

Case Study



American Eagle Outfitters
Kansas, USA

New DC Stands as a Model for Combined Retail and Direct-to-Consumer Distribution

Supported by a seamless flow of state-of-the-art sortation, conveying and picking solutions by Dematic Corp., American Eagle Outfitters' new Ottawa, Kansas 552,000-square-foot multi-use distribution center is capable of moving 25,000 SKUs and up to 300,000 items daily to meet the distribution needs of its three apparel business divisions operating under one roof.

American Eagle Outfitters - based in Warrendale, PA with annual sales exceeding \$2.7 billion - designs, markets and sells its own brand of laidback clothing, targeting 15 to 25 year-olds. AE's collection includes standards like jeans and graphic T-shirts, as well as accessories, outerwear, footwear, basics and swimwear.

The challenge

Within the fast moving apparel industry it is critical to keep product offerings in sync with seasonal demands and continually shifting fashion trends. This poses unique challenges for those designing and operating distribution centers, particularly when multiple product lines are being distributed to diverse audiences. Such is the case with American Eagle Outfitters' (AE) new distribution center that commenced operation in Ottawa, Kansas in May, 2007.

The solution

With logistics partners Dematic Corp., and Vargo Integrated Systems, AE designed and implemented a super-streamlined, state-of-the-art automated facility to handle all distribution lines within one operating system. At 552,000 square feet - and expandable to 720,000 - the new DC stands as a model showcase for optimized efficiency in combined retail and direct-to-consumer distribution. Vargo conducted an analysis of American Eagle's needs and provided recommendations for the operational system design and the equipment

needed. Dematic then designed, built and installed the sortation, conveying and picking systems.

Designing a Multi-Use DC

"We spent a lot of time going around the country looking at distribution centers in the beginning," says Michael Fostyk, Senior Vice President of Logistics for American Eagle Outfitters. "We toured some of the best facilities for e-commerce, for example, and inspected many material handling applications. We wanted to acquire a very comprehensive understanding of the resources available so we could really design an outstanding DC to fit our requirements."

"Dematic was selected because they have designed, installed and serviced 95 percent of our material handling equipment in all three of our DCs. We were pleased with the work Dematic had performed for us, the quality of the company's equipment and the reliability of its service."

Michael Fostyk, Senior Vice President of Logistics,
American Eagle Outfitters

The solution was designed to incorporate a number of material handling procedures for both retail and direct-to-consumer product handling, including cross-docking, full-case shipping, break-cases, and warehouse storage. The Ottawa DC is a highly automated, very computerized system, with cutting-edge WMS and a total of thirty computer servers for running just the DC operation.

Floor Sets & Store Replenishment

Approximately 70 percent of AE' product is handled as flow-through, the remainder is warehoused and then picked to supply their e-commerce business and to replenish the retail stores. The majority of AE's retail store product comes in as floor sets, where brand new merchandise will be brought in, about to debut in the stores, in a variety of sizes, designs and colors. A floor set may consist of a seasonal package, or a sweater package or jeans package.

Before any shipments actually arrive at the warehouse, AE receives an advanced shipping notice (ASN) detailing all cases in the shipment. With floor sets, these shipments are designated for specific retail stores, and are cross-docked directly to shipping. Floor sets for all of its stores are received at their DC and cross-docked, and can be shipped out within an hour.

The Voice Picking system will instruct the pickers to retrieve four pallets from bulk reserve, and those pallets are then taken to the put zone.

High-Speed Sortation

Aside from the flow-through to AE stores, all other product that comes into the DC is funneled through a Dematic high-speed RS 200 receiving sorter and is again funneled through a Dematic high-speed RS 200 shipping sorter when leaving the DC. But, between these two points all the product is being stored, picked and sorted in compartmentalized areas of the DC for each of the above divisions.

State-of-the-art cross-belt sorters, shoe sorters and tilt-tray sorters are used to direct product throughout the three business units, connected by seven miles of conveyor system, also designed by Dematic. Using this set up,

the Ottawa DC can handle over 25,000 product SKUs running seamlessly at up to 300,000 items a day, on two shifts, through this system.

With the AE direct business, there is also an additional software optimization system in place which coordinates the picking process with the sortation chute assignments to maximize the timing of the conveyor, effectively ensuring that all pieces of an order arrive in close time proximity to be packed.

"AE believes in maintaining minimal inventory, keeping their products flowing through the system and out," says Tom Main, Vice President of Sales for Vargo. "We know we have to turn every complete shipping chute that has an order in it every six minutes. We have to have ten orders an hour going out of every one of those chutes to meet American Eagle's peak demand. So, we had to design the system to ensure that every piece to an order arrives at a converge point to be packed within one minute of each other. Considering there could be thousands of order items in the system at a given time period, this is quite a smooth operation."

Picking & Automated Zone Routing

Dematic also designed and integrated state-of-the-art picking technology into the DC, incorporating multiple picking technologies and automated pick zone routing. The AE direct section can handle roughly 25,000 SKUs of total inventory. This unit has two pick modules, each 420 feet long and four levels high, using an optimization picking program developed by Dematic.

"The picking areas are set up separately for each of the business units," says Main. "Multiple systems are being used including pick-to-light, pick-to-voice and hand-held RF. Each of the business units has multi-level, rack-supported pick modules, 600 feet in length. Each module has a conveyor going down the middle - some have pallets flow-feeding them, and some have parts flow-feeding. Up to 6,200 items can be picked per hour."

With the Dematic pick-to-light system, the operator scans a bar-coded address label attached to a product, carton or tote box. Digital displays located in front of each pick bin tell the

operator which SKUs to pick and how many. By providing eyes-free, hands-free operation, voice-pick workers are able to hear instructions without having to look down at a hand-held computer screen display or fumble with a pack of picking labels.

The picking modules are supplied by an empty-tote sorter which sorts the totes to supply the picking personnel. There is also a full-tote distribution system which takes the totes to the induction system.

Waveless Picking

For its direct business, AE is using waveless picking - a solution to the stopping and starting when picking by waves. When a new order comes in, if it is designated to have priority over something that is already in the system, it puts a picking priority tote in front of those with less priority.

"Basically, with standard waving, people will order goods up to a cut-off point, a certain time," says Fostyk. "A DC will queue up at a certain point in time, and maybe there are now a thousand orders that need to be picked, and they need to be shipped by a certain time of the day. The wave handles those orders."

"With the waveless picking system, orders are coming in real-time, they are jumping into this queue, and they are prioritized based on how they are to be shipped," Fostyk explains. "So you may start picking product at 8:00 in the morning. If a customer orders at 10:00 a.m. for the next day, then delivery of that order is prioritized and moved into the front, software-wise, to the people that are picking. In the past, our pickers would start in the beginning of a row and work their way down the row - if another order came on that had priority then they would have to go back to pick that product and get it down to the packing station. That is now all done smoothly and seamlessly."

Customer benefits

→ Capable of moving 25,000 SKUs and up to 300,000 items daily

→ Meet the distribution needs of its three apparel business divisions operating under one roof

→ A highly automated, very computerized system, with cutting-edge WMS