pack stations, in-line weigh scale, shipping sorter and trailer loading.

The Challenges

Benco Dental has a distribution strategy that supports responsive and highly accurate order processing to over 30,000 customers in 50 states. Using a five distribution center network, Benco Dental services dental offices and educational venues providing one-day shipping to over 80% of the United States population.

The regional DCs ship to customers in a geographic region and focus on handling SKUs with slow, medium, and high velocity. Over two million packages are shipped per year, using order fulfillment systems engineered and implemented by Dematic.

In recent years, Benco Dental had outgrown its Grapevine, Texas DC. It needed to scale and grow its business without adding headcount. However, the size and structure of this DC could not accomodate the changes. Benco Dental consulted with Dematic on a new facility

Order totes are scanned at the order start workstation.

Our Solution

The warehouse is temperature controlled to protect the inventory and provide worker comfort. The system is designed such that the piece picking and case picking, as well as replenishment are accomplished simultaneously on one shift of operation. For the piece pick operation, typical order size ranges from four to six line items; picking accuracy is over 99.95%. In a typical day, this DC will pick, pack and ship approximately 650 to 1000 customer orders.

A discrete order picking method is used whereby a standard size plastic tote (grey color totes in photos) is the container for gathering all the SKUs required to make up a customer order.

Throughout the shift, orders from the Warehouse Management System (WMS) are download to the Warehouse Control System (WCS), which runs Dematic iQ performance optimizing software. The WCS manages the routing of each customer order tote throughout the warehouse starting with the order start station.

At order start, a barcode on the tote is "married" to each customer order. Both the tote barcode and shipping manifest barcode are scanned, one after the other. The WCS takes over and controls the tote on the zone route conveyor network. Each tote only travels to zones with items to pick, minimizing the travel distance, congestion, and time required to process each order.

The three-level piece pick module is configured with a zone route conveyor network.

The center conveyor is an expressway though to the pick module. Order totes are transferred to the sidings if a pick is required in that zone.

After packing, the order cartons are conveyed to the case sealer.

Order containers are in queue at the case sealer workstation.

"Our Solution" continued

Furthermore, pickers only access inventory in a small area, eliminating the need to travel through the entire warehouse. This configuration reduces picker travel time to each pick face. There are 12 pick zones where order totes can be routed. A typical order may only need to travel to 3 zones.

Slow moving inventory is staged furthest away from the pickers in the flow and shelf areas. Faster moving inventory is stocked close to the conveyor network.

Once all the items for a customer order are selected and placed into a tote, it travels on the conveyor network to the pack stations. There, a warehouse staff member working at one of the 24 pack stations removes the items and provides a 100% QC check while packing the items into a cardboard shipping container. The shipping container exits the pack station module and travels to the void fill and case sealing zone.

From here, all cartons are scanned and conveyed across the automatic in-line weigh scale to determine shipping cost and perform quality checks. Finally, a sorter diverts each carton to a shipping door and then loaded into truck trailers.

The zone route conveyor network also provides the reverse logistics method to bring received items back to the pick face. Received items are scanned and placed into a special green colored tote. The green tote travels only to the zones where the SKU is located. The operator in the zone places the SKU into the front of the pick face.

The Results

With the use of the engineered order fulfillment system, "perfect order" performance has increased while achieving operational efficiency and overall process improvement. By routing each order only to zones with picks, order processing time is significantly reduced.

The order picking staff remains in a small geographic zone; this minimizes travel time to each pick face, thereby increasing worker productivity. Integrated QC methods ensure 99.95% accuracy. Orders received by 5:30 pm ship same day.

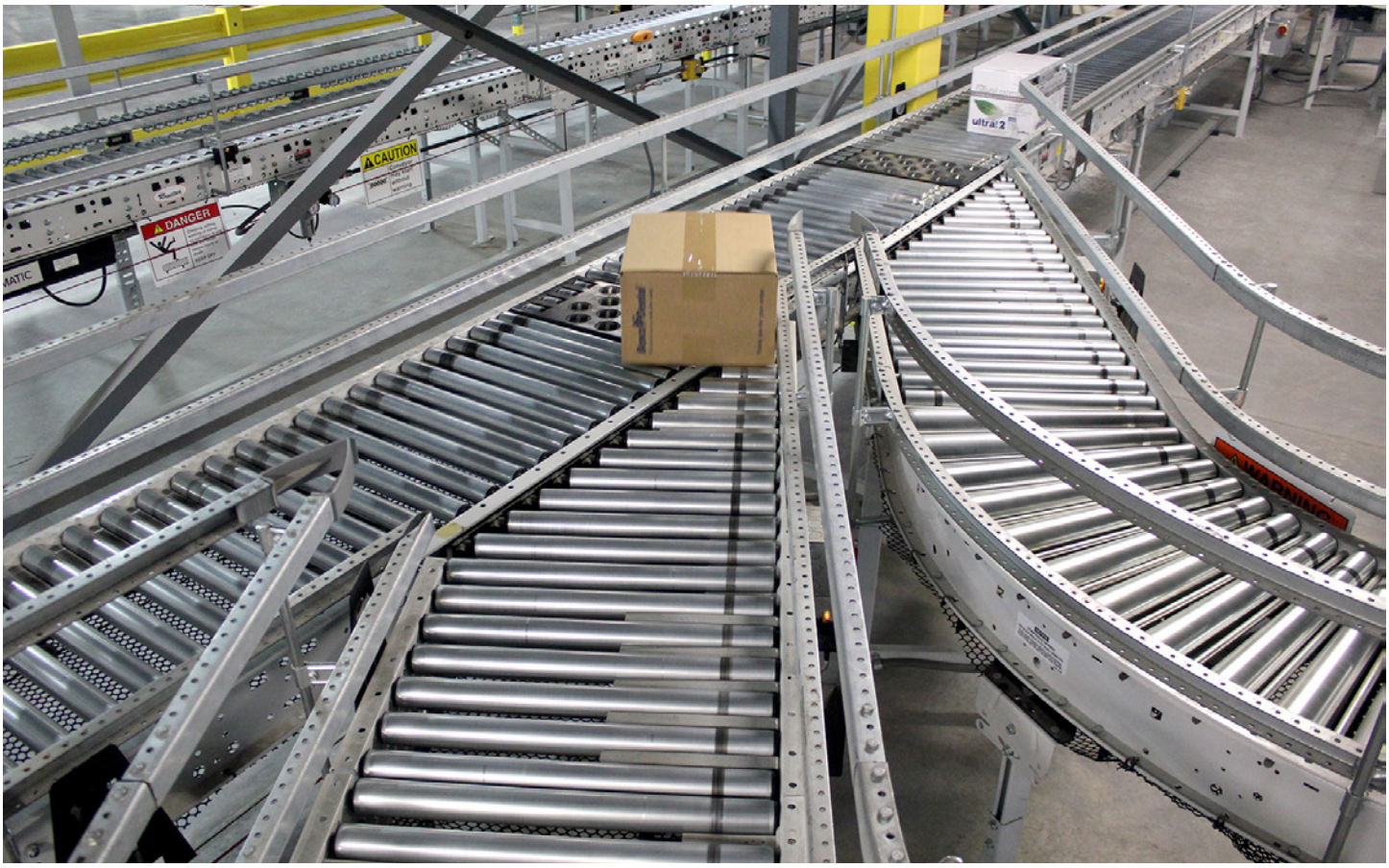
Automation such as the in-line weigh scale reduces labor requirements and order processing time. The order fulfillment system is engineered for dual functionality: order picking and returns processing since the zone route conveyor network delivers returned items back to the pick face in the warehouse.

Green totes are used for re-stocking.

Void fill is added prior to case sealing.

Order cartons are weighed “on-the-fly” prior to shipping.

The steerable wheel sorter diverts order cartons prior to case sealing.



Order cartons are sorted to the appropriate shipping door.

DEMATIC

dematic.com

Order-No. NA_CS-1129 | Printed in USA 08/18