BSN SPORTS:

In a league of its own

By Bob Trebilcock,
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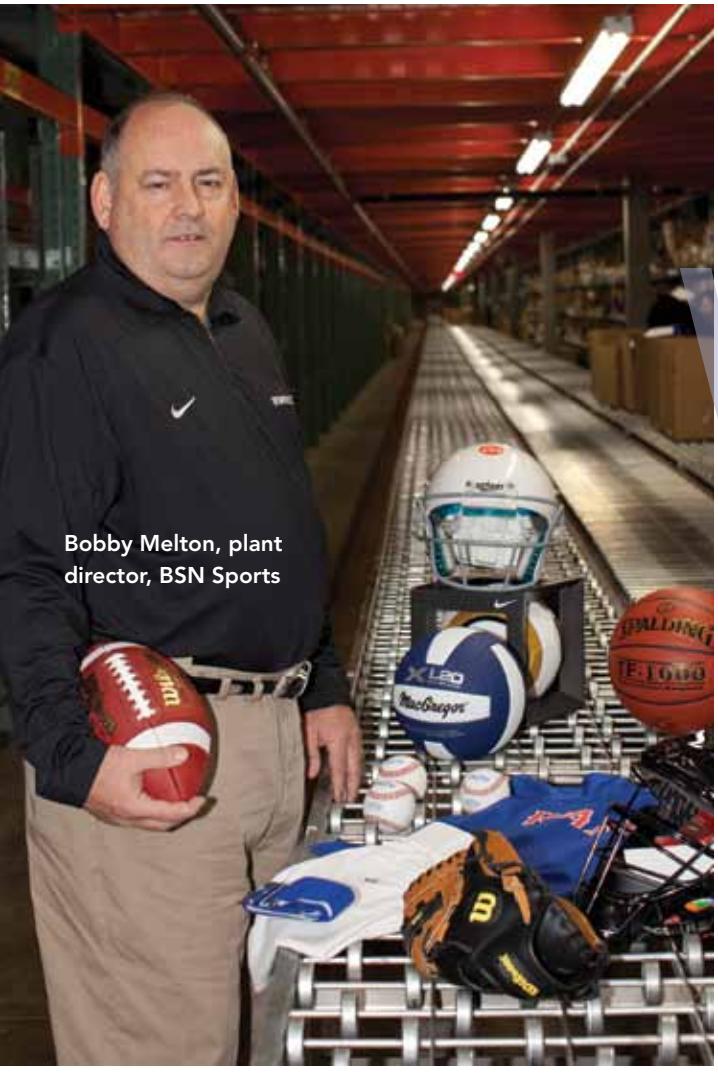


Bobby Melton, plant director, BSN Sports

Following a retrofit of its DC, BSN Sports has achieved new levels of productivity and space utilization.

What do you do if you have run out of space in your existing distribution center, but can't quite justify the cost of a new DC?

That question confronted BSN Sports in June 2010. A manufacturer and distributor of sporting goods apparel and equipment to schools and institutions, BSN had outgrown its facilities in the Dallas suburb of Farmers Branch.

"Space was at a premium," says Bobby Melton, BSN's plant director. "We had brought in so many new products that we had 1,200 SKUs in makeshift pick faces in our reserve storage area." What's more, LTL orders waiting to be shipped often ended up in picking aisles.

Rather than build a new DC, BSN worked with a systems integrator (TranSystems, transystems.com) to retrofit an existing 187,000-square-foot distribution center—one of two DCs located across the street from one another. The other, a 95,600-square-foot facility, supports manufacturing and fulfillment operations for large and bulky products such as bleachers, weight benches and soccer goals. After the retrofit, the facility features:

- 8,000 pick slots for some 8,000 SKUs;
- very narrow aisle (VNA) storage with single-deep rack for 8,500 pallets;
- a three-level pick module with 5,580 pick slots featuring shelving, carton and pallet flow rack;

At the heart of BSN's system are new pick modules that expanded BSN's order fulfullment processes (bottom left) and set the stage for future growth.

Photos by Jeffrey Sauger/Getty Images

• a three-level carton flow rack pick module with 4,230 pick slots;

• a five-level pallet flow rack with 142 pick slots; and

• a non-conveyable pick line with 1,008 pick slots.

What the facility doesn't include is a lot of automation. Instead, it is an example of what solid improvements can be gained by reconfiguring the layout of a conventional warehouse with limited automation.

BSN Sports does have a warehouse management system (WMS) to manage inventory and create pick tickets. A conveyor line routes totes through picking modules and the packing and shipping areas. However, orders are still picked from paper tickets. Gains of productivity and space came from adding levels to existing pick modules, expanding the existing conveyor line, relocating and reconfiguring pack stations, and reconfiguring the shipping area, including:

• an increase in pick locations by 52%, with a 27% increase in one picking line and 110% in a second picking line, and

• an increase in throughput of 30% in the packing area.

"We shipped 744,000 packages in 2010 before the retrofit," says Melton. "In 2011, we shipped 855,000 packages. Our only increase in labor was related to some new prod-

ucts we added to the mix." As a bonus, Melton says he still has 1,200 to 1,800 pick faces available for future growth.

Dealing with constraints

While BSN Sports may not be a household name, it is the nation's largest sporting goods distributor to schools and sports leagues. Founded in 1972 as the Sport Supply Group, the company distributes more than 50,000 products to 125,000 institutional and team-sports enthusiasts through multiple sales channels, including a direct sales force, catalogs and the Internet.

The company boasts more than $300 million in sales and 900 employees. BSN Sports manufactures its own line of bleachers, backstops and soccer goals; offers a suite of proprietary, factory-direct brands such as MacGregor, Voit, Alumagoal, Champion Barbell and PORTaPiT track and field; and distributes branded equipment and team apparel from Nike, Rawlings, Wilson and Under Armour.

In the spring of 2010, order fulfillment processes were slowing as the company wrestled with growth. Not only were 1,200 SKUs being picked from a makeshift pick zone in the reserve storage area, those items weren't being managed by the WMS. Instead, orders for those products were planned offline and picked manually. Since the orders weren't being planned by the WMS, they didn't go through the box-picking logic that packs the most number of items in the least number of shipping containers.

The result was orders were slow, cumbersome to pick, and expensive to ship. "Because it was taking too long to pick orders, we were delivering late to our customers," says Melton.

Initially, BSN Sports investigated building a new DC in the Dallas area. However, that idea proved too expensive. "After talking to our consultant, we decided not to build a new facility and instead spend less money," Melton says.

BSN Sports set out several goals for its new design:

- It should integrate the 1,200 SKUs that were located in the makeshift area into the existing pick zones so those products and any new SKUs could be managed by the WMS.
- It should increase pick, storage and throughput capacity to accommodate present needs and future growth plans.
- It should use existing equipment to maximum potential.
- The project should be completed under a tight schedule of less than six months from concept design to go-live.
- Most importantly, it should be completed within a budget of $1 million to $1.5 million—far less than the cost of a new DC.

Re-imagining existing processes

Since one of the goals was to use existing equipment, many of the most important changes involved a re-imagination of existing processes, says Melton.

"We had an existing single-level pick module that we totally dismantled and

Once built, pallets are stretchwrapped and then staged for shipping.

rebuilt as a three-story module," says Melton. "That gave us an additional 1,800 pick faces on each level."

As part of the conversion, the first and second levels of the mezzanine were built immediately along with the support system for the third level. Shelving was installed on one side of the first level and carton flow rack on the other side.

The second level consisted of carton flow rack on one side and pallet flow rack on the other. Along with the existing floor-level conveyor, a second level powered center take-away conveyor was added. That conveyor system was connected to the original system.

Those changes absorbed the 1,200 SKUs in the makeshift area and provided an additional 2,400 pick faces for future growth. In fact, during the first phase of the project, BSN only built out the second level, but within a few months decided to add the third level. "It's now half full," Melton says.

A second important reconfiguration took place in the packing area. Prior to the retrofit, there were 10 packing stations, all on the floor. There was limited space for accumulation conveyor and staging for outbound orders. In addition, after packing, associates had to pick up and place an outbound carton on a scale and then manually place it back onto the outbound conveyor line.

In the new configuration, BSN Sports installed another three-level mezzanine in the packing and shipping area. That relocated pack stations onto the mezzanine. The top level receives incoming totes from the picking modules. The middle level receives cases, and empty totes are returned on the first floor.

Elevating the packing operations increased the room for additional accumulation conveyor and staging. In addition, cases slide from the packing area onto a scale and then are automatically conveyed to shipping. And, associates no longer have to pick up cases. "We've created a safer work environment because our packers are away from lift truck traffic," says Melton. "We're also able to stage all our orders in the shipping area, including LTL orders. In the past, we might have orders in aisles because we didn't have room."

Toward sustainable distribution

Safety and efficiency were important. But, creating a more sustainable distribution center was also important. "We have a few customers who won't do business with us unless we can demonstrate that we're green in our business," says Melton. They focused on three key areas:

Lighting: BSN Sports replaced a 15-year-old lighting system with energy efficient fluorescent bulbs that are delivering more foot candles of lighting with fewer lights in the affected areas. "It has improved the working environment for associates and has cut back on our utility costs," says Melton.

Transport packaging: BSN Sports replaced paper packaging and peanuts with a machine that produces biodegradable and recyclable air pillows. "The machine is located above the pack station and the material is on rolls," says Melton. "Our associates just have to reach up and grab what they need for void fill." Better protection from the new packaging has resulted in fewer freight claims.

Recycling: BSN Sports has been recycling trash since the facility originally opened in 1995. "A pallet management company takes our pallets and our waste management company takes our trash, corrugated and plastics," says Melton. "At this point, we are no longer paying to have our trash hauled away, and on occasion, we even get money back."

Two years since the new project went live, Melton declares it a success. "Since the project ended, we have increased our revenue while reducing warehousing as a percentage of revenue," he says. "We're getting more productivity, throughput and storage out of the facility with room to grow."

After they have been picked, cartons and eaches are conveyed from a mezzanine to the packing area where they are prepared for shipping.

Designing the play

BSN Sports realizes solid improvements by reconfiguring the layout of a conventional warehouse with limited automation.

BSN Sports
Farmers Branch, Texas

SIZE: 187,000 square feet
PRODUCTS HANDLED: Sporting goods
STOCK KEEPING UNITS: 8,000
THROUGHPUT: 855,000 packages per year
EMPLOYEES: 65 to 85
SHIFTS/DAYS: 1 shift/5 days per week

BSN Sports' new layout streamlined order fulfillment processes, allowing the sporting goods manufacturer and distributor to expand business within an existing facility with conventional warehousing processes.

Receiving: BSN Sports receives (1) imported and domestically manufactured product.

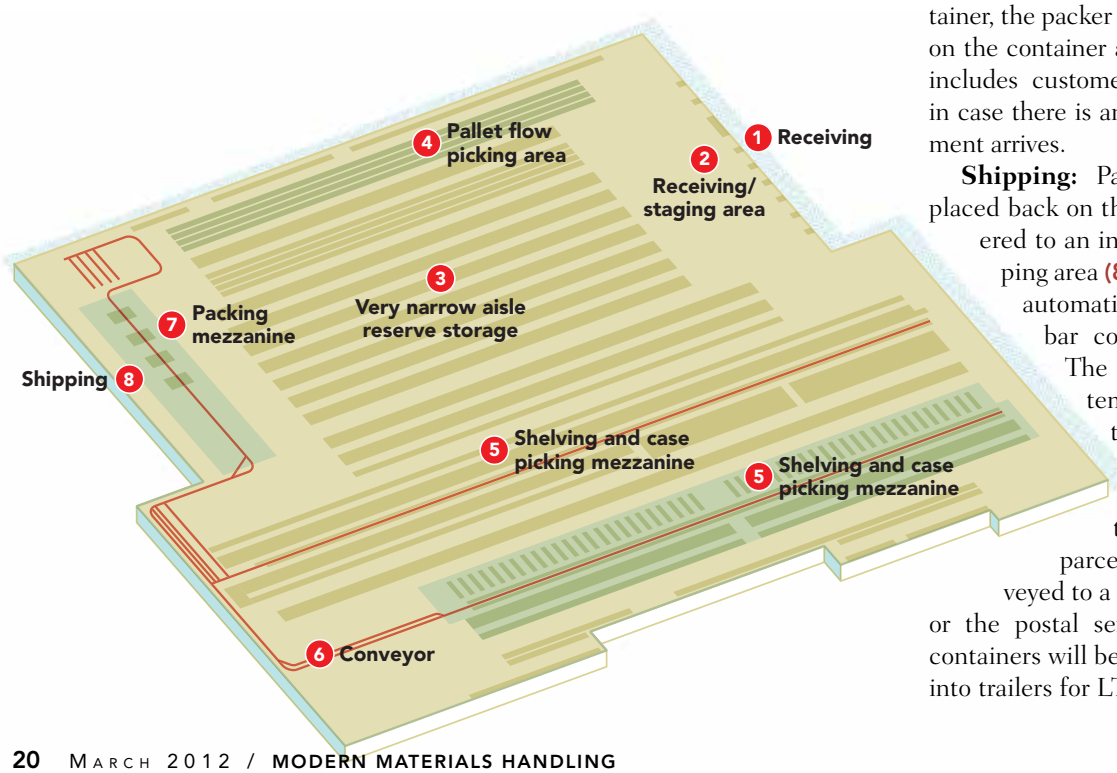
For imported products, the warehouse management system (WMS) receives an ASN and generates a packing slip for each container of imported product. Items are manually unloaded in the receiving area (2) to a pallet. Once a pallet is verified against the packing slip, the WMS generates a pallet ticket that includes the product code, the quantity on the pallet, the time it was received and a putaway location in the storage area. Pallets are staged (2) for putaway.

For domestic products, receipts may be floor-loaded or palletized deliveries, which will determine whether the product is manually unloaded or unloaded by a lift truck. As with an imported receipt, the shipment is verified against a packing slip before the WMS generates a pallet ticket. Pallets are staged (2) for putaway.

Putaway: Staged pallets are delivered by lift truck or pallet jack to a drop off location for the very narrow aisle (VNA) reserve storage area (3). They are put away into storage by an operator on a VNA lift truck.

Replenishment: In addition to dropping off pallets for putaway, lift truck operators will pick up pallets from reserve storage (2) to restock picking areas (4, 5) before a wave of orders.

Picking: Orders are picked from one of several picking areas. Pallet flow racks (4) are used for high moving items; gravity flow rack and shelving are is used for other pick areas (5). Pick tickets are distributed to order selectors on each level of the picking mezzanine (5). To initiate an order, a label from the pick ticket is placed on a tote. The order selector picks the items in that zone, places the ticket in the tote and then pushes it onto a takeaway conveyor. If that completes the order, the tote goes directly to a quality control area. Otherwise, it is conveyed to the next picking zone on that level or one of the other mezzanine levels until the order is complete. At that point, it will be pushed onto the takeaway conveyor (6) and delivered to the quality control area, where it is inspected for completeness.



Packing: Once an order has been inspected, it is conveyed to the packing mezzanine (7). The packer chooses a shipping container based on information located on the pick ticket. Once items are packed in the shipping container, the packer places a bar code label on the container along with a label that includes customer service information in case there is an issue when the shipment arrives.

Shipping: Packed containers are placed back on the conveyor and delivered to an inline scale in the shipping area (8). There, the carton is automatically weighed and the bar code label is scanned. The parcel shipping system uses that information to create a shipping label that is applied to the container. Containers for parcel shipment are conveyed to a shipping area for UPS or the postal service. The remaining containers will be palletized and loaded into trailers for LTL shipments. □