

# *interlake* **MECALUX** news

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COCA-COLA | PORCELANOSA | BENCO DENTAL | CHILDREN'S MEMORIAL HOSPITAL | ELECTROLUX | LAKMA | TRIVANTAGE



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There's no need to reinvent the wheel if you efficiently store the ones you have.



# The Design of Good Taste

How the Mecalux Group partnered with Coca-Cola to expand the company's soft drink distribution operations.

In 1965, the People's Republic of Bulgaria purchased a bottling and distribution license from Coca-Cola making them the first Communist country ever to do so. Adorning its packaging with the classic logo in Cyrillic, Bulgaria has been successfully producing, distributing and selling Coke ever since. In 2000, Coca-Cola London merged with Greece's Hellenic Bottling Company to form Coca-Cola Hellenic (CCHBC), Europe's largest general bottler. In Bulgaria alone, the company has three plants and seven distribution centers, including the newest one constructed in Kostinbrod, the city 10 miles northeast of Bulgaria's capital city Sofia, located in the eastern part of the country. It was there that Coca-Cola shook up its operation.

The global recession sank its teeth into the soft drink subsidiaries in Bulgaria just as it had almost everywhere else in the world. This forced Coca-Cola Hellenic to rethink its investments and how it would handle its future expansions. Carefully appraising every detail of each equipment piece, layout and warehouse efficiency meant that it would take months, possibly even years longer to execute their expansion efforts.

Rapidly disappearing were the days of fully automating new facilities because disappearing were the businesses with profits to justify such investments. Coke, for decades one of the most recognizable brands on the planet, evaluated every decision with gravity.

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*Coca-Cola needed to fit as many pallets as possible into its 11,000-square-foot space (right). Mecalux had their solution.*







Their caution led CCHBC to invest in partial automation.

**Red, White & New**

This partially automated racking solution would come in the form of

the Mecalux Pallet Shuttle—although Mecalux would not be absorbed into the fold until 2011, four years after the distribution center had been first conceptualized. If it wasn't economically feasible to fully

automate the new facility, Coca-Cola reasoned that the next best option was to automate the processes that are taking place inside of the rack while letting the personnel of the facility work efficiently outside of it.

The problem was that by 2010, Coca-Cola had already endured a modest amount of bad luck with remote-controlled racking trays manufactured by other companies and was hesitant to give it another try. Their caution led them to Mecalux. Mecalux's positive sales history earned them the global giant's trust; Coke ordered six shuttles and nearly 11,000 square feet of Mecalux's Drive-In rack.

The benefit of serving hoards and hoards of thirsty citizens around the globe is that sooner or later, distribution is honed down to a science. Such was the case with Coca-Cola, which articulated to Mecalux a brief checklist of requirements for its newest warehouse. The first was to crowd as many pallet positions into 11,000 square feet of space as possible. For this, according to CCHBC Bulgaria's Area Logistics Manager Metodi Metodiev, only Mecalux's Drive-In/Drive-Thru, Pallet Flow and Pallet Shuttle systems were to be considered for the newest Coca-Cola facility.

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Mecalux's positive sales history earned them the global giant's trust; Coke ordered six shuttles and nearly 11,000 feet of Mecalux Drive-In rack.

“We also required FIFO [first in, first out],” Metodiev says, recounting the second item on the checklist, “which only two of them can do: Pallet Flow and Pallet Shuttle.”

Ultimately, Coke chose the Drive-In system based on the final item on the checklist: cost. Pallet Shuttles are half the price of Pallet Flow. Additionally, Metodiev points out that the remote-controlled carts in the Mecalux Drive-In Pallet Shuttles more than pay for themselves through the time employees save in the facility.

After punching a few more buttons on his calculator, CCHBC’s logistics manager also tallied that the additional value of each Pallet Shuttle was increased space with an increased number of shuttle carts. “With one lift truck and one shuttle [we] can store [up to] 40 to 50 pallets per hour if we transfer the shuttle four or five times. With six trucks and six shuttles, the number of pallets increases to 250,” he says, adding that so many more pallets can be attended when time isn’t squandered transferring the shuttle around.

### It Had to be Good to Get Where It Is

The three Drive-In blocks were to be mounted consecutively in two-week increments. While this was going on, CCHBC personnel assigned to operate the Pallet Shuttles were to be trained and tested. All of this, it goes without saying, came to fruition without complication.

Once Mecalux received the green light to manufacture its materials, the companies involved found the rest of the installation to unfold rather



#### TECHNICAL DETAILS

Type of rack:	Drive-In, Selective
Number of load levels:	6
Number of aisles:	3 sets of 14 aisles
Number of Radio Shuttles:	6 (RSM10-08A)

#### RACK DIMENSIONS

Length:	159 ft. (each block)
Width:	68 ft. (each block)
Height:	39 ft.
Total:	32,436 sq. ft.
Max pallet weight:	1,874 lbs.
Space between each pallet level:	61 inches (5 ft. 1 in.)



*Above: Pallet Shuttle allows for a high-density, compact storage system.  
Right: A forklift sets the pallet on top of the Radio Shuttle, and the cart moves along the track to place the load in the correct location.*



smoothly. CCHBC wanted three blocks of six-deep Drive-In, each 14 aisles long; Mecalux provided it. CCHBC wanted to reach at least 35 feet rack heights; Mecalux accommodated. CCHBC wanted 4,500 pallet locations; they got it. Even the eight to 11-week schedule Coca-Cola allotted for the delivery and installation of the

materials turned out to be easily met. Coca-Cola was installed and fully loaded ahead of schedule.

#### **Adding Life**

CCHBC selected Pallet Shuttle devices in its newest facility despite not having used them in any of its other dozen bottling plants and distribution

centers. Partial, as opposed to full, automation with remote-controlled shuttles roused the interest of the Eastern Bloc. Coca-Cola had used similar remote-controlled devices from other manufacturers outside of Bulgaria, but none of the carts had lived up to their expectations. Rather, Coke found the shuttle carts to be a

Coca-Cola didn't need its shuttles to last multiple days without charging. They were better served by easily charging fewer batteries each day.



tremendous drain on the six batteries required to operate the Pallet Shuttle and that recharging each one cost valuable operating time. Mecalux determined that its Pallet Shuttles would serve Coca-Cola's facility more successfully if the product was tweaked ever so slightly ... by cutting the power.

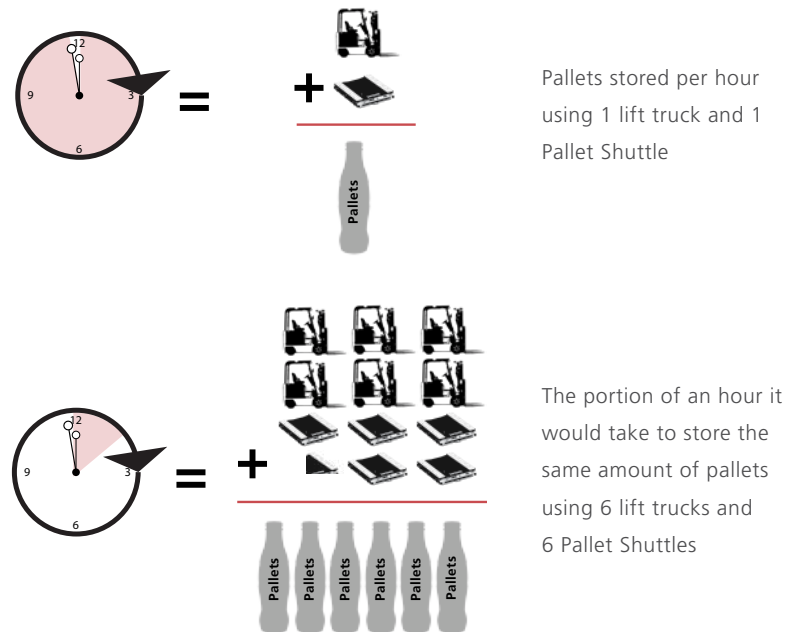
"We supplied special batteries for the shuttles," explains the export manager for Mecalux Europe. "The [original batteries] were very heavy – suitable in some circumstances – but not for Coca-Cola." Personnel work in three daily shifts at the facility in Bulgaria, but the shuttle carts are only used in two shifts. This allows the batteries to be charged with personnel supervision, but without disrupting operations during the off shift. "We supplied lighter batteries that were easier to charge. They don't last as long, but that didn't matter with the extra time they have to charge each one."

The standard bulky Pallet Shuttle batteries are tricky to install with two people and a cruel joke to install if one finds him or herself left alone with the task. The advantage of these larger batteries is their considerable power; they last more than twice as long as the lighter kind. Despite this, based on Coca-Cola's needs, Mecalux advocated for the use of four lighter batteries instead of six heavy ones. The reason for this is that while the four lighter batteries require recharging more often, the time saved attending to the less complicated batteries would allow Coca-Cola to be significantly more productive in both

Though the last decade has brought new competition, the head start Mecalux had in the region made them the obvious choice for Coca-Cola.

### RSM'S RPM'S

CCHBC's Metodi Metodiev calculated that one lift truck and one Pallet Shuttle yielded 40-45 stored pallets per hour and that adding five more trucks and carts would increase the output by six times. Here's what that would look like:



the short term and the long run. Coca-Cola didn't need its Pallet Shuttles to last multiple days without charging. They were better served by charging fewer batteries each day.

### Things Go Better With Coke

Mecalux remains the market leader within the Eastern Bloc – particularly in Bulgaria. Though the last decade has brought new competition, the head start Mecalux had in the region

(and the expertise such a head start affords) made them the obvious choice for Coca-Cola.

"The Pallet Shuttle systems [have been] very successful solutions for our warehouse," Metodiev says today. Already, the sides involved in this installation have regrouped to discuss future expansion, and in any industry, there can be no clearer affirmation of success. ●

# Lakma's Rise and Shine

How a large chemical manufacturer added one of the most adaptive storage facilities to its manufacturing plant and never looked back.

The Lakma Company is one of Poland's largest manufacturers of chemicals for both the construction industry and private households. The company owes its dynamic development to its ability to distinguish market trends early, a skill reflected by the number of new SKUs introduced each and every year to the company's product line. Lakma's modern machinery fleet and fully equipped laboratory reflect the company's sustained ability to offer high-quality products while meeting the demands of the fast evolving market.

In Poland, The Lakma Company ranks first among local companies and sixth among multi-national corporations in

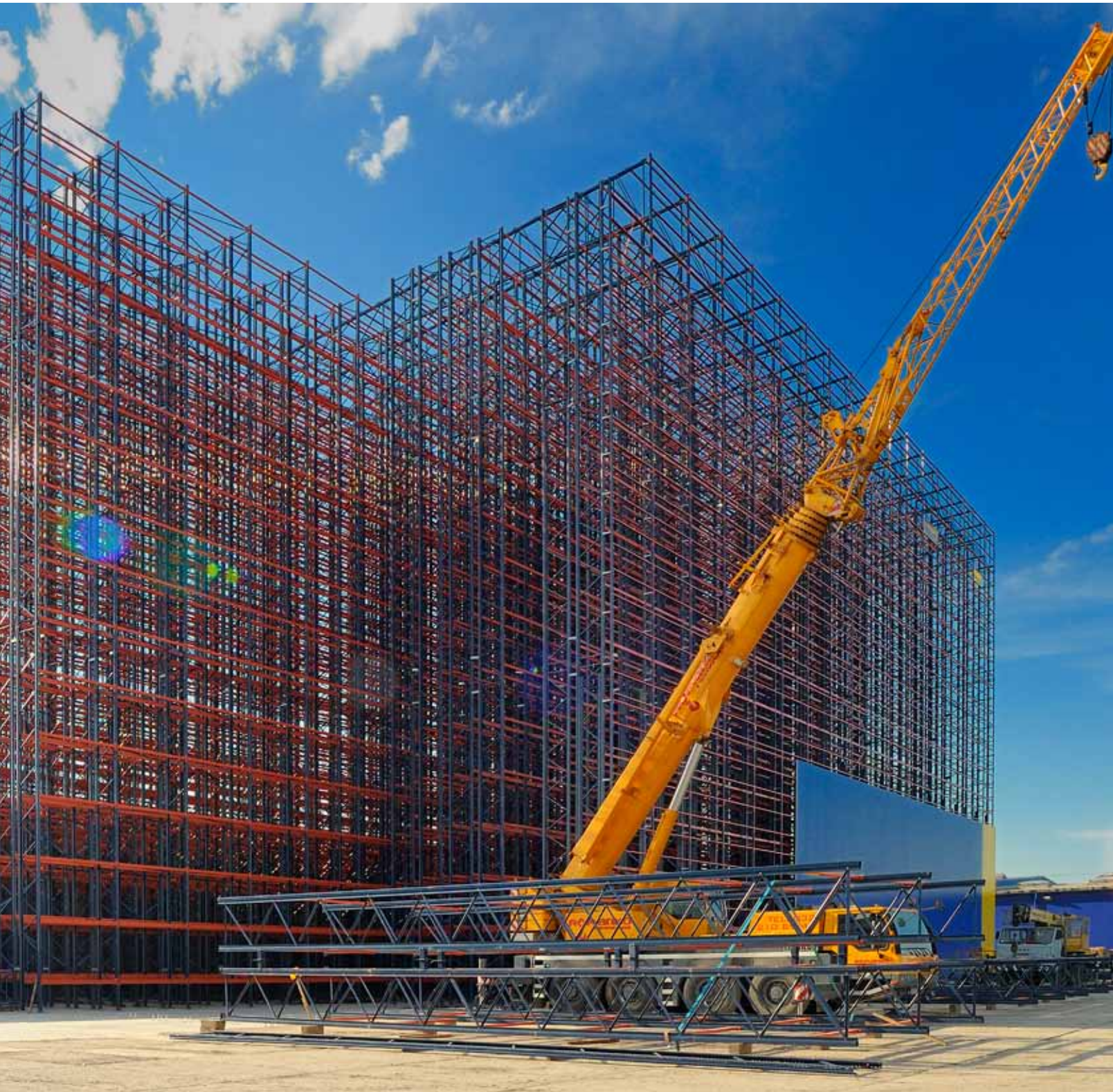
value sales. This is thanks in part to the company's growing network of sales and co-distributors, who help sell its products in large retail chains.

Józef Zietek, the founder and president of Lakma's management board, first entered the market by producing construction chemicals, like varnishes and paints, for large industrial use. In 1988, the company purchased a plant located near the Czech Republic border in the city of Cieszyn. Five

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*In 2010, Lakma decided to build a huge storage facility (right) attached to its pre-existing manufacturing plant.*





“The Lakma investment [was] our first turnkey project in the general contracting system, which involved not only the technology, but all the construction industry related sectors.”

~ Juan Santos, Mecalux Poland Director



anchored by commerce flowing through the nearby city of Zory. SEZs carry more free-market-based laws and business orientations, allowing the suspension of Poland’s nationwide laws in order to attract foreign investors. About 18 months after opening within the SEZ, Lakma’s first pallet of goods left the production lines and the company was underway.

#### Spit and Polish

Eleven years after the inauguration of the new plant, the management board, which included Lakma production director Maciej Paluch, decided to build a modern automated rack supported storage facility and connect it to their manufacturing plant. “The constantly rising customer requirements and the growing need for specialized distribution services have motivated us to launch an investment project,” Paluch said. “For this reason, we have reached for the latest solutions, which will allow us to optimize everything from stocking the warehouse with finished products to product preparation for each client in a customized configuration.” Mecalux Poland, neighbors just a few miles to the north in Gliwice, was brought in to facilitate the construction of a new storage space and the subsequent installation that would immediately follow for Lakma.

years later, the company introduced its product line of household chemicals into the commercial retail market. As a result of dynamic expansion in both the old and new markets, in 1998

the management board built a new production plant 20 miles north in the Katowice Special Economic Zone (SEZ) and moved the company there for good. The economic zone rested in a region

## TECHNICAL DETAILS

4 double-deep stacker cranes

14 storage levels

roller, chain and mixed conveyor systems

10 shuttle cars

2 goods-to-man stations

gravity conveyors in the facility's picking area that may hold 160 pallets at a time

5 loading docks

advanced warehouse management system (Easy WMS)

transfer bridge

2 pallet lifts

Dimensions: 266(l) x 174(w) x 105(h) ft

Configuration: 4 aisles  
4 stacker cranes  
double storage depth  
picking area

Loadspace volume: 16.112 pallets / 2,200 lbs

Before such actions would be taken, the Mecalux Group had to plan the work necessary from the first to the last: scheduling the process, obtaining the building and installation permits and arranging the delivery of all necessary goods. As Juan Santos, the Mecalux Poland director, recounted, most companies have not had experience facilitating the construction of such an advanced system because most companies aren't able to pay them to do it. As a result, not many companies even have the ability to handle a project of

this magnitude. "The Lakma investment [was] our first turnkey project in the general contracting system, which involved not only the technology, but all the construction industry related sectors," Santos said. Lakma finished construction in 2011 and named the facility Multisoft. It was designed to be a self-adaptive, fully automated automaton of software sophistication. Today, Multisoft stands as both pillar and brace to Lakma's business, providing a strong base on which the company has already begun building.

### Facility Characteristics

The completed storage facility stretches across more than 14,560 square feet and incorporates both AS/RS storage and conventional picking. The high-bay storage facility is over 98 feet tall and covers about 7,550 square feet of floor space. The rack supported facility stores products manufactured in the adjacent plant – a one-story steel structure with a 7,021-square-foot picking floor. Here, the company's products are prepared for shipment. Both floors are separated by movement joints and an REI 120 firewall. This firewall incorporates an E160-certified fire safety gate, enabling the floors to be technologically connected, and an 11-foot-high E160-certified service door. The picking floor consists of five load docks and a transport gate, through which the second floor can be accessed from the ground. The rack supported warehouse is fully automated, which eliminates the manual movement of goods and thus facilitates the order preparation process. The shop floor is joined to the warehouse by a transfer bridge.

Furthermore, the Mecalux-designed warehouse management software, Easy WMS, was implemented to guarantee optimum control over the stock and enable express stocktaking.

### Building Process

No type of construction installation of this magnitude comes without a small amount of plan restructuring. "Choosing a suitable solution fitting to a company's needs is the hardest part of any newly launched project," according to Paluch. "One concept leads to another, regulations of the

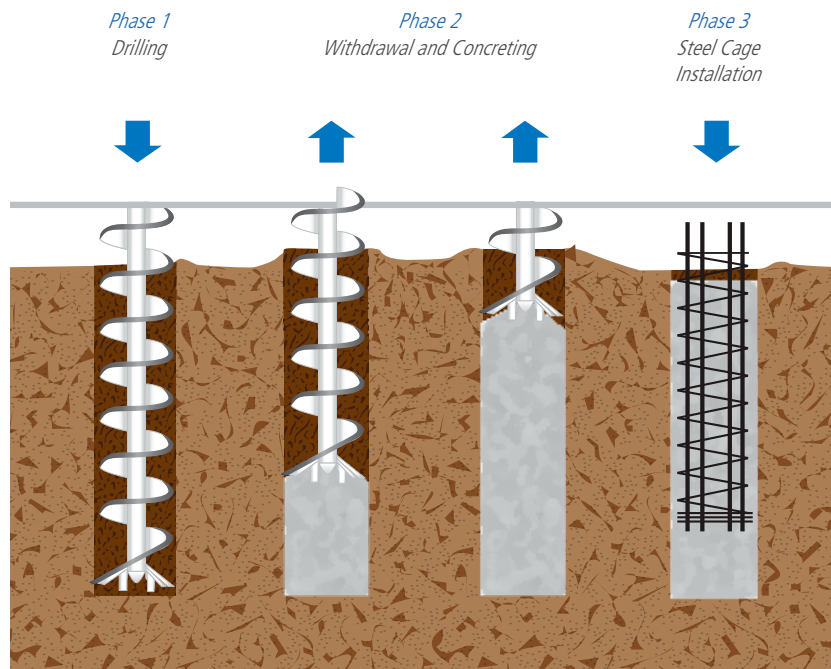
### THE CFA PLANTING PROCESS

The CFA planting process entails digging 254 piles, each created using a drill-like blade surrounded by a tube.

Once the blade is sunk into the soil about 50 feet down, the blade inverts upward leaving empty space inside the tube.

As the blade rises to the surface, concrete is poured from a spigot attached to the end of the ascending blade.

The end result is a concrete pile about the size of the hole dug into the earth. If necessary, piles may be reinforced with cages inserted in the still wet concrete.





development plan restrict structures in height, and more issues could be enumerated. The most important thing is that we have managed to adequately resolve them all.”

The weak subsoil forced the contractor to support the facility on 254 piles made with the use of the continuous flight auger (CFA) technology. Considering how close all the other buildings are to one another in the area of construction (including Lakma’s manufacturing plant), CFA construction was necessary. CFA eliminates vibration and disturbance to adjacent structures. A 20-inch-thick reinforced concrete slab was rested on 220 of the 254 total piles located on the building site of the new warehouse. As Santos explained,

Today, Multisoft stands as both pillar and brace to Lakma’s business, providing a strong base on which the company has already begun building.

“The foundation of the facility posed a considerable problem due to the poor soil. After many evaluations, we chose the option of deep foundation on piles, which, in fact, took some specialist actions.” These actions, recommended by Mecalux designers, ensured the utmost safety and security of the facility.

The racking was erected on this slab. The high-bay floor would be impossibly

expensive to heat, so they capture and redistribute the heat created from the rotation of load units to achieve a consistent and comfortable temperature for everyone in the facility.

The remaining 34 piles are located in the picking floor, which includes the warehouse manager’s office, locker rooms, lunch rooms and restrooms. Since these piles are not included in



the reinforcement slab, they were fitted with caps to support the steelwork structure. To further ensure the stability of the floor in the picking section, it was constructed from trowelled and surface-hardened, fiber-reinforced

concrete. The picking floor is heated and ventilated by hot water HV units. The facility's external elevation was constructed out of 3-inch polyurethane foam core sandwich panels aligned vertically. The roof covering, which was



*More than 15 crew members were charged with erecting the quartet of stacker cranes that can each exceed heights of over 90 feet, making them incredibly useful for these installations.*

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made using similar layer construction, incorporates trapezoidal thermal insulation sheets consisting of a double layer of 4-inch thick polyurethane foam, and a PVC membrane, all constituting a waterproof barrier.

Both floors are equipped with drainage systems connected to the rainwater drainage and hydrant systems.





## THE MECALUX GROUP IN POLAND

Almost 20 years ago, Mecalux opened a sales office in the town of Gliwice in the southern part of Poland. At the time, it was the farthest east Mecalux had expanded its sales territory. Less than a decade later, in 2000, Mecalux added to its Eastern European presence by breaking ground on a then 82,000-square-foot production facility.

Throughout the decade, the Polish plant grew to nearly 576,000 square feet and proved to be an important building block for the global company. It became – and remains – one of the company’s research and innovation centers, producing all of the Mecalux Group’s stacker cranes and other similar automations.

The facility also had a fire alarm system installed. “There were no models [of fire protection system development] on the Polish market to follow and no clear-cut fire regulations,” Santos said. The original challenge was that the Multisoft facility was so technologically advanced that the precedents there

would be in a simpler installation did not apply. “Due to the specific character of the facility, the design and construction of it required a lot of involvement on our part, and a lot of consultations with the State Fire Service,” Paluch said. Eventually, the development team patched the fire alarm directly to the State Fire Service. However, it wasn’t easy and may have been the installation’s largest challenge. Still, in the end, the system’s construction guarantees total compliance with all standards.

Mecalux also developed the external area, building a vehicle circulation zone for lift trucks with pathways to the docks and a fire access road. Because of this additional attention to safety, Lakma earned recognition from the National

Labor Inspectorate for adhering to high safety standards throughout construction. This was not an easy feat considering the number of cooks in Multisoft’s kitchen. “Coordinating a dozen sector companies in a manner that did not interfere with the course of particular implementation stages was difficult.” Santos says today, “Still, we were able to get optimum use of the human resources and equipment.”

### Load Storage

The process flow inside Multisoft, for all its scope and sophistication, remains simple in its fluidity. A loaded pallet, transported from the shop floor, passes through the control gates located in the plant’s picking area, where its dimensions, weight and condition are

Mecalux Group was charged with planning the work necessary from start to finish: scheduling the process, obtaining the building and installation permits and arranging the delivery of all necessary goods.

checked. Load units that do not comply with the preset criteria are immediately deposited on a different conveyor in order to be rectified. Acceptable load units are put directly on the pallet conveyor system, which transports them to the shuttle car. It is fitted with two chain conveyors, which allows two units to simultaneously load or unload within one working cycle. The shuttle car transfers those pallet units to the warehouse entry area. There they are collected by stacker cranes, which deposit the loads in locations optimally selected by Easy WMS.

The rack supported warehouse is operated by four double-deep stacker cranes for pallets. The high-bay racking system enables a maximum storage of about 3-by-4-foot, 2,200-pound pallets deposited on 14 levels (the heaviest pallets are stored on two bottom levels). Lakma decided on a double-deep storage system because their stored items had relative repeatability. This method is commonly used in advanced facilities. It easily doubles the pallet positions while only minimally affecting productivity. Due to this and to the use of a rack supported structure, more than 16,000 different pallets are stored in the 14,500-square-foot warehouse. This is possible mainly due to the large load concentration and the use of the quartet of stacker cranes, which each climb to almost 100 feet.

#### **Order Picking and Dispatch**

In order to prepare significant amounts of goods for dispatch, a Lakma stacker crane might collect several pallets from the racks and deposit them onto the large chain conveyor located near the warehouse exit area. A lift truck



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Mecalux helped construct one of Poland's most adaptable storage facilities when other companies couldn't, just as Lakma emerged as an industry leader when similar companies from the region didn't.



then transports them to the picking area where they are placed onto pallet conveyors. Depending on whether whole or partial pallets are being dispatched, pallets are deposited either directly at one of the loading zone's three full pallet collection points or in the picking area comprised of eight gravity roller tracks. Each picking station has two shuttle-operated buffer points, allowing operators to maintain nearly constant picking without waiting for the goods to be replenished.

When a pallet is empty, it leaves the gravity conveyor and is replaced with another one holding the same type of product. The picking area can hold 150 references at the same time. The goods with the lowest rotation are picked from one of two product-to-man stations. These stations, which are equipped with hydraulic tables, are located in the lateral section of the picking floor and operate by using the advanced order picking functionality of Mecalux's Easy WMS system. This is just

one of the many processes performed by Easy WMS, which also handles services such as dispatch, intake and transfers. The software communicates with the warehouse staff via RF terminals and then develops those communications into part of the logistics structure of the delivery chain. The chain's main task is to control warehouse movements and maintain effective management of the storage area.

Modernizing the logistics processes of automated systems unquestionably enhances the efficiency of an enterprise. Automated systems like stacker cranes, conveyors and the IT management system guarantee fast, safe and reliable handling of loads deposited on the racks as well as instant access to all reports and schedules.

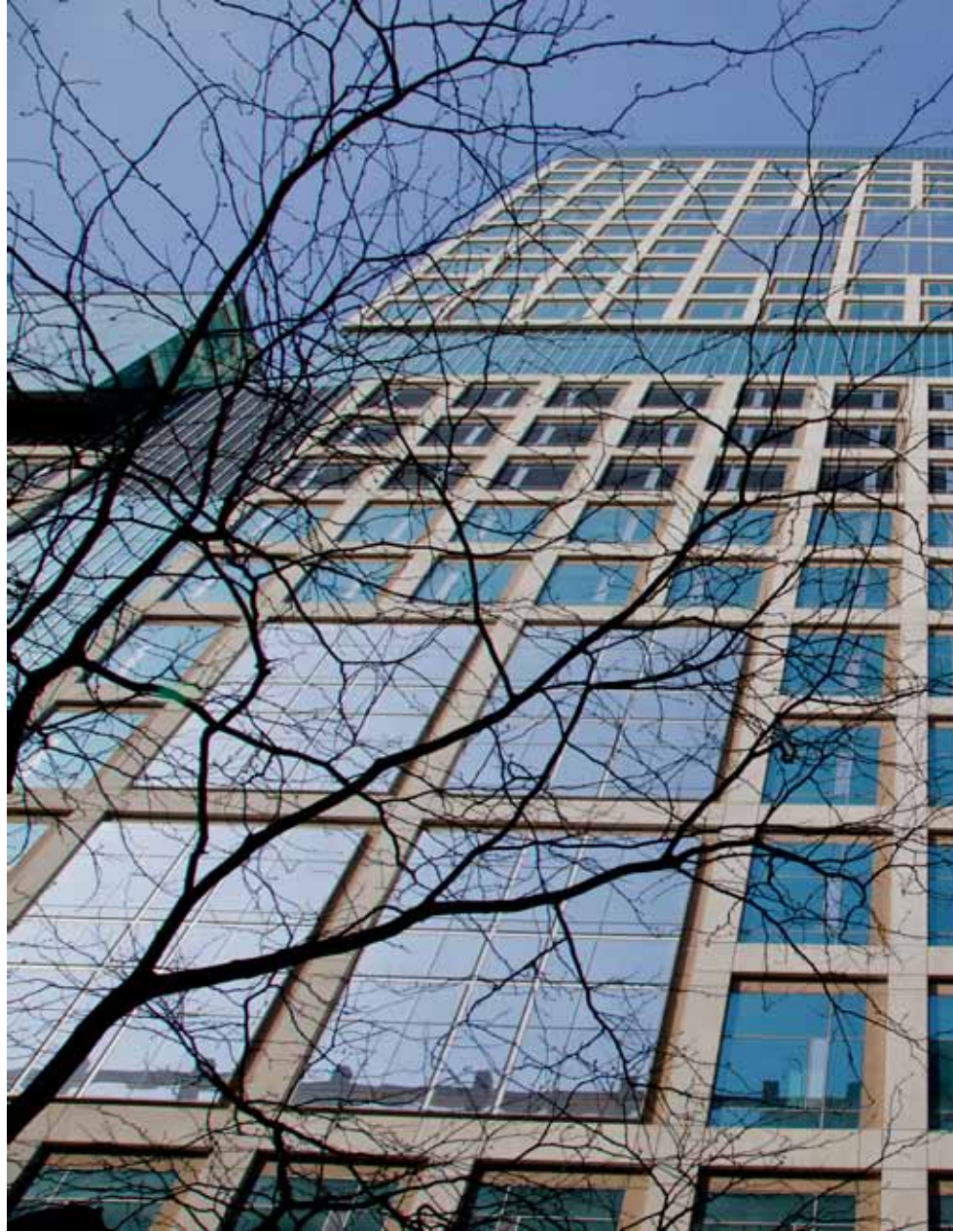
Warehouse automation modernizes in-plant processes and increases the efficiency of order preparation. It allows the maximum number of working cycles per hour to be reached – several times

the working cycles that are possible with a forklift operator. Furthermore, automation allows companies to build up. Automated facilities can reach considerably greater heights than manual facilities, therefore saving on the cost of land. And with the use of mechanized devices for transfer and load storage processes, they also save on labor.

Mecalux helped construct one of Poland's most adaptable storage facilities when other companies couldn't, just as Lakma emerged as an industry leader when similar companies from the region didn't. It would not be overstating the case to call Multisoft a remarkable achievement by every party involved. "The base for an effective project is a good team and professionals that work well," Paluch said about the approach he experienced with the Mecalux Group. "Cooperation with our project manager and the construction team was ideal." ●

# The Ninth Floor at the Eleventh Hour

Time was of the essence as the ninth floor service center in the world's tallest children's hospital went from fragmented to functional in 21 days



A group of distressed personnel unpacked boxes filled with I.V. fluids, bed pans, syringes, rubber gloves, and dozens of other medical supplies. The group was deliberate, almost frenzied. The entire floor, nine stories above downtown Chicago, was flush with building

engineers. Particle board guided foot traffic and only a small number of security doors scattered around the hospital were being used. The central hub of this floor is called the service department. In fewer than 10 weeks, the 1.25 million-square-foot Ann & Robert H. Lurie



*Children's Memorial sat on a 6-acre plot for more than 130 years. The new hospital is a markedly more compact 1.8 acres.*

Children's Hospital would be a functioning cog in the Windy City's healthcare cycle. In fewer than three weeks, this supply room would transform from the gaping space in the floor's center to an operational concentration of service filled with almost 1,000 square feet of metal-

decked shelving storing 1,700 different products. And in fewer than seven days, all of it would be expected to feed supplies to other parts of what would soon be the world's fifth tallest hospital. The problem at this point was that there was very little on the shelves.

### **A Foot in Both Camps**

Getting this room up and running wasn't the only responsibility of the staff in charge. Several of the staff involved in the installation vented that as daunting as opening a new hospital can be, it's nothing compared to doing it while also

Requests are made through a sophisticated product tracking system, ensuring that whatever items were taken from the shelves today will be replaced tomorrow.

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keeping the old hospital functioning. While the new 23-story, \$915 million hospital was still being primed, the original children's hospital several miles away functioned normally.

Opening a hospital is a far more delicate process than opening

most other facilities. Transferring goods from an old structure to a new one is stressful, but it pales in comparison to transferring patients. The added pressure showed on the faces of the personnel filling the Wide Span shelving inside of the service department.

And although it was close, the hospital's supply chain staff, in concert with Interlake Mecalux, maintained its schedule and saw to it that every box along the process checklist was ticked on time. But while the checklists kept ticking, so did the countdown to the big



opening. The new hospital, built on a relatively tiny 1.8-acre patch of land, is in the heart of downtown in one of the largest cities in the U.S. In its new location, Children's Memorial works closely with the adjacent healthcare facilities including Northwestern Memorial's state-of-the-art Prentice Women's Hospital. The idea behind placing Children's Memorial in such close proximity to Prentice was to provide, among other things, faster transport of critically ill newborns between the two facilities.

### Wide Spanning History

To keep the operational pistons pumping smoothly, the service department runs on a dually capable manual and electronic requisitioning system called the Pyxis MedStation. When personnel from different parts of the hospital need supplies, they must make a request through the automated supply system. Pyxis maintains a minimum and maximum range for each product type stored on the shelves and replenishes items based on where in the range inventory falls. Requests are made

at all hours of the day through the system, ensuring that whatever items were taken from the shelves today will be replaced tomorrow.

With turnover demanding such sophisticated product tracking, it was necessary to fortify each Wide Span bay with galvanized shelves. In addition to offering resistance-free product stacking and removal, the smooth shelves are also the easiest to clean – a necessity in a facility storing liquids.

Customers occasionally have a basic understanding of what storage solution is best for their space. According to Steve Zimmerman, the Midwest sales representative from Interlake Mecalux overseeing the installation, Children's Memorial had more than done its homework. "Wide Span really is the best rack for hand-picking, and they knew that," Zimmerman said. "We discussed the pros and cons with them, ensured they had the information they needed, and we all agreed."

This was not the first time Interlake Mecalux had teamed up with the hospital. In 2006, two years before construction began on the new hospital, the consulting firm designing the room spaces throughout the building had to determine how the product would best be stored. Several




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*The galvanized steel shelving added to the rack allows for easier stacking and removal of simple handpicked goods, as there is less storage friction.*

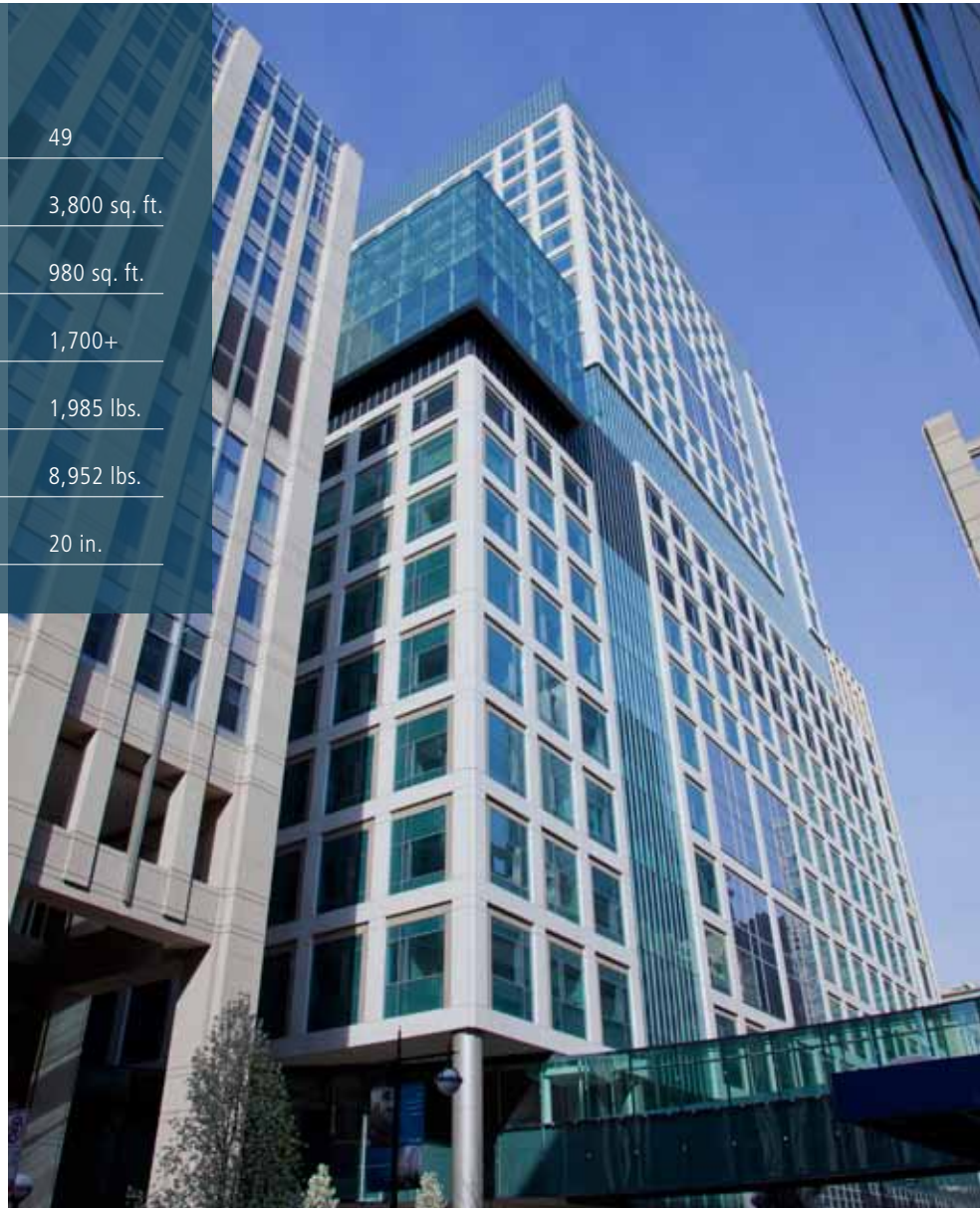
## TECHNICAL DETAILS

Number of 5-shelf Wide Span bays:	49
Total square footage of facility:	3,800 sq. ft.
Total square footage of shelving:	980 sq. ft.
Total product capacity:	1,700+
Weight capacity per shelf:	1,985 lbs.
Weight capacity per beam:	8,952 lbs.
Space between shelf levels:	20 in.

vendors were reviewed and Interlake Mecalux won out. A hospital director closely associated with the service department's development, who cannot be identified due to hospital policy restrictions, noted that the receiving dock at the old hospital had Interlake Mecalux shelving. The consultants charged with fortifying the new space with rack decided Interlake Mecalux rack was durable and could be cleaned easily. The Wide Span shelves would also maximize some of the height advantages the new hospital has over the old facility. Four-shelf systems were more prevalent in the old hospital store rooms, whereas each bay in the new hospital allows space for a fifth shelf.

### Lowering the Roof

Mike Schiller, the corporate director of procurement at the new hospital, pointed to only one hiccup in the installation: the height of the ceiling. Early in the installation process, before any decisions had



been cemented, personnel from both Children's Memorial and Interlake Mecalux convened several times to look at the space and create a design plan. On these early occasions, the floor-to-ceiling height was near 16 feet, but none of the mechanical, electrical or plumbing components (MEP) necessary for a functioning room in the center of a high-rise had been installed. One personnel

member present at those walk-throughs described, with a hint of hyperbole, the original ceiling height as resembling a cathedral and added that when she returned several weeks later, she was surprised by the change.

The HVAC system and lights had reduced the available floor-to-ceiling height by two feet. The building's fire



*The overhead mechanical, electrical and plumbing components decreased the planned clearance height by more than two feet and forced a couple last-minute alterations to the frames.*

codes called for no less than 18 inches of air space between the sprinkler heads and anything else. By the time everyone involved in the installation understood what the final height would be on the roof, the 10-foot rack beams and frames had already been manufactured and needed to be refigured to accommodate the loss of space.

Zimmerman agreed that the changes to the room's layout resulted in minor delays, but the ceiling wasn't the only hurdle. He noted that the walls caused a momentary hiccup as well. "We didn't have the exact dimensions of the room, and Children's Memorial requested a few changes on installation day," the sales associate said, recalling the effort. The Interlake Mecalux team worked closely and meticulously with the hospital's procurement division and effectively saved material by using the room's dimensions much more efficiently. "Initially, the design called for two rows going all the way back," Zimmerman said, explaining that the row of Wide Span along the southern wall of the room would jut out two feet in order to avoid multiple load-bearing columns. The team's solution was to push the frames against the wall and separate some of the bays by incorporating the columns. "It



“Wide Span really is the best rack for hand-picking, and they knew that. We discussed the pros and cons with them, ensured they had the information they needed, and we all agreed.”

~ Steve Zimmerman, Interlake Mecalux

## The Interlake Mecalux team worked closely with the hospital's procurement division and effectively saved material by using the room's dimensions more efficiently.

changed the number of beams and frames we needed," Zimmerman said. "That's why there was extra material." Another smaller group of rack bays was shifted from the center of the room to extend across the west wall. This proved to be a vital alteration later on, after the receiving process started. Zimmerman said that the redesign was neither difficult nor time consuming. "It actually worked out real well," he said weeks later. "The manufacturing plant staff was flexible and the redesign only added an extra week to the delivery. We ended up cutting the beams down and installed [them] rapidly." All involved concur that the installation was the easiest part of the process. Once the room's dimension issues were resolved, all of the other pieces fell into place. Even the Interlake Mecalux installation crew drew kudos from the hospital personnel, who commended every aspect of their performance from their speed and timeliness to the fact that they were thorough enough to alert personnel if they were pausing for lunch.

### **Sitting By the Dock with Some Bays**

The store room's location on the ninth floor provides a centralized area for inventory control. Putting the mechanical and support services

in the middle of the 23-story building allows more efficient service to the procedural and clinical care spaces in the lower portions of the building while still allowing economic service to patient care floors in the upper portions of the building. The drawback to this centralization, however, is there is virtually no space for any type of storage on the hospital's ground floor loading dock. Schiller explained that the hospital's ground level loading dock would serve as a pass-through for goods destined for the service department. The store room is located almost directly off the service elevators, a point, according to the procurement director, that was strategically located to make the transfer of supplies up nine floors simple.

The location of the department ensured that there would be as few turns of the service elevator as possible, saving time and eliminating opportunities for accidents to occur. Once inside the service area, the third of the store room closest to the service elevators is meant to remain bare and to function as the central supply and receiving dock. This is why the switch in rack layout to create more space was so important. Without the extra space, the receiving area would have been much smaller.

When the SKUs are shipped and unloaded in the hospital, one of the supply chain team members moves the pallets from the ground floor to the ninth. Once the shipment finds its way to the service department's receiving area, the fast-moving items with low units of measure are placed on the shelving bays closest to the room's receiving area, while the bulk box storage items are tucked farther away. The pallets of products are widely mixed as the Pyxis machine only fulfills according to what was used the day before. Rarely is a full pallet of the same product ever ordered. If one specific item is normally packaged in a case of 80, the hospital might receive 30.

As the hospital's grand opening approached, Children's Memorial was grateful for every break it could get. Luckily Interlake Mecalux has a manufacturing plant just minutes away. This made adjustments like shaving 2 feet off 10-foot beams almost a non-existent issue. "It really helps us in this whole geographical area," Zimmerman adds on his way to another installation. He pauses and the suggestion of a grin crosses his face. "Our biggest problem is that our rack is too durable. They never need to replace it." At least not until Chicago builds another hospital. ●



# Collaboration through Communication

Porcelanosa and Interlake Mecalux  
rely on their strong relationship  
to outfit the ceramic giant's U.S.  
headquarters with the ideal  
storage solution.

When you can list Charles, Prince of Wales, as one of your clients, you know you've cultivated quite a successful business. Yet that is exactly who is on the patron roster of Porcelanosa, Europe's largest manufacturer of tile, kitchen and bath products. In 2005, Porcelanosa received a coveted Royal Warrant after carrying out extensive work at Prince Charles's Royal residences. Royal warrants of appointment have been issued for centuries to tradespeople who supply goods or services to a royal court or certain royal personages. Such an honor is quite an accomplishment for a company founded more than 40 years ago in the small village of Villarreal by the Mediterranean Sea in Castellon, Spain. Since then, Porcelanosa has experienced incredible growth over the years. Made up of almost 5,000 skilled professionals, its global presence now extends to more than 140 countries through more than 400 company-owned showrooms, distribution

centers and an extensive network of independent distributors and retailers.

Porcelanosa started operations in the United States more than 20 years ago and has quickly grown to become a dynamic resource for homeowners, builders, architects and designers. Porcelanosa USA reopened stores in New Jersey, New York and Florida with new stores in Connecticut, Texas, Georgia and Illinois. When it came time to install racking in its new 84,000-square-foot U.S. headquarters in Ramsey, N.J., Porcelanosa leveraged its global relationship with Interlake Mecalux – another company with roots in Spain. Porcelanosa, one of Interlake Mecalux’s largest customers, had already relied on Interlake Mecalux to do a number of installations worldwide, so it only made sense that the company called upon the storage systems provider once again.

“We needed to make room in our warehouses and sought a specialized storage solutions provider,” said Jose Año, logistics manager for Porcelanosa. “Mecalux offered the best solution to our needs. We had already worked with Mecalux in our production and

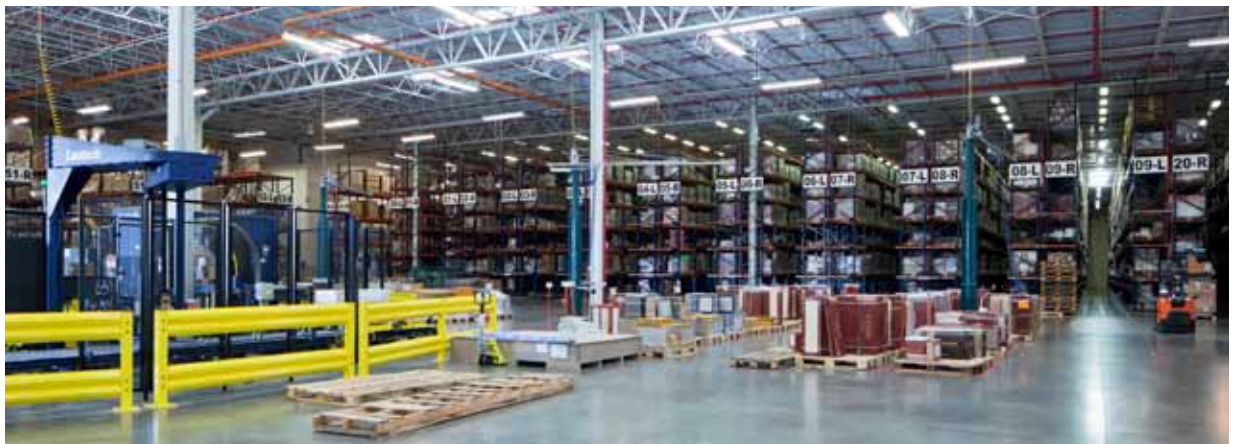
distribution centers in Europe. In order to maintain the same standards of quality and service to our customers in the United States, we decided to work with Interlake Mecalux in expanding our distribution centers in the USA.”

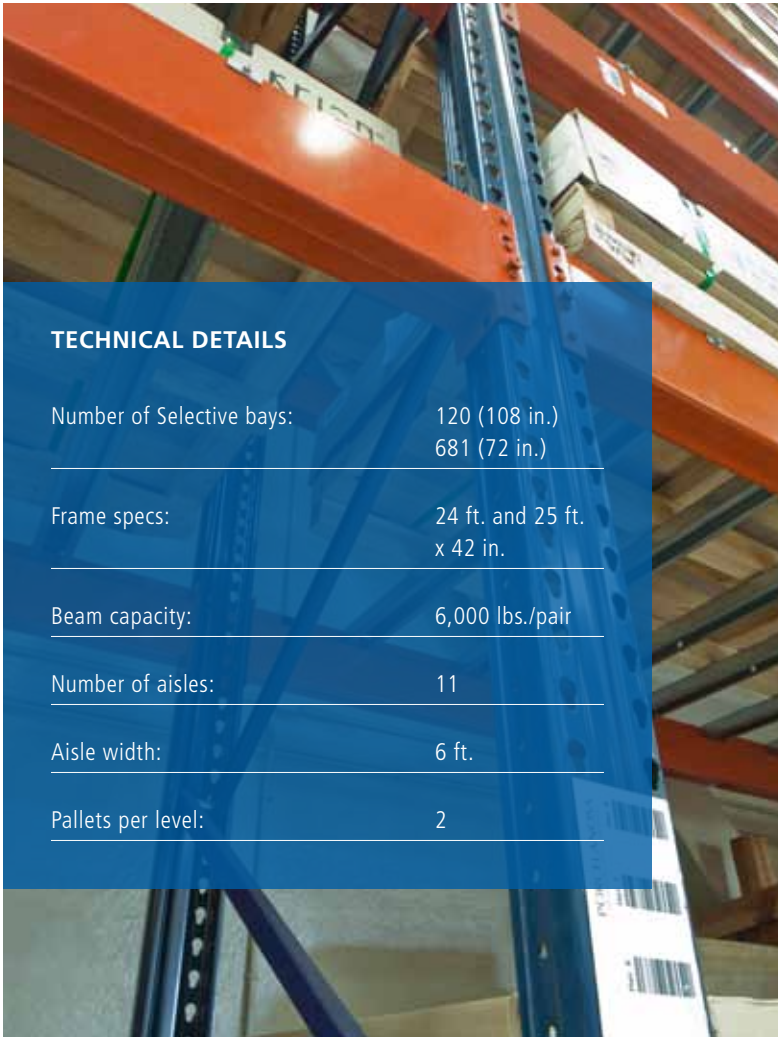
In addition to Ramsey, New Jersey, Interlake Mecalux has completed installations for Porcelanosa in Maryland, California, Texas and Florida. When outfitting the facility in New Jersey, Porcelanosa’s engineers decided upon a combination of Selective, Cantilever and Wide Span rack. Interlake Mecalux’s selective pallet racking was ideal for the warehouse because it offers direct access to each pallet, simple stock management and adaptation to any product volume, weight or size, which was important considering how Porcelanosa needed to store 3,000-pound pallets. The Selective rack is designed to allow access to any pallet in the facility, which has increased picking efficiency. The rack is also designed and built to last with a life expectancy of more than 10 years.

Porcelanosa uses its Cantilever shelving to optimize storage space

when large or bulky items are being handled. Cantilevers function through a beam anchored at one end, which carries the load to support the extended structure. This allows for overhang without external bracing. Interlake Mecalux’s structural cantilevers offer economical designs to suit numerous applications and are ideal when trying to maximize the storage of non-palletized and sheet-type items. Cantilever rack also provides Porcelanosa warehouse operators easy access to product SKUs through its efficient and sturdy arm construction. Also, because the uprights are not next to the aisle, the potential for damage to the rack due to forklift operator error is greatly reduced. Overall, the installation greatly increased the Porcelanosa facility’s storage capacity. “The number of Euro pallets that we can store is 16,000, which allows us to store a stock of four months based on current sales,” Año said.

So, what makes Porcelanosa trust Interlake Mecalux to provide its storage solutions time and again? Much of it has to do with the effective communication that takes place between the two companies before





**TECHNICAL DETAILS**

Number of Selective bays:	120 (108 in.) 681 (72 in.)
Frame specs:	24 ft. and 25 ft. x 42 in.
Beam capacity:	6,000 lbs./pair
Number of aisles:	11
Aisle width:	6 ft.
Pallets per level:	2

and after any installation. “We meet with people from Mecalux to explore the best solutions for the storage and distribution of our products,” Año said. “Interlake Mecalux offers different solutions to help us optimize the storage and handling of our products in our distribution centers. We also periodically meet again with Mecalux to look for solutions already implemented in other projects, and after analyzing them, we choose the most appropriate. We then move forward to plan the implementation phases and commissioning.” Miquel Lopez, area market manager for Interlake Mecalux, added that Porcelanosa facilitates the process by being prepared. “It’s easy to deal with them because they know exactly what they want,” he said. “It is not a static warehouse. It is alive, so they change every two or three years.”

Once in a while, Porcelanosa will make slight adjustments to the racking to accommodate its needs. “Due to the wide variety of products that we sell, we had to make some small changes in the elevations during the implementation phase,” Año said of the project in New Jersey. Despite these small changes, the coordination between the two companies on the project in New Jersey has allowed Porcelanosa to provide faster service and to be more effective with its customers in the United States.

“The solutions that we have incorporated have allowed us to considerably increase the capacity of storage and operations. As a result, we are able to meet the growth of our company and maintain our quality of service,” Año said. ●





# Growth in the Mexican Market

Appliance manufacturer Electrolux expands one of its distribution centers as it prepared to expand its business throughout Mexico.

The story of Electrolux begins with AB Lux in 1901. That year the company introduced the kerosene lamp for outdoor use, and it wasn't long before they were illuminating streets and lighthouses all over the world. The widespread use of electric lighting eight years later

allowed the company to invest in different products. Over time, AB Lux developed a relationship with Axel Wenner-Gren, and together developed a vacuum cleaner sales business. In 1919, AB Lux and Svenska Elektron AB cooperated and developed the modern canister-type



vacuum cleaner and the absorption refrigerator, two standard household appliances that changed the way people live, shop, clean, cook and organize their lives forever. In 1957, the company changed the spelling of Elektrolux to Electrolux and the household brand fully established what it remains today.

The Electrolux Group reaches 150 countries and sells over 40 million products a year, from refrigerators and microwaves to stoves and vacuums. The company is a leader in innovation. It has received six Good Design awards from the Chicago Athenaeum Museum of Architecture and Design, five Red Dot Design awards (given by a panel of design

experts based on the degree of innovation, practicality, quality, ergonomics and ecological compatibility), and four German Plus X awards for product of the year, among many others. In May 2010, *Forbes Magazine* named Electrolux one of the 130 Global High Performers and placed it in the top five companies in consumer durables. With 52,000 employees, the Electrolux Group shows no signs of slowed growth on the horizon.

Electrolux focuses on each of its geographic regions, as demonstrated by the project it undertook in Mexico recently. The company spent 18 months and \$10 million on market research to determine the best

configuration for a line of refrigerators that would satisfy consumers. In an interview for the Mexican newspaper *Vanguardia*, Winston Merchor, general director of Electrolux Mexico, explained that the company was uninterested in introducing a one-size-fits-all type of product. "What



TECHNICAL DETAILS	
System type:	Selective Rack
Installation height:	25 ft.
Number of aisles:	15
Aisle width:	10.5 ft.
Pallet type:	Euro
Storage capacity:	5,128 pallets
Total storage area:	172,222 sq. ft.

*Electrolux Mexico made it clear that it wanted durable products to sell, and durable shelves to store them on.*

we want to do is develop products that will specifically satisfy the needs of the Mexican consumer,” Merchor said. “Mexican buyers have made very clear the need for robustness in their products. They try them, push them around and make sure that they are durable and functional.”

He then added that Electrolux is not interested in manufacturing fragile products. Refrigerators that might sell in large numbers in Brazil or the United States might not have appeal in the Mexican market. Following their research, Electrolux took the advice of its buyers, made just two modifications to the refrigerators, and customer preference increased from 20 percent to 70 percent. This



is not unique to the Mexican market; the company is customer focused and manufactures its products with the final consumer in mind, whether that buyer is in Mexico, Brazil, Sweden or Spain. It is this attention to detail that has put the company at the head of their market.

### Lux Squared

In 2010, Electrolux found itself running out of space in the warehouse they rent in Cuautitlan, about 20 miles north of Mexico City. This distribution hub serves more than 300 clients in the country with products arriving from factories in Ciudad Juarez,



“This gave us capacity to store 50 trucks more, going from 94 trucks to 144, a 53 percent increase over the old system.”

~ Christian Macedo Acuña, logistics director for Electrolux

Queretaro, China, the United States and Germany.

The company wanted to maximize the amount of products they could place within the existing area, without having to rent additional space. They started a bidding process to find a material handling company that would help them accomplish their goals. Christian Macedo Acuña, logistics director for Electrolux Mexico, explained that his company connected with Mecalux right away. “Mecalux was very helpful answering all the questions about the products and installation process,” Acuña said. Mecalux would

be the material handling company to solve the storage problem for the new distribution center.

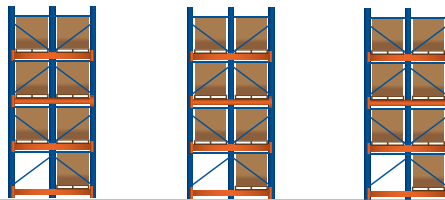
Electrolux and Mecalux worked together to devise the best solution for their storage restrictions and decided to take advantage of the cubic footage in the space they already had. Mecalux installed double deep selective rack, narrowed the aisles and increased the height of the installation, which optimized the space without having to rent out more square footage. The change was music to the ears of Acuña, who compared the improvement to the expanding capacity of an accordion.

“We made it smaller so we were able to put more rack in the same area, wasting less space in aisles and increasing the rack capacity by going up and doubling the depth. This gave us capacity to store 50 trucks more, going from 94 trucks to 144,” Acuña explained, “a 53 percent increase over the old system.” The installation was structured in three phases, with the final one completed in January 2012, giving the distribution center a final storage capacity of more than 5,100 pallets.

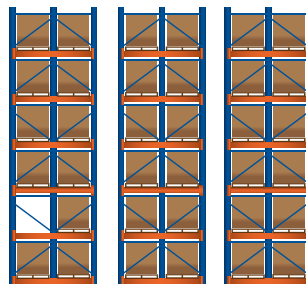
Mecalux conducted a study, taking into account the current storage conditions at Electrolux and the projected conditions for the next five years, in order to streamline placement and handling of product. Merchandise would be stored using the FIFO system (first in, first out) and would be divided into two groups: bulk and palletized. About 60 percent of the installation would be dedicated to bulk items and the remaining amount would go to palletized products. Appliances would be organized in families, regardless of the brand, so all refrigerators would be in one area, while washers and dryers would be in a different area. Products with high rotation would be placed right next to the loading docks to minimize time retrieval and save on labor.

## WAREHOUSE SPACE DISTRIBUTION

Before installation: wide aisle, normal rack height, Selective Pallet Rack



After installation: narrow aisles, increased rack height, Selective Pallet Rack. Electrolux and Mecalux designed a solution that would utilize the same footprint while storing 53 percent more product. They built up instead of out.



## MECALUX IN MEXICO

Mecalux arrived in Mexico in 1997 opening a 323,000-square-foot manufacturing plant in Tijuana. Today, Mecalux has more coverage in Mexico than in any other country throughout the Americas, with sales offices in Mexico City, Merida, Puebla, Monterrey, Guadalajara, Hermosillo and a second manufacturing plant in Matamoros. The factories in Tijuana and Matamoros are the company's sole developers of Wide Span product, all welded structural beams and frames, bolted structural Cantilever rack, push back beams and carts and the majority of accessories such as row spacers, guide rails, and foot plates. Mecalux relies on these facilities to manufacture and ship the products worldwide.

The company's growth in Mexico in the last decade is due to its technical advancements, the comprehensive range of storage systems offered, its extensive distribution network and the developmental opportunities that are unique to the area.

In all, Mexico accounts for one-third of Mecalux's North American production space, half its sales offices, and Mecalux maintains a consistent annual presence at public events throughout the country.



When it came to warehouse space distribution, the 172,222-square-foot storage space was divided in two areas: Area A with four storage levels of double deep selective rack, where product is received and stored, and Area B for internal logistics, where the double deep rack is stacked five levels high and dedicated to returned or damaged merchandise. This space is 8,611 square feet and the

appliances are kept until they are sold to companies interested in refurbishing them or interested in buying them for spare parts.

Acuña pointed out the main benefits Electrolux derived from the new installation from Mecalux were in the efficiency of their deliveries, which went from 96 percent to 99.6 percent. The new rack also made it



*The problem was simple: store more without renting additional square footage.  
The solution was simpler: build up with Mecalux high-height Selective Pallet Rack.*



The installation was structured in three phases, with the final one completed in 2012, giving the distribution center a capacity of more than 5,100 pallets.

vastly easier to handle the product without damaging it. This reduced the number of returned products due to transportation or storage damage and led to significantly better relationships with their distributors and partners. Furthermore, they saw a large improvement in production.

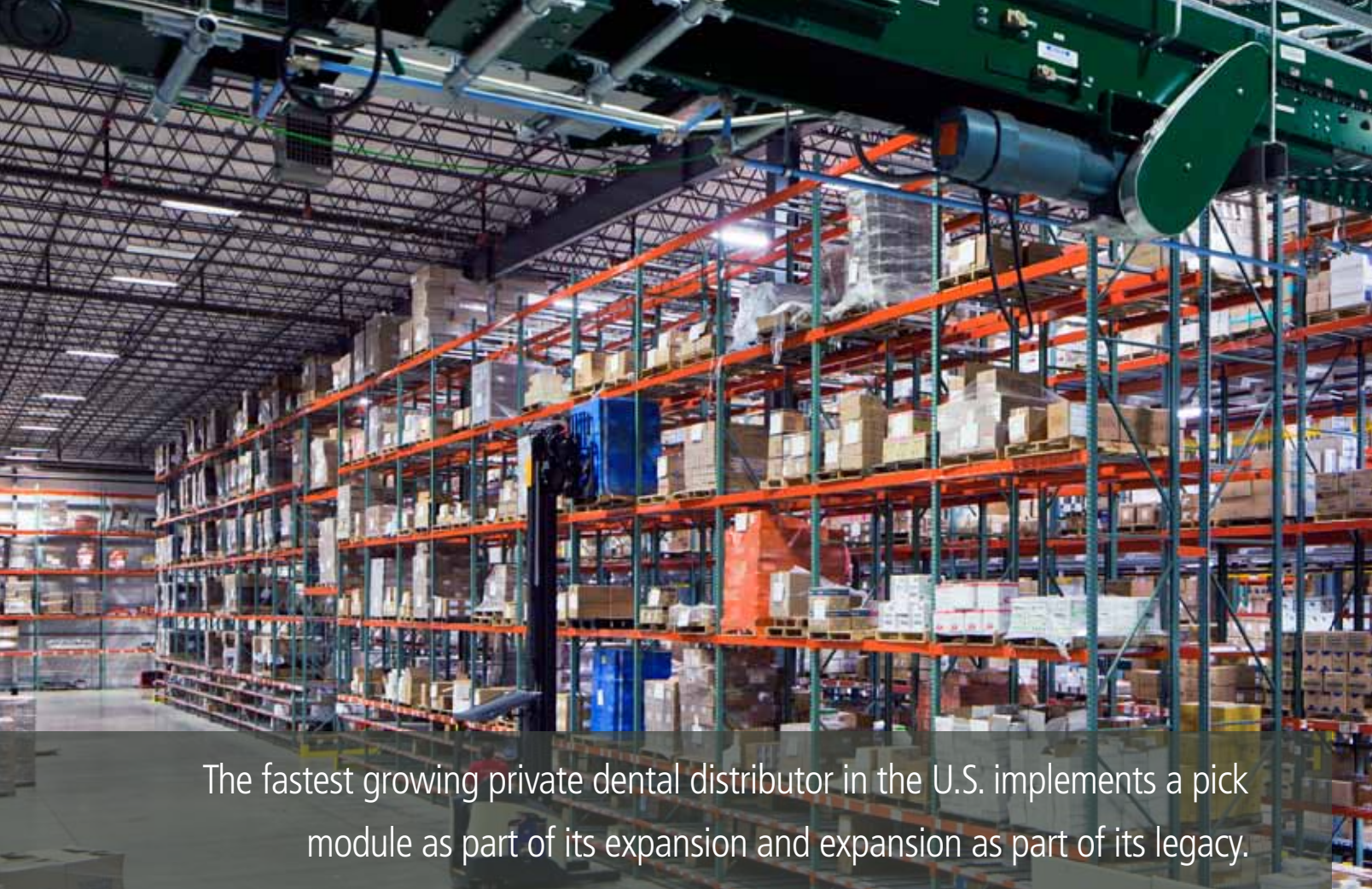
"We have saved on corrugated materials, repackaging materials and

labor time for placement of product," Acuña explained. "We were also able to avoid renting more space by utilizing the height of the warehouse we already had."

With a seemingly simple solution of higher rack bays, narrower aisles and double deep capacity, Mecalux greatly increased the volume of product Electroflux was capable of

storing in their facility in Mexico, saved them money on rent and maximized the company's efficiency.

Electrolux is poised and primed to keep growing and expanding their manufacturing and distribution centers in Mexico. And Mecalux will be standing by whenever the appliance manufacturer is ready to expand again. ●



The fastest growing private dental distributor in the U.S. implements a pick module as part of its expansion and expansion as part of its legacy.

# The Serial Uprooting of Benco Dental

In January 2010, dental equipment supplier Benco Dental teamed up with Interlake Mecalux (IKMX) to create the nucleus of its growing business: a new home office which would also double as a distribution center and lavish product showroom. After a decade that saw the Pennsylvania based company open distribution centers in Florida, Indiana and Texas, Benco Dental's next step was to bring the company back where it all started, and then to a nearby town. In its latest move, Benco swapped a 69,000-square-foot facility for over 160,000 square feet just seven miles away. Movement, it turns out, is as much a part of Benco's history as dentures and floss.

## An Inconvenient Tooth

The company's founder Ben Cohen (Benco is a contraction of his name), emigrated to the U.S. from Russia in 1922. He spent the bulk of his 20s hawking dental supplies out of a suitcase and using train lines along the East Coast to determine his sales territory.

By 1930, Cohen put down roots in Pennsylvania and formally started Benco Dental in a modestly sized Wilkes-Barre office. Benco grew the business there for 30 years before moving into a facility three times the size of that original office. The company would relocate twice more, the first of which happened in 1972,



*The facility's impressive size and expansive range of capabilities is a far cry from its humble beginnings. More than 80 years ago, Benco got its start as a one-man operation in a cramped room of a bank building.*

after a hurricane drowned the entire Mid-Atlantic Coast and forced a rebuilding effort. Benco exchanged Wilkes-Barre's southern flood plain for space in the drier north. Eventually, the company would expand that space to almost 70,000 square feet before relenting to its inconvenience and moving a final time in 2010. In fact, Lou Mangino, Benco's vice-president of operations, called the previous facility a hodgepodge, adding that the difference between the new building and the old was, "probably the difference between heaven and hell."

#### Dental Detail

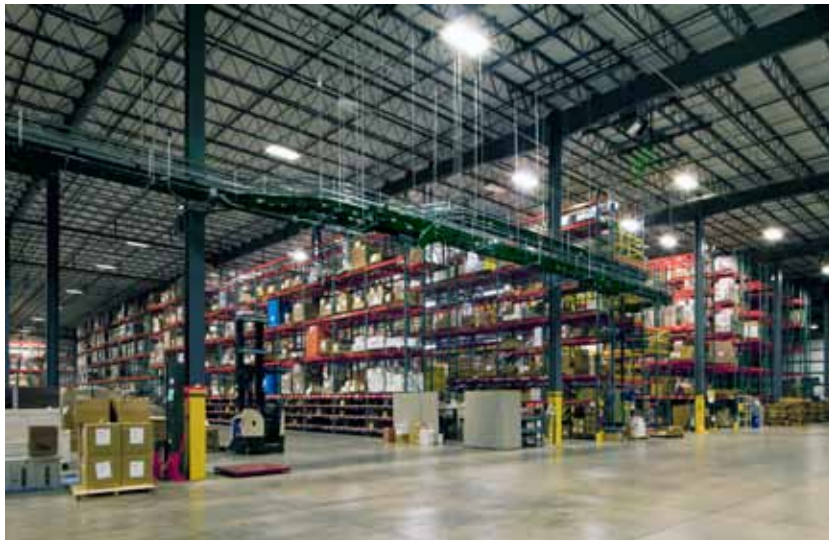
In the old Wilkes-Barre facility, the company was hampered by, amongst

other things, limited and undersized pick locations, pockets of scattered secondary stock and bins requiring inefficient replenishment. "The most bang-for-your-buck happens [when companies] receive product, stick it in its primary location and pick it," Mangino says. "That's the philosophy Mike took when he designed the new facility." The Mike he refers to is Michael Mangan, Benco's special projects coordinator. Mangan designed the new Pittston facility's large and, in several places, lavish CenterPoint facility, by first reapplying many of the successful systems found in the company's previous installations in Florida (2001), Indiana (2003) and Texas (2005).

More than 400 employees work out of the Pittston facility – and not just in the distribution warehouse, but in the offices, classrooms and showrooms built into the structure's design. "We have the biggest single place in the U.S. where dentists can come see all kinds of working operatories," Mangino says. Twenty-six office sets display the products and technologies Benco distributes. Each set is presented much like room displays in furniture stores; and similar to the way furniture store customers relax on recliners and tinker with lamps and televisions, Benco's visitors are encouraged to handle the equipment and test out the facility's 13 X-ray suites. Such hands-on capabilities fit

“For us, it’s about relationships. If you make your employees happy, your customers sense that.”

~ Lou Mangino, Benco Dental



into the “one call gets all” operation Benco Dental says it has honed over the last three generations. As further evidence of Benco’s commitment to networking, they send 700 repair techs and sales people out on the road and host in-house seminars in the Pittston facility. “For us, it’s about relationships,” Mangino says. “If you make your employees happy, your customers sense that.”

Bob Novak, Interlake Mecalux’s national sales manager, explained that he first got involved with Benco Dental after one of its lift truck distributors came to him for assistance designing Benco’s pick module in Fort Wayne, Indiana. “We said we would handle the module entirely, and leave the rack to [the distributor],” Novak explained. He also noted that after Interlake Mecalux’s outstanding and distinguished work and guidance with the installation in Indiana, Benco Dental commissioned the international warehouse shelving manufacturer to provide rack for its future installations. “We went in as the experts on pick modules and have worked with Benco ever since.”



“It worked out pretty well,” Mangan says, reflecting on both Benco’s reenlistment of Interlake Mecalux and the six-week installation in Pennsylvania that followed. “There was a lot of communication between us and the vendors; a lot of drawings going back and forth.” As it often does, the evolution of this process started with conceptual drawings. After the sides volleyed their ideas back and forth, the concept was whittled down to a final design.

### Reserve Efficiencies

The design and size of Benco Dental’s facility ensures that it isn’t strained by constant restocking demands. Warehouse dimensions aside, the dental product distributor uses its space wisely by also building vertically and canvassing each square foot with efficient operations. Benco’s floor plan certainly fulfills all of its basic requirements, but it’s the system’s bells and whistles that add a unique efficiency exclusively available in that facility in Pittston.

In addition to the improvements the shelves inherently create in the facility, the expert innovations and specialized flourishes of the Pittston location optimize production. There are efficiencies created by the system and efficiencies created around it. Those in the latter group, sometimes called “reserve efficiencies,” require creativity and a total understanding of the challenges unique to individual spaces that even new storage systems cannot solve. Mobilizing this knowledge into innovative solutions is what helped solidify Benco’s relationship with IKMX.

Here are all of the facility in Pittston’s biggest customizations – and why they are necessary:

### Elevations

“I approached Interlake Mecalux with a basic design in mind, they tweaked it, and we both added some cool features,” says Mangan, who had over 20 years of experience with Benco leading up to this installation. Mangan says he and Interlake Mecalux adjusted deck elevations

### PICK MODULE SAFETY:

How Interlake Mecalux worked with Benco Dental to ensure a safe operation.



#### 1. Safety Straps.

The operator is hooked into a harness as well as a safety strap. The strap rides along a trolley that runs the length of each module level (other than the ground floor).

#### 2. Galvanized Safety Deck.

Once a pallet is fully picked, personnel will relocate the pallet. If not for galvanized sheeting over the bar grating, pallets would travel over the bars like cheese over a grater, shedding wood shards on personnel who work below. The galvanizing ensures an easy, undamaged course to a return lane.

#### 3. Safety Netting.

The netting extends past the safety deck in order to deter personnel from approaching the edge of the pick module and to protect them if they do.

and short ground floor risers to make it easier for anyone and everyone to stock top shelves. Each stocking area on the module’s ground floor added a 10-inch built-in step to ease the picker’s reach. “One of the issues with Carton Flow is that the system is on an incline,” Novak explains. While shorter employees might be able to reach

the top shelf on the lower picking end, the incline up to the loading end would make that side higher and therefore more difficult to reach. Unlike the module’s ground floor, steps cannot be added onto the elevated floors for structural and architectural reasons. The solution was to incline the deck on the higher end of the



*Clockwise from upper left: The extra shelf picking areas ensure constant quick turnaround. The customized bridge Interlake Mecalux built connecting its module to a competitor's mezzanine. The stocking area rises 10 inches between the picking side and the charge side, making steps on the top three levels necessary for shorter picking personnel.*



Carton Flow module several inches and install multiple ramped catwalks connecting the two. The end result is a seamlessly equal reach for personnel on both sides.

#### **Bridgework**

In addition to the catwalks, Novak and the IKMX design crew were able to create a bridge connecting the second floor of the pick module with a structural mezzanine supplied by a company no longer in operation. "That's not something we usually do," Novak says of the bridge.

#### **Extra Shelf Picking Areas**

The design also called for shelf pick areas allowing for maximized order completeness, or "just-in-time" shipping. "When a product hits the dock," Mangan says, "we try to receive it within 24 hours and get it put away. A lot of times, it's already committed to an order and we've got to rush to get it replenished and on the shelf for the orders we have." Shuffling the product out the door or back into the system is easier to do the more shelf pick areas one has. Once a pallet is unloaded onto

the dock, lift trucks transport the pallets to their appropriate locations throughout the module. Pallets arrive on the outer decks of the module to be loaded onto the flow rails. Once there, they slide toward the middle of the module where items will be picked and scooted along the conveyors.

#### **Steel-Encased Flow Rail**

The ground level Pallet Flow rails were last-minute additions designed to maintain a productive picking speed of oversized products. The customized structural steel casing protects the rails against lift truck damage.

#### **Chevron Shelves**

Benco Dental wanted their smaller, slower-moving products to be accessible to the pick area without going to great lengths to retrieve them – a common wish among facilities with similar products. For this, the group designed chevron shelves. The 20-inch deep units hang above the conveyor – accessible but out of the way.

#### **Bonus Storage**

The *coup de grâce* of Benco's optimized turnaround time was adding pallet storage to each level.



Adding more storage space to each level meant that Benco would have extra floor space where pallet storage would have been. That extra floor space can be used by forklifts to unload additional goods faster.

### Dental's Implants

Relocating a company is tough business, even if it only moves you seven miles away. The Pittston facility rests in a never-occupied building within a storage park that was adapted according to Benco's specifications. Hospitable as the facility owners may have been, Benco Dental's team realized how tricky the several months preceding the late 2009 move were going to be. "It was like pulling a Band-Aid off very slowly," quips Mangino, reflecting on having to manually move 34,000 items one-by-one from old pick slots to new ones. "The transition lasted about two-and-a-half months. We underestimated what a pain it would be." The main issue was maintaining two half-operational facilities simultaneously. One was half filled, the other was half empty and as a result, pieces of orders had to be shipped from the two separate locations. "Maintaining customer satisfaction during the move was the biggest challenge," Mangino says. "We didn't shut down for one day."

Knowing what they know now, Benco could have avoided many of the issues caused by the facility changeover. The most malingering of these issues occurred when the dental supply company misjudged the frequency with which it picked certain items. They left behind slower



### Benco Dental Record

*Clockwise from upper left: added height for pallets and steel-encased flow rail keep product both stored and out of the way. The customized chevron shelves sit above conveyor lines for quick storage of small items.*



moving products that were picked more than expected and resulted in two half-filled warehouses each storing equally necessary products. Relocating is a learning process

– though Benco Dental hopes they've taken their last course.

"I think it's just much easier to open up a brand new facility from scratch

## Benco Dental's Plans for the Future

Benco designed the current layout with future growth in mind. They left plenty of space for additional storage and included a section where an extra pick module can easily be installed.

The red layout on the far left is dedicated to future storage. An extra pick module can slide into the red space in the center.

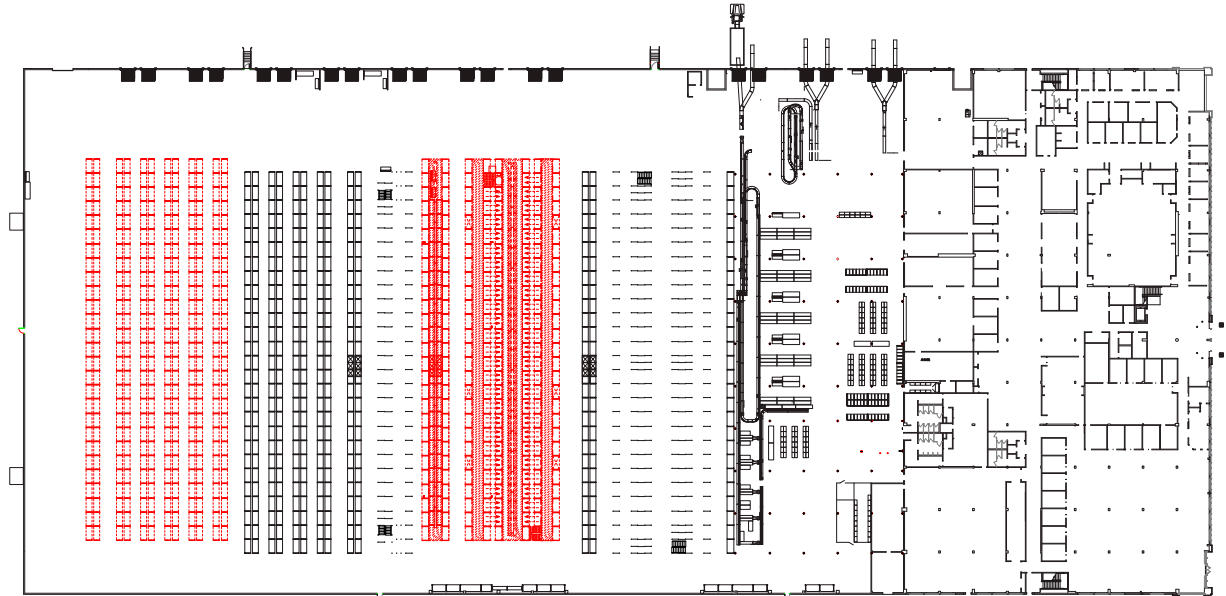


Fig. 1

than it is to move into one," Mangino says, adding that Mangan and his design team planned for the future when designing CenterPoint. "As we grow, the facility is designed to drop in a second pick module." Clearly, more than 80 years of relocating and expansion have taught the team to pay as much attention to tomorrow as to today. The goal is to relocate the floor stock from the space designed for the second pick module before installing that second system (see fig. 1). And it isn't hubris on the part of Benco to have designed their facility with such a rosy forecast. The company's past success implies future progress. Since the company's arrival

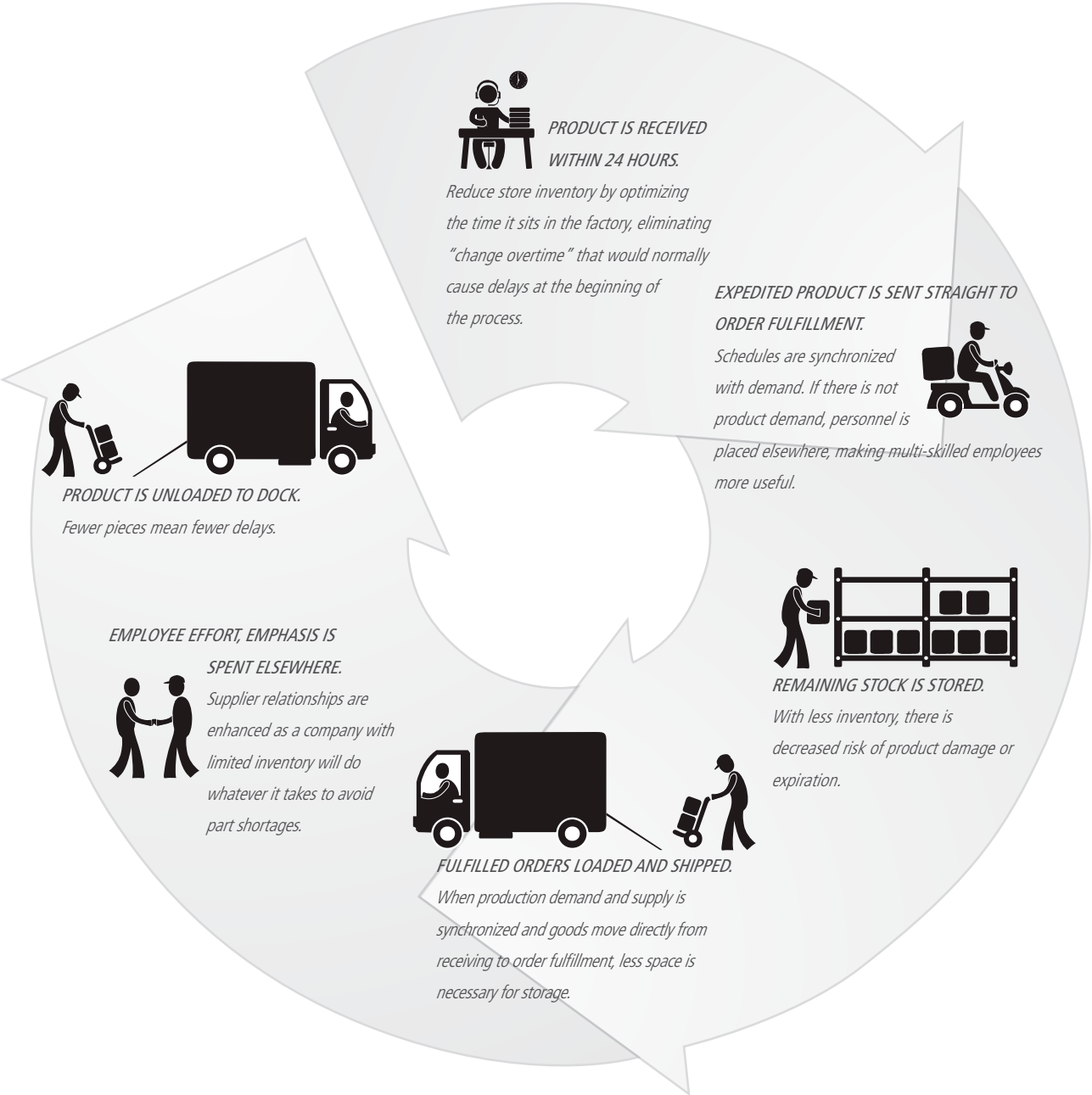
in Pittston, Benco has exhibited the largest growth rate among its competition ... by far. Rapid growth has allowed Benco to stomp out a bigger national footprint, most recently in Reno, Nevada, the company's first expansion to the West Coast market. "What's nice about that is the only thing you can do when you get into a new market is steal market share from your competitor," Mangino reflects.

As a result of incorporating the Interlake Mecalux systems into the Pittston facility, Mangino estimates that it has seen a 12 percent improvement on productivity

compared to what Benco was pumping out of Wilkes-Barre. That number, incidentally, is likely to grow in concert with the company's plans to expand. Having successfully worked alongside Interlake Mecalux in Fort Wayne, Pittston and most recently, Reno, Mangino expressed interest in working with Interlake Mecalux in the future – a future that appears to be rapidly approaching. Benco's Dallas facility is already facing the same growing pains that its Wilkes-Barre building faced – that's the good news. That both Benco Dental and IKMX know plenty about such travels toward expansion suggests the bad news won't make the trip. •

### CYCLING THROUGH A RESPONSIVE REPLENISHMENT METHOD

Benco Dental has made it a company practice to saturate its distribution centers with efficient production strategies including its Just In Time (JIT) replenishment method. JIT is a means to reduce stored inventory by optimizing system performance. Here is how Interlake Mecalux helped ensure Benco Dental's efficiency:





# Rolling with an Idea

Durable fabric distributor Trivantage had 50,000 fabric rolls and no idea how to store them. Then Interlake Mecalux made one simple suggestion.

Density is the first thing one notices about the towering racking system in Trivantage's North Carolina distribution center in Mebane. There are three times more shelves than in most normal units. This means that the second thing one notices about the racking system is how unique it is. Extending impossibly 30 feet in the air, thousands of fabric rolls bunk in shelving compartments like crayons in a box. It is immediately clear that more than a little engineering went into the design of this facility.

## **Parachutes and Pantyhose**

In 1969, United States astronauts took mankind's first steps on the moon and sank their country's flag



eight inches into the surface to honor the feat. That flag's fabric was woven by a North Carolina company named Glen Raven, known more for making pantyhose than historical textiles. This was just one event in the history of a company with diverse and wide-ranging accomplishments.

Glen Raven got its start as a cotton awning manufacturer in 1908. Throughout the 1940s, with World War II raging, Glen Raven found its niche manufacturing military parachutes. The company continued growing and shifting and eventually developed the first commercial ladies pantyhose in 1959. Three years later, the company introduced an acrylic-

based fiber more durable than cotton which put Glen Raven back into the primary role of manufacturing fabric – a role that it has maintained ever since. Today, in addition to making awning and boat covers, Glen Raven and its subsidiaries make convertible tops and outdoor canopies, and they supply many of the hardware pieces that complement their fabric line.

Between 1998 and 2008, the company merged with France's Dickson SA and acquired two American companies. The French merger gave Glen Raven a presence throughout Europe and China, while the American acquisitions led to another development. Glen Raven, along with the more than

130-year-old Cleveland-based Astrup Company and the more than 140-year-old Brooklyn-based John Boyle & Company, combined their considerable experiences (and considerable advantages within the market) to form the triple-headed super-subsidary named Trivantage.

#### **When They First Did Not Succeed, Tri' Tried Again**

Trivantage, unlike Glen Raven, was created to focus on the distribution of fabric rather than its production. It didn't take long for the newly formed company to realize how different the two functions are. Less than 18 months after its formation, Trivantage began retooling its processes.

Lee Whitney, the company's vice president of finance administration, said the economy's downturn largely spurred the company to reconsider not only how it had been performing operations in the last year-and-a-half, but also how the two acquired companies had handled distribution over the last century.

According to Whitney, the company decided it needed to regard its value in the manufacturing chain differently than other distribution centers. "A manufacturing company might have a roll of fabric; let's say 50 yards," Whitney explains in a Carolina-soaked drawl. "Well, not everybody needs 50 yards of fabric. A lot of times, only five or eight or 15 are necessary. Our role

is to take the manufactured goods and sell it to the end-user in whatever dimensions he needs."

In order to fulfill such a wide range of orders, the storage warehouse must not only be able to hold tens of thousands of fabrics (the North Carolina facility has space to store more than 50,000 fabric rolls), but also be able to locate a specific roll quickly. As Whitney explains, "You can't just point to a bin location and say, 'Okay, pick one of these.'"

Trivantage remains the only national distributor of the types of fabrics Glen Raven manufactures, and its Mebane distribution center was the first such facility in North Carolina to be fully

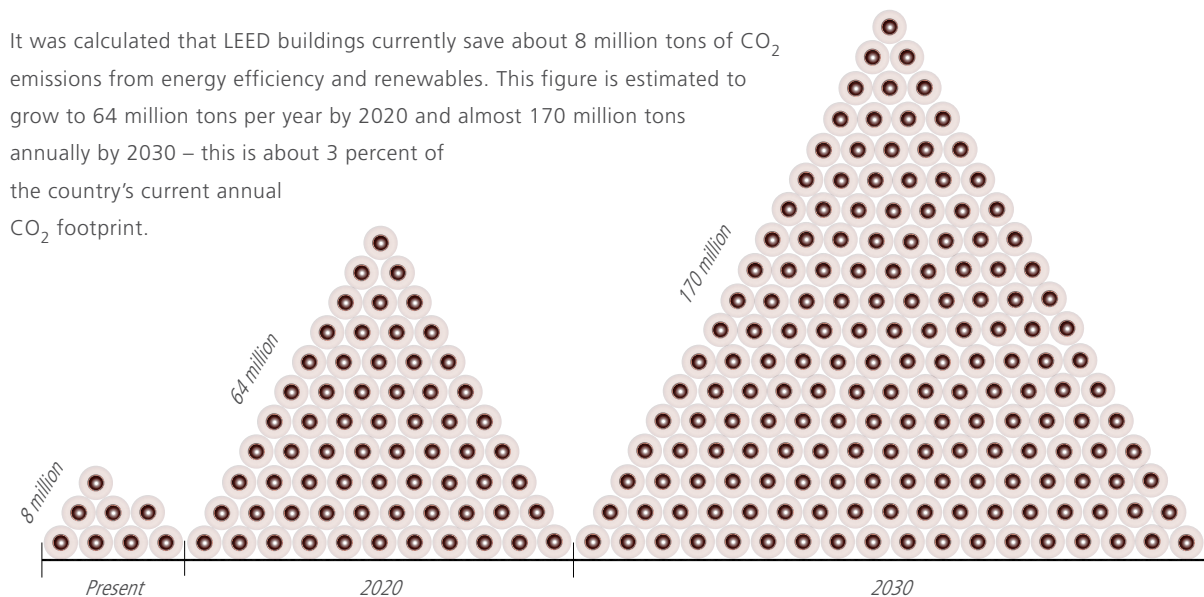
LEED certified. Each year the company brings its bulk supply in, breaks it up into thousands of individual SKUs and deals them out to hundreds of its vendors around the U.S. Typically, if a customer places an order today, they want it tomorrow. In order for a distribution center in North Carolina to fulfill an order on its way to Texas with that kind of efficiency, its employees cannot afford to spend three minutes rooting around fabric stacks aimlessly hoping to find the necessary product.

The Mebane distribution center serves two separate-but-equal purposes. The first is to replenish the 11 other branch locations throughout the country. The second is to process and ship orders directly out of the

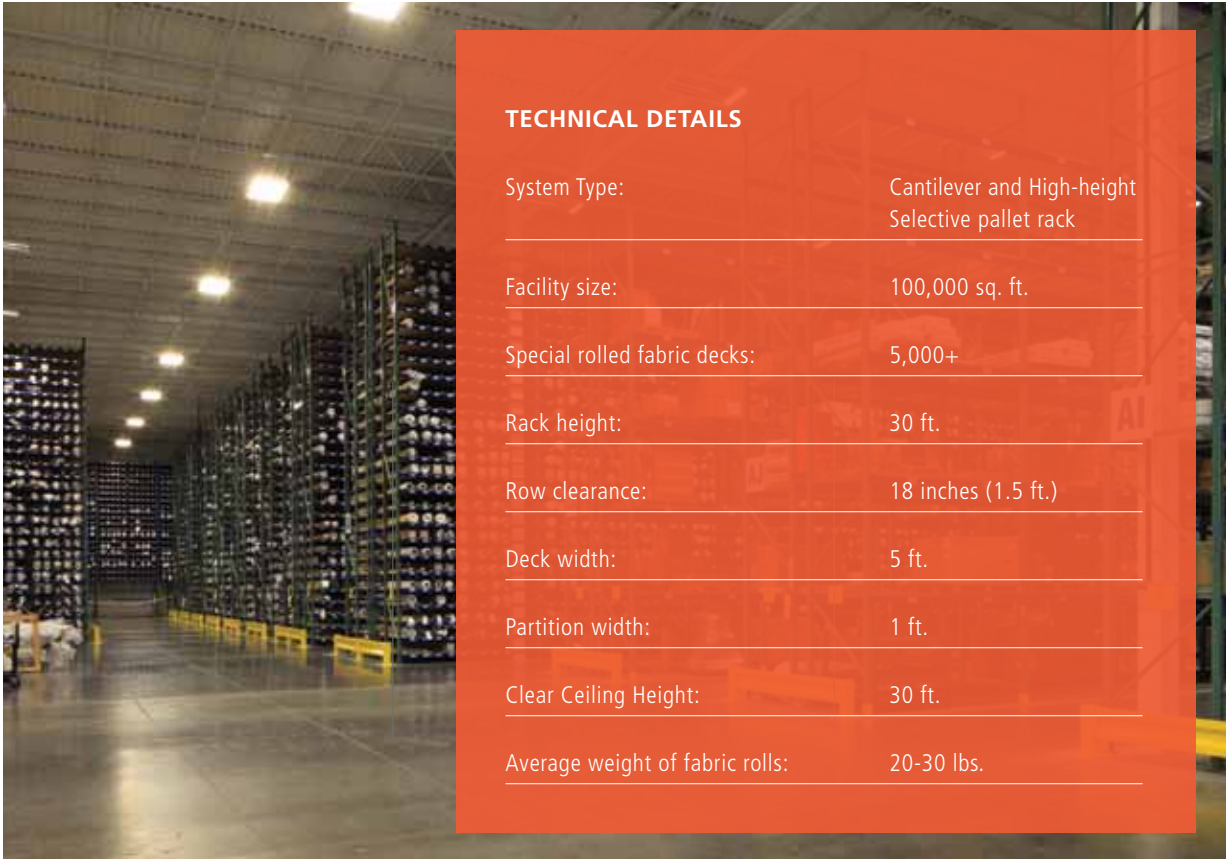
## LEED CERTIFICATION FOR CO<sub>2</sub> EMISSIONS

Having created the first LEED certified building in North Carolina, Trivantage paved the way for the green building revolution. The trend, which saw growth even through the Great Recession, expects continual and substantial growth in the number of buildings receiving LEED certification. The corresponding savings in CO<sub>2</sub> emissions are nothing to scoff at ...

It was calculated that LEED buildings currently save about 8 million tons of CO<sub>2</sub> emissions from energy efficiency and renewables. This figure is estimated to grow to 64 million tons per year by 2020 and almost 170 million tons annually by 2030 – this is about 3 percent of the country's current annual CO<sub>2</sub> footprint.



SOURCE: <http://www.greenbiz.com/news/2010/11/17/leed-buildings-grow-14-percent-despite-market-crash>



### TECHNICAL DETAILS

System Type:	Cantilever and High-height Selective pallet rack
Facility size:	100,000 sq. ft.
Special rolled fabric decks:	5,000+
Rack height:	30 ft.
Row clearance:	18 inches (1.5 ft.)
Deck width:	5 ft.
Partition width:	1 ft.
Clear Ceiling Height:	30 ft.
Average weight of fabric rolls:	20-30 lbs.

*Most companies that don't store rolls on carousels tend to stack the product pyramid-style.*

warehouse. "It's a distribution center," Whitney reminds us. "Our main goal is to move items, not just store them."

Before the retooling effort, it would not have been out of the ordinary to find a couple dozen 25-pound fabric rolls stacked in a compact area ready to be tugged out when needed. This practice left many rolls frayed, dented, with unnatural ridges, essentially destroyed. "That [storage method] wasn't going to work with our volume," Whitney says, adding that the immense product volume prompted the company to consider alternative

methods of storage and location tracking. Trivantage hired consulting firm Tompkins International to take charge of the operation. Tompkins had an idea of the rack layout necessary for their client's end-goals but struggled to bring that idea to fruition. "That's when [Tompkins] started talking to all kinds of different vendors," Whitney says. "They had a wide range of companies bidding on this project and trying to develop a solution; from racking people and design engineers to fabricators." After a number of failed approaches, Tompkins found a company with an answer. Interlake Mecalux had a big idea.

### The Cardboard Tube Solution

Trivantage needed to store an immense number of fabric rolls and aimed to do so in an unusual way. The company wanted single-selectivity storage so that their distribution center could more easily access a single fabric roll, bring it down, cut it, and put it back. Most companies that don't store rolls on carousels tend to stack the product pyramid-style, forcing personnel to move product at the top of the heap in order to reach the products on the bottom. Not only was it necessary to store the rolls on a smooth surface, but they were



to be stored without the use of the commonly used cardboard tubes.

In most operations, the wax-lined cardboard tubes that held each fabric roll like chips stacked in a Pringles can, would wear out and force users to repurchase new tubes at \$10-15 a pop. In addition to the costs of the tubes, clients also added to their fire risk by storing flammable fabric into a cardboard coffin, making each product twice as flammable, not to mention the extra space each tube occupied in multiples of hundreds or thousands.

The tube solution, according to Karl Borgman, the Tompkins project manager in charge of equipment purchases, was completely off the table. Instead, Tompkins solicited several metal fabrication shops for ideas on how to better store the fabrics. The best idea to come from this was a half-moon cradle-type metal pallet that could have been made from either steel or aluminum. Either way, the price to manufacture and ship them was unthinkable.

“At the time, it was the only solution we had,” Borgman says, recounting

that after the metal fabricators, Tompkins shopped the prototype around to different rack vendors. “We said, ‘Here’s the solution we’re planning on using. If you have a better one, please provide it to us.’”

Everyone was searching for a way to store 50,000 rolls of fabric individually without the damaging stack-and-tug methods of yesteryear. According to Mark Tomko, a Midwest sales rep for Interlake Mecalux, Tompkins invited IKMX to take a stab at finding a solution. The result is not a complicated design, but it is a new





## NORTH REGION WOOD

Cornerstone President Greg Doppler used a Northern spruce wood for the shelf decks, explaining that despite it being a soft wood, the project called for a material that was more straight and stable than it was strong.

“The guys in the South, they don’t like spruce because they grow yellow pine there,” Doppler explains about the Northern wood.

“Yellow pine, the more you fool with it the more it wants to warp and twist.”

He also clarified that although yellow pine would have provided stronger decks, they would not have worked in the Trivantage application because they never would have stayed flat.

other companies solicited] provided us with any other benefit. Interlake Mecalux came back with a solution I didn’t even know about.”

Tomko, for his part, was careful to add that innovation was only half of it. “We were a lot less expensive too,” he says. Most of the rejected designs involved \$500 metal pallets that did little to protect the product. Tomko’s plan, if enacted, would protect every individual roll and saved hundreds of thousands of dollars along the way.

“I looked at Tompkins’ metal pallet plan and thought, ‘that’s going to cost millions of dollars.’ There was no way. “I have to credit Tompkins for doing a lot of the work to get to a point where they brought me in,” Tomko says. Borgman knew that the half-moon pallets weren’t an optimal solution, which is why he jumped on the Interlake Mecalux wood design, noting that reconfiguring a system filled with wood is better than having to replace steel or aluminum.

one. Each flat wooden deck rests comfortably on the frame’s beam like a wire or galvanized deck usually would. Long rectangular wooden dividers – sometimes called “cleats” – create about a foot of space for the fabric to rest without rolling to either side. Each deck is large enough across to fit five fabric rolls. Whitney described the design’s end result as resembling the plastic supermarket partitions placed between bundles of groceries at the checkout line. “It’s so simple,” Tomko says, slightly lamenting the fact that the eventual solution isn’t more visually impressive, “but the simplest

ideas are sometimes the coolest. When you show it to somebody they’re going to ask, ‘What’s so special about that? It’s just a board with a separator on it.’ It doesn’t look like a big deal, but for a company that had damaged fabrics and trouble tracking them, this is a great solution.”

The design may have been simple enough that anyone could have come up with it, but no one else had. “Interlake Mecalux was the only vendor that came back with anything other than what we said we would do,” adds Borgman. “None of [the

### Tri’s Trio

The next step for Interlake Mecalux was to determine how to produce 5,000 specialized wooden decks as inexpensively as possible. After a brief search for wood companies capable of the job, Interlake Mecalux partnered with Cornerstone Wood to produce the decks, a job the Oregon-based company jumped into with both feet. The wood manufacturer admitted they had never been asked to build industrial particle shelving with as heavy of a load in as long a span as Interlake Mecalux had initially



*Just as there are three times the shelves of a normal bay packed into Trivantage's system, there are also five-times more pallet positions.*

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by itself was not sufficient to do the job," Doppler says.

Borgman, with a resolved laugh borne from hindsight adds, "Lo and behold, the client decided to put rolls on the decks that were heavier than expected in those locations." The decks bowed on the beam and punched through the wooden support. Simply screwing the separators to the deck proved not to be secure enough to get the job done. Gluing and screwing the shelf cleats into place, it turned out, offered considerably more strength to the shelving system, creating not only a deck divider, but also a significantly stronger non-deflecting deck. Another issue in need of attention was how to make each deck smooth enough to allow the fabric to slide in and out easily. Doppler vaguely described this solution as a manufacturing process that involves a product similar to medium density fiberboard. He then jokingly halted and cautioned that if he revealed any more he'd have to take this reporter out back and shoot him. No further questions on the matter were posed.

designed, but their confidence never wavered. "[Cornerstone] is willing to do strange things," says the company President Greg Doppler. "The more technical it is, the more involved it is, the more design there is, the more we like it."

Cornerstone brought four different layouts of each of the two proposed prototypes to Tompkins' North Carolina facility and every faction convened to fine-tune the solution. Tompkins, Interlake Mecalux and Cornerstone – with cooperation

from Trivantage – began testing for weaknesses in the design or issues that might develop during use. The four companies had to collaborate in order to hammer out a number of issues, the most pressing of which was preventing shelf deflection. Cornerstone first considered constructing the shelves out of plywood, which would have been structurally stronger, but more expensive and prone to splintering and chipping when in contact with the fabric. The wood manufacturer determined that the shelves would need something extra. "The shelving

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“It’s a very quick process. It’s a matter of scanning it in, pulling the roll and moving onto the next location.”

~ Lee Whitney, Trivantage

As Doppler explained, sometimes solid plans on paper don't always work when replicated using composite materials with unique loads in the actual field conditions. Whitney adds, "Several iterations seemed logical until we went out and tested it. The

**LEEDing to Success**

Using Interlake Mecalux rack was just one in a chain of ecological decisions made by Glen Raven in the construction of the Mebane, N.C., Trivantage warehouse. Throughout the process, they had sustainability on the mind. This is what earned them their LEED Silver certification and, with their 100,000-square-foot space, the claim as the fourth largest LEED certified building in existence. This project was no small undertaking.

“We have been [making sustainable choices] since before it was popular,” said president and CEO of Glen Raven, Allen Gant. “You have to protect the environment in order to be here generation after generation after generation. Our focus is not six months or one year. Our focus is the next 100 years. In order for us to be successful in 100 years, we have to take care of the environment.”

The result of taking care of the environment is a building that is 20 percent more energy efficient than building codes demand. The new structure features solar hot water, sensors that switch the lights on only when someone is present and plumbing designed for minimal flow. During the construction process, 30 percent of the materials used contained recycled content, and almost 90 percent of construction waste was recycled.

Glen Raven made choices for its new building in Mebane that reduce energy consumption, improve air quality and make it an all-around more comfortable place for employees to work and customers to do business. They have laid the groundwork for a successful next 100 years, and Interlake Mecalux is proud to have rack standing on that ground.

things we came up with didn’t end up allowing the fabric to slide, or it shred the fabric.”

The team spent a month tweaking the design to ask and answer several questions. How round the edges should be? How much end space was necessary to comply with state and federal fire codes? Are the rolls able to slide smoothly? Can the decks handle the weight of the fabrics?

Cornerstone even set up a makeshift woodshop at the Tompkins site, complete with a router and spare pieces, making adjustments to the wood prototypes on site until the right product was formed. It wasn’t easy. “It was about 98 degrees outside,” Doppler recalls. “We were sweating ridiculously.





It was disgusting out there, but it was a lot of fun because everybody pitched in and was committed to a solution.”

#### **Rack ‘N’ Rolls**

The skyscraping storage bays in the Trivantage facility are so dense that each fabric roll appears like a light in a grand scoreboard. Just as there are three times the shelves of a normal bay packed into Trivantage’s system, there are also five-times more pallet positions. In short, the storage was very dense. In addition, the fabric rolls aren’t manufactured in standard lengths; some extend past five feet, while others come in under four.

This was another consideration in the design of the racking layout. It was important to keep items of similar length (and weight) grouped together to create a more efficient system of storage while also maintaining the preciousness of the fabric. Not every bay carries the same 18-inch distance between shelves; some are wider to handle larger or heavier fabric rolls. Generally, however, the system is built for maximum density, while maintaining the most efficient method of locating specific fabrics. The Trivantage facility is an automated paperless operation in which fabrics are listed in its WMS. When a specific roll is needed, the determining

descriptors are entered into the system and the roll’s location is listed. What makes this distribution center hum is the ease with which each roll is accessed after it has been located. “It’s a very quick process,” Whitney says. “It’s a matter of scanning it in, pulling the roll and moving onto the next location. If we didn’t have the racking system, [finding fabric rolls] would be more cumbersome and time-consuming.” As it is now, the product picking procedure has been streamlined in a way none of the other Trivantage facilities were allowed to operate before. Now, pickers take routes within the warehouse that are geographically lumped together.

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In order to fulfill such a wide range of orders, the storage warehouse must not only be able to hold tens of thousands of fabrics, but also be able to locate a specific roll quickly.

~ Lee Whitney, vice president of finance administration, Trivantage

The picker then unloads the wave and goes out to start a new one in a different section.

Interlake Mecalux understood the importance of product accessibility in a warehouse, especially in one placing so much emphasis on fast turnover. IKMX, Cornerstone and Tompkins created a solution for Trivantage’s storage that became a solution for the rest of the facility’s ailments.

In fact, the solution has carried over into other installations with other companies, according to Borgman.

“Quite frankly, we didn’t realize you could do a beam that narrow. I recently did a project in Canada and they had beams on 3-inch centers and I said, ‘Good grief, guys. This is annoying!’ It made me appreciate 2-inch centers,” Borgman explains. He expounds a bit more on this watershed moment in storage innovation and one wonders if Glen Raven might add this to their marketing materials next to the images of Armstrong and Aldrin planting the flag on the moon.

“[Interlake Mecalux] did a hell of a job putting this thing together,” Doppler

says today. “They did what not one-in-a-hundred people would have done for [Trivantage]. They really helped the customer.”

There are no stopgaps in the IKMX product line. Whether it is something they’ve been doing for decades, or something new, the solutions from Interlake Mecalux are permanent; the success on display in Trivantage’s distribution center proves this. “I like to think that we need each other in processes like this,” Whitney says. “We couldn’t have done it without Interlake Mecalux.” ●



# Refurnishing the Furniture Giant

How Interlake Mecalux and Mathis Brothers combatted the elements and refurbished the furniture company's operations.



You could say furniture is in Bill and Larry Mathis's blood. You could also call them the Mathis Brothers, but they would dispute that. "So many people think we are the Mathis Brothers, but we are not the original Mathis Brothers," Larry said in a 2006 interview with *NewsOK*. In fact, the first Mathis brothers were their father, Don, and their uncle, Bud, who started the family business in 1960 in Oklahoma City. Just seven years later, in 1967, Don Mathis bought his brother's portion of the company. Then in 1988 Don bequeathed the furniture behemoth to his sons, Larry and Bill. The brothers became the owners and operators of

410,000 square feet of warehouse in Oklahoma City. Fast forward 27 years and the brothers have expanded their great empire beyond Oklahoma City to Tulsa, Oklahoma; Indio, California; and Ontario, California and have attained an impressive spot on Furniture Today's Top 100 Retailers list at number 21.

A sprawling warehouse and a decades-old furniture business might be a daunting endowment for most, but not for Bill and Larry Mathis. A local newspaper asked the brothers when it was that they started working at the family furniture store. "I don't recollect not coming to the business,"

Bill replied. As boys they spent their weekends and summers at the store mowing the grass, operating soda machines and cleaning the trash cans – mundane tasks that were perhaps made up for by the budding of their media careers. Bill became the star of the furniture commercials at the age of 14, shortly followed by Larry, and the two brothers were the face of Mathis Brothers for decades. Only recently have they stepped down in favor of younger spokespeople – their own children.

"When our car turns in the parking lot, crosses that asphalt, we look around: it seems like home," Larry





said of coming in to work. Mathis Brothers really is the quintessential family business. When the family enterprise needed to expand its Tulsa warehouse, another family company stepped up to the plate. Interlake Mecalux would go on to help Mathis Brothers expand their showroom, revamp their warehouse and revitalize their distribution processes in Tulsa.

**Ironing Out the Details**

An expansion project for any business is good news, and it certainly was for Mathis Brothers. The company had spread into Tulsa from Oklahoma City in 1993, and in the spring of 2012, they were itching to expand their showroom. Expanding the showroom also meant expanding the warehouse to house more pieces for the showroom. But as Mathis Brothers general manager of retail sales, Brad





Woessner, pointed out, the furniture company quickly realized they had to change their plan.

“The original thought process of the expansion was to have enough warehouse capacity to service the additional showroom space. Then as we began adding more stores we adjusted the showroom [size] and expanded the racking capacity.”

Though the showroom had started out as the top priority for Mathis Brothers, warehouse storage soon caught up. As more and more Mathis stores popped up in the Tulsa area, the warehouse, which serves as a distribution center for



*At 140,000 square feet, the new Mathis Brothers showroom is unmatched in Oklahoma.*



all of the Tulsa stores, saw rapidly increasing demands. The result is a 100,000-square-foot expansion, which includes 60,000 square feet for the warehouse and 40,000 as part of the showroom addition – the rest of the showroom space coming from the original facility. “The Mathis showroom will have the largest

selection of furniture in the state of Oklahoma,” said Woessner. “It will range from high-end to moderately priced furniture.” Overall, the project literally doubles Mathis Brothers’ storage capabilities, establishes a showroom unparalleled in the furniture business and sets the tone for a bright future.

Among these other goals was the need to improve and upgrade their existing rack to better fit their new needs. Russell Industries, the distributor, and Southern Material Handling Company, the supplier, knew exactly what Mathis Brothers needed. Interlake Mecalux Selective Pallet Rack was the clear choice.



When asked why Interlake Mecalux rack was recommended for the installation, Greg Young, managing partner of Russell Industries, laughed and replied simply, "Because we like [Interlake Mecalux]!" Enough said.

As for why Selective was the best way to go? "The benefit of [Selective] rack

## TECHNICAL DETAILS

Type of rack:	Bolted Selective Pallet Rack
Installation height:	36 ft.
Number of beam levels:	up to 9
Storage area:	100,000 sq. ft.
Max beam capacity:	9,370 lbs.
Storage capacity:	55,000 items
Layout:	combination of 2-deep and back-to-back

is the unlimited options you have in storing merchandise," Woessner explained. "It gives you flexibility to adjust as furniture styles evolve." Not only that, but Selective aptly provides greater selectivity than a lot of rack systems. And since Mathis Brothers stores all different models, shapes and sizes of furniture, as opposed to storing much of the same item, being able to access each particular piece is extremely important.

Interlake Mecalux Selective rack was also chosen because Mathis Brothers was hoping to reduce damage done to the furniture. Furniture damage is likely the largest thorn in the side of furniture makers, retailers, and distributors. Furniture is bulky, heavy, awkward, and not easy to ship by any means.

At times it seems there are endless opportunities for damage, which means there are just as many

opportunities for dissatisfied customers. In fact, in a 2011 review by the U.S. Better Business Bureau (BBB), retail furniture ranked 9th for most customer complaints. Of the more than 13,000 complaints filed against furniture retailers that year, it is estimated that 20 percent were over broken or damaged furniture. Selective, with its many uprights and high load capacities, is a structural colossus, and can play a part in protecting against this damage. "They felt more comfortable going with this," Young commented regarding the choice of IKMX Selective rack.

For extra support, Russell Industries also provided particle board. The wooden slabs nestle in between the beams, providing "a smooth surface to slide multiple furniture products back and forth," said Young. Between this and the IKMX Selective rack, Mathis Brothers' furniture isn't going anywhere — except to customers.



**A Little Bit of This,  
A Little Bit of That**

As for fitting the new warehouse with rack, Mathis Brothers “pretty much knew what they wanted,” said Terry Milan, allied sales manager at Southern Material Handling. “They had 100,000 square feet of warehouse and they knew how much they wanted to fill with rack.” The job of Southern Material Handling and Russell Industries, then, was to figure out how to maximize that space with rack.

Designing pallet rack for furniture is unlike designing pallet rack for standard, palletized goods. All the various dimensions, weights and heights that come with furniture have to be assessed and rack organized to suit all of these disparities. Mathis Brothers stores a wide variety of products — from boxed goods to upholstery to mattresses. “Depending on which one they’re [storing], the depth of the shelf and the height of the shelf is different,” noted Milan.

The racking, then, is as diverse as the stored products. The installation features some back-to-back, some double deep and beam lengths ranging from 84 in. to 144 in. And all of this is mingled together. From one row to the next, the rack can have vastly different dimensions.

**Making It Work**

Pick the rack: check. Design the rack: check. Install the rack: pending. The collaboration met its first hurdle when the shipment of rack arrived

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“We had amazing support from IKMX and Southern Material. If we had a question or concern they were on premises or here in minutes.” ~ Brad Woessner

“The benefit of [Selective] rack is the unlimited options you have in storing merchandise,” Woessner explained. “It gives you flexibility to adjust as furniture styles evolve.”

on time, but the construction of the new warehouse was behind schedule. What do you do when you have 160 tons of homeless

steel rack and nowhere to put it? “It has been interesting,” laughed Tim Crow, Mathis Brothers’ Tulsa warehouse manager.

Young blamed weather for the building delays and explained how they overcame the inconvenience that was beyond their control. “We

## Dealing with Damage: How Much Will You Spend to Save?

Selling quality furniture means transporting furniture to its destination. Transporting furniture means tackling the logistics of moving furniture, ideally without damaging it. This is no small undertaking. And certainly not one furniture stores take lightly.

“The slightest scratch can cause the customer to refuse the delivery,” said Robert Masters, senior vice president of Manna Freight Systems, in an interview with Inbound Logistics. “Worse,” he continued, “a consignee may refuse a 10-item shipment because one piece is damaged.” In fact, returns account for 20 to 25 percent of sales. The cost of this slip-up is almost incalculable, both in dollars and time lost, not to mention customer satisfaction.

But how to ensure the safety of your furniture en route? Many companies are investing more money in packaging. A few bucks up front can save hundreds on the back end. Another solution is to establish a comprehensive monitoring program involving all involved parties. ShockWatch Inc. conducted a study that proved such programs typically reduce damage by 30-70 percent. In addition, most damage occurs during loading and unloading, not caused by the freight carriers as much as by dealer mishandling. Dealers often remove protective packaging when trying to fit furniture into smaller trucks, thus making the pieces more vulnerable to damage. By monitoring the entire course that a piece of furniture travels, with the help of

technology, problem points can be identified and remedied.

Once furniture is damaged, it is either costly and time-consuming to repair and then reship, or it is impossible to mend. In which case, the cost of the damaged piece is simply absorbed. Neither scenario is ideal. By investing more in packaging and also inspecting goods thoroughly before delivery, companies can largely protect their product and their wallets. This kind of preemptive strategy is just what Mathis Brothers was after when they switched from their old rack to the new IKMX Selective Rack. They trust the sturdiness of IKMX rack. They trust it will keep their furniture damage-free. They trust it will help keep their customers happy.



had to store some of the rack outside. We had to cover it, and of course we had to move it a couple times before we could start moving the rack in [the facility].” Ramps were built to off-load freight so that it would avoid construction. The whole crew worked together to minimize the problem. “[We were] just working with the general contractor on a daily basis to stay out of their way and [for them to] stay out of our way,” said Young. While managing this obstacle, the team had countless other duties to stay on top of, some of which were unforeseeable. Not the least of which was assuring that the sprinklers and lighting would align with the rack once it was in place.

“Well, the first thing is that the feed lines for the sprinkler system had to

line up with the flues of our back-to-back racking,” said Milan. “And they were wanting to have the feed lines installed prior to the racking. We just had to get them lined up on where the rack was going to be so they could put the lights and sprinklers in the right place.”

On top of installing the new Interlake Mecalux Selective Pallet Rack, the company was moving some cantilever rack from their old warehouse into the new one. Navigating the sprinkler systems with this rack proved to be a bit more complicated than originally thought. “The sprinklers had to be removed from the cantilever in the old warehouse so they could move that in the new warehouse. When we put the cantilever in the new warehouse, they had to put the sprinkler system

back in the cantilever rack,” Milan said. “We had to switch back and forth between different areas of the warehouse, and sometimes we had to work at night”, Young added. It was a process that required, as Young put it very bluntly, “lots of communication.” “And [Mathis] needed to be able to pick orders and receive merchandise all through this,” Milan pointed out. “It involved daily working together not to disrupt the process.” Which, all in all, they did successfully. “Mathis was great to work with,” said Milan.

Once all the construction was completed, it was time for the rack to make its way into the new facility to be installed. “There were a couple of changes in the layout as we started putting the rack up, that Mathis Brothers requested, and we

accommodated,” noted Milan. They were what he called “configuration” changes. Having reviewed the different types of furniture they were going to be storing in the facility, and adjusting to the ever-changing and improving business climate, Mathis determined that they needed more of a specific type of rack than they had originally planned. “There were some rows that were double back-to-back and they changed a couple of those and added another aisle.”

Luckily the alterations did not affect the materials list, but simply the layout of the rack. “It was a head-scratcher,” recalled Milan later, “but we were able to do that.” The project is ultimately a testament to what organization, teamwork and the country’s top provider of steel pallet rack can accomplish. Interlake Mecalux, Southern Material Handling, Russell Industries and Mathis Brothers came together to revolutionize the furniture icon’s

distribution processes and to optimize and maximize its potential. “It’s a big project,” Young mused, indicating that there are bound to be hiccups and obstacles. It’s really all about how you face them as they arrive, and if you are able to work as a team. “We had weekly meetings where we had amazing support from Interlake Mecalux and Southern Material,” recalled Woessner. “If we had a question or concern they were on premises or here in minutes.”

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Overall, the project doubles Mathis Brothers’ storage capabilities, establishes a showroom unparalleled in the furniture business, and sets the tone for a bright future.

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Upon wrapping up this project, Crow reflected on the future for Mathis Brothers. “We’re expanding as much as we can, as much as the economy allows us,” he remarked. And the economy seems to be accommodating them. An expansion of the Oklahoma City warehouse is already in the works. The parties will reunite for a project three times the size of the Tulsa expansion, featuring all IKMX Selective Rack. Interlake Mecalux rack has “improved [our processes] tremendously,” Crow said, so they will keep this next project in the family.

“We make decisions based on [the question], ‘How would the best furniture store do it?’” said Woessner. In terms of storage and expansion, that means partnering with Interlake Mecalux. ●



# House Thieves

Studies show that instances of internal theft of warehouse goods rise in bad economies and that the solutions are as simple as they are ignored.

An estimated \$50 billion is stolen from warehouses around the globe each year and research suggests that more than half of that theft involves an internal source connected to the stolen goods. Thirty years ago, Carl Shapiro and Joseph E. Stiglitz examined grim economic conditions in connection with employee concerns about their financial situation. The study concluded that such concerns were likely to cause an increased number of employees to steal





from their employers. Year after year, surveillance equipment is installed, guards are hired and processes are revamped all in an effort to decrease the number of SKUs that go wandering off. Realistically though, there are only two efficient security measures and both are surprisingly uncomplicated.

#### **The Human Problem**

Using standard warehouse automation and the management software that

accompanies it are the irrefutable answer to tightening warehouse efficiency and forcing drastic declines in theft, both internally and externally. Unknown loss is nearly incomprehensible when management software and any number of automated systems are integrated into a company's storage space. Employees using these systems must sign in to operate them, leaving an identifiable tracking history. And partial automation is also a partial

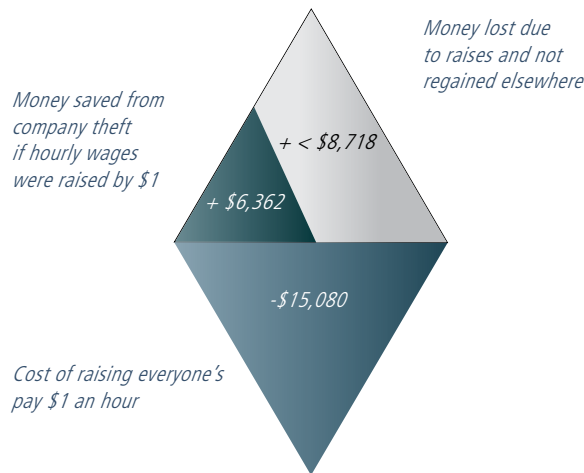
solution; it effectively saves costs for a company, but since personnel are still involved in warehouse functions, the human problem still exists.

Jon Schreibfeder wrote in a 1999 article for the website Effective Inventory Management, that implementing policies designed to keep better track of stock was the only way to circumvent the catch-22 of warehouse operations. "Your salespeople need access to the warehouse because your stock balances are inaccurate," Schreibfeder said. "Your stock balances are inaccurate because your salespeople (along with customers, vendors, truckers and others) have access to the warehouse. The quality of your warehouse machinery doesn't matter if those charged with using it are not to be trusted." The limitation of automation is that products must be loaded onto the system in order for it to be of any value. Until someone develops a way for trucks to unload product directly onto storage systems, loading docks are anathema to warehouse security.

Short orders and loose cargo have proven to be bullet-pointed sources of theft for many warehouses, according to the Australian Institute of Criminology. The AIC's 2007 report concluded that the period of time between products being unloaded from a truck and moved off the loading docks is fraught with theft because those handling the materials are overly concerned with speed. "Especially since the 2004 Hours of Service working rules change," the AIC reports, in reference to the law limiting the number of hours drivers are allowed to remain on the road each day, "warehouses and distribution centers

## THE TROUBLE WITH RAISES

A 2011 study examined a convenience store chain that gave its employees \$1 raises in an effort to improve employee morale, instill in them more pride in their work and effectively decrease internal theft. Here were the results:



SOURCE: "Can Wages Buy Honesty?" Clara Xialing Chen, Tatiana Sandino. 2011

are more concerned than ever with the speed in which they load or unload a truck." The activity at the docks creates a chaos in which personnel are more concerned with making deadlines than they are with security. As a result, safeguards are weakened and the employees who understand those weaknesses can bide their time waiting for the right opportunity. An employee who knows about this brief soft spot on safeguards is able to counteract any security or efficiency that automation could otherwise provide.

Despite the sophisticated capabilities of storage automation, at some point even the most autonomous warehouse must rely on human personnel. If warehouse automation is a child's shiny new toy, human personnel are the batteries that

are sold separately. "Special care must be taken," advises the Mecalux Group's Automated Warehouses catalog, "as to the participation, motivation and training of the personnel involved [in operating automated machinery] in order to achieve optimal results."

If automation is the best solution only after products have been loaded, what is the most vital method of securing them before that point?

### A Sucker Punch To Morale

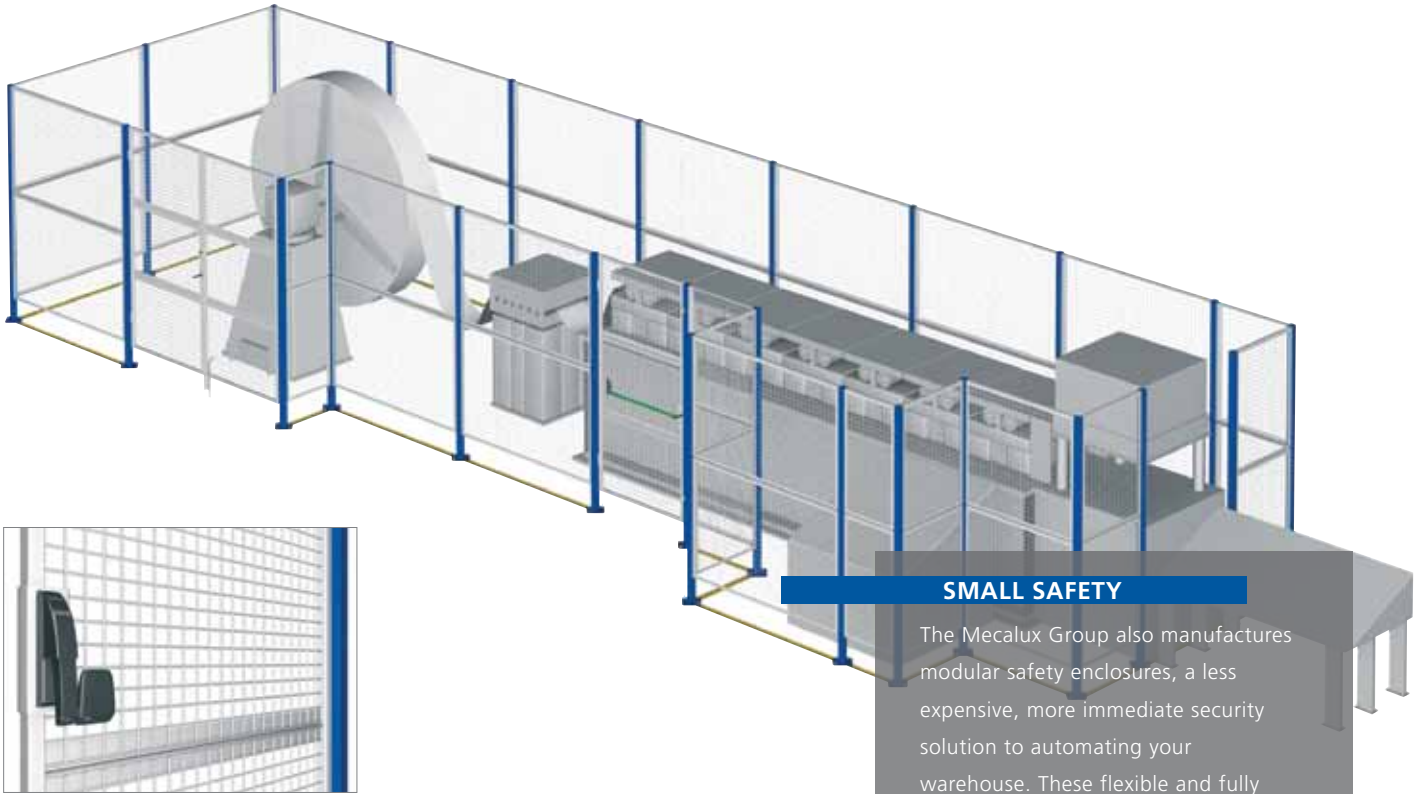
As troubling as the internal theft statistics are, it's important to maintain perspective about how this translates to a single warehouse. Companies that attempt to bully their personnel into good behavior don't often fare well.

Though domineering management is aimed at creating a workforce of all good apples – or at least enough good apples to make spotting bad ones comparatively easier – it often just sours employees.

The prospect of internal theft or product negligence is not lost on warehouse owners and managers around the globe, nor should it be. Those in charge have a responsibility to protect their goods and their businesses. There is a delicate balance between protecting one's warehouse and not leveling company morale in the process.

Many owners will contract undercover operatives to observe its workforce. Too many warehouse owners view this solution as swift justice, ignoring the after-effects of working in an environment that, rightly or wrongly, distrusts its employees. Bob Riordan, partner and leader of the labor-and-employment practice group at the law firm Alston & Bird LLP, warns against creating a contentious work environment. "You need to be aware of the culture of the workplace you're dealing with," he says. "You want to maintain an environment where your employees have some sense of code of conduct or integrity." The resentment created by aiming spy cameras into break rooms or cafeterias discourages loyal employees from giving their fullest effort to a company.

While security system manufacturers often crow about surveillance equipment being the meanest dog in the pen, the reality is that alarms and cameras are more bark than bite when



#### SMALL SAFETY

The Mecalux Group also manufactures modular safety enclosures, a less expensive, more immediate security solution to automating your warehouse. These flexible and fully customizable enclosures protect full pallet loads or case-pick inventory with safeguarding options like push-pad locks. Keep your storage open, but not the access to it.

While surveillance measures often fail to apprehend dishonest employees, they are inadvertently ostracizing the majority of innocent ones.

it comes to dealing with preventing internal theft. Dishonest employees are not intimidated at all by unmanned or inoperative cameras. Even if the cameras are monitored, employees are adept at finding and exploiting weaknesses in the operation. Thieving employees put considerable effort into circumventing measures put in place that are intended to curb stealing. In fact, while surveillance measures often fail to apprehend dishonest employees, they are inadvertently ostracizing the majority of innocent ones.

#### Hidden Costs

In 1990, the *Journal of Applied Psychology* published a study by Dr. Jerald Greenberg noting that among a test pool of companies that pruned away 15 percent of their employee's pay in one period, theft immediately increased the following period. In the same test, companies that did not decrease employee pay saw no such rise in theft, suggesting a correlation (if not causality) between wages and theft. One theory attempting to debunk the connection between the two suggests

employers tightening their company's purse strings simply notice more theft because they're paying more attention. Companies forced to pinch pennies pour over their financial books more carefully than most other companies, leaving the impression that more theft is occurring when perhaps simply more theft is noticed.

Brian J. Mich, head of anticorruption compliance and investigations, at risk management firm BDO Consulting told the *Wall Street Journal* not too long



after the housing market set off a linked financial explosion around the globe that, "In leaner financial times, people have a tendency to give in to temptation to commit criminal behavior," especially if those lean times are accompanied by eliminating perks such as company holiday parties, vacation time or schedule flexibility. "They're thinking, 'I'm not being treated fairly by my employer anyway, so I'm going to take this indulgence here,'" Mich says.

Certainly, running a good business does not always result in fairness, but in some cases, fairness proves to be the best business. Employees who perceive they are being treated fairly by management are likelier to refrain from stealing and also are more likely to stop co-workers from stealing. A contented employee is rarely excited to lose his or her job and

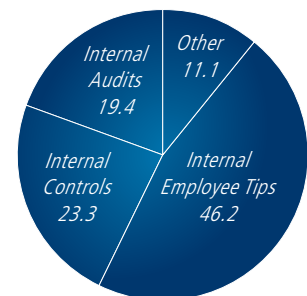
has proven to be more inclined to report internal theft because of it.

Studies dating as far back as 1979 illustrate that employees have equal power to influence or diminish bad behavior in their co-workers. The deciding factor in an overwhelming number of cases was the group's wage. Higher wages resulted in employees instigating productive competition among one another that benefitted the company, while personnel with lower wages tended to compete in a way that had the opposite effect. The inherent problem is not the wage paid to each employee, but what the wage suggests.

While there is an overwhelming amount of research suggesting money is not the primary motivator for employees and that raises aren't enough

### THE MOST FREQUENT METHOD OF DETECTING OCCUPATIONAL FRAUD

Creating an atmosphere of respect and installing the best organizational tools in your warehouse have proven to be the most successful methods to decreasing internal theft.



SOURCE: Association of Certified Fraud Examiners (ACFE), 2008

to change employees' minds about their employer, there is other research that suggests there is a wide chasm between what employees say and how they act. As the 2004 study from Sara L. Rynes, Barry Gerhart and Kathleen A. Minette explained, "When asked directly about the importance of pay, people tend to give answers that place it somewhere around fifth in lists of potential motivators. In contrast, meta-analytic studies of actual behaviors in response to motivational initiatives nearly always show pay to be the most effective motivator." Society says it's crass to list money as the prime motivator, so people contrive other more socially acceptable factors to cite as being more important. Then companies dangle raises in front of their workforce and more often than not all those other motivators simply fall away.

### Information Matters

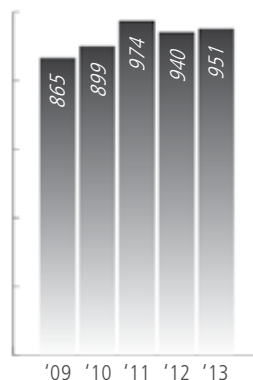
It is important to understand the role wages play in warehouse theft and to impart that understanding to warehouse personnel. Greenberg's study observed a 141 percent increase in theft among a pool of test companies immediately following the announcement of a 15 percent pay cut in which no explanation for the cut was given. He also observed that when the same pay-cut occurred among a different set of test companies that offered its employees an adequate explanation and the managers delivered the news with remorse, the facility only saw a 54 percent increase in theft.

When companies understand the reasons why theft happens, inexpensive steps can be taken to counteract them. Acknowledgement plays a substantial role in internal theft.

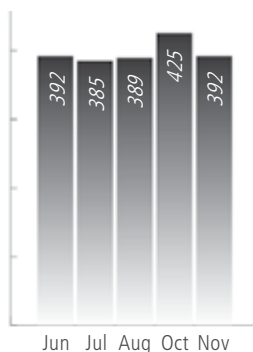
### GROWING LOSSES

FreightWatch, a security company specializing in providing monitoring solutions for logistics operations, releases a yearly tally of U.S. cargo thefts. Internal theft accounts for about 1/3 of the total theft within a supply chain; the remaining number of stolen goods comes from points of transport.

#### NUMBER OF ANNUAL U.S. CARGO THEFTS, 2009-2013



#### PEAK MONTHS FOR CARGO THEFT, 2009-2013



As Rynes states, "Some of the most sought-after and desirable employees do not wish to work in systems that do not differentiate individual performance. The average U.S. worker desires individual pay-for-performance."

The reason for this is simple enough: employees seek acknowledgement for their work. The same display of respect that goes into giving an employee a raise based on his or her performance is the same that manifests when managers explain why a decrease in pay is happening. Ignoring the effect that giving explanations have on employees is a mistake made too often. Most employees don't see the relationship between inventory and the wages they earn. Inventory turns to cash from customer sales. That cash pays expenses and employee wages.

Explaining to employees the link between their company's shrinking inventory and dwindling available funds meant to pay their wages and raises has proven to be almost as effective as automated storage and more effective than surveillance cameras at decreasing internal theft.

If executives articulate the link between the quality of pay and performance, not only will the company attract a higher quality workforce, but it will get more out of the workforce already in place. Automation is the technical solution to secure warehouse processes, but it isn't the easiest. Neither is handing out bags of cash to every employee. A bit of employer transparency and cultivating an atmosphere of mutual respect can go a long way to minimize internal thefts and improve employee productivity. •



# Panamaximization

The Panama Canal expansion project is expected to be finished in 2015. Businesses will be best served preparing their infrastructure and logistics for the future.



The Panama Canal opened in the summer of 1914, carving a link between two oceans and revolutionizing maritime travel and trade. Skip ahead 92 years, to 2006, when three out of every four Panamanian citizens approved a referendum that would expand the canal, keep up with the shifting demands of pan-oceanic trade and again, revolutionize maritime travel by 2015. Neighboring countries are working hard to adapt their harbors and infrastructures in order to better

receive the “post-Panamax” ships, while also forging trading treaties to maximize the benefits. The impact of widening the chamber devices that control water levels in narrow pathways will also affect major U.S. distribution hubs – even the ones located inland.

“Post-Panamax” ships traveling the new passageway will be 25 percent longer, 50 percent wider and have a deeper draft (going from 39.5 feet to 50 feet). These vessels will be able to



carry about three times the amount of merchandise as traditional ones while nearly tripling the cargo volume, increasing it from 4,400 20-foot containers to 12,600. This increment in cargo capacity will unmistakably throw storage facilities and harbors into deep flux. To absorb the product flow, warehouses and distribution centers will have to be modernized (automated for maximum efficiency), expanded or built from scratch, creating a unique opportunity for growth within the material handling

industry. The additional amount of products delivered will have to be stored, accessed and distributed somewhere, which will require the development of state-of-the-art warehouses and logistics operations.

#### **Expanding to the U.S.**

The United States will be one of the markets most impacted by the changes, since it is the destination or origin of about two-thirds of the merchandise traveling through the canal. “[Storage and

Post-Panamax ships traveling the new passageway will be 25 percent longer, 50 percent wider and have a deeper draft (going from 39.5 feet to 50 feet).

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logistics] companies are projecting growth and expecting to continue seeing progress,” explained Juan Carlos Rojas, general manager for Mecalux Peru. “They need to build infrastructure to house more products.” It isn’t just the storage companies looking to make their front doors bigger; some of the hemisphere’s busiest seaports are stretching, too. In order to keep its harbors competitive, \$8.5 billion has been slotted to update 13 of the leading U.S. ports. Seaports from the East Coast all the way down through the Gulf area are deepening their harbors, modernizing their crane equipment, widening their quays and expanding their warehouse facilities in anticipation of the mammoth ships. The Georgia and Virginia port authorities are spending a combined \$3.7 billion in improvements for just the Savannah and Virginia ports.

Many of the investments from southern and eastern U.S. ports have been made in anticipation of increased traffic coming up from the Panama Canal as well as diverged traffic that once used to travel to West Coast ports. West Coast ports, on the other hand, look at the investment as a way to retain current customers and attract new ones following the canal improvements.

The new traffic pattern will mean a much needed economic revitalization for Miami, the U.S. port closest to Panama. The port authority is investing \$2 billion in new infrastructure to make sure the port, highways and railroad systems are ready for post-Panamax traffic flow. The first issue to tackle will be the depth of Biscayne Bay, which is too shallow for the larger vessels. The bay's limestone bottom will be blasted to 50 feet over the course of about two years. Miami is also spending half a billion dollars, through public and private partnerships, to dig a tunnel under its downtown and direct truck traffic away from congested surface streets. The East Coast is also busy getting ready for the new maritime traffic patterns. Products that have been historically delivered by ship to the West Coast and distributed by rail and trucks throughout the U.S. will arrive



directly into the East Coast. This will result in savings on distribution costs, lowering of retail prices and creating a mad scramble to recover from the hit the logistics industry will take.

The possibility of such an economic boost to these port cities is pushing those municipalities to get ready to

receive the ships and have the right logistics in place to distribute the materials quickly and efficiently.

In New York Harbor, the problem is not the depth, but the height. The Bayonne Bridge, connecting Jersey's Bayonne with New York's Staten Island, is too low for the post-

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The additional amount of products delivered will have to be stored, accessed and distributed somewhere, which will require the development of state-of-the-art warehouses and logistics operations.





Panamax traffic to clear. To ensure the new vessels are able to clear the bridge, the port authority will spend \$1 billion to raise the bridge 64 feet, an engineering feat that will take five years to finish.

### Inland Cities

Not all the changes are happening close to the ocean; non-port cities like Chicago, Dallas and Atlanta are preparing for the intermodal traffic increase and are expecting to reap the benefits of the boost in commerce. Aaron Ahlburn, vice president and director of industrial research for the commercial real estate management firm, Jones Lang LaSalle, explained

how the new locks will impact inland cities in the United States, “We expect more demand at the inland distribution hubs due to the increased flow of cargo from the ports. Intermodal traffic has been increasing steadily, and Class I railroads are investing in intermodal yards, track work and rail facilities.” Such an increase in material movement will squeeze distribution hubs to fine-tune their logistics application, space use and the overall organization of their systems. North America’s largest planned inland port is tucked away in a suburb 30 miles southwest of Chicago. The CenterPoint Intermodal Center-Joliet (CIC-Joliet) is a

### THE STEAM DREAM

Slow Steaming is the practice of reducing a ship’s speed in order to save fuel. And although this practice is not favored among vessels with tight deadlines, there remain a great number of benefits to the strategy.

- By reducing speed by 20 percent, fuel consumption is reduced by 40 percent, according to Maersk Spokesman Bo Cerup-Simonsen.
- Slow steaming has reduced emissions by 7 percent per container in the last 1.5 years.
- From 2007-2009 Maersk reduced CO<sub>2</sub> emissions by 12.5 percent. The goal for 2020 is to reduce CO<sub>2</sub> emissions by 25 percent.
- Crossing the Pacific used to take 11 days, but at lower speeds it takes 15 days (*L.A. Times* – Article by Ronald D. White).
- In 2010, Maersk made a profit of \$639 million in the first three months of the year, up from a loss of \$373 million during the same period the previous year.
- An 8,000-container ship traveling at 21 knots will burn 125 metric tons of fuel per 500 nautical miles. The same ship will need 80 metric tons of fuel if the speed drops to 15 knots (Lee Kindred, environmental director for Maersk North America).
- Hong Kong to Long Beach is 6,310 nautical miles away. At the reduced speed, the fuel savings would total \$250,000, according to Maersk.

6,500-acre hub strategically positioned with direct access to BNSF and Union Pacific rail lines and major highways. Combined with a nearby 14 million-square-foot rail-served park, the more than 8,000 acres of combined intermodals form one of the largest container ports in the U.S., capable of redistributing merchandise around the country and the world. The Dallas Intermodal Terminal (DIT) supports the growing intermodal volume in the region with over 360 acres of dedicated space. Another 6,000 acres have been planned for

distribution, manufacturing, office and retail developments. The Hub will make Dallas the Southwest's number one trade hub. Norfolk Southern put 200 acres under contract along the I-675 corridor for an intermodal container transfer facility in metro Atlanta and IDI is looking for opportunities to improve distribution facilities.

The central locations of these cities in the United States make them the next step in the distribution of all the extra merchandise delivered to the harbors.

"All the infrastructure investments at the ports will move goods more efficiently, thereby helping reduce the transportation costs," Ahlburn said. Making sure they are ready to absorb and re-distribute the sizably larger amount of products will enable inland cities to profit significantly from the new shipping patterns.

"The [canal project] just improves trade," said the executive director of the U.S. Port of Corpus Christi, Texas, John LaRue. "The West Coast ports have grown dramatically because of



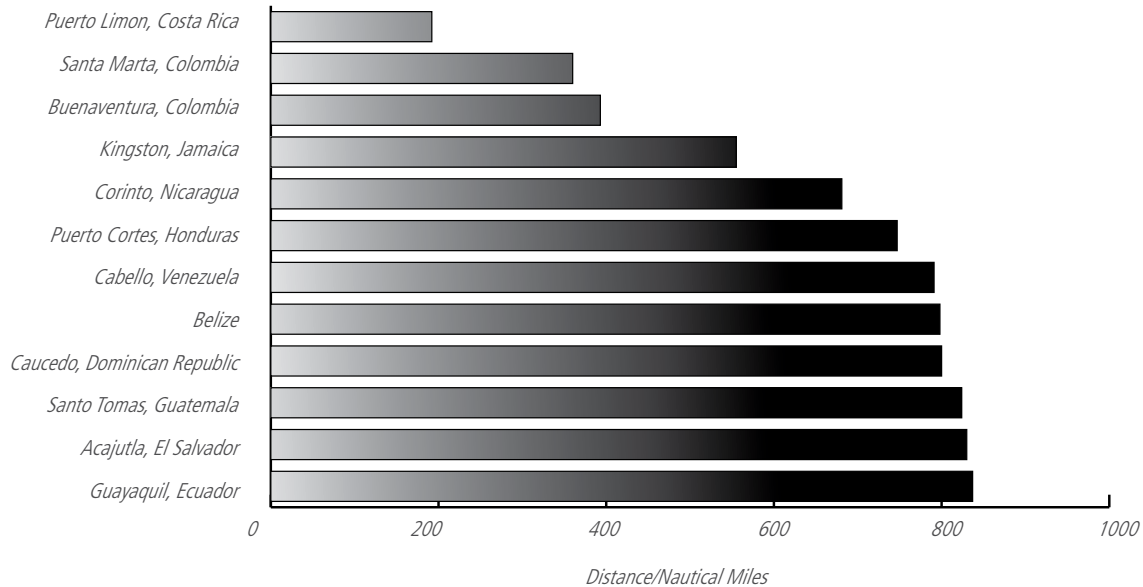
The port authority is investing \$2 billion in new infrastructure to make sure the port, highways and railroad systems are ready for post-Panamax traffic flow.

**EVOLUTION OF THE WORLD'S LARGEST CONTAINER SHIPS 1985-2014**

President Truman 1988	– 4,538 TEU – Breach 29.4 – Draft 12.5
NYK Altair 1994	– 4,953 TEU – Breach 37.1 – Draft 13
Sovereign Maersk 1997	– 7,403 TEU – Breach 42.8 – Draft 14.5
Gudrun Maersk 2005	– 9,500 TEU – Breach 42.8 – Draft 15
Emma Maersk 2006	– 15,200 TEU – Breach 56 – Draft 16
TBN 2014	– 20,200 TEU – Breach 59 – Draft 16.5

*SOURCE: Rodolfo Sabonge, vice-president of market research and analysis, Panama Canal Authority, March 2011.*

## PRINCIPLE PORTS CLOSE TO PANAMA



SOURCE: Rodolfo Sabonge, vice-president of market research and analysis, Panama Canal Authority, March 2011.

Non-port cities like Chicago, Dallas and Atlanta are preparing for the intermodal traffic increase and are expecting to reap the benefits from the boost in commerce.

all the Asian cargo. Routing ships to the Gulf would save the West Coast's infrastructure and benefit us all. I don't see any negative."

### South of the Border

Markets in Central and South American countries will also be affected by the changes in traffic patterns. Peru, in addition to modernizing its infrastructure, went one step further and forged a Free Trade Treaty with Panama to promote the import and export of goods,

eliminating taxes on both sides.

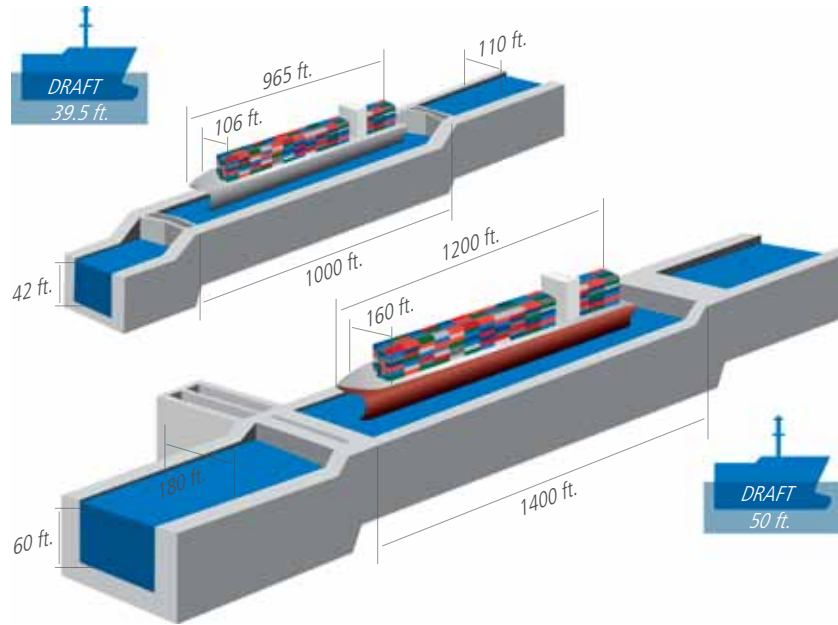
Panama is the first Central American country to sign such a treaty with Peru. The Treaty was ratified December 2011 and went into effect in 2012. The agreement guarantees that 93 percent of Peruvian exports to Panama will go untaxed in the next five years.

This mutual agreement will open the market for Panama – a country of 3.5 million people – to Peru, a country

of 29.5 million people. Costa Rica, Panama's neighbor to the northwest, is remodeling the Atlantic side of the Limon and Moin harbors with the expectation of a significant increase in exports. Both harbors estimate a 75 percent growth over the next five years. By that time, the deep water facility will have completed its first phase, creating a 20-foot capacity with six berths, almost 2,000 feet of quay and 2,800 plugs that power refrigerator ships. If the export growth predictions come

**NEW LOCKS; LARGER CAPACITY**

**Existing locks max vessel: 4,400 TEU's**



**New locks max vessel: 12,000 TEU's**

true, the country is expecting to net more than \$16 billion in revenue from agricultural exports by then, a significant increase from the \$9.4 billion in 2010. At the completion of the final phase, estimated to be finished in 2045, the harbor will have nine berths, almost 5,000 feet of quay, and 6,500 reefer plugs. Further south, Brazil and Venezuela are increasing shipments of oil, grain and other raw materials to China so the expansion will directly benefit them too.

**Keep the Moving Parts Clean**

The first expansion to the Panama Canal is expected to cost \$5.25 billion. Construction will be financed by development banks that will be repaid with the tolls collected from

the ships that travel through the canal – tolls that can reach several thousand dollars for large vessels.

This project is impacting the Panamanian economy at a variety of levels. For instance, it has promoted the growth of several industries such as the rock-crushing plant that turns the excavated rubble into sand and stone for the concrete floor. Additionally, the expansion program has created an additional 14,000 Panamanian jobs. Ahlburn expects to see a holistic approach from all of the shipping companies that are involved to resolve any issues that the larger vessels might bring.

“We envision the new locks at the Panama Canal will have

fundamental implications to cargo traffic over time,” he said. “Many port investments will build for scale and capacity.” Ahlburn expects the vessels to serve fewer ports and use intermodal transportation like trucks and smaller ships to distribute containers and cargo to nearby cities.

The U.S. Department of Transportation estimates that port traffic will double or triple by 2030. Alberto Alemán Zubieta, CEO of the Panama Canal Authority, thinks ports on the coasts of the U.S. should not feel like competitors, but rather complementary to each other. Time will tell, but it certainly seems the U.S. will need every port ready and open for business when the canal inaugurates its new locks in 2015. ●

# Product Spotlight: Vertical Carousel for Tires

There's no need to reinvent the wheel if you efficiently store the ones you have.



While some products are easily stored and retrieved from rack, others – due to their dimension, size and characteristics – are difficult to stock. Oversized goods present an organizational challenge with only three solutions: 1) find the perfect rack that will store the oversized load efficiently, 2) drop the load on the rack you have now and hope for the best, or 3) stack your bulky goods in a distant corner of your warehouse and hope it doesn't haunt your dreams at night. Tires may lead the way in night terrors, as their round shape and heavy weight make them a unique product to store and retrieve from

traditional storage systems. Interlake Mecalux's vertical carousel for tires (VCT) is designed for use in even the smallest workshop, providing extra floor space, a more ergonomic working environment for warehouse personnel, and easy tire access without any additional equipment.

This carousel's structure is composed of two frames with guided chains, outfitted with vertically pulled tire gondola carriers specifically adaptable to multiple tire sizes. The motor uses a 1.5 horsepower gear reduced drive, which operates the machine at 26 feet-per-minute speed. The control box, with its lock out keypad,

up/down controls and emergency stop code, ensures the machine is operated by authorized trained personnel only. These controls can be installed at ground level and at a second floor height, turning the machine into an elevator, accessed from both floors for increased compatibility.

The VCT is available in widths of 8 feet, 14 feet and 17 ½ feet and heights ranging from 10 to 25 feet. Aside from physical dimension, storage capacity in these units may be determined by size. Most VCTs can store between 108 tires to more than twice that. Consolidating a large amount of tires into one storage system can result in freeing up nearly 70 percent of your storage location's floor space. The carousel can accommodate multiple sizes of tires with a combined weight of 12,000 pounds.

Aside from tires, vertical carousels are versatile enough for any number of applications. Michael Bussie, vertical storage account manager for Interlake Mecalux, notes they are particularly in-demand among manufacturers.

"I get a lot of calls from customers that are in manufacturing who have a lot of small parts or product that will fit on the carousel such as rolls of material or spools of wire," he said.

Retailers also benefit from the vertical storage offered by the carousels. Outdoor equipment retailer Cabela's, one of Interlake Mecalux's largest vertical storage customers, takes advantage of the space savings provided by the carousels, according to Bussie.



"They don't have a ton of floor space in their warehouse, but they've got a lot of ceiling height and the clothing that they store takes up a lot of space," he said. "By using the carousels, they can take up a lot less floor space and get a lot more storage out of those carousels."

"The ability to save on floor space and ease of use are major draws for many consumers of vertical carousels", Bussie

says. "If a customer has a lot of ceiling height but is running out of floor space, the only thing that makes sense is to go up," he said.

"If you've got the clear height, the carousel uses that clear height and it actually brings the product down to you where the customer doesn't have to worry about ladders, lifts or that kind of thing to get the equipment. You don't



have all of the issues of getting the product down and having forklift traffic going all over the place.”

Vertical carousels also are known for their reliability. Aside from routine maintenance or part replacement, carousels typically have sound longevity. “I’ve had a lot of customers that have called me who have had their machine for 20 years or more,” he remarked.

Besides space savings, versatility and longevity, vertical carousels – and in particular vertical tire carousels – address both ergonomic and safety issues, while mitigating injury risks. Instead of having to pick up tires from the ground level, the waist-high storage range creates an easier, ergonomic position for workers, keeping them healthy and on their feet. It also renders the use of ladders and forklift machines unnecessary.

Another safety feature of the carousel for tires is set off when the machine becomes unbalanced. The out of balance load on the conveyor is 2,000 pounds, which means the brake on the motor would not slip more than six inches and the machine will continue functioning even if one side is 2,000 pounds heavier than the other. If this displacement occurs, the machine would come to a stop when letting go of the switch. Car dealerships, auto repair shops or tire manufacturers are some of the businesses that benefit from this storage system since tires for cars, SUVs or vans can be combined in a single unit. The machines are versatile enough to handle a variety of styles and sizes of tires.

“Dealerships will store the tires that they have in their inventory inside the carousel because it takes up a lot less floor space than just stacking up a bunch of tires five or six tires high,” Bussie noted.

The system can also be custom made to fit bus or tractor tires with carrier cover sizes varying in outside diameter from 14 to 33 inches. Store virtually any tire in your facility with ease with a vertical lift module.

A number of vertical lift module manufacturers have products that might hold tires; indeed some carousel manufacturers will include tires in the list of objects their products store, but few of those manufacturers have the capability to fit your warehouse, facility, or workshop with a storage system designed specifically for your Goodyears and Michelins, at the same time. The ease of use, space savings and competitive price, make the vertical carousel for tires the perfect tool for the right job.

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