

BD goes big on green

The medical technology giant's new 720,000-square-foot hyper-sustainable DC has ushered in a 9 percent improvement in two-day service times along with subsequent reductions in transportation and facility costs.

BY MAIDA NAPOLITANO, CONTRIBUTING EDITOR

From the sale of its first glass syringe in 1897 for \$2.50, Becton Dickinson and Company (BD) has grown to become a global medical technology powerhouse with sales of over \$7 billion in 2010.

For over a century, BD has stood by its commitment to “helping all people live healthy lives” by innovating, producing, and distributing a broad range of medical devices, equipment, and supplies to its many customers including hospitals and clinics, laboratories, pharmaceutical companies, government agencies, physician’s offices, and pharmacies here and abroad.

In everything it does, this New Jersey-based manufacturer is steadfast in providing the highest standards of excellence—particularly when it comes to its supply chain. In 2011, Gartner Research ranked BD’s supply chain third in its Healthcare Supply Chain’s Top 25, recognizing it as one that achieves “supply chain excellence and supports high-quality patient care at optimal economic cost.”

At the core of this supply chain is a three-distribution center (DC) network that primarily supports BD’s Medical segments along with portions of its Diagnostics and Biosciences segments. Last November, to further strengthen this network, the company opened a new 720,000-square-foot facility in Four Oaks, N.C. After only a few months up and

running, the facility has already garnered some significant certifications.

It will be the company’s first Leadership in Energy and Environmental Design (LEED) Gold certified DC—a certification developed by the U.S. Green Building Council to rate a facility’s environmental friendliness. “BD has a real drive for sustainability, and we kept that on the forefront when we planned and designed this new DC,” says Ewald Parolari, senior director for supply chain operations.

Not only is the DC green, but it’s also safe and secure in terms of moving its products around the globe. It was awarded with a Customs-Trade Partnership Against Terrorism (C-TPAT) certification from the U.S. Customs and Border Protection, that ensures a more secure and expeditious supply chain for BD’s employees, its trading partners, and customers. In addition, it successfully completed a TSA certification process that included an onsite assessment of the facility, designating it as a Certified Cargo Screening Facility (CCSF). As such, the facility is certified to do cargo screening in-house so that it’s not subject to a secondary screen at the airport.

And we haven’t even started to describe its state-of-the-art materials handling. With 50 percent of its orders comprised of full pallet picks, the DC uses the latest in lift truck



Left: Skylights use solar-powered GPS technology and mirrors to track the sun and deliver natural light, minimizing the need for conventional lighting for the office area. Top: Partial view of four acres of solar panels, estimated to reduce the site's energy consumption by 20 percent.

technology to transport pallets, while case-pick orders are picked using hands-free voice technology onto pallet jacks.

So, how did they do it? Over the next few pages we'll share how the BD team made this one-of-a-kind DC a reality.

TIME FOR A CHANGE

For years, BD had been shipping products using a three-DC network: a 600,000 square-foot facility in Swedesboro, N.J., that opened in 1991; a conventional 425,000 square-foot facility in Redlands, Calif., that opened in 2002 to handle all Far East shipments; and a 650,000 square-foot mechanized (pick-to-conveyor) facility in Plainfield,

Ind., that opened in 2007.

"The Swedesboro DC was the oldest in our network and basically had a suboptimal configuration," explains Parolari. "With 28-foot clear heights, there's room for only four levels of racking. Because of its limited height, it had a large footprint, causing material handlers to make long runs."

It was also running out of space, closing in on a 85 percent capacity threshold. "We need flexibility," adds Fernando Gonzalez, BD's manager of supply chain process improvements. "We have to be in a position to readily support acquisitions and route new products lines. And due to its age and where it was in its capacity, the Swedes-

boro DC would not have been able to adequately support that."

But what pulled the trigger on the Four Oaks facility was the fact that the Swedesboro DC's lease was about to expire. Instead of simply extending the lease, the team wanted to take a good hard look at the current network configuration in a detailed study and determine the best option moving forward.

LOCATION, LOCATION, LOCATION

In July 2008, the team began exploring multiple network scenarios. Over nine months, the network model was run with different candidate sites ranging from New Jersey to North Carolina. In the end, the study reinforced



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—Fernando Gonzalez, manager of supply chain process improvements

the three-DC network solution with a recommendation to close the Swedesboro facility and open a new East Coast DC in either North Carolina or Virginia.

A total of eight sites in the North Carolina and Virginia areas were investigated. “Because of considerable exports to Europe, we needed to have the DC close to a major port,” says Parolari. Quick accessibility to a major thoroughfare was also a critical requirement, along with reasonable real estate costs, as the new DC would need a substantial tract of land to allow for future expansion.

In early 2010, the team decided to build a new facility in a new industrial park in Four Oaks, N.C. Why a new DC in a new industrial park? “We had very specific requirements with regards to the size of the DC—ceiling heights, column spacing and building layout—along with specific temperature control requirements. In the areas where we concentrated our search, there was no available existing real estate or spec buildings that would have addressed all of these requirements,” responds Parolari.

Just to be sure that Four Oaks would be the current and the best solution, the team re-examined the network study in March 2010 using the latest sales and cost information. The second study simply re-affirmed its plan and BD broke ground in October 2010.

According to Gonzalez, installation of the new facility went flawlessly—by keeping a close eye on a 1,500-line project plan and by nipping issues in the bud before they escalated. “The pallet racks had the longest lead time,” says Gonzalez. “You’re looking at 90,000 pal-

lets worth of racking—that’s 10 million pounds of steel. We spent a lot of time upfront coordinating with the vendor to map out their timeline.” By November

Fast facts on BD’s East Coast DC

Location: Four Oaks, North Carolina

Size: 720,000 square feet

Productshandled: medical devices, supplies, instruments, laboratory equipment, and diagnostic products

SKUs: about 2,600

Throughput: 100,000 units per day (full capacity)

Shifts/Day: 2

System suppliers

Lift Trucks: Crown

Pallet Rack: Frazier

Stretch Wrapper: Beumer

Conveyor: Intelligrated

Battery Changing System: Energys

Rack Labeling: DataPower

3PL Provider/WMS: Genco ATC

Voice Technology: Vocollect

2011, BD began shipping product from the Four Oaks DC.

HOW IT WORKS

Operations within the DC are fairly conventional and are run by BD’s third party logistics partner Genco ATC. Most of the product is lot controlled with both FEFO (first-expiry, first-out) and FIFO (first-in, first-out) requirements. At receiving, inbound items are checked for accuracy and damage before being put away into racks that are six levels—or more—high within a 38-foot clear building.

“We use the latest reach trucks from Crown equipped with regenerative masts. As you’re bringing down a pallet from the rack, it’s reenergizing the lift truck’s battery,” explains Kevin Booth, BD’s director of distribution and North America transportation operations. According to Crown, this feature supports fewer battery changes, more productivity, and 12 percent more run-time for improved energy utilization. With a swipe of an operator’s key card, driver-specific requirements can also be



Employees driving fuel-efficient vehicles get some of the closest parking spots at the main entrance.

programmed to the truck. For quicker putaways and retrievals, drivers select specific rack height options that automatically position the forks to the correct height.

Full cases are picked and put onto single and double pallet jacks using voice technology by Vocollect. Completed orders are then transported to two state-of-the-art hooded Beumer wrappers. "This automatic wrapper uses a plastic film that encloses the entire pallet, so it's very secure. In fact, we've seen a decrease in damages, shortages, and missing product," says Booth.

PUSHING GREEN

Not only is the Four Oaks DC operationally high-tech, but it's also designed to reduce its environmental footprint. "The challenge was funding these design elements while still maintaining our budget and timeline," says Gonzalez. "We involved our financial team early in the design process and worked closely with them to define and then obtain the appropriate level of funding for the project."

"The cost to go green was about 8 percent of the total capital invested," adds Gonzalez.

One of the most notable sustainability initiatives is the installation of four acres of solar panels on a roof that spans 15 football fields—that's right, 15. An online dashboard can monitor the electricity generated along with onsite weather conditions. This roof-mounted photovoltaic system reduces the site's energy consumption by an estimated 20 percent.

In the main office area, the use of skylights with GPS technology and mirrors that track the sun bring high levels of natural light. Most times, the main office area operates without the need for conventional lights.

In the warehouse, all interior lights, except on the dock and main equipment aisle, are on motion sensors to reduce energy use. Exterior lights in the parking and trailer lots are also on photo sensors, reducing light pollution.

Employees with fuel-efficient vehicles are rewarded with the closest parking spots at the front of the main entrance. The facility also encourages

On securing the C-TPAT Tier III certification for the Four Oaks DC...



◀ **Kevin Booth**, *BD's director of distribution and North America transportation operations*

LM: What motivated the team to get this security clearance and certification for this facility?

Kevin Booth: The reason we sought C-TPAT certification was part of BD's commitment to supply chain security and to simply doing what is right. BD is committed to driving continuous improvement in supply chain security processes and improving site security for all BD facilities.

By participating in the C-TPAT program, BD is subject to validations of supply chain security processes by US Customs and Border Protection on a periodic basis.

As a company, BD is committed to maintaining supply chain and site security so that we can therefore provide adequate security to our associates, assets, and products and so that we can remain in compliance with our C-TPAT Tier III status. Tier III is the highest tier that can be attained by companies that participate in the program and demonstrates BD's adherence to developing and implementing "best practices" in supply chain security processes.

BD Corporate Security requires all BD sites worldwide to maintain compliance with internal reviews, audits and updates to maintain this certification.

LM: What specific properties of BD's DC makes it C-TPAT certified?

Booth: To secure our C-TPAT certification, we demonstrated a comprehensive supply chain security program using the C-TPAT security guidelines and a commitment to continuous improvement of global supply chain security. Those guidelines address Procedural Security, Physical Security, Personnel Security, Education and Training, and Access Controls.

LM: What are the benefits of this certification?

Booth:

- Improve predictability in moving goods and services across borders.
- Lower exam rate for imported products and goods.
- Participation in other countries' Customs programs is dependent upon certification in C-TPAT.
- Mutual recognition with security programs in other countries

BD has C-TPAT programs around the world; all work in conjunction with similar programs in New Zealand, Canada, Japan, Mexico, Ireland, and Singapore.

alternate transportation, such as bicycling, by offering a bicycle storage rack next to the employee entrance, as well as changing/shower rooms.

IT'S PAYING OFF

BD's newer, greener, more efficient network is expected to reap many benefits. There's already an estimated 9 percent improvement in two-day service times to customers and subsequent reductions in transportation and facility costs.

"By moving the East Coast DC a little further south, we're also able to move some states currently serviced by our Plainfield DC to the Four Oaks DC, increasing Plainfield's capacity," adds Booth.

So what's BD's secret to success? "Keep executive leadership updated so that there are no surprises," advises Parolari. "We got quick approval for the capital from our leadership because we kept them in the loop the entire time." □