

BENCHMARK BRIEFINGS

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SITE

DePuy Distribution
Bridgewater, Mass.

APPLICATION

Distribute medical devices on a just-in-time basis to hospitals; support over 500,000 surgeries per year

EQUIPMENT

Horizontal and vertical carousels, Shuttle® VLMs, FastPic® software

SUMMARY

Facility selects and distributes a large volume of high-value orders with 99.9% + order accuracy, and picking up to 625 lines per hour



Carousels and VLMs helps DePuy meet the Food & Drug Administration's Good Manufacturing Practices (GMPs), ISO certification & JIT practices.

Picking Up To 625 Lines Per Hour, Using 1 Operator Rather Than 5

Surgeons performing complex operations must be supported by a highly efficient and accurate supply chain system for medical devices. The right medical devices need to reach the right hospitals and surgeons in a timely manner or surgeries don't take place on schedule.

Horizontal and vertical carousels and Shuttle vertical lift modules (VLMs) at DePuy Inc.'s distribution center help this DC keep hospital operating rooms running as planned. The facility's shipments support over 500,000 surgeries each year.

DePuy ships medical devices on a just-in-time (JIT) basis directly to hospitals and to its sales force of individual reps, who deliver to the hospitals.

JIT speed is needed, as Dave Johnson, director of distribution, points out, because a surgeon may place an order for a medical device one day, then operate the next day at noon.

The DePuy DC turns most orders around in the same day, marked from the time of order receipt to the time of that order shipping.

Also necessary is a very high degree of order accuracy. Mistakes aren't tolerated. With the carousels and VLMs running on FastPic software, order picking accuracy exceeds 99.9%, says Johnson.

A Johnson & Johnson company

DePuy, Inc. is a major medical device manufacturer and distributor. The company operates under the Johnson & Johnson corporate umbrella. DePuy distribution serves the shipping needs of three affiliated manufacturing companies — DePuy Spine, DePuy Orthopaedics, and DePuy Mitek - as well as the Codman company. The DePuy DC also distributes devices from other suppliers as well.

DePuy distribution must achieve a high level of excellence and comply with a range of quality assurance procedures. Surgeons require a specific type and size of device for each patient. J&J internal quality control policies must be followed. The DC must pass inspections from the U.S. Food & Drug Administration. The facility also is ISO certified, explains Johnson.

The DC achieves its quality and accuracy objectives supported by a combination of automated and mechanized systems for materials handling. The facility's automated handling systems include horizontal carousels as well as VLMs. Vertical carousels and a VLM also fulfill a quality control role as well. Mechanized systems include conveyor, narrow-aisle rack, and flow rack equipment.



Up to 500 transactions a day are made from the Shuttle VLM which queues up to 2000 kits.

From a 92,000 square foot distribution center DePuy ships a variety of medical devices. Included are spine implants; surgical instruments; replacement kits for new knees, hips, elbows, and the like; and shunts for neurosurgery.

Working three shifts daily on a six-day week, this DC selects orders from a total of 14,000 active DePuy “codes,” or stock keeping units (SKUs). Each order averages five or six lines. The DC sends out an average of 2,200 domestic shipments each night. About 70% to 80% of these shipments are for overnight delivery.

Much of this daily volume is packed in small parcels. Included are many high value items. A single parcel’s value might be as high as several thousands of dollars. With per parcel values reaching as high as this, it’s important to maintain tight controls over inventory. It’s also vital to ensure a high degree of accuracy in picking, packing, and shipping.

Carousel pick accuracy tops 99.9 percent

Three horizontal carousels are grouped together at the DC. Together, they hold 3,800 SKUs. On an evening shift a single operator — assisted by the carousels’ Light Trees and software providing exact pick instructions — pulls outbound orders from this system. “Picking accuracy is well over 99.9 percent,” says Johnson. “The carousel software does all the sorting and picking for us,” he adds.

Over a period of three to four hours each night, a lone carousel operator, can pick up to 625 lines per hour. That’s, 500 orders containing 4 to 5 lines per order. Before using the horizontal carousel system, it took five operators to match this one person’s picking productivity.

During the day shift an additional 150 “emergency” orders, with three to four lines per order, will also be pulled from the horizontal carousels.

Faster moving items are staged in the carousels’ golden zone for more ergonomic picking by the operator, moreover, says Johnson.

A Shuttle VLM holds some 2,000 sets, or kits, of DePuy spine implants and surgical instruments. Orders for 150 to 250 sets will be pulled each day, and about the same number of sets will be put away in the VLM.

“Order selection from the VLM is a lot easier than going looking for these sets on shelving,” says Johnson. With the Shuttle VLM system presenting these sets at a comfortable and ergonomic working level for picking (or for put away) there’s also little fatigue for operators.

Two more vertical carousels are located in the packing and redress area. Here they perform such functions as product segregation and labeling.

Finally, automated vertical handling systems support quality control efforts. These efforts are necessary to satisfy requirements of FDA’s good manufacturing practices (GMPs) as well as to meet DePuy’s ISO certification status. All incoming items from all the J&J divisions that DePuy serves must undergo QC activities as do all items requiring sterilization before use. Two vertical carousels are used to store and retrieve the documentation necessary for these QC efforts. Another Shuttle VLM stages materials prior to inspection and keeps them separated and organized, explains Johnson.



Two vertical carousels located between mezzanine supports are used for packing and redressing.