Michaels and the Art of Supply Chain Optimization
FKI Logistex Case Studies Series
With a startling 20 percent* sustained store growth in the North American retail industry over the last three years, there is a movement afoot to rethink supply chain strategies. For Dallas-based Michaels Stores, Inc.® (NYSE:MIK), the world’s largest retailer of arts and crafts, a supply chain must do more than get the right product to the right store on time. It also needs to squeeze new levels of productivity upstream from its vendors to the downstream in-store operations to enhance customer satisfaction, meet growth goals and gain new levels of profitability.

By 2003, Michaels was achieving record growth with approximately 820 stores in North America and a planned expansion in the Midwest and Canada was on the table. With its supply chain bursting at the seams, the retail giant was rapidly outgrowing its inventory information systems and warehouse capacity. Michaels senior management called on its logistics team to develop a scalable long-term solution.

Les Gardner, Michaels vice president of logistics and distribution, notes that the company’s supply chain had become outdated. “We had four distribution centers that were completely out of capacity,” says Gardner. “We had to go back and reengineer the entire supply chain process.”

**Redesigning an Efficient, Flexible and Scalable Distribution Network**

Michaels began its redesign with a set of transportation and logistics innovations devised to cut costs, control truck loading...
and manage the routing of 35,000 core products between its suppliers, warehouses and stores. This new supply chain and inventory management plan was designed to streamline product flows to the stores and shorten order fulfillment times throughout the distribution network. Michaels understood that any new DC or material handling equipment installation would have to support the company’s long-term inventory management initiatives.

The initial steps in the new supply chain plan, beginning back in 1998, included installing new POS systems in all stores, implementing store planograms, eliminating non-core merchandise, and devising a new store opening strategy. With those building blocks in place, Michaels was ready to include its distribution centers in the supply chain evolution.

The cornerstone of the Michaels supply chain optimization plan for its DCs was a change in order fulfillment operations to complement the new transportation logistics plan. To implement the plan, Gardner and the Michaels team turned to long-time material handling solutions partners, KEOGH Consulting™ and FKI Logistex®. Together, the team set out to design and implement a distribution solution with minimum interruptions of service to its stores in an accelerated timeframe.

Tom Guschke, managing principal at KEOGH, and the Michaels team decided that improving warehouse management would first require validation of product flows and the collection of basic logistics data, such as cubing and weight.

“Michaels needed to integrate improved material handling systems that could offer real-time or near-real-time information processing about products moving through the supply chain,” says Guschke.

The second part of KEOGH’s recommendation called for Michaels to replace an outdated warehouse facility in Kentucky with a new 690,000-square-foot automated distribution center to serve the chain’s Midwestern and Canadian expansion. The optimal site for the proposed DC was in New Lenox, IL, just one hour south of Chicago. The site was chosen as a strategic location to better serve stores within a ten-hour trucking radius that went as far west as Fargo, ND and up into Canada.

The New Lenox DC would serve a secondary, future role as a centralized, slow-mover distribution hub, providing additional high-speed order fulfillment and capacity for the entire Michaels DC network. KEOGH’s recommendations also included expansions of Michaels existing Lancaster, CA and Hazleton, PA facilities.

High-Speed Fulfillment, Real-Time Order Visibility
Making life easier at the stores was a central part of the Michaels plan from the beginning, and FKI Logistex solutions played a pivotal role in making those changes a reality. To simplify in-store receiving, an order fulfillment system was designed to pick, pack and ship items by departments corresponding to store planograms.

In addition, the Michaels team expected to significantly reduce shipments directly from vendors to stores, and eliminate product-to-paper checking. All of these order fulfillment changes would dramatically reduce in-store replenishment time and cost, freeing up staff to better serve customers.
We added some advanced FKI Logistex technologies that included an upgrade to our pick-to-light and conveyor systems, new sortation scanners, and pick-and-pass transfer points for our pick modules,” says New Lenox DC general manager Rich Sanderson. “We also added quality assurance (QA) checkpoints and software upgrades to improve output. FKI Logistex engineers developed a custom application in its BOSS™ sorter controls package to allow both controlled and random QA diverts by store and zone to enable us to actively monitor our picking performance.”

The New Lenox DC uses a RedPrairie® warehouse management system (WMS) to manage and control orders and inventory replenishment. The WMS organizes order fulfillment and truck loading in a sequence that dramatically shortens store-restocking times.

An FKI Logistex EASYpick® TRAK pick-to-light and controls system manages both full and split case picking and conveyor zones to maximize efficiency and minimize the number of touches per case.

The pick-to-light system guides eight pickers at 13,100 pick locations. EASYpick receives orders from, and reports order status information to the WMS, and sends conveyor routing messages to the system’s FKI Logistex BOSS sorter controls.

Real-time feedback to the WMS indicates whether an order is complete or short. EASYpick sorts and checks order shorts (resulting from situations such as a delayed shelf replenishment) to see whether they are occurring in multiple locations. If they are, EASYpick registers an out-of-stock closure of the location, allowing associates to skip over the order pick, which provides significant time savings and order fulfillment efficiency. Whenever the WMS registers an order short, it automatically sets up a replenishment request.

Picking accuracy at the New Lenox DC now runs at 99.5 percent. “Picking by departments is so much easier; it makes for a much shorter time to restock stores and saves on labor,” says Sanderson.

The New Lenox DC also features the FKI Logistex UniSort® XV ultra-quiet high-speed sorter for outbound cartons. The UniSort XV, managed by the BOSS controls system, sorts
The automated print-and-apply system reduces inaccuracies while improving DC throughput rates.

Each carton to its designated dock door for loading into trucks headed for the stores. A saw-tooth merge, fed by eight lanes, and a custom-built automated print-and-apply system with inline scanners and human-machine interface (HMI) monitors, ensure the system’s accuracy and high-velocity throughput as a last check before inventory is loaded onto the trucks.

According to FKI Logistex senior project manager, Bob Moran, Michaels’ New Lenox DC combines the best FKI Logistex technology under one roof. “The UniSort XV with its dual omni scanners and divert confirmation software allows Michaels to accurately update their shipment database. Also, the new custom-built QA station enables flexible auditing of their pick-and-pass operations,” says Moran.

New Lenox is the first site in the country to implement an FKI Logistex Accupass™ pick-and-pass transfer system, a modular plug-and-play system based on industry-leading FKI Logistex 24-volt Accuzone® motorized roller conveyor technology. In the New Lenox installation, Accupass modules sit in a horizontal series at key points of a central infeed conveyor, scanning the identifying label on open cartons or totes. Based on the label, Accupass transfers the item left or right to conveyors feeding product pick zones. At the pick zones, product is picked into the zone-routed cartons or totes and then passed along to its destination route. Accupass helps Michaels minimize walk times and improve order fulfillment accuracy.

“The FKI Logistex Accupass pick-and-pass system has offered one of the biggest order fulfillment improvements of this project,” says Gardner.

The New Lenox DC system also features the FKI Logistex Wireless Information Module (WIM). The WIM allows Michaels maintenance personnel to closely monitor the accuracy of the automated print-and-apply system, reduces inaccuracies while improving DC throughput rates.

Real Partnership, Real-Time Success

Forming a long-term material handling team is integral to supply chain overhaul

Michaels, like many other mass-market retailers around the world, is discovering that forming long-term partnerships with material handling specialists is a secret weapon in the battle against costly mistakes and implementation delays associated with vendor hopping. In return for its ongoing business, Michaels demands and receives better service, the very best and latest technologies, and after-sales follow-through that helps the company maintain its dominance in the arts and crafts retail industry.

So when the time came for Michaels to overhaul its network of regional DCs, it turned to its longtime material handling partners, KEOGH Consulting and FKI Logistex. The KEOGH-FKI Logistex team has completed three consecutive Michaels DC projects in the U.S.

Les Gardner, Michaels vice president of logistics and distribution, keeps both the Michaels and the KEOGH-led vendor teams working together from DC to DC so that the only new team member is the builder. FKI Logistex senior project manager, Bob Moran, has managed all three Michaels DC projects and upgrades.

From left to right: George King, vice president, major system sales, FKI Logistex; Les Gardner, vice president of logistics and distribution, Michaels; Rich Sanderson, general manager, New Lenox distribution center, Michaels; Tom Guschke, managing principal, KEOGH.

The partnership between Michaels, FKI Logistex, and KEOGH Consulting has resulted in the completion of three successful DC projects.
Because Michaels uses a consistent DC development team, they’re able to tell us exactly what they want done,” says Moran. “While they have very tight timetables, they also turn over a DC that is nearly complete for us to go in and work on with a realistic schedule to achieve their goals. Michaels has learned that by working with FKI Logistex on a repeated basis, they get a single-source manufacturer and integrator who delivers on time and can provide the exact equipment and systems that they need.”

“When you have a good team, good things will happen,” says Gardner. “After each facility, we have a complete post-mortem to identify what went right, what could be improved and why.

“When Michaels approaches each DC project, we negotiate timing, insist on continuity of experienced personnel from our vendors and establish clear expectations on price and service that must be met. It is a tremendous timesaver and negotiating tool to not have to restate those expectations with new rounds of bidders. I believe that in the end we save money and receive superior service and implementation by not chasing the lowest-price bidder every time.

“The team has learned to trust each other and it has been a fantastic experience. Having the same group of experts offers us a level of collaboration that is unusual in the industry, ” adds Gardner. “So many projects have a tendency to be purely price-driven, and this means changing vendors and integrators more frequently if they think they can save a nickel. This is a problem in the long run. KEOGH and FKI Logistex do it right the first time, and we get a lot better results in the end.”

A Pilot Cross-Docking System

Michaels is piloting a new distribution design that uses a cross-docking and batch processing flow-through system to maximize transportation and DC fulfillment efficiencies. This system is part of a strategy to reduce the number of SKUs warehoused in each DC from 16,000 to around 12,000 and to gain increased throughput as a result.

To achieve this expected inventory reduction, Michaels divides all inventory into two basic groupings. The first group, type A, includes fast-movers that all DCs will carry. Type Bs, however, are slow-movers that will be warehoused by the DC located closest to the supplier. As a result, each regional DC will, in effect, become a national warehouse and distribution hub for a unique set of type B items, thereby reducing the total number of slow-mover SKUs handled in each DC.

“The flow-through system offers increased control over inventory and reduces order fulfillment lead times,” says KEOGH’s Guschke. “As items are packed for each store across the country, the DCs ship full truckloads to each other to get the items repacked and off to the proper geographic DC corresponding to the store’s territory. Each receiving DC then adds those repacked items to the regular shipments and delivers the items to the local stores.”

Under the new strategy, each regional DC maintains slower-moving items from vendors in the DC’s local area. The regional DC distributes those slow-moving items to all stores in the chain, rather than only to the stores in that region. For example, the New Lenox DC receives items from vendors in the Midwest, then picks and packs those items for all 850 Michaels stores. The strategy reduces the number
Michaels’ new material handling system incorporates the flexibility needed to accommodate the company’s continued growth and expansion.

of SKUs that each regional DC has to keep in inventory, and means that stores get all items on one truck from their regional DC rather than receiving separate shipments from vendors all over the country.

This cross-docking plan is central to the new Michaels supply chain optimization. “With any dynamic retail business, poor-performing SKUs are discontinued and new SKUs are added,” says Gardner. “When all poor-performing SKUs are in one building, your clearance risk is reduced.”

**Increased Efficiencies and Productivity Gains**

The New Lenox DC came online in a series of stages. First, inventory and order fulfillment was moved from Kentucky to Illinois. Next, order fulfillment was moved from a non-departmental to a departmental system. Finally, material handling progressed from a manual process to full automation.

The challenge for Michaels and the rest of the project team was to transition from the older Kentucky facility to the new, fully automated New Lenox operation without interruption of service to the stores. The New Lenox inventory handover was a twelve-month process, from its conception in 2003 to start-up in June 2004. Freight transition began in March 2004.

“My promise was that one day a truck would simply show up from our new DC and keep delivering, without interruption,” says Gardner.

“Everything went smoothly and we even opened one month early,” he adds. “The only way our store associates should have been able to tell that there had been a change was that boxes were shipped by department and that paper picking had gone away.”

Productivity metrics tell the success story of the New Lenox DC. Early in the design phase, the project team set down goals for the new facility. After just three months of operation in 2004, the New Lenox team was achieving more than 90 percent of its planned throughput goals. Cartons picked per hour and cartons received are being processed at a rate that is 500 percent higher than expected.

Michaels has achieved a dramatic 40 percent drop in labor turnover from the old Kentucky facility, through a combination of material handling automation, training incentives, awards and a hands-on management style.

“A whole new level of inventory management was the biggest benefit of the new supply chain strategy,” Gardner says.

“There are shorter lead times for inventory to stores and better ‘in-stocks,’” adds Gardner. “Some of our vendors that still ship direct have 35-40 day lead times, and the average for all of our direct vendors is 17 days. With our new strategy, even if we have to cross-dock all the way across the country, lead times are reduced to 11-13 days max. This means a much faster response to sales and a better in stock position.

“The new supply chain efficiencies allow Michaels to carry more...
The transition to the new, fully automated New Lenox DC was completed smoothly, with no disruption to Michaels’ supply chain.

inventory on high velocity SKUs and the increased material flow creates faster inventory turn for the company. Last year, we couldn’t have told you precisely what stores owned at any point in time. Now we have direct-from-the-register real-time data, and a perpetual inventory system that allows us to automate replenishment. Once you know what you own, and what you have sold, then you can replenish automatically back to the quantity you want to keep on hand.

“This means better in-store inventory and more time for staff to spend on the sales floor, and that’s all about pleasing the customer. Well-stocked stores mean increased sales, profits and better overall results. It’s all tied together,” says Gardner.

In just seven months of operation, New Lenox has already been ranked third out of the company’s nine DCs in terms of production dollars per hour. Gardner expects that the new DC will easily become the most efficient of all Michaels facilities.

“As soon as we went online, there was an immediate 35 percent increase in productivity,” he says. “At the end of the first six months, we have seen this figure grow to 50 percent, and we haven’t come close to peaking yet as we bring on more stores. The facility now holds the productivity record for a single week, and I envision that by October 2005, this DC will be setting new records for all of Michaels.”

*Source: Reed Elsevier Business research © FKI Logistex. All rights reserved.
MICHAELS NEW LENOX DC SYSTEMS OVERVIEW

Location:
Michaels Stores, Inc.
New Lenox, IL

Size:
690,000 sq. feet

Systems Overview:
49,000 total reserve locations
23,000 rack locations
600 floor storage locations
13,100 pick-to-light pick locations
16,000 pickfaces
9 reach trucks
8 order pickers

WMS:
RedPrairie

Consulting Group:
KEOGH Consulting

Image provided courtesy of
KEOGH Consulting

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