Neiman Marcus makes a distribution fashion statement

How to listen to your lift truck

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2013 Salary Survey: With experience comes reward

Results of our 2013 Warehouse/DC Operations Survey

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PMMI brings industry together to raise $50,000 for education

PMMI, The Association for Packaging and Processing Technologies, reported the 2013 PMMI Education & Training Foundation Golf Tournament raised $50,000 in support of training and education for packaging and processing professionals.

A field of 136 industry executives played in the biennial event on Sept. 22, the day before Pack Expo Las Vegas 2013 opened, at the Royal Links Golf Course. Thirty-two companies sponsored the event.

“The industry comes together at Pack Exo, and the PMMI Education & Training Foundation Golf Tournament is a fun way to start the show experience—connecting, supporting industry growth and strengthening our workforce,” said Maria Ferrante, vice president of Education & Workforce Development at PMMI. “We’re very grateful for the support of all our sponsors and golfers.”

Modex recognized among top 100 U.S. trade shows

MODEX HAS BEEN NAMED to the Trade Show Executive Gold 100 Trade Shows of 2012 list. The list represents the top 100 trade shows held last year in the U.S. ranked by verified exhibit space. Modex is produced by MHI, an international trade association that has represented the materials handling, logistics and supply chain industry since 1945.

“To achieve this recognition for a new show launch is remarkable and everyone at MHI is very proud to have accomplished this feat,” said Tom Carbott, MHI senior vice president of exhibitions.

Trade Show Executive is a print and online resource for the trade show, exhibition and event industry. Modex 2014 (www.ModexShow.com) will be held March 17-20, 2014 at Atlanta’s Georgia World Congress Center.

New metrics released to improve visibility into maintenance operations

THE SOCIETY FOR Maintenance and Reliability Professionals (SMRP) has announced the release of the newly revised SMRP Standardized Metrics. The revisions feature “best-in-class target values,” which provide insight into the effectiveness of asset management in the maintenance and reliability industry.

With the release of the revised metrics, maintenance and reliability professionals can uncover these values and gain insight into formulas, ratios, statistics, definitions and references, which combined provide a consistent benchmark to measure their performance. Current metrics from SMRP give standardized guidance on how to measure key performance indicators; the new additions show how to effectively apply the metrics and to identify “what good looks like.”

Members can access the metrics at http://library.smrp.org.

ISM manufacturing data posts another strong month in September

SEPTEMBER MARKED the third-consecutive month of solid manufacturing activity, according to the most recent edition of the Manufacturing Report on Business from the Institute of Supply Management (ISM).

The PMI, the index used by the ISM to measure manufacturing activity, hit 56.2 in September, which was 0.5% above August and now represents the highest level for the index in 2013. It is above the 12-month average of 52.4 by 3.8% and has been over 50 in nine of the last 10 months.

The report also noted that economic activity in the manufacturing sector expanded in September for the fourth straight month, with the overall economy growing for the 52nd consecutive month. New Orders, which are often referred to as the engine that drives manufacturing, slipped 2.7% in September to 60.5 and showed growth for the fourth month in a row. Production rose 0.2% to 62.6 and showed growth for the fourth straight month, and Employment saw a 2.1% hike to 55.4.

“There is a lot to like about this report,” said Bradley J. Holcomb, CPSM, CPSD, chair of the ISM Manufacturing Business Survey Committee, in an interview. “This marks three months in a row of solid PMI numbers. The average PMI for the entire third quarter is 55.8, which compares to the first half average of 51.5.”
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First, the good news...

If you like research, and you know we do, then you’re going to love this issue of Modern. This month we offer the results of two annual studies conducted by Peerless Research Group (PRG) on behalf of Modern and the supply chain publications of Peerless Media.

The results of the first, Modern’s 6th Annual Salary Survey, may fill you with a sense of pride, perhaps even a little joy; and the second, our 2013 Warehouse and Distribution Center (DC) Operations Study, may simply validate the malaise you feel when the discussion turns to your barely budging capital investment budget.

But, let’s get to the positive data first. On page 42, associate editor Josh Bond kicks off the results of this year’s salary survey with a fairly striking result: The average base salary reported by Modern readers this year rang in at $95,010, that’s the highest figure in the six years that we’ve been conducting the study and up nearly 6% over last year’s number.

Even the median salary came in at $83,910, marking an $8,410 jump from 2012. “This jump in the median tells me that there are more salaries on the upper end of the distribution this year, with more readers earning higher salaries than last year,” says Judd Aschenbrand, PRG’s director of research.

“Any way you slice it, moving the median at this rate is an encouraging sign for warehouse and DC management professionals.”

Throughout this year’s findings, we saw this continued, positive momentum. For example, for the third year in a row we found extremely high job satisfaction, with 97% of the 735 respondents saying they’re very happy with their career choice. We found that 55% say they intend to finish their careers with their current employer; we found an increase in hiring; a decline in layoffs and pay cuts as cost-cutting measures; and we even found a modest increase in the number of 18-year-old to 34-year-old college graduates taking positions in the industry.

“When you consider that more than 50% of respondents have been in materials handling for more than 20 years, that slight uptick in the younger persongravitating toward these positions is very encouraging,” says Bond. “We need to share this story with every high school student in the country. It reflects the strength of the industry, the growing value and recognition that warehouse and DC management plays in supply chain management, as well as the potential for a fulfilling career.”

Modern readers also like a good challenge. And if the results of our 2013 Warehouse and DC Operations Survey are any indication, they’re going to be faced with an ever-shifting landscape of operational challenges for years to come.

Contributing editor Maida Napolitano, a warehouse and distribution professional herself, reports (page 50) that we were somewhat surprised to find that, despite the positive vibes that U.S. business started to feel about a year ago, respondents are still stuck in the period of “barely budging budgets” that we saw solidified during the recession.

How are they keeping costs in check while cranking up the service? According to this year’s results, a little bit of whatever works. “There is no magic bullet,” says Norm Saenz, senior vice president and principal of TranSystems, Modern’s partner for this survey over the past eight years. “Whether they’re opening new DCs, improving inventory control, tweaking warehouse processes, or turning to a third-party logistics provider, results show that there’s no single prominent answer.”
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Moderate revenue growth expected for manufacturing in 2013

PwC MANUFACTURING BAROMETER REPORT ILLUSTRATES THE CONFIDENCE AND CAUTION IN MANUFACTURERS’ HIRING AND INVESTMENT PLANS.

BY JOSH BOND, ASSOCIATE EDITOR

U.S. INDUSTRIAL MANUFACTURING executives remain confident about their ability to guide companies through global and domestic challenges, according to the Q3 2013 Manufacturing Barometer, recently released by PwC U.S.

Although optimism regarding the global economic outlook reached 40%, the highest level since the first quarter of 2012, 82% of manufacturers surveyed expect positive revenue growth for their own companies in the next 12 months. Bobby Bono, U.S. industrial manufacturing leader for PwC, says the numbers reflect a healthy level of optimism in the domestic economy. “It’s interesting that, despite what they see in the news, they are confident they can navigate their company through the economic, regulatory and legislative challenges,” Bono told Modern. “They understand how their companies work and what they can do to succeed.”

The projected average revenue growth rate over the next 12 months remained moderate at 4.2%. Only 7% of respondents forecast double-digit growth, while 75% expect single digit growth. The primary growth driver remains the U.S. economy, with 60% expressing optimism about the domestic outlook. “But it’s not that the remaining 40% are pessimistic,” Bono said. “They are uncertain. Legislative and regulatory pressures in general create uncertainty, both in the demand arena and the cost environment. I wonder if, for many of these executives, a bad result would be better than this uncertainty. At least with a bad result you know the rules you’re working with.”

The report also showed that hiring plans are on the rise, with expectations reaching the highest level in five years and the second highest quarterly percentage in the past 10 years. The majority (58%) plan to add employees to their workforce over the next 12 months, up 16 points from second quarter 2013 estimates. But despite healthy hiring expectations, the survey identified head-
winds in securing qualified workers. Three-fourths (77%) of respondents cited a need to fill certain skill gaps over the next 12 to 24 months, with only 23% claiming to have all the right skills needed at present. The biggest skill gaps were in middle management (70%) and skilled labor (67%). At the same time, half of U.S. industrial product organizations admitted to having open positions that they were unable to fill with skilled employees.

“Again, this is a product of uncertainty and caution,” Bono said. “If an employer looks for 10 things in an employee, maybe they used to be comfortable hiring someone with five of those. Now they’re looking for nine. You’re also seeing an evolution in the skills needed in these jobs with the growth in automation and technology. How do you find these workers? What are the appropriate salary ranges? Companies have to rethink how they acquire talent.”

ROBOTICS

Robotics community awards robotic truck unloader

ROBOTICS BUSINESS REVIEW has announced the winners of the first-annual Game Changer Awards, recognizing outstanding advancements in robotic technology in 2013.

“Every entry was eminently worthy of an award,” said Tom Green, editor in chief. “Every product displayed an imaginative concept, innovative engineering and great practicality.”

Judges recognized Wynright’s Robotic Truck Unloader as winner in the “NextGen Game Changer” category and noted the robot’s ability to react on the fly to changing conditions and product orientations. “The robot doesn’t
just use vision, it uses perception,” according to the award’s Web site. “The technology allows the robot to be completely non-deterministic, which is much different from general robotic applications.”

The winners of the Game Changer Awards were chosen by a panel of distinguished experts from the International Journal of Advanced Robotic Systems and the business and investment community. Criteria included innovation, features, benefits and impact. Entrants showcased technologies for applications including industrial manufacturing, autonomous vehicle systems, consumer toys, and an exosuit to assist people with difficulty walking.

PACKAGING

Packsize signs reseller agreement with System

ON-DEMAND PACKAGING MANUFACTURER Packsize International together with System, an industrial automation company based in Italy, have announced that Packsize has obtained the rights to market the high-volume Freebox automated packaging system. Through the agreement, Packsize will add the Freebox machine to its on-demand packaging product offering, beginning January 2014.

Freebox is an entirely automated, high-volume machine that uses continuous sheet-fed corrugated. The machine, which is 24 feet long by 12.5 feet wide and 6.5 feet tall, uses flat corrugated to create made-to-measure boxes with customized printing in real time for every kind of product. With the Freebox system, customers can reduce corrugated waste, minimize the need for filler materials, optimize warehouse space, reduce labor, reduce product damage and increase customer satisfaction.

“The agreement extends our On Demand Packaging product line to meet the high-volume, labor-intensive demands of the high-end fulfillment market sector,” said...
The Multi-Load Tote from Akro-Mils is the Next Generation Product for Shuttle-Based Automation Systems that will transform how you look at storage, organization and order picking! Be on the lookout for more information on this innovative new product in January 2014!

Guess What’s Coming Down The Line…

The Multi-Load Tote from Akro-Mils is the Next Generation Product for Shuttle-Based Automation Systems that will transform how you look at storage, organization and order picking! Be on the lookout for more information on this innovative new product in January 2014!

Packsize CEO Hanko Kiessner. System president Franco Stefani added: “High-end fulfillment customers are trending toward more automation. This partnership will address these customers’ redundancy and peak performance operational issues efficiently and cost effectively.”

The Packsize On Demand Packaging network-wide solution will incorporate both Packsize Freebox and iQ Fusion machines, all integrated with proprietary software developed by Packsize.

FOOD & BEVERAGE

Study: Food and beverage producers expect growth

AFTER YEARS OF FOCUS on cost reductions and operational efficiencies, executives and producers in the food and beverage industry are feeling confident again, according to the 2013 Grant Thornton Global Food and Beverage study “Hunger for Growth.”

“Food and beverage industry leaders were forced to put certain plans for growth on hold during a difficult economic period,” said Dexter Manning, food and beverage practice leader of Grant Thornton. “Now that the global economy is showing signs of improvement, these leaders clearly have the appetite to strengthen their market positions and achieve sustainable growth through increased, focused investment.”

The survey reveals a vast majority

Nearly 75% of food and beverage executives expect more equipment spending in the next year.

(90%) of food and beverage executives expect revenues to increase during the next year, and one-third are expecting sales growth greater than 10%. Industry executives (56%) also expect employment to increase during the next year. More than 75% report their organizations will increase spending on equipment, product development and IT in the next 12 months.

Global executives cited the following types of regulations and the negative effect they may have on their companies: environmental (48%), taxes (44%), food labeling (38%), food traceability (33%) and employee health care (25%).
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Lift trucks are built to be sturdy and to reliably withstand the harsh conditions in most materials handling applications. But standard models have an Achilles heel; they perform differently and degrade quicker in cold storage environments. Although it is common for a pool of lift trucks to be used alternatively in cold and ambient areas, this practice can compromise safety, equipment and productivity.

There are some steps fleet owners can take to minimize these risks, and they begin with ensuring the equipment that will be used in cold places features optional protection packages. “It is a common mistake to neglect this step,” says Jeff Bowles, product line manager for Mitsubishi Caterpillar Forklift America (MCFA). Bowles says today’s manufacturers of electric lift trucks typically incorporate a high degree of protection for electrical components in the standard chassis. “However, not every standard chassis is designed to withstand cold storage applications. Optional protection packages are available and should be purchased.”

In addition, some electrical components and attachments that might work well in ambient environments are not compatible with cold storage, Bowles says. It is important to be sure that costly lift truck-mounted equipment is not subjected to conditions that will impair its usefulness or shorten its life.

With the chassis—the most expensive portion of the lift truck—protected, then it’s time to focus on the nuts and bolts. Other components that will improve productivity in cold storage applications include softer tire compositions, lighter weight hydraulic oil, an operator cabin, or anti-skid/anti-slip technology to assist with traction and reduce wear on drive tires.

Additionally, the use of narrow aisles in cold storage is common for maximizing the storage capacity. But as the fleet grows in a limited space, traffic and maneuverability can become an issue in the absence of forethought.

If lift truck movement between freezers and ambient environments can’t be avoided, it is best to transition first from a freezer to a cooler before using a cold lift truck in an ambient environment. This will greatly reduce the potential for condensation and corrosion on the lift truck’s components.

Josh Bond is Modern’s associate editor and can be reached at jbond@peerlessmedia.com
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Stretch hoods gaining traction for irregular-shaped pallet loads

With new developments and a narrowing price gap, additional applications are opening up for this packaging equipment.

By Sara Pearson Specter, Editor at Large

Stretch hood machinery unitizes a pallet load by stretching a plastic film bag (or hood) over a load, which then contracts to secure contents. Traditionally used to secure bagged bulk products—including cements, concrete, stone aggregate mixes, baking ingredients such as flour and sugar, and even pet foods—recent developments in both the equipment and the film have opened up new applications.

“Stretch hood equipment can now be used to secure mixed pallet loads that are very irregular in shape,” explains Uffe Kristiansen, Beumer Corp.’s director of sales for palletizing and packaging. “That feature allows the technology to be applied in consumer packaged goods handling, such as unitizing pallet-based orders that contain a variety of different products for stores or directly to customers.”

The ability to contain irregular loads can be attributed to developments in the plastic stretch hood film and to equipment.

“Some stretch hood machines, like ours, can be equipped with an optional load contour detection system, which reads the profile of the load and then dispenses the correct amount of film to secure it,” says Kristiansen. “Without the system, excess film can collect under the pallet.”

In addition to a messy appearance, excess film wastes both money and materials, and could snag on conveyor or impede lift truck forks. Equipment without this kind of system may not properly release the film, causing tears and interruptions, he says.

All of these developments make stretch hoooding an attractive alternative to stretch wrapping for applications that previously deemed the technology to be too expensive—such as food and beverage, household products and general distribution—he says. Kristiansen also says the cost difference between a fully automatic stretch wrap system with top sheet dispenser and a stretch hood system has narrowed in recent years.

Considering the longevity of a stretch hood system, the price difference can now be considered negligible considering the added benefits of stretch hoooding, he says.

“In addition to advances in film thinness, down to 1.6 mils in some cases, companies realize that stretch hood benefits contribute to acceptable returns on investment, as opposed to just factoring film and equipment costs,” Kristiansen says. “Stretch hood unitizing deters theft, reduces product damage and presents a neat appearance that even supports printing of advertising messages on the film.”

Sara Pearson Specter is an editor at large with Modern and can be reached at sara@saraspecter.com.
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Neiman Marcus makes a distribution fashion statement

When you test the softness of a cashmere Brunello Cucinelli pullover or try on a pair of knee high boots from Manolo Blahnik, it’s easy to forget that luxury retailers face the same distribution issues as mass merchandise merchants. They still have to receive product, replenish their stores efficiently and fill a growing card of e-commerce orders.

Those are among the reasons the Neiman Marcus Group launched a 200,000-square-foot distribution center in Pittston, Pa., last spring. The facility processes 7.6 million newly received units a year. Working with a design consultant (Johnson Stephens Consulting, www.johnsonstephens.com), the luxury brand retailer designed the facility to receive and distribute goods from suppliers located on the East Coast or that ship to East Coast ports.

The facility replaced a DC managed by a third-party logistics provider (3PL) in New Jersey, and it complements Neiman Marcus’ primary distribution center in Longview, Texas. The new DC services 63 Neiman Marcus, Last Call and Cusp stores. It is also the primary distribution point for the Bergdorf Goodman store in Manhattan.
First and foremost, the facility was designed to move merchandise as quickly as possible. Merchandise will either crossdock same day or move very quickly to processing areas for VAS (value-added services). “About 80% of what we receive here is crossdocked immediately or flows through by next day,” says Michael Schlink, director of operations for Neiman Marcus’ East Coast distribution center.

To that end, the DC features a conveyor superhighway with 3.5 miles of powered and gravity conveyor, along with a 570-foot-long sliding shoe shipping sorter with 21 store diverts. The superhighway connects the receiving and shipping docks, allowing some cartons to move from inbound to outbound trailers in minutes. It also includes spurs that efficiently deliver goods that require auditing, labeling or hangers to separate areas for processing flat goods in cartons and garments on hangers.

The garment-on-hanger area includes 3,000 linear feet of overhead powered garment rail conveyor and 13,000 linear feet of gravity slickrail conveyor to handle a large selection of hanging garments on trolleys.

However, the DC is also a multi-use facility that features a DC within a DC—an area with very narrow aisle pallet and shelf storage area where pallets are built by floor levels to replenish the Bergdorf Goodman store in Manhattan. The facility also features a packing and wrapping area to fill a portion of online orders from Bergdorf Goodman’s Web site, as well as traditional customer orders from Bergdorf Goodman and Neiman Marcus stores in the East. The stores send customer orders to the DC for gift wrapping, packing and other value-added services.
before they are sent by small package
carrier to the customers.

Last, but not least, the DC is tem-
perature and humidity controlled. This
keeps associates cool, clean and com-
fortable while handling garments that
can cost thousands of dollars.

The facility went live last spring
and is still in ramp-up mode. To that
end, the longer-term goals for the facil-
ity are yet to be realized. However,
with six months of operational data,
Schlink says, “we set operational and
labor goals for three and six months
and we’ve achieved those goals.” More
importantly, the DC builds out Neiman
Marcus’ network to better serve its
stores and online business.

Bringing a 3PL in house
Founded more than a century ago, the
Neiman Marcus group of stores offers
an upscale assortment of apparel, acces-
sories, jewelry, beauty and decorative
home products to affluent consumers.
In all, the company operates 41 Neiman
Marcus stores across the U.S., two
Bergdorf Goodman stores in Manhattan,
and 36 Last Call clearance centers for
more than 6.5 million square feet of
retail space. The online retailing opera-
tion conducts print catalog and online
operations under the Neiman Marcus,
Horchow, Bergdorf Goodman and Last
Call brand names.

Development of the new facility was
driven by a variety of needs, including
constraints at the primary distribution
center in Texas and a drive for effi-
ciency across the network. “We have
been working with 3PLs to handle
product that arrives at ports on the East
Coast since the 1990s because it didn’t
make sense to ship product to Texas
only to send it back to stores in the
East,” says Schlink.

While there were advantages to work-
ing with 3PLs, Neiman Marcus’ long-
range plan was to operate its own facil-
ity when the time was right. The belief
was that the organization would have
more control and a much better operat-
ing cost per unit in a company-owned
facility. With a contract coming up for
renewal and favorable business condi-
tions, Neiman Marcus began looking for
a new location a few years ago.

According to Schlink, the operations
team started with more than 50 prospec-
tive sites. Working with an economic
incentives consultant, the original list
was narrowed down to three finalists in
Pennsylvania and West Virginia.

“We used a weighted decision-
making process/matrix that considered
quantitative and qualitative factors,”
Schlink says. Those factors included
the net present value of rental rates,
average wage rates, the available work-
force population, the proximity to New
York and the Bergdorf Goodman store,
required service levels and the location
of the facility in relation to inbound/
outbound shipping volumes.

Just as important, Neiman Marcus
received a significant incentive package
from the state of Pennsylvania, the local
municipality and the industrial park
developer to locate in Pittston. Taking
over the shell of a building, Neiman
Marcus installed all of the materials
handling equipment, the offices and
added dock doors to one side of the
building to transform it into a cross-
dock, flow-through facility. The facility
went live in April of 2013.

Designing for multi-use
While many retailers talk about omni-
channel distribution from facilities that
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are designed to fill orders from every sales channel, the Pittston DC is at heart a flow-through facility designed to move goods as “efficiently as possible,” says Schlink.

The design of the facility, and the equipment making up the system, was influenced by two key factors.

First, it had to handle at least three types of products:

• Flat goods consist of products that aren’t put on hangers, such as shoes, handbags, cosmetics and jewelry.
• Garment-on-hanger, also known as ready to wear (RTW), includes men’s, women’s and children’s clothing and sleepwear that will be merchandised on hangers in the store.
• High-value products, such as jewelry, require security measures.

The second factor was the different velocities at which goods move through the facility:

• Flat goods that don’t need to be audited and don’t require value-added services, such as ticketing, are cross-docked directly from receiving to shipping in a matter of minutes.
• Flat goods that require some level of auditing or that require ticketing are conveyed to a flat goods processing area. There, processes may take up to two days to complete and ship, depending on the extent of the auditing required.
• Garment-on-hanger merchandise is conveyed to a separate processing area for auditing and to be placed on the hangers preferred by the stores and then loaded onto trolleys for shipping. Like flat goods, those processes may take one or two days.
• High-value items may be handled like flat goods but are processed in a secure area that integrates directly with the main conveyor system to prevent theft.

At the center of the design is the conveyor superhighway that was installed in the overhead space between receiving and shipping. It includes separate accumulation conveyor from each of the main processing areas that converge into a high-speed merge that releases product to a high-speed sliding shoe shipping sorter. The sorter can divert up to 160 cartons per minute and is so quiet that associates can hear the Sirius XM music system while working.

Separate conveyor lines from the superhighway connect receiving directly to the flat/cosmetic and crossdock processing areas for products that require auditing or value-added services.

“As part of the design, we eliminated a staging area for flat merchandise that requires auditing or value-added services,” says Schlink. “With this design, merchandise can flow directly from one of the receiving docks to shipping or flow right into the flat processing area. That saved a considerable amount of time.” A powered spiral belt conveyor sends items from flat processing along with high-value items up and onto the superhighway system once they have been audited, processed and are ready to ship.

A separate conveyor system delivers RTW apparel to the garment-on-hanger processing area. There, the garments are placed on hangers and put on trolleys for shipment. In turn, the trolleys are moved by an overhead rail to an outbound trolley sorter on the shipping dock. The outbound trolley sorter uses a laser scanner to read the trolley bar code label and divert it to a sort lane for an outbound trailer.

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MODERN system report

a significant improvement in the time required to crossdock or flow through the system. “We could crossdock in our old facility, but there were a number of pinch points, and we weren’t nearly as fast,” says Schlick. “Once a carton is ready to ship, we can get it to the dock in minutes rather than hours. If we can’t load it onto a truck that goes out that night, we’ll palletize it and load it onto a truck for shipment tomorrow.”

A DC within a DC
In addition to the crossdock processes, the Pittston facility features an overstock storage area. That area features a very narrow aisle pallet and shelf storage system and is primarily dedicated to store replenishment and e-fulfillment support for Bergdorf Goodman. “At Bergdorf Goodman, we dedicate as much space as possible to the selling floor,” Schlink says. “We have minimal stock areas, so we serve as an off-site stock room.”

Think of it as a conventional DC within a crossdocking DC, one where replenishment is demand-driven: The sale of an item in the store generates a replenishment order for that item. In addition, Bergdorf Goodman store personnel have the ability to look into the available inventory in the warehouse management system (WMS) and key in orders up until 2 p.m. for next day delivery.

Order picking is paper driven: Associates are given pick tickets for specific zones and orders are picked manually to totes, either by an associate on foot or on an orderpicker. Totes can be conveyed directly into a truck or palletized by the floor where they will be merchandised inside the Bergdorf Goodman store.

Inventory in the overstock area is also used to process e-commerce orders for merchandise that isn’t stocked in Texas at the NMG e-commerce fulfillment center (Neiman Marcus Direct). In addition, associates at Bergdorf Goodman and Neiman Marcus stores in the Northeast will send customer orders to the facility for packing and delivery. Both types of orders—e-commerce and traditional customer orders—are conveyed to workstations in a packing area, where they are prepared for parcel delivery, conveyed to a manifesting station for parcel delivery and then inducted onto the shipping sorter.

“Bergdorf Goodman e-commerce is a relatively small but growing piece of our business in Pittston,” says Schlink. “In the future, we plan to have all of our facilities and brands on one common merchandise system so that we can more easily cross sell from all sales channels.”

Going live
The transition from 3PL to a corporately owned facility was an all-hands-on-deck affair, with significant support from the distribution team in Texas. Newly hired managers were first sent to Longview to learn the ropes; similarly, managers and supervisors from Texas spent up to a month in Pennsylvania as Schlink’s team was flipping the go-live switch.

As part of the start-up process, Pittston adopted the labor management standards that had been successful in the Texas facility. Now that the facility has some experience under its belt, that is beginning to change. “This was the best way to start, but we know that our processes and layout have some differences,” says Schlink. “Our consultant is currently re-measuring and redefining our labor management tasks. When that’s complete, we’ll make sure our associates are being held to the right metrics.”

Five years down the road, Schlink expects the facility to process merchandise to the stores even more quickly and productively than it does now. And, as the e-commerce channel grows, the facility is expected to evolve from a multi-use to an omni-channel facility.

“Our goal is that all of our merchandise is cross-sellable, which means a lot of potential growth for the overstock area,” he says. “We definitely want to be as lean, efficient and profitable as we can be to get there.”

Cartons ready for shipment are crossdocked to the shipping area.
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Optimizing a crossdocking facility for luxury goods

A high-speed conveyor and sortation system flows goods from the receiving dock to the shipping dock, with some conventional storage and picking.

A true multi-use facility, Neiman Marcus’ Pennsylvania DC relies on a superhighway overhead conveyor system and outbound sliding shoe sorter to crossdock merchandise between receiving and shipping. A garment-on-hanger processing area, a high-bay narrow aisle storage rack area and state-of-the-art workstations round out the facility’s operations.

**Receiving:** The first stop for product arriving on the East Coast is a freight consolidator in Edison, N.J., who forwards some of the merchandise to a primary DC in Longview, Texas. The remainder of the receipt is forwarded to Pittston the next day.

When a truck or container arrives at the receiving dock, associates launch the receiving process by scanning a bar code on a shipping carton. Cartons have been packed according to a designated store. The scan tells the associate whether the item is a flat or hanging item and whether it must be audited. Flat product that doesn’t need further processing is crossdocked on the conveyor superhighway directly from receiving to shipping. Flat product that requires auditing or value-added processing is conveyed to a flat processing area.

Hanging garments that are already on the hanger of choice from the vendor may also be audited on the receiving dock and crossdocked directly to shipping. Otherwise, those garments are conveyed to the garment-on-hanger (GOH) processing area.

**Crossdocking:** Flat product that is ready to be shipped is transported by a powered spiral belt conveyor up and onto the outbound superhighway conveyor system. The multiple con-
veyor lines from receiving and the flat processing area converge into a high-speed merge (8), which releases and feeds the shipping conveyor (9). Cartons are scanned in a scan tunnel (10) and then enter the shipping sorter (11) diverted to the correct outbound trailer at shipping (3) for that order. Powered, flexible conveyor delivers the cartons into each trailer.

**Value-added processing:**
Product that can’t be crossdocked goes to a processing area. There are separate processing areas for flat merchandise (4) and garments on hangers (6).

- **Flat processing:** In the flat processing area (4), cartons are opened and the items are audited by scanning a bar code. If required, items are also ticketed and then placed in a shipping carton.

- **High-value processing area:** Since both Neiman Marcus and Bergdorf Goodman are known for luxury goods, the facility features a special secure area (12) to process high-value goods. This area was integrated directly into the facility conveyor system (2) to prevent theft.

- **Garment-on-hanger (GOH):** In the GOH processing area (6), items may be ticketed and placed on store-ready hangers. Once the garments are on hangers, they are placed on trolleys for transportation to the store. The area uses a gravity slickrail system in conjunction with powered overhead rails (13) to convey trolleys of hanging merchandise to an automated outbound trolley sorter (14) on the shipping dock (3).

**Storage:** When auditing and value-added services are complete, product designated for Neiman Marcus is conveyed directly to shipping (3). Product designated for Bergdorf Goodman’s store in Manhattan may be conveyed directly to shipping. Or, it may be sent to a very narrow aisle (VNA) pallet and shelving overstock storage area (15).

In the overstock area, associates on narrow aisle pallet trucks and order-pickers are directed by the WMS to store and retrieve merchandise.

**Picking and packing:** The Bergdorf Goodman store receives replenishment orders on a daily basis. The facility also receives online orders and customer orders from Northeastern stores. To fill the Bergdorf Goodman online orders, the system prints a pick sheet that organizes picks by zone and other order characteristics. For instance, some picks can be reached by an associate on foot while others require an orderpicker lift truck. Associates pick items and scan them into a tote. The totes are then conveyed to wrap and packing stations (16) where the items are prepared for shipment.

Once orders are ready to ship, they can be conveyed to the outbound crossdock conveyor (2), where they will be merged (8), scanned (10) and then sorted (11) to a parcel shipment truck. Or, they can be palletized by floor for shipment to the Bergdorf Goodman store. Once they arrive at the store, pallets are delivered to the right floor for the items on the pallet.

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**System suppliers**

**MATERIALS HANDLING DESIGN:** Johnson Stephens Consulting, johnsonstephens.com  
**SYSTEM INTEGRATION:** Conveying Solutions, conveyingsolutions.us  
**ECONOMIC INCENTIVES ADVISOR:** Rubin Advisors, rubinadvisors.com  
**CONVEYOR AND SORTATION:** Dematic, dematic.com  
**PALLET RACK:** Interlake Mecalux, interlakemecalux.com  
**MEZZANINE:** Steele Solutions, steelsolutions.com  
**WAREHOUSE CONTROL SYSTEM:** Pyramid Controls, pyramidcontrols.com  
**WAREHOUSE MANAGEMENT SYSTEM:** Manhattan Associates, manh.com  
**BAR CODE SCANNING:** Sick, sickusa.com  
**WORKSTATIONS:** Dehnco, dehnco.com  
**LIFT TRUCKS:** Crown, crown.com

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Few fleet managers will be surprised to learn that a modern lift truck can collect data about every facet of its operation, well beyond the simple hour meter. Many are familiar with the concept that microprocessors onboard even the most standard lift trucks are ready to interface with computers, tablets, voice systems or a warehouse management system (WMS). What some may not realize is that this capability is not reserved solely for massive fleets with deep pockets. The brains inside newer lift trucks are great for turning them into advanced mobile data collection platforms, but they are also designed to enable small, specific changes to a lift truck’s operation, even for a fleet of one. These changes increasingly allow a lift truck owner to shape the lift truck to the application while improving the productivity and uptime of both.

With plug-and-play technology, a lift truck can even be made to respond to voice commands. Other solutions enable the forks of a reach truck to rise to the precise level of the pallet opening at the push of a button. By collecting information about a lift truck’s travel through a facility, it’s also possible to identify areas of traffic congestion, restructure the placement of racks or pinpoint problems with the floor surface that could lead to excessive damage.

But for all the innovative options, the most important factor to consider before a fleet owner unlocks the potential of a truck is whether it will create measurable results.

“A lot of technology has come onto the scene in the last 10 years, and it can be distracting to a fleet owner who is just trying to procure a piece of equipment,” says Scott McLeod, president of Fleetman Consulting, an independent forklift fleet management and procure-
ment consulting company. “As lift truck suppliers try to differentiate themselves, customers should be careful about gimmicks and look for tangible results.”

Modern spoke with a few leading lift truck suppliers to learn how technology options can be best used to optimize productivity and processes.

Listening to the lift truck
Borrowing from the automotive industry, diagnostic ports and microprocessors began to creep into lift trucks within the last decade. Lift trucks are now primarily not governed by mechanical systems, but by electronic ones, with wires replacing levers. Sensors embedded throughout the truck can now collect data about every aspect of a lift truck’s operation, from lifting and lowering to idle time and average speed.

In an effort to make the most of this available data, the popularity of fleet management technology has grown as well, even if the implementation results have been mixed. The most common culprit of a failed implementation is the inability of the customer to effectively manage all the data the truck can produce.

“Data in a variety of platforms, many times not integrated, can be overwhelming to customers if left unattended,” says Mark Faiman, product manager, IC, AWP and GSE products for Toyota Material Handling. “The customer might review reports periodically, but without a conclusion or direction little progress can be made toward improving a process or productivity.”

Thankfully, the technology on lift trucks allows data to be relayed directly to the dealer, who is increasingly called upon to manage that data on behalf of the customer. “When customers buy this technology, probably 80% of the time their expectation is that they will somehow get control over it themselves,” says Jonathan Dawley, president of Hyster Distribution. “Then they find they really don’t have the time to dig through all the data. The other 20% of the time, we are effective in explaining that our fleet management expertise can help them focus on their core competencies.”

For instance, a lift truck can report a fault code to a service technician who can repair the problem before the customer or operator knows something is wrong. An overheated lift truck might need $20 brushes and one hour of labor. But in the interest of productivity, an operator might turn the lift truck off, reset the fault code and get back to work.

“They’ll keep doing that until the equipment fails,” says Scott Craver, product manager of business and information solutions for The Raymond Corp. “That customer is now looking at a blown $700 motor and a much lengthier downtime.”

Reading between the aisles
The assortment of sensors on a lift truck is good for tracking what lift trucks do best, which is pick things up and put them down. But the data they collect can also paint a picture of processes and pinch points throughout a facility.

“By far, the biggest trend we see is creating business intelligence using the lift truck almost as a sensor in the warehouse,” says Lew Manci, director of product development for Crown Equipment. “It has to do with the fact that the WMS can see what happens at each barcode scan, but it can’t see what happens between them. The lift truck now has the capability to collect that information and provide it to management.”

Managers can now identify high traffic points and look at how the facility layout might change to make traffic run more smoothly. And while impact monitors will tell a manager when a collision has occurred, says Craver, a deeper look into the data might reveal that the operator is not entirely to blame for each impact. Damage could also be caused by variances in the dock level or cracks in the floor that can ruin wheels and tires, resulting in big costs.

According to Craver, one customer used this technology to detect that a particular operator tended to have a lot

Onboard electronics help export data from the lift truck, but they also allow commands to be sent in, such as automatic raising and lowering of the mast.
of impacts around 10 a.m. every morning. Someone else had been unloading trucks and putting some heavy materials in the operator’s way. While navigating the containers, he would often collide with them. “We adjusted the facility layout, creating a path that improved that operator’s speed and productivity while eliminating that damage,” says Craver. “Some managers might just write him up. Others will look into the data for a huge return on investment.”

**Beyond picking things up and putting them down**

Even the most rudimentary modern lift trucks come with standard diagnostic ports and microprocessors. “The difference between lift trucks of today versus 10 years ago is that they have a brain,” says Bill Pfeifer, president of Yale Distribution.

But while the electronics embedded throughout the lift truck are great for sending data out, they also allow commands to be sent in. The operator’s controls no longer rely solely on levers and hydraulics, but pass through the central brain of the lift truck. This allows a variety of technologies to directly control various functions of the equipment.

For instance, when integrated with the facility’s WMS, an onboard computer can direct an operator to a pick location. Once the operator reaches the location, whether 100 inches or 400 inches high, he or she can simply press a button on the computer screen to send the forks up at the fastest possible speed before they stop precisely in front of the pallet opening.

Similarly, the lift truck’s onboard intelligence can control the process of lowering the mast. By monitoring the forces applied during descent, it’s possible to more than double the speed of lowering. “In tall or narrow aisle racking, lowering can account for 25% of the overall lift truck cycle,” says Manci. “By doubling the speed, customers can see a 12% or 13% improvement in productivity.”

The microprocessors in a lift truck can also enable anti-slip technology that monitors wheel spin and improves traction in applications with slick floors, such as cold storage. The same onboard electronics make it possible to configure a pallet jack to accept voice commands, says Dawley.

By integrating with an existing voice picking solution or operating as a stand-alone module, this voice technology can allow a picker to advance the lift truck while a few steps away in a pick location. Married with some guidance technology borrowed from automatic guided vehicles (AGVs), the lift truck can even sense and avoid obstacles as it moves alongside a more productive picker.

**Tailoring the lift truck**

Instead of shaping an application around the limitations of an off-the-shelf lift truck, technology enables a truck to
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be highly customized to the application. One example is narrow aisle applications, where traditional wire guidance or rail guidance are enough to keep the lift truck safely away from racking. But radio frequency identification (RFID) technology is capable of communicating a variety of information to the lift truck that can alter its performance, says Chad Munger, product line manager of warehouse products for Mitsubishi Caterpillar Forklift America.

For instance, an RFID transponder embedded in the floor of a facility can ensure a lift truck will only lift to a certain height near low-hanging air handling units or conveyors. It can control deceleration at the end of an aisle, or bring the lift truck to a complete stop.

By tracking the speed and direction of travel of the lift truck, RFID can also position the equipment in three dimensions. If moving from one elevated pick location to the next, the operator need only apply the throttle and the system will determine the precise optimal speed to travel forward, lower, then elevate again, ending directly in front of the desired location.

“When an order or command is received, the operator simply navigates to the correct aisle and the lift truck takes over from there,” says Munger. “Through this technology, the WMS can actually manage the equipment, instead of relying on the operator to make each of these decisions about what he’d like to pick next. Even with the most experienced operators, efficiency can improve by as much as 25% on a given pick.”

Brandon Lutton, manager of product engineering for UniCarriers Americas, offers another example of the ways a customer can shape the lift truck to their needs. He recently worked with a customer to integrate onboard scales, which required extensive collaboration between the scale supplier, the onboard computer supplier, the bar code scanner supplier, the customer and UniCarriers.

In the past, Lutton’s department primarily installed attachments, applied special paint colors, and installed aftermarket parts. These projects typically take two to three weeks from order to application, as compared to three months for the scale customer.

“The amount of changes made for this individual project were greater than what would typically be required for an entire model upgrade,” says Lutton. “I expect these sorts of projects to be more common in the future as customers demand fully integrated lift truck technologies.”
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Tips from the scales
Lutton's customer is not alone in benefiting from lift truck-mounted scales. The growing trend sees many lift trucks that can now bypass a stationary scale to weigh product on the move. When integrated with the WMS, this can add further visibility and accountability into product movement.

“This helps eliminate lost revenue created by shipping weight discrepancies, which can have a major impact on operation costs,” says Toyota's Faiman. It can save on labor, fuel and travel time by eliminating trips to scale stations or having to repack pallets to weigh items, while recovering floor space previously used for scale stations.

“Quite frankly, I wish the onboard scale would be standard on every lift truck and not an option,” says McLeod, who says improved safety is an essential by-product of integrated scales. “It allows a lift truck operator to know he’s operating within safe limits. This is a huge issue as I see it. A lot of the experienced people just do it by feel, but you need to know the capacity of your forklift, and you should know what the load weighs along with its corresponding load center.”

As with each of the lift truck technologies, a scale can be attached to the truck for the simple benefit it provides, or fully integrated with the customer's other technologies for even bigger results. Although the latter option calls for a much more involved project, Craver predicts the combination of data from the WMS, onboard scale, fleet management and labor management will become more common, in a trend he calls “data fusion.”

Hyster’s Dawley agrees: “There’s a gap there at this point, but I foresee these systems starting to come together, and a complete picture of what is going on in the facility will emerge.”

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Conveyors and sortation: Turning up the volume

With intelligent circuit boards, dexterous handling and ultra-low maintenance, new technologies illustrate how what’s underneath the product can help a company stay on top.

By Josh Bond, Associate Editor

To meet the needs of the high velocity world of e-commerce, conveyors and sortation systems must be a smart, fast and efficient component of a production or order fulfillment engine. Driven by the need for flexibility, speed and maximum uptime, customers are turning to a new generation of technologies—and new ways to minimize and optimize conveyor and sortation solutions—that enable nimbleness while cutting costs.

“A successful warehouse now is about flow control and pulling levers at individual processes to keep the whole facility in balance,” says Lance Anderson, director of sales for sortation and distribution at Beumer Corp. “Going toward this sort of ‘flow control’ requires less conveyance and more flexible conveyor technologies that can re-route things in creative ways.”

E-commerce could reasonably be credited for the dismantling of conventional thinking about conveyors. When automated materials handling systems were first introduced years ago, they were a way to move things easier and faster without back-breaking labor. “Equipment got its start handling large items,” says Tim Kraus, product management supervisor for Intelligrated. “It’s now shifting to smaller orders, smaller items and piece handling instead of full cases. Conveyor and sortation designs have evolved to match this shift.”

But the evolution of conveyors extends beyond the multi-channel paradigm. Product tracking and visibility is becoming essential to many operations, and the pressure to do more in less space is universal. Conveyors therefore must be intelligent, more reliable and less maintenance-intensive—all while collecting data about product movement at every opportunity. Trends in packaging such as the increased use of poly bags can also challenge conventional conveyors, even as new solutions allow for the effective handling of a wider variety of materials.
Similarly, sortation technologies have traditionally worked best with predictable packaging in large volumes. But as everyone from Amazon to Mom and Pop work to achieve speed, efficiency and visibility, sortation solutions become more scalable, reliable and flexible. And since downtime is not an option, new sortation systems are built with redundancy and ease of reconfiguration in mind.

“I see the industry, with e-commerce and parcel handling, going toward lots of smaller, single-line orders,” says Mitch Johnson, director of systems development for Hytrol. “It’s changing the way we think about sortation. We used to think about sorting faster and in higher quantities. Now, it’s better to be able to sort smaller things and greater numbers of orders.”

Conveying information

The conveyor industry is seeing an increased interest in 24-volt or motor-driven roller technologies according to Johnson, who says 24-volt systems are now Hytrol’s No. 1 product. Unlike traditional conveyor, these new modular systems don’t rely on centralized, hardwired controls to direct the system components. Instead, the intelligence driving each conveyor segment is distributed throughout the facility. Paired with intelligent software, these technologies allow smart routing, energy efficiency and the ability to easily rearrange modules or sections of conveyors and sorters with minimal disruption.

“Each 24-volt motor has a circuit board with embedded intelligence,” says Johnson. “Each conveyor segment can look at upstream and downstream traffic, communicate with other segments, make decisions on the fly or send detailed information to management. The more we can move the brains from a distant location to a very specific location, that’s a direct increase in flexibility.”

A brainy circuit board might be located every 30 inches or 10 feet, depending on the application, and decisions are made on the conveyor rather than 500 feet away on a panel. Each segment can then adjust speed, monitor the movement of label-free product or activate diverts. This modular approach enables easy installation and reconfiguration as well as more targeted diagnostics; management can respond to precise areas if problems arise, and the intelligence of each motor can provide proactive information about wear rates or other potential issues.

Intelligent circuit boards at each section of the conveyor or sorter also send data back to the equipment supplier, who can remotely monitor wear indicators to reduce unplanned downtime. The ability to monitor the overall flow of a facility in real time is also a powerful tool for efficiency and uptime, according to Ken Lento, strategic business unit manager for unique products at FlexLink.

“People will say they achieved 85% efficiency in production and consider it a victory,” says Lento. “But they can’t explain why they lost the 15% because they’re not gathering the data. Now, they can start to analyze when and why a conveyor was down and how long it took to reset. They can respond and react in real time instead of looking at a report the day after.”

The management of real-time, case-level data throughout a warehouse is driving the development of mobile solutions for managers, according to Mike
Khodl, vice president of solution development for Dematic. For example, a manager can use a mobile app to see if voice-enabled pickers are meeting standard rates, while another screen can illustrate sortation rates, conveyor status and overall productivity. “They can remotely see the flow of a system,” says Khodl. “Traditionally, they might focus a lot on the physical flow, but not on the data flow that goes with it. Now they are one and the same.”

Sorting it all out

When people think of sortation systems, many envision a massive 600-foot linear shipping sorter with dozens of inducts and destinations. Just as with conveyors, says Khodl, the tendency now is to work with point-solution sortation systems. “Maybe you want a divert point for a replenishment process or inside of a pick module,” Khodl says. “You now have the ability to drop a modular sorter component into a standard conveyor in

New twin DCs feature two unique sortation systems

When Germany-based Adidas Group purchased British-based rival Reebok in January 2006, the company decided to examine its combined U.S. distribution network. When consolidating DCs, the company installed a range of customized sortation systems to handle 18,000 units per hour.

The new campus in Spartanburg, S.C., would become the largest Adidas Group distribution site in the world at more than 2 million square feet. Two DCs, set on a 258-acre site, receive and ship hundreds of thousands of units of footwear and apparel each day. DC1 handles apparel and provides value-added services (VAS), such as hangers and price tags, while DC2 handles footwear and hard goods.

According to facility manager Bob Henriques, planning for the DCs began with three overall goals: improving service levels, reducing operating costs and preparing for future growth, particularly in e-commerce. “Our direct-to-consumer business is growing significantly,” says Henriques. “The ability to fill these types of orders was an integral part of our planning process.”

The company selected a system integrator (Sedlak Management Consultants, jasedlak.com) and an equipment supplier (Intelligrated, intelligrated.com) to develop specialized conveyor and sortation systems. Two custom materials handling concepts were engineered. For poly bags and irregular garments, a “waterfall” induction in DC1 replaces manual sorter induction with a gaylord dumping system. Belt conveyors then lift garments into induction stations nearly 20 feet overhead. A “domino” system in DC2 uses conveyors to singulate shoe boxes into the cross-belt sorter. Boxes are manually inducted in groups of as many as eight at a time, oriented vertically on edge, like a domino. The boxes are then toppled one at a time onto the incline conveyor to the sorter.

In DC2, full cases of shoes are distributed to workstations in a round-robin pattern. The company completes emergency waves (e-waves) two or more times per day, once in the morning for those orders that were placed after 3 p.m. the previous day, and once around 4 p.m. to meet the guarantee of same-day shipping response.

Another key difference between DC1 and DC2 is how and where individual cartons are packed. The unit sorters can sort both apparel and footwear, up to 18,000 units per hour, and are very similar in each DC. In DC1, totes are packed off the unit sorter and sent to the mezzanine level for packing and VAS. Because footwear in DC2 requires significantly less VAS, cartons are sorted directly from the chute to a final shipping carton.

After a carton is complete in both DC1 and DC2, it is then transported through the print-and-apply area, where boxes receive up to three labels. Cartons move onto the central packing merge and are routed to shipping on a sliding shoe sorter. In both shipping departments, Adidas has the ability to load parcel, less-than-truck (LTL) or full truckload trailers. Each DC’s shipping area also processes consumer and associated returns.

The Adidas team was able to bring both DCs online on-time and on-budget. “We are happy to report that we’re meeting our productivity numbers,” says Henriques. “Our savings are on track as calculated and we improved our service levels.”
an hour or two. In the past you couldn’t do that without open-heart surgery.”

In the midst of the e-commerce boom, unit sortation systems designed to handle eaches are more common. Whatever the size of the sorter, this equipment plays a critical role in speedy, intelligent product movement. In a flow-based facility, any downtime of any step in the process will disrupt the entire fulfillment engine. Therefore, sorters are increasingly geared toward scalability, redundancy and ease of maintenance.

Scalability is essential when working to cost-justify a sortation system that will meet peak seasonal demand while scaling back for the remainder of the year. During peak volumes, the sorter might direct totes to temporary stations with specific packaging or value-added specialties. “Off-peak, one order might go to a multipurpose station where it is packed to an outbound shipper right there,” Anderson says. “That’s one touch instead of three. That sort of flexibility is one of the ways to justify this capital equipment. Putting in a sorter that extends the life of a building is never as expensive as a new building or a third party.”

On the induction side, sorters can get bogged down when workers are paired one-to-one with inducts. The first person in line will always have an empty tray, whereas the fifth person might have to wait for an opening. Instead, five workers could continuously induct into short segments of conveyor that feed the sorter continuously, ensuring a balanced workload and optimal use of sorter locations. If fully automatic induction is not viable, this semi-automatic approach to induction is gaining popularity, according to Stephen Cwiak, vice president and general sales manager for Interroll.

On the discharge side, sorters might feature double- or triple-level destinations that transition between batches. Between the sorter and the packer, a divider door stops product from flowing down until the order is ready. This also ensures a steady workload while taking up less space by stacking orders vertically instead of linearly. “What tends to be forgotten is how many cases per hour you can induct and how many you can close,” says Steve Schwietert, vice president of integrated systems sales for TGW Systems. “Closing is the choke point, and can drop rates from 1,000 cases per hour to 500.”

To further minimize downtime, two...
sortation loops might be layered on top of one another, says Cwiak. This also addresses issues of SKU proliferation, as one sorter might be designed for larger, heavier items while a second handles smaller items. Or, one could handle fulfillment while the other handles returns. If either goes down for any reason, the second sorter can take up the slack, providing redundancy and continuity of operations. Additionally, new sorter systems allow for quick repairs to individual trays or belts even as the rest of the system continues to operate.

Handling whatever may come
With the intelligence and flexibility to react to changing volumes, conveyor and sortation solutions must also adapt to changing product characteristics. Piece handling lacks the predictability of cases, and can be difficult or impossible to manage with conventional conveyor systems.

“The industry is reaching out to things previously considered non-conveyable,” says Johnson. “Cartons are a cinch, but bags of dog food or grass seed, for instance, have been a problem in the past. The more you can convey those things, the better the return on investment.”

This might include the deployment of specialized conveyor zones for certain product types, a process made easier by modular systems. Non-rigid items like poly bags or envelopes also prefer more continuous conveyance surfaces to prevent jams, Cwiak says. Belts are therefore replacing rollers in certain applications.

New sensor technology must also work with conveyors to detect irregular items. “A carton’s front and back edges are easily and consistently detected,” says Intelligrated’s Kraus. “With something shaped like a pillow, you have to detect where it starts, ends and comes in contact with the rollers.”

Similarly, sortation technologies
must allow for gravity in the case of light products sliding from tilt trays, or sensitive systems for the smooth discharge of light items from a cross-belt or sliding shoe sorter. “I have seen customers successfully adapt a sliding shoe sorter to sort poly bags, which was previously considered a recipe for disaster,” says Schwietert. “But people are starting to stretch the limit of what was thought of as a no-no.”

Maintenance is also a concern, says Johnson. “In the near future, each conveyor section might have a specific QR code label, which you could scan with a mobile app to pull up everything about the conveyor, or even order the parts right from there.”

Schwietert says 24-volt rollers tend to be easier to service, taking only five minutes to change as opposed to as much as an hour when working with a drive and reducer. He adds that in sortation systems it is now possible to add or move a divert without system downtime. “Say you have four diverts for UPS, and the next day you want to add four for FedEx. That doesn’t need to be disruptive.”

Another way to minimize disruption is to plan ahead. Traditional conveyors feature fixed guide rails, heights and widths. New systems—which can also be retrofitted to make use of existing conveyor—use adjustable guide rails to make for quick manual transitions or even software-directed automatic transitions. “In the past, if you wanted to switch products on a length of elevated conveyor, you would have to use a ladder, deacti-vate the equipment, and complete the change in a day or two,” says Lento. “Now you can go to a control panel and switch over an entire line in a matter of minutes.”

“A lot of customers ask for solutions based on what they’re doing today, just to get the line running,” Lento says. “It’s always more expensive to make changes later than to do it during the initial project. And who today knows what their packaging will look like in two years?”

Companies mentioned in this article

BEUMER: beumergroup.com
DEMATIC: dematic.com
FLEXLINK GROUP: flexlink.com
HYTROL: hytrol.com
INTELLIGRATED: intelligrated.com
INTERROLL: interroll.us
TGW SYSTEMS: tgw-group.com
6th Annual Salary Survey
With experience comes reward

Compensation continues to climb steadily upward in our industry, which is overwhelmingly populated with satisfied veteran employees.

By Josh Bond, Associate Editor

The results of Modern’s 6th Annual Salary Survey paint an appealing picture of employment in materials handling, even as young, new talent continues to trickle into the industry. At $95,010, the average base salary is the highest in the six years of our survey, up nearly 6% over last year’s record average. Just as with last year, an impressive 97% of the more than 735 respondents expressed satisfaction with their work.

Survey respondents represent a range of industries and disciplines, and 91% say they like their jobs. The same 91% said they would recommend the materials handling profession to others. With 55% indicating they intend to finish their careers with their current employer and with an average turnover rate of 6.7%, the industry seems to have little trouble retaining

What is your current base annual salary for 2013?
(not including bonuses and commissions)

Source: Peerless Research Group (PRG)
happy employees. Modest increases in the number of 18- to 34-year-olds and college graduates suggest some new blood is making its way into the industry. It will be interesting to watch the transition as the 55- to 64-year-olds (who make up 30% of the respondent base) approach retirement.

In the meantime, the use of drastic cost-saving measures like layoffs and pay cuts has declined by double digits since 2011, and hiring continues to surge. Materials handling professionals report they feel more valued in their roles as their organizations recognize the value of the supply chain to the bottom line and customer satisfaction.

A consistent theme throughout the survey’s short answer section (see sidebar) is that each day brings a new challenge. Amid constant change, the optimism among materials handling professionals seems unmoved.

The compensation picture

Hiring saw a slight uptick in 2013 with 56% of respondents indicating their companies have been hiring in the previous 12 months. Meanwhile, respondents also reported decreased instances of layoffs, pay cuts, hiring freezes, reduced benefits and reduced overtime. As recently as 2011, almost 40% said their companies had implemented at least one of those cost reduction measures. Now it’s down to between 25% and 30%.

This year, 64% of respondents said their salary increased in the past year (6% more than in 2012) and 33% said it stayed the same (5% fewer than in 2012). In 2013, the average base salary increase was 5.2%, the same pace as 2012. Of those respondents who saw a salary increase last year, nearly one in eight received increases of 10% or more.

Bonus plans continue to reflect a focus on company and individual performance. In past years, nearly half of respondents indicated bonuses were based primarily on lower operational costs and increased sales. In 2013, lower operational costs were a source of bonuses for just 25% of respondents. And while increased sales bonuses jumped from 29% to 36%, incentives for better inventory management fell from 15% to 11%. Overwhelmingly, bonuses result from the company reaching its performance goals (67%) and individual performance (47%). As recently as 2010, those factors rang true for just 18% and 5% of respondents, respectively.

Demographics

About 14% of respondents work for companies with estimated 2012 revenues of less than $10 million. Another 19%
expect between $10 million and $50 million, and 48% are larger than $250 million—including 22% above $2.5 billion.

Industries represented by respondents include food, beverage and tobacco (9%); automotive and transportation equipment (7%); wholesale trade (7%); retail trade (5%); chemicals and pharmaceuticals (5%); industrial machinery (5%); and third-party logistics (5%). Primary job functions of respondents include warehouse, distribution and logistics (31%); engineering (18%); plant management (16%); company management (13%); and purchasing (9%).

Fewer than 22% of respondents have been in the materials handling profession for less than 10 years. More than half have been at it for more than 20 years, including 17% with 30-plus years in the field. On average, those who have been in the industry less than five years can expect to earn $55,000. But, their next five years could see a 27% increase to an average of $70,000.

The average respondent age continues to hover around 51, and with experience comes better compensation. In 2009, 25% of the survey’s respondents reported earning base salaries of six figures or more. In 2013, that number rose to 32% with 10% earning $150,000 or more (up from 8% last year). Fewer employees have faced wage decreases since 2009, when one in 10 respondents saw their salaries reduced by an average of 15% year over year. Just 3% saw decreases averaging 14% in 2013.

Those with supervisory responsibilities can expect to earn 30% more than their non-supervisor colleagues, as compared to the 36% gap between the two groups as captured in last year’s results. Those with budgetary responsibilities will earn about 40% more than those without. In last year’s survey, supervisor salaries increased an average of 4.5%, whereas the average salary for a non-supervisor fell by slightly more than 1%. In 2013, the average supervisor salary increased an average of 5.5% but was dwarfed by the more than 10% increase in non-supervisor salaries. This results in an average

Why would you recommend the materials handling profession to others?
• When I first started, logistics professionals were not highly regarded. That has changed. Many companies now realize the value of supply chain experts and the positive impact we can have on the bottom line.
• You can make a very big impact on the performance of the company from the logistics side of the operation.
• The profession is challenging and becoming increasingly sophisticated with e-commerce driving the technology.

Why would you not recommend the materials handling profession to others?
• The future is not what it was. Outsourcing, third-party logistics, automation and centralization of distribution points limit career opportunities.
• Companies tend to only invest when there are significant issues, rather than making steady improvements.
• Besides small, incremental position improvements, the only way to secure a promotion is if your manager leaves.
• It is not a sufficiently deep career to warrant a full-time, long-term commitment, so one needs to have multiple skills. The wider one’s knowledge base, the better chance they will have to apply a number of specialty skills.
A base salary of $94,010 for 2013, a 6% increase from 2012, while the median salary jumped 11% to $83,910.

Modern’s first Salary Survey, published in June 2008, showed median compensation at $80,000 including base salary and bonuses. After that median number dipped as low as $78,000 in 2009 and 2010, it shot back up to $91,000 in 2011, only to settle back at $83,910 this year.

This year, 48% of respondents completed an undergraduate degree, up from 40% last year. Nearly half have been with their current employer for 10 years or more, with 24% having served 20 years or more.

Regionally within the U.S., there has been some localized growth in average salaries. In the south, where 12% of all respondents are employed, average salaries jumped from $83,900 to $92,030, an increase of 9.7%. In the Midwest, where 40% of respondents are located, salaries decreased by about 3% to settle at an average of $85,670.

Job satisfaction

When asked about their futures, 55% see themselves finishing their careers at their current employers. Among that group, salaries increased an average of 6.2%. Those who do not intend to finish their careers with their present employer saw average salaries increase 10%, and salaries for those who said they are “unsure” rose by 5.7%.

In 2009 and 2010, just 12% of respondents expressed they were “extremely satisfied” with their careers in materials handling, as compared to 20% in 2012. This year the number has fallen to 17%, while the percentage of those “very” or “somewhat” satisfied in 2010 rose slightly to 56% and 24% respectively. Today, just 3% are “not very” or “not at all” satisfied.

This year, 38% of respondents indicate no interest in seeking another job, down slightly from last year. The same 36% who said in 2012 they are “open to other possibilities” are still keeping their options open in 2013. About 21% are passively looking for work elsewhere and just 5% are actively looking, motivated primarily by compensation (53%), the desire for new challenges (40%), and a lack of advancement opportunities (33%).

When asked about stress levels at work, 43% say it is more stressful than two years ago, and 44% say stress levels have remained the same. Among the 10% who report their job is “extremely” stressful and the 34% whose work is “very” stressful, the top complaints included workload (47%), not enough people (41%), not enough time (40%), balancing work life and home life (37%), questionable management decisions (36%), and working with outdated technologies (29%).
Jordano’s is a family- and employee-owned food service and beverage distribution company serving close to 1,700 customers in central and southern California. After deploying voice technology and wireless headsets, the company reduced errors by 93% while boosting productivity.

Today, Jordano’s orders are filled through its Santa Barbara distribution center. The 100,000-square-foot facility processes upward of 14,000 SKUs six days per week across three shifts.

Dennis Merchant, director of operations, wanted to improve accuracy levels. Order fulfillment was also becoming increasingly complicated due to governmental mandates for traceability. After evaluating voice-based setups at comparable grocery distribution centers, Merchant began testing a voice solution (Vocollect, vocollect.com).

“In hindsight, if we had deployed all areas of our DC at the same time, we would have been fully operational in a month,” says Merchant. “But we chose to move a bit more cautiously, starting in the freezer, moving to the cooler, and then to dry goods.”

Using freezer-certified wireless headsets, Merchant and his employees immediately saw improvements. “It’s a much easier, cleaner process all around,” says Merchant, who adds that because the headsets are lighter it is much easier to maneuver in the freezer section. “The ability to share headsets across shifts greatly reduces the number of batteries and provides a great cost savings.”

Before deploying the voice solution, Jordano’s had one error per 1,000 cases. Workers now average one error per 14,000 cases, representing a 93% reduction in errors (up to 99.995% picking accuracy). The solution also helped workers move from picking 135 cases per hour to 160, for an additional 19% boost in productivity. And, training time for employees has been reduced by half. With the accurate tracking of individual performance, traceability has become much easier.
Memphis-based Hollywood Feed offers unique brands of unprocessed food for canine and feline pets as well as ancillary services such as grooming, training and proper pet nutrition. Since 2007, the company has expanded from three to 20 stores at 50% yearly growth with plans to build 12 new stores in the next year. After deploying a voice picking solution in its warehouse (Voxware, voxware.com), the company has improved accuracy and efficiency while supporting rapid growth.

Operating distribution out of a 36,000-square-foot conventional warehouse, Hollywood Feed previously filled orders for 30- to 50-pound bags of pet food using a paper-based picking process. With a small workforce devoted to product selection, the existing picking process did not allow workers to reach maximum levels of productivity or efficiency and left room for inaccuracies. When the company expanded the warehouse to 77,000 square feet, managers turned to voice technology to increase productivity, efficiency and accuracy.

“We began investigating voice because it offered a hands-free solution that would best meet our needs,” says president Shawn McGhee. “However, we quickly found that few suppliers wanted to talk to us unless we were spending $250,000 or more.”

Instead, McGhee selected a supplier that offered subscription-based pricing that provided the level of flexibility needed to bring voice into his business. “In addition,” says McGhee, “we thought their cloud-based voice management suite (VMS) was far more intuitive than any other solution we investigated.”

Hollywood Feed had the voice solution up and running in just 11 days without the help of dedicated information technology resources. And, 50% of the workforce was up and running in two days. “Quite frankly, this is the single easiest technology I have ever implemented,” McGhee says. “I’ve had Windows implementations that took longer than this did.”

The results include decreased worker training time, worker efficiency improved by a third, increased accuracy in order selection, and a return on investment in less than 60 days. With continued growth in their sites, the company plans to scale the cloud VMS to accommodate more workers, increase order demands and ensure their customer base remains satisfied.

Voice technology enables growth as warehouse doubles in size

Cloud-based subscription model installed in 11 days provides return on investment in 60 days.

By Josh Bond, Associate Editor
The HYDAC Corp., a manufacturer of hydraulic and fluid power systems, had an ambitious growth plan. The company sought to double its business without physically expanding its facility. By installing an automated storage and retrieval system (AS/RS), the company exceeded its initial goal.

Management knew that as the plant’s output grew it would need to stock a greater diversity of parts and would need to turn those parts over more quickly. But storage was already maxed out. The 60,000-square-foot facility had been using fixed racking with mezzanines on top for storage and expanding them would require more floor area than the plant could spare.

The company installed a unique automated storage and retrieval system (Stanley Vidmar, stanleyvidmar.com): a single-operator system with a built-in, lifting-and-handling device that uses adjustable pallets to maximize storage density. The 16-foot-high columns of the storage system let the plant squeeze more parts into less square footage, using vertical space to store to store the same inventory in 70% less space than used by HYDAC’s old rack-and-mezzanine system. Cycle times and turnover rates have been reduced to as little as two minutes.

Previously, a number of engineers would be required to retrieve parts, taking them away from their designated specializations. Now, a single operator performs retrievals for the team, boosting productivity and safety. Before, a heavy item could only be stored as high as an operator could lift it. Now a 4,000-pound load can be stored 18 feet high. Inventory control has also been improved, since parts are easily identifiable and retrievable, as opposed to lost and double-ordered.

The increased density has even left room for more automated storage systems. Eventually, the plant could triple its storage capacity in the same floor area used by the old system.

“The system is very versatile,” says operations manager Mike Rooney. “It’s a great way to get into high-density storage.”
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2013 Warehouse/DC Operations Survey

Multiple paths, same goal

Whether they’re opening new DCs, improving inventory control, or turning to 3PLs to improve processes, survey respondents say that there’s no one prominent way to keep costs in check while simultaneously improving service levels.

By Maida Napolitano, Contributing Editor

According to the findings of our Warehouse and Distribution Center Operations Survey over the last four years, it’s been tough going for supply chain professionals looking to expand on their capabilities inside the four walls. In an economy that’s been slow to recover, reducing operating and transportation costs has continued to be the top priority—with little or no capital to spend.

This year’s survey results are slightly more encouraging with 52% of responding companies reporting a plan to spend $250,000 or more for equipment and technology to improve their warehouse and DC operations—just a few points over last year’s 48%.

Designed to gauge activities and trends in warehouse and DC management, our annual survey offers a first-hand look into how U.S. operations are currently being run. In September, a survey questionnaire was sent via e-mail invitation to Modern Materials Handling magazine subscribers. The survey gleaned 530 qualified responses, from upper-level managers all the way to CEOs—all personally involved in decisions regarding their company’s warehouse and DC operations.

Most participating companies came from manufacturing (38%), followed by distributors (31%), third-party logistics providers (9%), and retailers (8%). A broad assortment of products handled in the DC was once again well represented, with food and grocery leading the pack at 14%, followed by paper, packing and office supplies at 7%, and elec-
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tronics and automotive/aerospace tied for third at 6% each.

In this new normal of barely budg-
ing budgets, how exactly are today's professionals planning to keep costs in check while simultaneously improving service levels?

“There is no magic bullet,” says Norm Saenz, senior vice president and principal of TranSystems, a supply chain consulting firm and partner for this survey. “According to the findings, everyone’s doing multiple things. Whether opening new DCs, turning to a third-party logistics provider, or renegotiating with freight carriers, results show that there’s no one prominent answer among this year’s respondents.”

Don Derewecki, senior business consultant also from TranSystems, agrees: “A significant number of respondents are taking multiple actions—and that’s the key. Most are carrying out initiatives that don’t involve major system changes and require hardly any capital investments, such as improving warehouse processes and improving inventory control.”

Over the next few pages, we’ll present how the warehousing and distribution landscape has changed over the past year, track critical measures of warehousing activities, and interpret results against 2013 Warehouse/DC Operations Survey Webcast

Multiple paths, same goal
Tuesday, November 19 @ 2:00 p.m. ET
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a backdrop of current industry practice. We’ll also highlight emerging trends as we tack on another year’s worth of results.

What’s trending?

While the top priority remains reducing operating costs, it’s encouraging to note that 94% of respondents tell us that they are doing something to achieve this goal. In fact, companies are favoring not just one, but two top initiatives: improving warehouse processes (67%) and improving inventory control (61%).

Derewecki questions if this latter push to control inventory is really working. “There’s an emphasis on controlling inventory, but it doesn’t seem to be translating into improved turns.” In fact, results show that average inventory turns are holding steady at about seven turns per year over the past two years.

Derewecki speculates that this may stem from the continued “silo” mentality between buyers and warehouse managers. “The buyer gets a huge discount off a case of product, so he buys an entire rail carload without considering the negative impact it has on the warehouse manager who is incented to reduce costs. The warehouse now has to deal with the increased costs of this overstocked inventory.”

To reduce transportation costs, the majority (60%) of companies are “renegotiating freight rates,” followed by “shifting the mix of common or contract carriers” at a distant second (26%). Saenz points out that renegotiating rates is relatively easy to do. “It doesn’t require any systems or any capital investments,” he adds.

But more importantly, Derewecki notes how respondents are also “asking customers to order less frequently but in larger quantities” and “using 3PL warehouses to get closer to customers.”

“Again, there is no one single right thing you have to do,” says Derewecki. “Companies are trying out multiple ini-
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Saenz and Derewecki believe there’s even more evidence of optimism to found in this year’s data, with 72% of respondents reporting that they plan on expanding their distribution operations in some way in the next 12 months—versus only 60% last year.

While most are planning to “increase their SKUs” (30%), some respondents (14%) are opting to “increase the number of buildings” in their network. Saenz believes that these firms are trying to reduce outbound transportation costs as a result of high fuel prices.

“Strategy projects that we’re currently working on involve businesses that have an East Coast presence with a growing number of West Coast customers,” says Saenz. “These companies are contemplating opening a West Coast facility not only to control shipping costs, but also to improve service by getting closer to their customers.”

Our findings also show that warehouse software solutions continue to radically change how we do business in the DC. Results reveal a slightly upward trend in respondents using cloud-based technology—1% in 2011 to 5% in 2013. Derewecki expects the use of cloud-based solutions to increase particularly among smaller and midsized companies. “They will be able to afford these software solutions without the need for a considerable up-front investment in hardware and software,” he adds.

This year, a slightly higher percentage of respondents (17% versus 15%) experienced catastrophic events compared to last year. Open-ended responses show Superstorm Sandy as one of the main culprits, shutting down power and flooding warehouses in the Northeast.

To protect against these particular threats, many survey takers are undertaking multiple initiatives, including creating more robust disaster recovery plans.
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installing on-site generators along with satellite and critical communication back-up and data retrieval systems; setting up alternate sources and logistics lanes; establishing offsite IT infrastructure; investing in diesel fuel stock piles; and upgrading cooling capacity and redundancy to their on-site data centers.

**Blurred lines for e-commerce**
The growth of omni-channel marketing finds us keeping a close watch on the different channels respondents are servicing. Derewecki says he’s surprised by the very slight uptick in e-commerce over the past year—from 29% to 30%. “This is a growth area among our clients in all areas,” he says. “And as time goes on, that 30% will likely increase considerably. If you’re not servicing e-commerce now, you’re going to be.”

Saenz points out that even more manufacturers are offering their products online. “The line has blurred between retailers, manufacturers, and e-commerce,” he says. There is also a decrease—from 40% to 35%—in companies carrying out e-commerce fulfillment on their own from within their existing DC. “When e-commerce starts out, it is all in-house, squeezed into a corner somewhere,” Saenz adds. “As it grows, then it becomes an entity unto itself,” says Derewecki. “The e-commerce business becomes very protective, not wanting the retail business to ‘steal’ e-commerce inventory. Thus the e-commerce business wants to be in a total separate facility—perhaps run by a 3PL.”

Saenz says he anticipates that the biggest future trend will be retailers trying to service e-commerce from their stores. “It’s happening now, where they’re taking inventory out of the DC and processing those orders from their own storefronts, which makes sense from a geographic perspective in many cases as well,” he adds.

**2013: Profile of a DC network**
All in all, the DC profile across North America has remained consistent over the past few years. About 70% have three or fewer buildings in their distribution network, with 59% operating less than 250,000 square feet of space in their distribution network.

While most DCs still have clear heights of 20 feet to 29 feet, Derewecki points out how there is a slight increase in buildings greater than 50 feet. “As time goes on, new, taller buildings are being added to the stock,” he says.
More respondents are planning periodic distribution network optimization and location studies—in exchange of the “as-needed,” reactionary study. Saenz says he’s seeing this firsthand. “These studies have become a regular activity for firms looking to stay competitive and make a profit.”

Derewecki concurs, but notes that companies may sometimes require a mid-term update. “As companies make acquisitions, as they tack on new product lines, their needs change,” he says. “We’ve been called back within relatively short periods of time just because they want to validate a study they completed recently.”

And, while recycling continues to dominate sustainability efforts at 71%, our experts also noticed a growing trend in “solar panels” and “LEED certification” coming out of this year’s data. LEED (Leadership in Energy and Environmental Design) certification is a rating systems developed by the U.S. Green Building Council (USGBC) to rate a facility’s environmental friendliness. According to the USGBC, LEED-certified DCs continue to command higher rents because of its energy-saving features. And, in good news for those facility operators, the push to go green remains a hot topic, with only 7% of companies “not at all likely” to evaluate green or environmental issues.

The last word on full pallets
The days of forcing customers to receive full pallet quantities of a SKU are few and far between. According to this year’s data, most are receiving and shipping product in a mix of full pallet, case and split case quantities. Saenz points out that regardless of the inbound unit of measure, the outbound trend will be in smaller quantities, such as split and full case.

Derewecki agrees, recalling a project he completed for a New York-area hospital where storage space was at a premium: “If patients needed something tomorrow, the hospital would order it today, and they expected their suppliers to deliver it to them the next morning. They depended on their suppliers’ supply chain to deliver. Now, as a manager of your own logistics and operations, do you think your customers could depend on you?”

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“<This design led us to being more cost and labor efficient.”

- Richard “Rocky” Ruane, regional director of warehouse operations, Wirtz Beverage Illinois
AS/RS systems upgraded with new features
All the supplier’s automated storage and retrieval systems (AS/RS), including mini-load, unit-load and DUOSYS lines, now offer anti-sway and adaptive controls that increase throughput and reduce downtime. The enhanced controls significantly reduce the swaying of cranes—caused by high throughput speeds—decreasing idle time and increasing throughput. Engineered for S-shape speed control, the system enables smooth acceleration transition and improved load stability. Adaptive controls enable the AS/RS to continue running during non-serious errors such as over-current or load overhang. If a crane has an over-current, the controls reduce machine speed and acceleration automatically, instead of shutting down the entire system. Similarly, temporary load overhang does not shut down the system entirely; instead, it allows time for the protrusion sensor to be checked automatically without manual intervention for consistent operation. Daifuku Webb, 248-553-1000, www.daifukuwebb.com.

Next generation shuttle system customizable to handle totes, cases or trays
Handling totes, trays and cases in a range of sizes and weighing up to 110 pounds, the Multishuttle 2 automated inventory staging buffer system consists of multiple levels of racking, shuttles, buffer conveyors and software. Each level includes input/output conveyor and an extraction device equipped shuttle that travels horizontally to access stored loads. The high-performance shuttles reduce cycle times translating into fewer shuttles and fewer aisles. They also enable multiple system configurations, such as single and dual cycling, drive-through and tandem. Standard, flex and belted models allow for application customization. The flex model incorporates flexible load handling for storage and retrieval of variable load sizes and formats without trays, flexing high-speed telescopic arms to adjust to the exact width of the load, while its fingers engage the product for transfer on and off of the shuttle. Dematic, 877-725-7500, www.dematic.com.

Efficient AS/RS saves energy
The Exyz automated storage and retrieval machine is configurable with either a single- or double-mast and one or two load handling devices for a single-, double- or multi-deep handling. The units reach from 26 to 147 feet high and are customized for each application from standard components. All travel, hoist and movement functions have been engineered for maximum energy efficiency. Features include guide rails integrated into the mast, a U-shaped hoist mounting that reduces approach values by 5 inches to minimize operation and construction costs, and onboard counterweights for the hoist truck mounted inside the mast. Two strong drive motors, located in front of and behind the load, provide all-wheel drive for optimal traction and energy efficiency. For load security, the unit incorporates a short wheelbase and brakes on both drives, and an anti-pendular system that equalizes vibration. Schaefer Systems International, 704-731-1613, www.automation.ssi-schaefer.us.

Vertical carousel stores lighter weight items
Ideal for storing and retrieving small items, the Megamat RS 180 vertical carousel holds up to 397.8 pounds per carrier for a total unit load of 13,260 pounds. The system increases picking efficiency on the factory floor, production line or in distribution centers to optimize processes and minimize costs. Capable of saving up to 85% of floor space, the standard unit is equipped with the Logicontrol machine controller, which offers basic warehouse management functions. The unit may be specified in a variety of widths from 6.09 to 12.6 feet, depths from 4.7 to 5.3 feet, and heights from 7.2 to 24.6 feet. The system can be extended at any time and can be easily relocated. Features include a smooth-action sliding door for faster, safer access to items and optional access authorizations. Should a power failure occur, the carousel can be manually operated with an emergency hand crank. Kardex Remstar, 800-639-5805, www.kardexremstar.com.
Shuttle-based system handles multiple warehousing functions beyond storage

For simplified operation, the OSR Shuttle goods-to-person picking system offers extended capabilities to accomplish all the main processes of an automated warehouse. The single system handles storage, consolidation, sequencing, replenishment, buffering, returns, dispatch and picking for optimized material flow. Combining all these functions yields faster operating cycles than standard mini-load automated storage and retrieval systems, low energy consumption and high availability. As business needs grow, the system is scalable. It also includes multifunctional workstations for ergonomic operator interfaces that minimize physical strain. Knapp Logistics Automation, 888-606-0695, www.knapp.com.

Store small parts and tools in automated, vertical unit

Providing vertical, automated storage for small parts and tools, the Small Parts Storage System (SPSS) delivers faster, more efficient picking, storage and inventory management. The system combines precise organization and parts protection with modular drawer storage in trays that hold up to 500 pounds capacity. Offered in heights from 12.5 feet to 40 feet—and in quick-ship heights of 18-, 24.5- and 31 feet—the units feature modular construction. Each system includes a welded lower base module and bolted upper frame for faster installation times and flexible installation. For customization, a choice of standard controls or an optional inventory control software package may be specified to accommodate inventory control, communication to host, connection to peripheral hardware or control of multiple machines. Lauyans & Company, 502-774-2200, www.SPSSonline.com.

AS/RS inserter/extractor interfaces with tiered horizontal carousels

Capable of handling up to 1,440 transactions per hour, the UltraBot IE robotic automated storage and retrieval system efficiently delivers totes, boxes and cases to one or more high-speed order picking workstations for order handling. It features an inserter/extractor that moves up and down the front of two- or three-tiered horizontal carousels, automatically retrieving order items. Items are delivered to a conveyor and unloaded for routing to batch picking or dynamic batching workstations. There, orders can be buffered until the operator requires that pick. Completed orders are automatically taken from the workstation and routed to the next

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workstation or zone for further processing. Modular and flexible, the unit handles carton and tote sizes up to 36 inches for order picking and fulfillment, order consolidation, returns and reverse logistics, buffering, sorting, staging, kitting and work-in-progress applications. Integrated Systems Design, 248-668-8250, www.isddd.com.

Expand parts, service offerings with vertical storage units
Ideal for use in automobile dealership repair and service areas to store expanded parts inventory, a line of automated vertical storage systems is offered as an alternative to traditional fixed shelving. The Rotomat vertical carousel and Lean-Lift vertical lift module free up 65% or more floor space for other uses. The increased storage density of the units saves floor space while eliminating off-site storage and transportation costs. For inventory management, the units feature an integrated controller to prevent over-stocking, under-stocking and expired products. To maximize storage capacity at the installation site, each unit is built to order—spanning multiple floors or accessible at both the warehouse and retail parts counter. Hänel Storage Systems, 412-787-3444, auto.hanelstoragesystems.com.

Autonomous robots replace shuttles
The Perfect Pick automated, high-speed, goods-to-person picking system is based on the iBOT component, an intelligent, wireless vehicle. Each iBOT has full access to inventory stored in a single aisle. Unlike shuttle systems that rely on lifts, conveyors or transfers, iBOTs travel around inside the storage rack at rates of up to 1,000 dual-cycles per hour. They pick and stock inventory simultaneously and deliver totes or trays directly to a picking station located at one or both ends of the aisle. Because the system is engineered to be redundant, there is no single point of failure for maximum reliability. Scalable in size and speed, a single aisle system can be expanded easily by adding modules or more aisles. Opex, 856-727-1100, www.opex.com.

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Mini-load crane travels at speeds up to 984 feet/minute

The FX Quad mini-load automated storage and retrieval system incorporates a high-speed, mini-load crane that travels at rates up to 984 feet per minute and achieves hoisting speeds up to 590 feet per minute. Ideal to support high-density storage and high-throughput operations, the unit transports loads weighing up to 661 pounds. It uses twin fork and double-deep capabilities for maximum storage efficiency and enables multi-case handling of up to four cases simultaneously. The system may be equipped with a choice of load handling devices including rear-hook double-deep (free-size), single fork, twin fork with belt conveyor or twin fork with double-deep belt conveyor.


Automated vertical storage system travels on wheels

The Mini-Avenger portable, high-density vertical carousel and cart systems come fully assembled on wheels to move within any standard building, including through doors and elevators. Inventory is stored securely on carriers/shelves that rotate vertically on an oval track and are delivered to an ergonomically located work counter. Every carrier/shelf can be configured uniquely to meet specific inventory and application requirements. The system is ideal for handling small parts, items and inventory in manufacturing, retail, warehousing, distribution, healthcare, offices, institutions and wholesalers.


AS/RS calculates size of loads

A high-density automated storage and retrieval system stores up to 6,000 loads of products—including work in process. The system is built on a freestanding rack that stores 5,994 pallet rack positions and uses two storage/retrieval machines in two aisles. Capable of reaching up to 12 storage levels, it stores pallet loads up to three pallets deep on all levels, with inbound and outbound product staged on conveyors integrated into the rack structure at the head of the aisles. To deliver items just in time, the system can be customized with additional side outfeeds that provide product to work cells. The system calculates the size of each load and determines the required space, storing items within 2 inches of each other, regardless of load size dimension.

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Energy-efficient AS/RS for low- to medium-throughput applications

The Quickstore Microshuttle automated storage and retrieval system—a part of the supplier’s line of mini-loads, shuttles and load-handling devices—is offered as a solution for low- to medium-throughput applications. The shuttles move between different levels within the racking with a lift, feature wireless communication, and use capacitors for on-board energy that enables autonomous operation without power rails in the aisles. All braking energy is directed back to reload the capacitors for energy efficiency. Scalable, the system can be easily expanded with additional shuttles as throughput requirements increase. To ensure maximum uptime, the redundant system allows a shuttle to be removed as needed for service and every racking location can be reached manually. Vanderlande, 770-250-2800, www.vanderlande.com.

Transition from static to dynamic storage with VLM

Saving up to 90% of floor space, the fully automated Modula Sintes1 vertical lift module is ideal for transitioning from static to dynamic storage of small items like tools, electronics and pharmaceuticals. Products are placed in metal trays that are automatically stored and retrieved as needed. The compact unit is engineered for lower capacity applications with an easily integrated control system. Within the unit’s structure, a vertical lifting platform brings a tray of product to a determined storage level and then deposits the tray to a storage location. Tray height can be adjusted in 1-inch increments to accommodate multiple product heights. Each tray holds up to 440 pounds and features plain perimeter walls or slotting for partitions and dividers. Offered in two models—with an internal delivery area or an external picking bay—the VLM can be equipped with either single or dual delivery function for better ergonomics and faster throughput. System Logistics, 207-784-1381, www.systemlogistics.com.

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MODERN MATERIALS HANDLING / November 2013 65
Steve Rogers

**TITLE:** President of the Rack Manufacturer’s Institute; vice president of sales for Hannibal Industries

**WEB SITE:** mhi.org/rmi; hannibalindustries.com

**EXPERIENCE:** Has worked for Hannibal Industries since 1987 and has been with the rack division in 1996.

**DUTIES:** RMI has traditionally been an engineering-driven organization. In the coming year, Rogers plans to work more closely with MHI as they become a more customer-focused organization.

Modern: Steve, congratulations on the new position. As you see it, what are the most important issues RMI will be addressing in the coming year?

Rogers: We have a number of projects in the pipeline. Last year, we completed a new document addressing considerations for the planning and use of industrial storage rack. It’s the single most comprehensive rack document I’ve ever seen. It takes an end user from the planning stage through installation, inspection and use of the rack. One of our goals is to get that out into the marketplace. We’re putting the final touches on another usage document that addresses rack inspection. Last, we’re working on a document about rack repair. At RMI, we would like to see all new rack, but we know that’s not practical. We know people repair their own rack, and we’ve worked with some of the best rack repair companies to create a document that addresses how to safely repair and reuse rack. We believe the market is hungry for this information, and our plan is to put our stamp on this at our next meeting and have something ready to showcase at Modex 2014.

Modern: Coming out of the recession, how is the rack industry faring today? And, what are the factors driving the use of rack today?

Rogers: The rack industry took a tremendous hit during the recession. We are not yet at pre-recession levels, but by the end of the year we will be within 10% of typical norms before the recession. The drivers for our industry today are the same as they’ve always been: population growth and the economy. The economy is still not great, but we’re over the panic.

Modern: Are there any trends in how rack is being used, where it’s being used or in the types of racks being purchased today? If so, what are they and what’s driving the types of rack storage we’re seeing?

Rogers: The biggest trend is where the rack is being used on a geographic basis. My company is located on the West Coast, and we’re seeing a lot of interest from food and beverage manufacturers in emerging markets and developing companies. RMI has done such a great job of educating the market about safety that these companies want to buy U.S. made products. That’s a solid driver for improved rack sales for the whole industry.

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