



# BHFO handles double-digit growth

High-fashion, e-commerce company automated fulfillment to meet the next-day shipping challenge.

By Bob Trebilcock, Executive Editor

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-commerce is changing the dynamics of retail: To compete with the instant gratification of brick-and-mortar retail, e-commerce sites are pushing the envelope on order cycle times to get product into the hands of customers faster than ever.

That push is also changing the economics of automation in e-commerce order fulfillment and distribution. Where automation was once only via-

ble when sales reached a certain dollar and volume threshold, even smaller pure play e-commerce retailers are embracing high levels of automation to get orders out the door—and creating a new market for the industry.

This was the case at BHFO.com, a fast-growing 12-year-old e-commerce site based in Cedar Rapids, Iowa, with about \$30 million in annual sales. BHFO features top designer brands

of clothing, shoes and accessories at bargain prices on its Web site—the FO stands for factory outlet. The retailer ships around the globe from its 250,000-square-foot headquarters, which includes 200,000 square feet of warehouse space. With double-digit growth, BHFO's biggest challenge in recent years was getting orders out the door fast enough to meet customer service expectations. That's where auto-

Matt Wade, chief operating officer (left), and co-founder, Jon Sefton, oversaw the implementation of an automated goods-to-person picking solution in BHFO's Iowa DC.



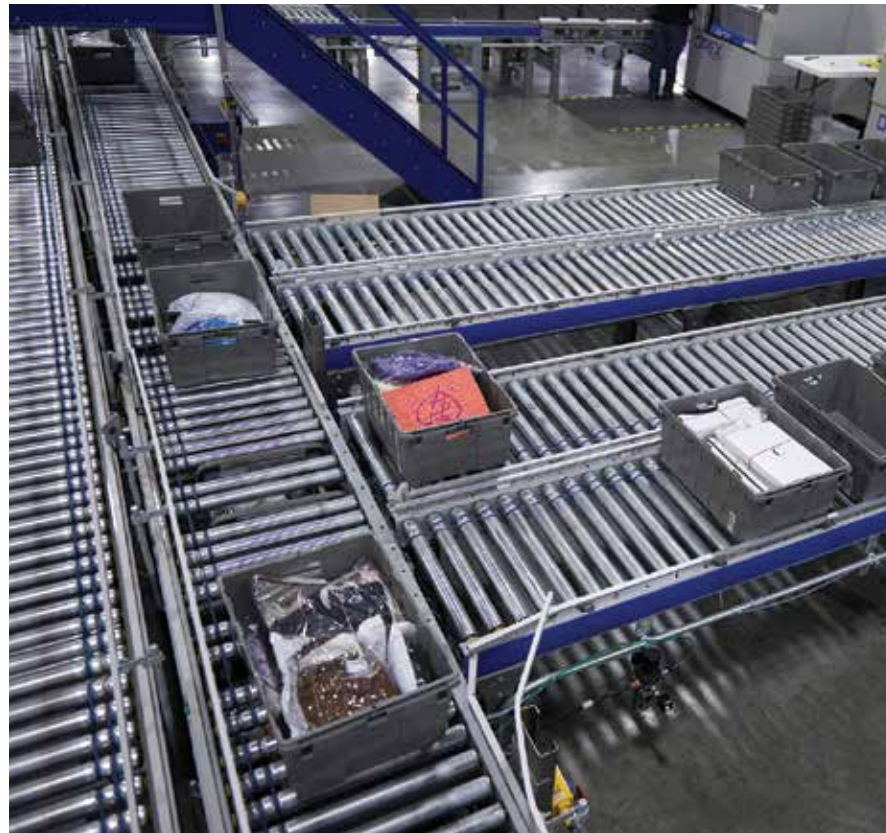
mation came into play. Working with a systems integrator (Bastian Solutions, bastiansolutions.com), BHFO implemented a goods-to-person order fulfillment and picking solution (OPEX, opex.com) that uses mobile robots to store and retrieve items about to be picked in a compact, high-density stor-

age system that takes full advantage of the building's 36-foot ceilings. The totes are then delivered to light-directed, goods-to-person picking stations.

The system has four putaway and picking lanes, and each lane is serviced by five mobile robots inside the storage area. In all, the system can hold



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After leaving the picking station, totes are routed by conveyor to the packing area, where they are prepared for shipment within one day of payment.

163,000 items at a time and process nearly 2,000 orders a day in roughly 20,000 square feet of space. And, in keeping with its cutting edge approach, BHFO is using iPods instead of conventional mobile computers on the warehouse floor.

Since going live in March 2014, COO Matt Wade says the site has seen accuracy rates rise to the high 90th percentile and a 30% decrease in the staff dedicated to fulfillment in its former manual system. More importantly, BHFO has seen a significant improvement in its cycle times and order fulfillment rates. “Prior to automating, most domestic orders shipped within two business days from the time of payment,” says Wade. “Now, we’re getting 95% of our domestic orders shipped within one day of payment.”

**Explosive growth**

You probably don’t think of Cedar Rapids as a hot bed of retail innovation, but that’s where Jon and Stacie Sefton

launched BHFO from their basement back in 2003. The B and H are the initials of their daughters.

From day one, the company focused on selling high-end clothing at factory outlet prices, beginning with a partnership to help a well-known lingerie company liquidate its shelf pulls and returns. The site was hosted on eBay, where items were sold through an auction model. Eighteen months later, the company had outgrown the basement and moved into a commercial warehouse.

Since then, BHFO has continued to add brands, product sources and employees to fuel significant growth—the target for 2015 is 50% growth in sales to \$45 million, Wade says. “We are expanding our vendor partnerships and try to bring 6,000 new products to the marketplace on a daily basis,” Wade adds.

In addition to the auction site on eBay, BHFO is now working to expand its catalog to Amazon customers. BHFO is also available on Australia’s TradeMe and the company is in nego-

tiations to go live on MercadoLibre, an online marketplace serving South America.

After leaving the basement, there were several moves, including 100,000 square feet of distribution space spread across two buildings. By 2013, even that was not enough; BHFO was relying on commercial warehousing to prepare and stage pallets for processing before they were transferred to the main space. “We were inefficient because of the manual picking and handling and had the added expense of outside warehousing and transportation,” Wade says. What’s more, it took two days to process most orders.

“In e-commerce, you have to get domestic orders out within one day of payment if you want to be competitive and keep your customers happy,” Wade says. “Knowing the marketplace and how we wanted to grow, Jon and Stacie believed we had to automate to grow.”

**Goods-to-person system**

The search for an automated solution began in 2012. The goal was to implement a goods-to-person system to cut down on travel time in the warehouse and rev up cycle times. BHFO initially looked at a number of automated systems, including mobile robots. The company was analyzing the return on investment of one solution in particular when Jon Sefton learned about an alternative solution at a business conference.

That led to discussions with a systems integrator about alternatives, including horizontal carousels. Ultimately, they chose the solution in place for several reasons. For starters, by using the whole cube of the building, the order fulfillment system occupies 20,000 square feet of the 200,000-square-foot warehouse. That leaves plenty of room for processing as



In the packing area, associates wrap and pack items for shipping.

of the building,” Wade says. “Once we saw it in operation, and analyzed how it would work with our operation, we knew it was a good fit.”

As designed, the system has four 80-foot lanes and four pick stations—one on each lane. Depending on order volume, picking can be handled by four operators, or two operators picking from two lanes at once. Inside the high-density storage and sequencing system, five mobile robots manage put-away and retrieval in each lane. The system was originally designed to handle 150,000 items but has since been expanded to 163,000 items to accommodate the growth in categories and SKUs. Since the system is modular, it can be expanded in the future to handle BHFO’s growth. Or, alternatively,

well as handling space for apparel that needs to be hung rather than folded and placed into a tote.

“The ceilings in our new facility are 36 feet tall, and this solution would allow us to take advantage of the cube

BHFO could add more units if needed.

Picking at the goods-to-person workstations is designed to ensure order accuracy. A touchscreen displays a picture and the lot ID of the item to be picked. Pick-to-light identifies the right order tote on the conveyor as well as the right storage cell in the storage totes. Finally, order selectors scan each item to verify the pick. “The system won’t let us pick the wrong item,” says Wade.

The design of a new corporate headquarters and the implementation of an automated picking system coincided with the implementation of a new retail enterprise resource planning (ERP) system, including order and warehouse management to drive more efficiency.

Operations are relatively straight forward. With a 90% average sell-through rate, the facility is designed to process newly received products for sale online and then move through the building quickly and effi-



Storage containers are delivered by mobile robots to a goods-to-person picking station. There, light-directed picking tells associates what items to pick for each outbound tote.

ciently. Storage is at a minimum: In the receiving area, new merchandise is staged, processed to be displayed online and then bagged and labeled for shipping.

From there, product is inducted into the order fulfillment system; items that are too big to be handled by the mobile robots are hung on piping in the warehouse space or stored on shelving. The exception is a growing category of fixed-price items that are stored in pallet rack. Because those items are not sold in the auction model, they may remain in the

facility for a longer time period.

Order picking and packing of the previous day's orders begins each morning. That way, the bulk of domestic orders are shipped within one day of confirmation of payment.

According to Wade, the system went live in March of 2014 and included two months of testing. After nearly a year working with the system, BHFO has seen accuracy consistently in the high 90th percentile; cycle times have improved; and the number of associates dedicated to fulfillment has decreased by 30%. Those associ-

ates have moved into other areas of the operation, including sales and customer service.

More importantly, BHFO's fulfillment operations can accommodate the company's continued growth and drive for customer satisfaction. "It's easy to scale the system: We can make rows longer, add rows, add pick stations or add more mobile robots," he says. "What's more, in the online world a happy customer is a repeat customer. Getting orders out the door more quickly is driving customer satisfaction." □

## Mobile robots and goods-to-person picking power order fulfillment at BHFO

The compact system processes nearly 2,000 orders a day in 20,000 square feet.

Like many pure e-commerce plays, especially those with an auction or flash sale model, BHFO's 200,000-square-foot distribution center is designed with fulfillment in mind. The facility features very little long-term storage space. Instead, the heart of the facility is the goods-to-person order fulfillment system, which features a high-density storage system that relies on mobile robots to receive, store, retrieve and deliver featured items to four picking stations.

**Receiving:** Product is manually unloaded, palletized and staged in the shipping and receiving area (1).

**Processing:** In the processing and staging area (2), cartons are unpacked and the items are hung or put on a cart. The items are then scanned if they have a bar code; otherwise, production identification is manually keyed into the system. That generates product descriptions for the Web site. Items that are new to BHFO are sent to photography where they are photographed on a light

table, a mannequin or, in the case of products that will be sold on Amazon, on a model. Once items have been received into the system, they are delivered to a stocking team. Items are folded, bagged for shipment in an auto bagging system, and labeled with a printed bar code label. Most items are then placed into totes. Items that are too big for the order fulfillment system are sent into the warehouse, where they are put away on shelving (3) or hung on piping (4).

**Putaway into the order fulfillment system:** Now that items have been folded and bagged, totes are placed onto the conveyor system (5). Following an automatic scan, the totes are directed to a goods-to-person picking/putaway stations (6) on one of the four lanes. At the station, a photo of the item in the tote appears on a touchscreen along with an ID number. An associate scans a bar code label to

verify that the right product was in the conveyor tote. A light then identifies the right cell for that item in a permanent tote used by the order fulfillment system (7). Once all of the items are in the tote, it is put away by one of five mobile robots serving each lane. Replenishment items relist on the Web site automatically. Brand new items are scheduled for sale.

**Order fulfillment:** New orders are processed in the morning when a fulfillment manager creates a wave of orders that will be filled from the order fulfillment system (7) or, in the case of oversized items, from the warehouse (3).

### BHFO Cedar Rapids, Iowa

**SIZE:** 250,000 square feet, including 200,000 square feet of warehouse space

**PRODUCTS:** Designer clothing, shoes and accessories  
**SKUs:** Varies but approximately 6,000 new items run through the facility per day

**THROUGHPUT:** 1,800 orders/5,000 items per day

**EMPLOYEES:** 180 employees and temps

**SHIFTS PER DAY/DAYS PER WEEK:** 1 shift, 5 days per week (Monday through Saturday with one day off during the week); 2nd shift (Sunday through Thursday)

### System Suppliers

**SYSTEM INTEGRATOR, WAREHOUSE CONTROL SYSTEM AND CONVEYOR:**

Bastian Solutions, [bastiansolutions.com](http://bastiansolutions.com)

**GOODS-TO-PERSON FULFILLMENT SYSTEM:** OPEX Corp., [opex.com](http://opex.com)

**WAREHOUSE MANAGEMENT SYSTEM:** RetailOps, [retailops.com](http://retailops.com)

**MOBILE COMPUTING:** Apple (iPods), [apple.com](http://apple.com)

**BAR CODE SCANNING:** Infinite Peripherals, [ipcprint.com](http://ipcprint.com)

**BAR CODE SOFTWARE:** Seagull Scientific, [seagullscientific.com](http://seagullscientific.com)

**LIFT TRUCKS:** Crown Equipment Corp., [crown.com](http://crown.com); Toyota Industrial Equipment, [toyotaforklift.com](http://toyotaforklift.com)

**AUTO BAGGING EQUIPMENT:** Sharp Packaging Systems, [sharppackaging.com](http://sharppackaging.com)

Empty order totes are then inducted onto the conveyor system (5). When they pass by an automatic scanner, each tote is associated with an order and routed to a goods-to-person station (6) on one of the lanes. Meanwhile, mobile robots retrieve totes from storage and place them on a takeaway conveyor to be delivered to the goods-to-

person station (6). When the fulfillment tote arrives, a picture of the item to be picked appears on the order selector's screen. The selector scans the bar code label on the item for verification; if it's the right item, a light indicates which order tote is designated for that item. Once all the items from that lane are in the tote, it is either routed to another

lane for more items, or, once the last item is in the order tote, it is conveyed (5) to a pack station (8).

**Packing and shipping:** At the pack station (8), the operator scans the license plate bar code on the tote. The customer's order, along with pictures of the items for that order, is displayed on the operator's screen. The operator scans the items for the order into a shipping container. Once all items are in the container, it is weighed, and a shipping label is applied. Packages ready for shipment are then put on a cart that is wheeled to the processing and staging area (2), where cartons are manually sorted into carriers at shipping and receiving (1) for parcel delivery.

To see a video of the order fulfillment system in operation, visit: [bhfo.com/pages/about-us](http://bhfo.com/pages/about-us). □

