

**gaining access  
to inspiration**

A2i Systems creates a  
successful organization

**raising the bar  
in idaho**

The Idaho State Liquor Division

**above the  
weather**

Morrison Company rescues  
their customer

**seeing green**

A Resource Based Approach to  
Greening your Supply Chain

**understanding  
rack**

Getting the most out of your  
warehouse



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TO DONE.  
FOR LESS.**



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## Interlake Mecalux News

is published every two months.



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## *A New Vision, A New Magazine*

Interlake Mecalux forges new paths in the North American market with renewed focus and a new publication.

As a global leader in the storage systems market, Interlake Mecalux has embarked on an initiative to create a material handling and logistics publication geared toward providing our readers a roadmap for supply chain solutions. In this economic climate, one must put to the test their capacity for strength and trace new paths, assimilate to the challenges presented and emerge with renewed spirit. It has become ever more worthwhile for our company to bolster our position by expanding not only the catalog of products and services we offer, but also the territories in which we operate.



In these circumstances, we have been intensifying our efforts towards diversification and it is with these thoughts in mind that we are taking a fresh step forward. Published every two months, this magazine will allow us to examine the latest industry trends and provide real cases of companies whose practices combine efficiency and ground-breaking approaches to supply chain solutions. We persevere in all projects and technological developments with the ultimate goal of facilitating strategies that will not only be cost effective, but will also build robust storage centers providing optimal performance.

Our objective as a provider of premium storage system solutions is to assist our readers with streamlining their warehouse operations to make them as productive as possible. From here at Interlake Mecalux News, I would like to invite you to send your suggestions to our editorial team. The nearer we are to the needs and concerns of the industry, the easier it will be to provide the right solutions.

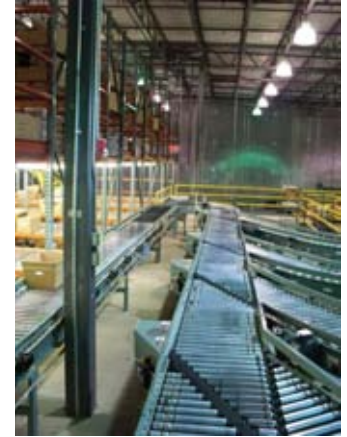
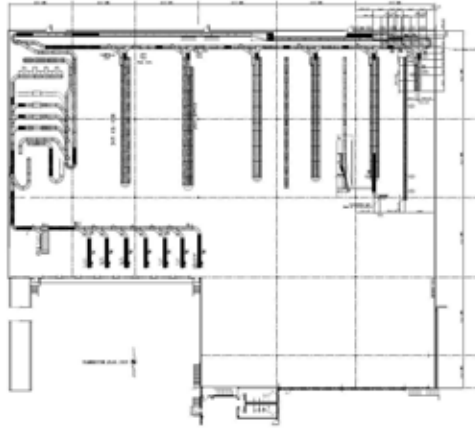
With much dedication and effort, we have created the inaugural issue of Interlake Mecalux News with these goals in mind: to provide a forum for the exchange of ideas, promote growth in the industry and encourage innovation. To persevere in these goals, we rely on our professional staff who remain dedicated to our readers and the primary focus of this magazine. Therefore, I wish to extend my gratitude for the accomplishments made by our staff and welcome you, our reader, to enjoy the first issue of Interlake Mecalux News. I am certain you will find the content within to be valuable and informative.

Linda Demke

C.E.O.  
Interlake Mecalux

PERFORMANCE INC.

**Cycling Solutions.** Providing bicycles and bicycle parts for over 25 years, Performance, Inc.'s growth is centered on mail order sales, orders to retail stores throughout the US, and the development of their web based store. They needed a distribution center that could improve order fulfillment efficiency. The solution included installation of three separate zones for picking, auditing, packing and shipping sortation using Wallaby sorters. An interface with Performance's WMS completed a paperless solution that enables customers to place orders and watch their progress virtually as they are processed and shipped on the same day the order is placed.



ZBYSZKO

**Soft Drink Warehouse.** Since its foundation in 1993, Zbyszko has used brand innovation and expansion to position themselves as a market leader. With a focus on investing in new technology and machinery, for the modernization of its production plant, Zbyszko built a completely automated distribution center. Using a Unit Load Automated Storage and Retrieval System to connect nearly 18,000 pallet positions of storage with five production lines and shipments, Zbyszko ensures seamless distribution to major customers in Poland and worldwide.



TECHNICAL DETAILS

DIMENSIONS

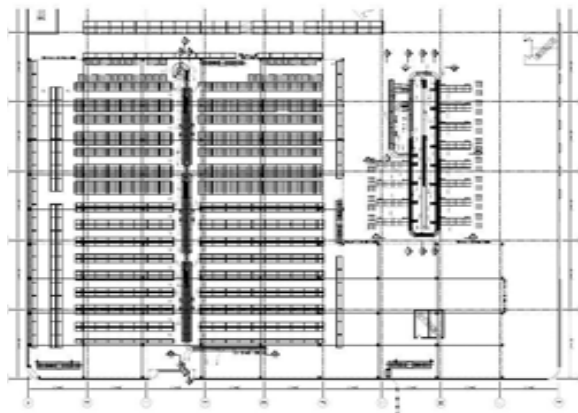
**Installation Length:**  
321'-6"  
**Installation Height:**  
36'-0"  
**Installation Width:**  
259'-0"

CAPACITY

**Static Load:** 17.9 pallets  
**Dynamic Load:** 286Cc/h  
**Management System:** MECALUX Easy  
**Control System:** MECALUX Galileo

ROYAL PET SUPPLIES

**Pet Product Distributor.** As a wholesale distributor of pet supplies throughout the eastern United States, Royal Pet Supplies stocks over 28,000 products. To reach their goal of picking and shipping all orders same-day, they needed an order fulfillment solution that featured a two-level conveyor system for picking, auditing, and packing. In the absence of an existing WMS system to provide carton routing, a custom software package was developed to tie multiple totes to a single order and pick list. This custom software enabled Royal Pet to have automated routing of their totes without the expense of a WMS system.





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# New Technology: Radio Shuttle

Featuring remote or software operation, this high-density pallet storage system simplifies the loading and unloading of goods by utilizing an electric cart called a Radio Shuttle.

Designed to be flexible and easy to use, the Radio Shuttle system incorporates the latest in storage technologies. It is ideal for high-density compact storage, cold storage, and buffers for temporary storage or prepared orders. Radio Shuttle carts can be used with existing pallets, forklifts, and popular warehouse system designs. The system can work alongside traditional rack installations like selective, which have limited storage density but can store a large variety of SKUs.

Due to its semi-automatic capabilities, the need for forklifts to navigate within the lanes is eliminated. The Radio Shuttle carts bring pallets to the lane entrance. As a result, the risk of product and rack damage by forklifts is minimized, forklift accidents are greatly reduced, and less time is required to load and unload pallets.

The Radio Shuttle system is easily expandable and provides high-density, semi-automated storage. One unit can be used throughout the entire warehouse, assigned to each SKU, or placed on each level of rack. The Radio Shuttle carts compatibility with different pallet sizes allows pallets of different widths to be compacted inside channels. Vertical spacing between levels is also reduced for efficient utilization of space.

There are two options for communication with the Radio Shuttle carts: via remote control or EasyWMS software. The remote control functions do not require specialized training and multiple

Radio Shuttles can be controlled by one remote. A forklift operator can access pallets one-by-one with the remote, while more complex operations can be performed using EasyWMS. EasyWMS is a warehouse management software application that can be integrated within an existing ERP or as a stand-alone computer program.

In addition to Radio Shuttle's flexibility, each unit is equipped with an array of safety features: a fall prevention safety system, bumpers, positioning sensors, status lights, low battery reserve, and a "Rescue" function. The fall prevention system consists of a safety hook and an anti-slip surface, allowing for secure placement of the Radio Shuttle cart on the forks of forklifts. When placed into a Radio Shuttle system, fixed bumpers prevent it from free-falling between racks. Positioning sensors allow the unit to identify its placement within the system. Status lights indicate the battery level and alerts users of possible damage to the unit. If a Radio Shuttle stops operating within a channel, another unit can be used to rescue it with the "Rescue" function. During operation, if the cart's battery level gets too low, after it has completed its assigned operating cycle, it will no longer accept new commands and will move to the end of the channel to alert the user of a low battery.

Fully charged, Radio Shuttle carts can operate for up to 20 hours. In rapid charge mode, recharge time can be reduced to only four hours. The carts have a load capacity range of 2,200 – 3,300 pounds and some cart options have an operating temperature range from -22 to 113 degrees Fahrenheit (-30° C - 45° C). The Radio Shuttle system is easily customizable and can provide a cost-effective solution to warehouses that need automation.



## Radio Shuttle Pallet Storage

*1 A forklift places a Radio Shuttle cart on the level where goods are going to be stored.*

*2 The forklift loads each pallet at the level's entrance, or it sets a pallet on top of the cart.*

*3 The cart slightly raises a pallet, and then moves along the track to place the pallet in the first open location.*

*4 The unit returns to the entrance to repeat the procedure until there are no more pallets or the lane is full. The Radio Shuttle cart can be removed for use at another level or lane.*

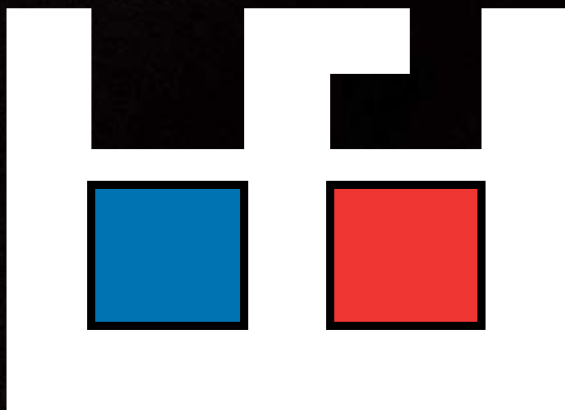
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*To remove pallets, the procedure is performed in reverse order.*



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# Above the Weather

*Morrison Company  
rescues their  
customer's  
sinking project  
deadline by  
pooling their  
resources.*

**W**hen a series of heavy rains and inclement weather in Dallas, Texas delayed construction on a new distribution center for one month, the client had serious doubts the project would be completed on schedule. Jim Green, president of Morrison Company, was decidedly more optimistic, "We were confident we could get it done. We just needed a plan of attack."

After experiencing years of growth, the customer, a national leader in the design and manufacture

of medical and school uniforms, was consolidating multiple locations into one large distribution center under construction in Dallas. Morrison Company, an Interlake Mecalux distributor, was one of the contractors scheduled to work on the new building. Their responsibility was to install three configurations of Interlake Mecalux rack systems: single-deep selective pallet rack, decked rack and a pick module.

With the floor and the roof of the facility unfinished due to heavy rains, the general contractor asked Morrison Company if they could condense the timeline for their portion of the project. This would



allow the remaining subcontractors to complete their work on schedule. Green was not intimidated by the tight schedule or the nearly 200,000 square feet of rack to be installed. He impressed the client with his immediate action. The design engineering and project management teams at Morrison Company worked closely with Interlake Mecalux and the customer's supply chain consultant to implement the three-fold material handling system. To accomplish the project, Interlake Mecalux combined shipments, re-arranged schedules, and worked to ensure any available inventory was shipped to the site.

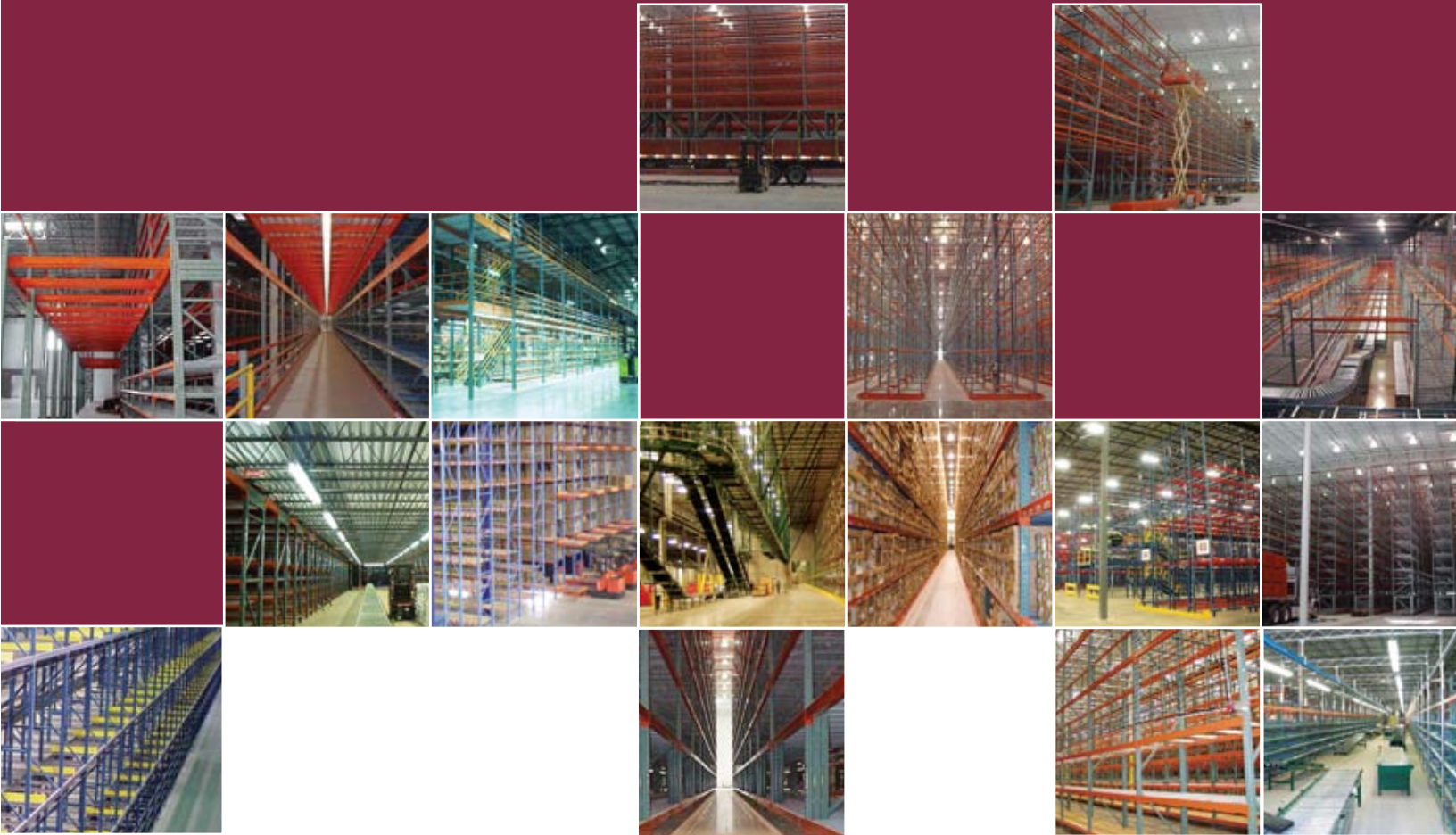
"We doubled our crew and split them up", explains Green, "One crew installed the racking while the other crew installed the pick module." The rack installation began when there were no lights and no doors on the building, so Green rented light trees for the crews. Determined to help the customer meet the project completion date, Green also worked to coordinate the installations with the other subcontractors at the job site. Beginning with the architect and general contractor, Morrison Company worked with the fire protection, roofing, dock door, electrical, warehouse management system, plumbing, and conveyor contractors to integrate their schedules.

"Morrison Company prides itself on demonstrating value to clients with our team approach", Green says. "We took a 20 week installation schedule and consolidated it into only 16 weeks." Due to the dedication and hard work of the Morrison Company as well as the Interlake Mecalux team, the client's deadline was met and the distribution center opened on schedule.

## TECHNICAL DETAILS

PRODUCT TYPE:	DECKED RACK	DECKED RACK 2-LEVEL PICK MODULE
No. of bays:	630	256 of Rack / 36 of Carton Flow
Frame specs:	54" D x 34' H 25000# cap	62" D x 20' H
Beam specs:	144" L x 2000# cap	96" L x 2000# cap
No. of beam levels:	12	5/Level
No. of aisles:	35	17
Aisle width:	66"	54"
Capacity:	12,000#/Bay	5,000#/Bay/Level
Area racked:	84,000 sf	50,000 sf/level

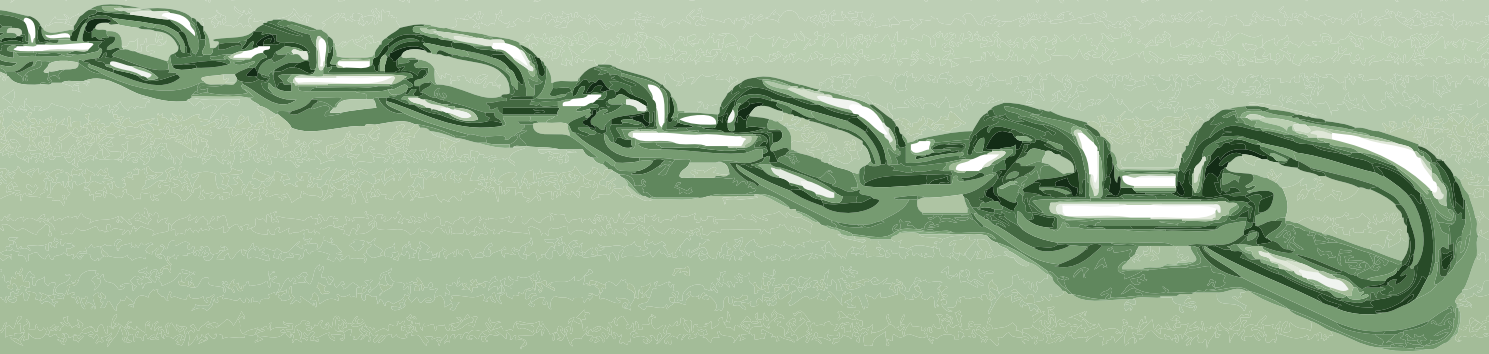
“We were confident we could get it done. We just needed a plan of attack.”



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Seeing Green:

## A Resource Based Approach to Greening Your Supply Chain

*Creating a sustainable supply chain with cost effective solutions is no longer the “wave of the future”.*

**E**ffective supply chain management has always been a critical success factor for a business and is even more vital in this economic climate. With consumers increasingly demanding sustainable products, more and more companies have realized they must consider the implementation of environmentally-conscious policies within the supply chain. Beyond contributing to global sustainability, going green reduces costs, enhances brand image, and results in greater operational efficiencies. Investing in sustainability is no longer a separate issue from increasing productivity.

A shared vision of sustainability among all employees is the result of careful planning and communication. Companies that have successfully implemented plans for a sustainable supply chain experienced more streamlined operations and increased revenue from positive marketing. Employee morale has also been seen to improve once all staff members begin working towards a common goal.

**Getting the Green Light.** Researchers determined a critical success factor in aligning sustainability and business strategies is gaining commitment from the highest levels of leadership, according to the Deloitte survey “Sustainability in Business” published on June 1. Data from the survey suggested though, that companies have

a gap between their leaders' environmental goals and the way sustainability is enabled within their organizations. One respondent commented, "I think that the message from the global office is that we have to look at sustainability as much as possible, but even though it is something that the parent company would like us to do, they would not be okay with us spending a quarter of a million dollars on it."

Justifying hefty investment in environmental initiatives should be reasonable and fit naturally with company priorities. The trend of incorporating sustainability within business models indicates that companies must address their role in its environment to remain competitive. Dave Meyer explains in his blog, ValueStreaming, a cost-benefit approach needs to be realistically weighted in making design and manufacturing decisions since "the cost of closing material loops may in some cases exceed the benefits." However, re-inventing a business based on sustainability efforts should be unnecessary.

When creating a sustainability action plan, following the three steps below will help you construct a clear and concise vision:

- ◆ Identify business processes that could be more efficient while promoting civic engagement.
- ◆ Focus on the entire scope of environmental sustainability rather than isolated initiatives.
- ◆ Align sustainability and business objectives. Then, set aggressive goals and priorities that meet both.

**Going Green.** When examining your overall company strategy, it can be helpful to review the ecological potential each function or process has in the chain. Here the supply chain is examined; pertinent environmental issues are described and presented together with their likely benefits laid out from a corporate perspective.

**Raw Materials.** At the top of a supply chain is a supplier who may work with even smaller companies to provide the raw materials to a manufacturer. The

environmental impact of this sourcing depends on the materials providers' capabilities and the sustainability and scarcity of the raw material.

Working towards a shared vision of sustainability with your supplier, as well as all supply chain partners is necessary. Successful supplier relationships can result in increased trust, product and process innovation, and mutual understanding during price negotiations. In the 2001 report, "Suppliers' Perspective on Greening the Supply Chain", the Business for Social Responsibility Education Fund described symbiotic relationships between both suppliers and customers. It reported that suppliers were enthusiastic about working collaboratively with customers to better incorporate environmental considerations into purchasing decisions or to support future environmental initiatives.

**Shipping / Logistics Operations.** Transport sectors throughout a supply chain create noise, air, and water pollution. Emissions may come from the activities performed during trucking, rail, air, and ocean freight transport. While no single behavioral change can eliminate pollutants caused by shipping resources, overall reduction in the use of fossil fuels will abate greenhouse gas emissions (GHGs). SmartWay, an EPA-sponsored program, identifies products and services that reduce transportation-related emissions. The program can assist companies in choosing transportation providers who support reducing fuel consumption and emissions from transport.

UPS and FedEx are reducing their carbon footprint by continuously upgrading their fleets to include more hybrid trucks. Solutions for manufacturers include: upgrading their own fleet, eliminating idling, optimizing their routes, transloading shipments from rail to freight, or automating logistics operations altogether. An automated logistics system saves time by providing more supply chain visibility, money by reducing overhead, and energy by decreasing expedite charges. If outsourcing logistics operations is an option, consider a company that can automate all logistics operations and shares a similar vision of sustainability.





*Warehouse.* Possibly one of the largest assets to a company, warehouses contain a variety of equipment such as forklifts, pallets, rack, and various other storage units. Warehouses consume large quantities of time and land. The amount of time spent on retrieving a specific item in a warehouse depends on the organization, speed and abilities of the staff, equipment, and the warehouse itself. Optimizing your warehouse with warehouse management software is economical and will save energy by streamlining product flow.

Installing an automated storage and retrieval system (AS/RS) limits the time spent on simple operations and land usage. Semi-automated storage systems require less investment and may fit a company's storage needs. However, wide adoption rates have lowered the costs of automated storage systems, and an AS/RS can generate a faster ROI by reducing costs on labor, energy, product waste, and maintenance. Whether fully- or semi-automated, both levels of automation require less lighting and temperature control.

*Product Packaging.* The advent of more complex products requires more intricate, and often more expensive packaging. Lowering packaging weight reduces shipping costs and saves energy in moving items across the warehouse. Reducing waste in landfills can be achieved by using sustainable materials or sending the packaging materials to recycle facilities instead of waste sites. Reusable packaging can be made easy for customers to return. A simple note on shipping paperwork or the packaging can encourage customers to reuse the cardboard, bubble wrap, or peanuts.

*Energy and Water.* Energy can be neither created nor destroyed. However, energy and water, are often wasted and their relatively low cost is preventing change from occurring, as one respondent said in the Deloitte study. "The cost of energy and water in general is still very cheap – we do not pay the full cost in the US, so justifying changes for this purpose [can be] very difficult." Despite the low cost, water and energy conservation should be an integral part of every sustainability plan.

## GREEN TECHNOLOGY RESOURCES

### **Carbon Disclosure Project**

<http://www.cdproject.net>

Accelerating solutions to climate change by putting relevant information at the heart of business, policy and investment decisions.

### **ENERGY STAR**

<http://www.energystar.gov>

Helping us all save money and protect the environment through energy efficient products and practices.

### **Environmental Defense Fund (EDF)**

<http://www.edf.org>

To preserve the natural systems on which all life depends by designing and transforming markets to bring lasting solutions to the most serious environmental problems.

### **International Organization for Standardization (ISO)**

<http://www.iso.org>

To promote the development of standardization in the world with a view to facilitating the international exchange of goods and services, and to develop cooperation in the spheres of intellectual, scientific, technological and economic activity.

### **SmartWay**

<http://www.epa.gov/smartway>

To improve the environmental performance of the freight delivery system in the United States through money saving, market-based approaches.



Companies can save energy by more efficiently lighting, heating, cooling, and using water in buildings. Lighting costs can be reduced by installing water meters, dimming systems, occupancy sensors, photosensors, LED lighting, skylights, and additional windows. General energy conservation in a warehouse can be practiced by charging battery-operated modules during off-peak hours. Heating and cooling inefficiencies can be resolved in a warehouse by installing cool-roof technology, desiccant systems, ice storage systems, oversized ceiling fans, or dock shelters.

The most-used water-efficiency practices in the commercial and institutional sector are automatic irrigation systems, high-efficiency urinals, water-saving bathroom sink faucets, water-saving showerheads, and less water-intensive plant species in landscaping, according to the EPA report "Water Efficiency in the Commercial and Institutional Sector", published on August 20, 2009. Efficiently using water in cooling towers can help affirm a company's policy on sustainability.

Purchasing energy from renewable energy suppliers is also an option. As reported by Julie Schmit of USA Today on September 20, renewable energy makes more economic sense for companies in certain locations with various influences, such as; high energy costs in Hawaii, attractive incentives in California, and close proximity to energy sources like wind farms in Texas.

**Greener Pastures.** Smart, yet aggressive green policies not only attract the attention of the media, but also benefit global business and ecological environments. Companies that commit to creating a sustainable, cost-efficient and organized supply chain will do more than meet government regulations. It will also enhance their brand image, reduce costs, meet consumer demand, and keep their own environment healthy.

The reference guide below lists several organizations and programs that can assist you with enabling sustainability practices within your business and supply chain.

<b>WaterSense</b>	<a href="http://www.epa.gov/watersense">http://www.epa.gov/watersense</a>	Protecting the future of our nation's water supply by promoting water efficiency and enhancing the market for water-efficient products, programs, and practices.
<b>WasteWise</b>	<a href="http://www.epa.gov/wastewise">http://www.epa.gov/wastewise</a>	Eliminate costly municipal solid waste and select industrial wastes, benefiting your bottom line and the environment.
<b>World Resources Institute (WRI)</b>	<a href="http://www.wri.org">http://www.wri.org</a>	To move human society to live in ways that protect Earth's environment and its capacity to provide for the needs and aspirations of current and future generations.
<b>World Business Council for Sustainable Development (WBCSD)</b>	<a href="http://www.wbcd.org">http://www.wbcd.org</a>	Providing business leadership as a catalyst for change toward sustainable development, and to support the business license to operate, innovate and grow in a world increasingly shaped by sustainable development issues.
<b>U.S. Green Building Council (USGBC)</b>	<a href="http://www.usgbc.org">http://www.usgbc.org</a>	To transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life. Best known for LEED certification.



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## Gaining Access to Inspiration



*How the partners of A2i Systems created a successful organization in the midst of global economic adversity.*

In June 2009, during one of the largest economic downturns in history, three entrepreneurs opened the doors of their new system integration firm, A2i Systems. Etienne Puckett, Kyle Hester, and Bob Cobak, among them having 50-plus years in the industry, created a partnership determined to provide their customers' full-service solutions to their material handling needs. Although they have experienced their own set of challenges since they started, their attitude of optimism combined with the steadfast resolve to become an industry leader, gives them a unique perspective on business, the economy and the world of material handling.

**Access to Imagination.** After earning his degree in mechanical engineering at Georgia Tech, Etienne Puckett began his career nearly 23 years ago as a project engineer and worked his way up through several management positions. During this time, he met Kyle Hester, and the two became co-workers and friends. Puckett's success in creating strong relationships within the industry led him to become the President of A2i. His background in automation design, sales, operations, and management provides a solid foundation for his new senior management role.

Now serving as the Vice President of Sales for A2i Systems, Hester began his career in a project engineering role similar to Puckett's. Hester earned his BS in Industrial Engineering from Mercer University and continues to support his Macon, GA alma mater as a member of the Mercer School of Engineering Alumni Board. Hester changed gears early on in his career to a sales engineering and business development position where he met and worked with Bob Cobak. Hester briefly returned to his engineering background as a Facility Engineering Project Manager before getting back into a material handling sales position in a start-up conveyor company. His 15-year history in engineering, automation design, sales, and management bolsters the appreciable experience of the firm.

After enrolling at Southern Polytechnic State University for Mechanical Engineering, Cobak graduated in 1995 with a BS in Mechanical Engineering. Cobak worked on the design and project management of large scale storage systems almost immediately upon starting his 15-year career. He quickly focused his efforts on a new company in which his responsibilities included design, engineering, sales, project management, and installation of industrial rack systems. With a framework of experience that includes co-founding a company, Coback, A2i's Vice President of Operations, has qualifications that round out the robust infrastructure formed by the trio.

The three founding partners of A2i all have a background in engineering; however, the diversity of their experiences creates the cohesive working relationship the company is built on. Over the course of their careers, the three developed not only strong working relationships, but also long term friendships. With skill sets that clearly complement each other, it was only a matter of time before they realized their dream of building a firm in which customers could rely.

“Our attitude and abilities make us unique.”

**Access to Illumination.** A2i stands for “Access to Integration”, the principle on which the company was founded. According to the company website, [www.A2i-Systems.com](http://www.A2i-Systems.com), its mission is “to always be accessible to our customers for their complete material handling integration requirements.” Puckett said A2i was created to meet the market demand for a company that can provide complete material handling solutions. “Customers are looking to build strong relationships with suppliers that can provide products and systems that meet all of their needs, whether it is storage systems, conveyor systems, industrial products, or an integrated solution including each,” Puckett explains.

One night a few years ago, Hester was having dinner with a customer who was disappointed in doing business with a large company. According to Hester, the customer felt that he wasn't getting the attention he deserved. It was only one month later that Puckett and Hester joined Cobak for lunch. When Cobak told them his plans to start a company focused on rack systems, Hester mentioned that he and Puckett were looking to start a firm focused on automation. From there, as Puckett says, “It was just a leap of faith.”

Building their company from the ground up, during a recession, has presented them with challenges they may not have faced five years ago. Specifically, Puckett says, “the biggest obstacle was funding.” With banks unwilling to invest in new business and investors cautious due to the fluctuations of the market, getting start-up capital was difficult. Undeterred by this complication, the partners succeeded in completely financing A2i through their own efforts.

As a start-up, A2i also faces hurdles with brand recognition. The partners focus on its unique perspectives and capabilities. With plenty of competition, the challenge lies in being able to stand out from the crowd. Puckett

**Product.** Single and Double-Deep Selective, Bulk Storage Rack, Conveyor System, Pallet Flow, Lockers, Workstations, and Guardrail.

**Services.** Site Survey and Dimensional Study, Design Engineering, Project Management, Installation, Professional Engineering, High-Piled Storage Consulting and Permit Acquisition.

**Highlights.**

- Provided laser measurements of the existing building
- Created initial drawings overnight at customers office
- Designed 16 plan views for customer review
- Used hybrid Interlake Mecalux system for the rack
- Completed installation in three weeks



## case study: A2i's CUSTOM SOLUTION

**Scope.** A leading manufacturer and retailer of sporting goods was planning to open a new distribution center in the Dallas, Texas area when concerns about obstructions within the building came to light. They contacted A2i Systems for a site evaluation to determine if the building size met the required number of pallet positions.

**Opportunity.** When A2i arrived at the customer's location, it became apparent that obstacles within the building such as wind bracing, rooftop A/C units, and odd column spacing had them unable to find a solution that fit their needs. The detailed site evaluation A2i performed included laser measurements of the roof pitch, slope, profile and any potential impediments.

**Custom Solution.** With the measurements completed, the A2i crew returned to the customer's office to recap the initial findings. They were prepared to fly back to their offices in Georgia that evening and begin designing the optimal layout while meeting the required number

of pallet positions. Estimated lead time: one week.

The customer, however, had another plan in mind. She was required to have engineered AutoCAD drawings of the plan view in addition to multiple front and side views for a meeting the next morning. It was an opportunity for A2i Systems to leave a lasting impression. The customer brought in pizza and coffee and A2i worked straight through the night to deliver the drawings in time for the customer's meeting.

Over the next few months, A2i Systems revised the drawings as the customer's sales and inventory forecast changed. A2i utilized the additional time to concentrate on designing a mechanized conveyor solution for the customer's process flow in the shipping area. The final design included plans to store the customer's complete inventory of product within the allowed space utilizing single- and double-deep selective rack and bulk storage. Also included within the design was a conveyor layout with workstations and

pallet flow rails customized for their manifesting and shipping operation.

Once the design work was completed, the customer gave A2i Systems a three week installation deadline. They chose to install a hybrid Interlake Mecalux system with bolted frames, welded footplates, piston lock beams and roll in pallet supports. The frame and beam elevations were designed according to the varying ceiling heights.

A2i Systems worked with their longtime partner ESSI to complete the installation within the allowed timeframe. A2i rounded out the project by providing project engineer (PE) stamped drawings and calculations, obtaining the permit and offering HPS storage consulting. They also remained on site to snap lines and oversee the installation. In the end, the customer was very satisfied with the new system, which not only works around the building's many obstructions, but also provides them with an efficient and productive facility.



## TECHNICAL DETAILS

**Number of bays:** ~400

**Frame specs:** 42"/48" deep x max 360" high | U80, U82, and U101 with welded 8" x 8" footplates

**Beam specs:** 168", 156" & 144" lengths

**Number of beam levels:** from 3 levels/bay to 14 levels/bay

**Height of rack:** Varies from 30'-0" to 26'-0"

**Number of aisles:** 14

**Aisle width:** 10'-6"

**Tunnel unit size:** 14'-0"

**Pallet positions:** ~7,500

**Pallet type:** GMA 48" deep x 40" wide

**Capacity:** 1,200 pounds

**Area racked:** ~60,000 ft<sup>2</sup>

**Year Installed:** 2010



says, "Our willingness to do whatever it takes, whenever, to satisfy our customers, has made us successful." With capabilities from complete systems, individual products, to services, they offer expertise in conjunction with systems integration. A2i Systems can accommodate almost any engineering requirement whether it is system conception, writing specifications or performance requirements, preparing bid packages, calculations and stamped drawings, auditing, or service work. Puckett, Hester and Cobak are determined to make their company a recognized industry leader and a partner their customers and suppliers are proud to work with.



In spite of the complications, Puckett says there are advantages in their position. "It is a great time to be a company with very low overhead when customers are looking more than ever for integrators who can offer value engineered systems at competitive prices." Another advantage? Suppliers are looking to find new ways to improve their business and provide lower costs with better terms. Key partners and suppliers like Interlake Mecalux help support A2i Systems with the knowledge and resources to continue growing their business.

**Access to Invigoration.** The customer base for A2i Systems is particularly strong in third party logistics (3PL) providers since all three partners have extensive experience in that particular area. 3PL firms specialize in providing their customers multiple logistics services. Most often, these services can be "bundled" together or are integrated by the provider and include transportation, warehousing, cross-docking, inventory management, packaging, and freight forwarding. In conjunction to their experience with 3PLs, A2i also serves the distribution market and manufacturing companies.



Puckett, Hester and Cobak attribute A2i Systems' current success to three essential factors: customer loyalty, competitiveness and attention to detail. Their focus on customer satisfaction creates repeat business, builds their reputation, and drives referrals. Striving to earn their customers' business presents the opportunity to build good working relationships with their suppliers and installers, who in turn facilitate aggressive pricing. They also focus on managing the details when engineering the systems on the front end. This allows them to provide storage system solutions for customers who had previously been told their requirements could not be met.

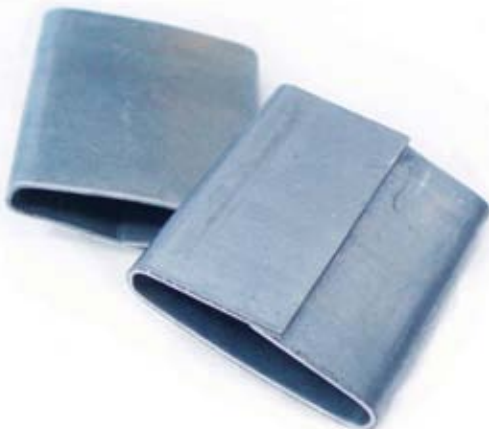
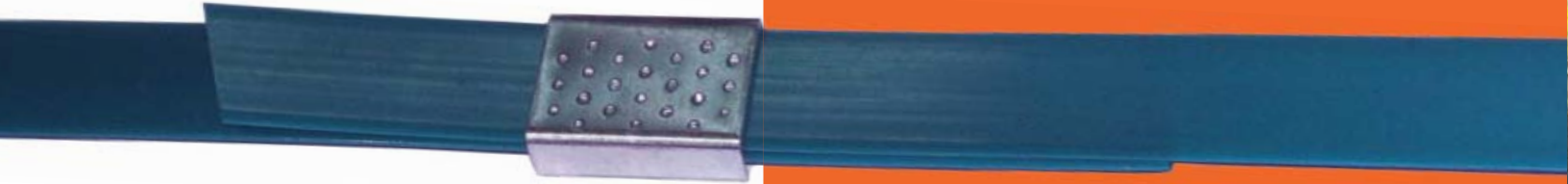
**“A2i Systems will continue to grow our success one customer at a time.”**



For the partners of A2i, confidence has never been higher. "We knew we could be successful in the execution of the projects. We knew our customers needed us. The moment we knew it seemed to fall in place is when our manufacturers, specifically Interlake Mecalux, so openly embraced our plans and pledged their support to our success." This conviction also extends towards the future, as Puckett describes, "A2i Systems will continue to grow on our success, one customer at a time. We will be the leading material handling integrator that customers turn to when they have a need."



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# Understanding Pallet Rack

*Getting The Most Out Of Your Warehouse From The Start Can Improve Your Organization's ROI.*



**W**ith the multitude of pallet storage options offered in the marketplace today, determining the most cost-effective and productive solution for your warehouse can be overwhelming. There are many storage systems available to solve the same storage problem, but an in-depth analysis of your warehouse requirements, as well as establishing the level of automation desired, can easily provide the right solution for you. This process can be made simpler by applying a series of steps to help resolve any issues during the design phase of your planned warehouse operation.

Implementing a highly organized warehouse or distribution center is an essential process for any company that manufactures, warehouses, or distributes goods. The development of a well ordered warehouse can maximize navigational efficiency and optimize the picking process. Reducing and unifying load movements improves output and lessens the possibility of product damage. Traditional pallet rack systems are still the industry standard for storage areas within the warehouse. However, the most efficient and cost-effective warehouse solution may be the automated one. There are multiple simple considerations that must be taken into account



when making a decision on which type of pallet rack to use. The following three steps can help establish which pallet rack system is the best solution for a specific warehouse and product:

**1 Classify Objectives.** The first step of determining the best layout for a warehouse space is to clearly define the objectives. Beginning with broader objectives will help narrow the focus during this step. In conjunction with the warehousing strategy of the company as a whole, objectives such as “improve customer service” or “reduce warehouse costs” can lead to more specific objectives like “improve picking processes” or “maximize vertical storage space”.

**2 Gather Information.** Collecting detailed specifications regarding the proposed warehouse space is the second step in the

process. To determine the best pallet rack system, it is important to understand the size of the space. Architectural drawings of the warehouse including columns, height restrictions, doors, docks, and structural anomalies help to define the space available. Placement of the building doors, columns, and docks can have the same impact on the function of the rack system as the floor space and ceiling height.

**3 Begin Analysis.** Merge the objectives drawn out in the first step with the information gathered in step two. Remember to consider the following when deciding which type of pallet rack best fits the application: desired storage density, product/goods accessibility, inventory rotation, pallet load size and weight, optimal storage design, and the cost of materials and installation. Use this data to determine not only which pallet rack system will provide the solution most closely aligned with the company objectives, but will also provide the best use of the available space.

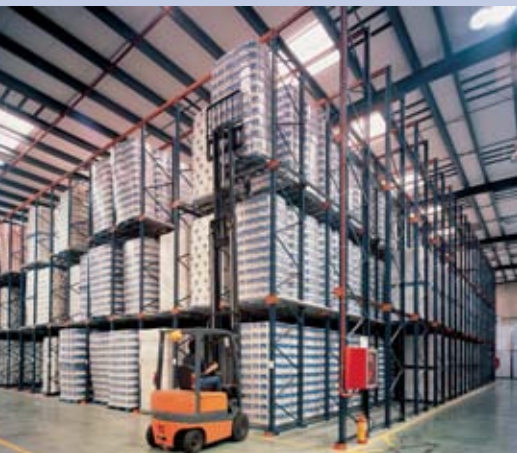
*Some companies may still use block stacking for the storage of their palletized products. The method for block stacking is placing pallet loads on top of one another and storing them on the warehouse floor in lanes or blocks. Although the block stacking solution is inexpensive in terms of implementation, during execution, product can be damaged or lost due to pallet collapse or improper stacking. Ultimately, the use of metal pallet racking is the most suitable and profitable solution to take maximum advantage of space.*



**Selective Rack.** Combining vertical frames with horizontal load beams, single-depth selective pallet rack provides total accessibility to the product. Easily the most popular racking system in use today, it provides the versatility required for warehouses that have a wide variety of product types. Storage density is compromised due to this flexibility, in addition to the fact that the aisles must be wide enough for fork trucks to maneuver.

Roll-formed selective pallet rack is commonly available with bolted or welded frame configurations. Beams are mounted to the frame and held in place with a safety clip or piston lock connector. This allows the beam levels to be re-arranged simply and easily when necessary. A variety of accessories are also available to improve the performance of the selective rack.

Designing a selective pallet rack system for maximum throughput and storage capacity from the start provides for years of growth.



**Drive-In/Drive-Thru.** With drive-in or drive-thru pallet rack, product is stored within lanes several pallets deep. Lift trucks place the pallets on supporting rails connected to the upright frames.

Ideal for companies who require high-density storage for relatively few product types, this storage system can increase storage density by nearly 75% in some applications over conventional selective rack. Drive-in/drive-thru rack does forfeit selectivity and accessibility but makes up for it in product concentration.

Drive-in rack uses the same entry/exit point in each storage bay and provides last-in, first-out (LIFO) product access. Drive-thru rack can be loaded from one end of the bay and unloaded from the other to provide first-in, first-out (FIFO) access. This is particularly advantageous for products with an expiration date.

**Push Back.** Providing more selectivity than drive-in/drive-thru and a higher density solution than selective rack, push back rack offers the best of both systems. Nesting carriages store the product up to six-deep for a low maintenance and versatile storage solution.

As each pallet is loaded, it is placed on a free-rolling cart that is pushed back into the system by loading additional pallets. When each pallet is removed, the carts behind the pallet gently roll forward providing instant access to the next item.

Push back is available two-, three-, four-, five-, or six-deep to create a custom solution for almost any warehouse or product requirement. It is quite commonly used in food handling applications because of the clean and debris-free design. It does provide the last-in, first-out (LIFO) product access and is available in a variety of configurations.



**Structural.** Designed for higher capacity applications, structural steel pallet rack is available in selective, drive-in/drive-thru and push back configurations. These systems are constructed using hot-rolled structural channel steel and can provide long-term, reliable storage in even the toughest environment.

Structural pallet rack has an open channel design and a thick cross section to ensure all strength requirements are met. It is also debris resistant and easily cleaned for use in food distribution centers. Simple bolted assembly provides for re-configuration and growth.

Structural steel pallet rack is commonly used for rack supported buildings and the upright frames are used to support the roof of the structure instead of standard building columns. Building a rack supported warehouse provides the highest density storage solution for nearly every type of pallet rack system. It also reduces construction costs, improves lead times and minimizes the building's footprint.



**Pallet Flow.** Making full use of the available storage space, pallet flow racks ensure the faces along the picking aisle remain stocked at all times. Consisting of a system of flow rails installed at a decline down the lane and multiple bays of rack, pallet flow creates high density, first-in, first-out (FIFO) storage.

Pallets are loaded at the top of the incline and, using a series of complex braking systems to control speed, they glide effortlessly to the picking aisle. The flow rail is made up of a track or roller system that allows the pallet to move by gravity to the end of the lane.

Pallet flow rack creates the space savings of drive-in/drive-thru rack while reducing the likelihood of rack damage due to forklift impacts within the lane. It also provides quick and efficient inventory turn-over, and is most often used for applications in which high-density product storage and inventory rotations are the main concern.





**Mobile Pallet Rack.** Comprised of a racking system installed on mobile bases, mobile pallet rack provides increased storage capacity with direct access to each pallet. The mobile bases run on lateral tracks installed in the floor of the warehouse and the aisles are opened up only when the operator requests access via remote control or computer. A series of motors, sliders, and electronic sensors ensure safe and efficient operation.

The need for multiple fixed aisles is eliminated and as such, the mobile pallet rack system can increase storage capacity by nearly 100%. With the wheels and axles manufactured from high-quality steel and multiple motors installed in each base, operation of the units is secure and reliable.

The mobile pallet rack system is best for facilities in which a building expansion is not possible. It is most commonly used in freezer or refrigerated cold storage applications where space is limited.



**Unit Load AS/RS.** Created to meet the need for maximizing available vertical space while maintaining a compact footprint, the unit load AS/RS can save up to 40% of storage space over conventional storage solutions. This system fully automates the entry and exit of goods and provides total control over product inventory. High-speed stacker cranes move within very narrow aisles and can reach heights of nearly 100 feet when retrieving or depositing a load.

Order requirements are communicated to the crane control software and the crane swiftly retrieves the pallet. The pallet is deposited on a conveyor or at an output station for order picking. Operator productivity is vastly improved because the product is brought to the picking station and inventory reports can be provided in real-time.

Available in single- and double-depth applications, the unit load AS/RS will increase product quality by reducing the number of times each pallet is handled. The system is most commonly used for buffering deliveries and controlling inventory although it is also sometimes used for picking replenishment.

**Okay, Now What?** Looking at an empty warehouse space can be intimidating at first, but with the variety of options available in the material handling industry, creating the optimal system for your specific needs can be simplified. The most important factors to consider when selecting the best storage method for your warehouse are: the ability to integrate the system into the supply chain, estimated growth and the service ceiling of the facility, the return period on the investment, and the added value of the new working operations. Keeping these factors in mind while following the steps outlined above should open the door to a clean and organized warehouse.





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# Raising the Bar in Boise

*The Idaho State  
Liquor Division  
Toasts the  
Success of Their  
New Interlake  
Mecalux Unit  
Load Automated  
Storage and  
Retrieval System.*



After experiencing 114% growth in twelve years, the Idaho State Liquor Division (ISLD) warehouse and distribution center in Boise was bursting at the seams. The old way of managing their inventory was not working for them any more and they had to find a new, more effective storage solution. The Interlake Mecalux Unit Load Automated Storage and Retrieval System (AS/RS) not only provides the storage they need now, but according to Bill Applegate, ISLD Deputy Director of Purchasing & Distribution, "Our plan is for this AS/RS to meet our needs today and as much as 25 years in the future."

Idaho is one of eighteen states in the US known as "control jurisdictions". These states regulate the distribution and sale of distilled spirits and some wine within their borders. All beverages exceeding 16% alcohol content must pass through the ISLD distribution center. Located in Boise, the Idaho State Liquor Division provides inventory for 168 state-owned or contracted stores. This allows Idaho to meet the constitutional mandate of not only making the product available but also managing availability to help limit excessive use.







**Unexpected growth.** When the Idaho State Liquor Division moved into their new 55,000 square foot Boise distribution center in 1998, they were confident in the facility's capacity to accommodate any increasing demand for the next several years. What they didn't foresee was the 15% population growth between 1996 and 2005. Higher population coupled with a consumer shift to premium liquor brought the ISLD to a point where they had to find a better way to manage their inventory or find a new, larger facility.

Additional space was also needed as suppliers frequently produce new or improved spirits. For example, while vodka has been one of the most popular distilled spirits in the US since 1975, flavored vodkas have only been introduced to the

market within the last 25 years. One of the most highly-recognizable vodkas, Absolut, brought the first flavored vodka to the US in 1986. Since then as just one of the 138 vodka brands worldwide, Absolut currently has 17 flavored varieties in addition to their standard blue label, red label and 10 specialty vodkas. Absolut already provides almost 30 varieties of distilled spirits. Coupled with a growing number of liquor manufacturers, the number of spirits products produced could grow exponentially. As a result, the ISLD team determined they needed to increase storage density. In 2005, they embarked on a five-year expansion program.

**The challenge.** Applegate explains, "We really felt that we could not stay in the original facility the way we were doing things. We had to automate,

we had to modernize." This conclusion led the ISLD team to look into automated warehouse options, including a tour of the Utah Department of Alcohol Beverage Control. Their newly installed Automated Storage and Retrieval System (AS/RS) provided high density storage in a smaller footprint with room for many years of growth. Although the ISLD team initially wanted to expand the warehouse outward with a uniform ceiling height, after seeing an AS/RS in action, they realized it was time to do something different – build up.

Throughout the extensive request for proposal process, the ISLD team looked at many types of automated systems. Among them were proposals using Automatic Guided Vehicles (AGVs) and a variety of AS/RS systems. The AGVs required excessive



“...we felt we needed to do something different...”

maneuvering room in an already tight receiving area. In addition, most of the AS/RS system proposals utilized more cranes than they thought were necessary and less rack for storage. One proposal; however, stood out from the rest – the Interlake Mecalux Unit Load Automated Storage and Retrieval System.

Applegate said the Interlake Mecalux proposal was, “Superior” because it was closely aligned with the Idaho State Liquor Division’s original vision for the warehouse. Three factors of the Interlake Mecalux proposal made them the clear front runner: the capability of the proposed AS/RS system, the automated product management, and the price. Not only did their proposal manage the needs of ISLD at the pallet level, but it provided a solution at the case picking level as well.

Currently valued at approximately \$9 million, the ISLD inventory includes distilled spirits, mixers, bar supplies such as shot glasses and corkscrews, and select wines native to Idaho. As in most distribution centers and warehouse operations, the 80/20 rule applies to ISLD, meaning that 80% of the warehouse activity centers around 20% of the product. Due to this, many of the products in the ISLD warehouse remain palletized while the top 20% of SKU’s are broken down for split-case picking.

**Automating Liquor Management.** The ISLD team decided to improve their storage capacity for the palletized product by building upward instead of expanding outward and installing the Interlake Mecalux AS/RS in a warehouse expansion of only 17,200 square feet. As Applegate describes, the goals

were clear, “We needed to improve our effectiveness, improve our efficiency and to touch product less often.” They worked with the Interlake Mecalux team to design an AS/RS that complements the existing manual warehouse operation by providing the ability to store and retrieve pallets for case and split-case replenishment. The new AS/RS fully utilizes the 51-foot high warehouse addition by adding nearly 3,000 pallet storage locations to the facility.

Distilleries, alcoholic beverage manufacturers and wholesalers ship products directly to the distribution center by the pallet. These pallets are received at one of the facilities’ three docks and either taken directly to the new AS/RS or to the selective rack storage for full case picking.

For entry into the AS/RS, lift trucks transport pallet loads to an induction station conveyor. Sensors

within the station automatically weigh and measure each pallet. To improve safety and product security, pallets are also automatically scanned to determine tolerance. Pallets that are loaded improperly or damaged are diverted for repair or adjustment.

Most pallets though are deemed acceptable and conveyed to one of the three 160-foot long aisles of the AS/RS. Servicing each lane of the system is a high speed, double-mast, double-deep stacker crane. The 50-foot tall stacker cranes are automatically summoned to gather any pallets diverted to their lane for putaway. Moving at speeds of nearly 10-feet per second and lifting speeds of nearly 4-feet per second, the cranes swiftly and securely place products in the double-deep rack.

The movements of each crane are precisely controlled by Mecalux’s Galileo software. When



the ISLD warehouse management system (WMS) relays a replenishment order to the Interlake Mecalux EasyWMS software controlling the AS/RS, EasyWMS sends the pallet position to Galileo. "The integration between our existing warehouse management system and the [Interlake] Mecalux warehouse management system seems to go very smoothly," explains Bill Applegate. "Both systems need to constantly talk to each other." EasyWMS allows Galileo to facilitate the movements of the crane ensuring the pallet arrives at the appropriate picking station.

Product entry and exit within the AS/RS is simplified and fully automated with the WMS systems working together. A replenishment order automatically sends the stacker crane to the location of the required pallet for retrieval. Upon arrival at the requested pallets position, the fork mechanism reaches into the rack system to gather

the load. The design of the fork extractor system allows for pallets stored on either side of the aisle to be retrieved easily. The pallet load is then carried by the stacker crane from the rack system to one of two output stations.

The primary output station is located near the case picking area. A conveyor on the ground floor moves the pallet to a fork lift station for pick up. Lift trucks move the pallets from the conveyor on the lower levels of the conventional rack area. This area is made up of Interlake Mecalux pallet rack installed prior the new addition. Full case picks are directed by a voice system and placed onto pallets. Some slow moving product is also selected from the upper levels of the rack using order pickers.

A secondary output station is located on the mezzanine level servicing split-case picking. When

a stacker crane delivers a pallet to this station, a worker is given instructions on a computer screen to pick a required number of cartons. The cartons are removed from the pallet, labeled and placed onto the split-case conveyor supplied by Interlake Mecalux. Once the required cartons have been removed from the pallet, a stacker crane returns the pallet to the AS/RS for storage.

The newly labeled cartons are conveyed to the split-case bottle picking area on the mezzanine level and placed into the carton flow system. This flow rack supports the picking of individual bottles into mixed cartons. The expansion of the split-case operation stems from an almost 30% increase in bottle sales from 2005 to 2009. Upgrading from 350 SKUs to around 1200 SKUs also allows the ISLD to reduce the number of full cases that are shipped and stored at the retail outlets.



# TECHNICAL DETAILS

## STACKER CRANE CHARACTERISTICS

**Travel Speed:** 590.55 ft/min

**Travel Acceleration Rate:** 1.64 ft/s<sup>2</sup>

**Lifting Speed:** 216.53 ft/min

**Lifting Acceleration Rate:** 3.77 ft/s<sup>2</sup>

**Forks Speed:** 98.4 – 196.8 ft/min

**No. of Stacker Cranes:** 3

### **No. of Elements of the Conveyor System:**

Approximately 100 sections of roller and chain pallet conveyor and 90° transfer sections.

## RACK CHARACTERISTICS

**Rack Length:** 160'-3"

**Rack Height:** 51'-0"

**No. of Racking Units:** 2740 pallet positions

**Aisle Width:** 5'-11"

**No. of Load Levels:** 7 full levels, 3 cantilevered levels at the front end

**No. of Bays per Rack:** 2

**Depth of Each Bay:** 2 pallet positions deep (8'-7")

**Width of Each Bay:** 8'-10"

**Load Unit:** GMA pallet (40" x 48")

**Total Capacity:** 2800 pounds per pallet

To fulfill mixed carton orders, workers remove empty shipping cartons from the overhead conveyor. The voice-picking system directs each worker to select the appropriate bottles from the flow racks and place them into the cartons. As each order is completed, the new mixed cartons are conveyed to the consolidation area on the ground floor.

Once the cartons from the split case area arrive on the main level, they are consolidated with any necessary full case orders and staged for shipment. Most of the 168 stores in Idaho receive a shipment from the distribution center once per week. A few high volume locations, like the Post Falls store ranked number one in sales for 2010 (The Coeur d'Alene (Ida.) Press, July 2010), are sent shipments twice per week.

**Satisfaction guaranteed.** The Idaho State Liquor Division distribution center's new Automated Storage and Retrieval System is projected to have a huge impact on the state's liquor operations. Applegate states, "We are going to touch the product less often. We'll put it in and we'll take it when it comes out to go to the picking location. We'll be able to maximize our storage space. Just in all ways, we'll have a lot denser product selection." Not only will the system provide for future growth without needing to increase labor, but it will also increase the building's safety, productivity and reduce product damage. The transition from primarily manual operations to mostly automated was not an easy one for the ISLD team to undertake; however, the excellent working relationship with the Interlake Mecalux team has helped make it smoother. Bill Applegate has nothing but praise for the team from Interlake Mecalux that brought the ISLD AS/RS from inception to reality, "I've really been impressed by the professionalism, their responsiveness, their attention to detail, keeping a clean work area, everything that I have seen and I've been out here every day throughout the construction process. They seem to anticipate what needs to be done and get it done before you have to say anything to them."





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