Office Depot: Flexible automation

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- Work Flow Analysis

Space Analysis
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Demetic Group to purchase HK Systems

DEMATIC, a leading global supplier of integrated materials handling solutions and services, has signed an agreement to purchase HK Systems, a North American automated materials handling and software solutions provider. The company says the merger will build a stronger, more responsive company and provide added value and expanded solution portfolios for customers.

“Customers are calling for integrated solutions that enable them to move products and information fast, reliably and efficiently through the supply chain,” said John Baysore, president and CEO of Dematic North America. The combined technology of the two companies will further drive innovations that help customers optimize their production and distribution operations, officials say.

ARC says 2009 was tough for WMS, good for SaaS

DAMAGING EFFECTS of the global recession hit the warehouse management systems (WMS) marketplace hard in 2009, according to ARC Advisory Group. Initial signs of the recession for the WMS market were evident in 2007, and 2008 saw market revenues decline slightly year-over-year. But with implementations often taking several months, ARC explained that backlog of projects protected suppliers’ 2008 revenues until the backlog dried up in 2009. While WMS had a tough year, the SaaS (software-as-a-service) segment, which is comprised of services packaged as part of a leasing model and hosted online, continued to grow at a double-digit pace from a small base. This technology benefits small companies that don’t need to purchase an expensive WMS.

WERCing it in North Carolina

IN A CONTINUING EFFORT to reach logistics professionals across the country, the Warehousing and Education Research Council (WERC) announced the formation of a new WERCouncil in North Carolina. Sheila Benny, from Optricity, is the new group president. WERC CEO Michael Mikitka said area WERCouncils are especially important because they offer education and networking at the local level. “Because the board defines their own local needs, the group can be more responsive to members in the area.” WERC helps local leaders identify speakers, programs and tours that best suit specific needs. As a result, people who don’t travel to national WERC events are able to get the same benefits of the organization.

FAST FACT

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The combined industrial lift truck revenue from all companies on Modern’s Top 20 ranking, see story on page 34.
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Brent Beabout and his team at Office Depot found an edge in a goods-to-person picking solution featuring two different mobile robots.

COVER STORY

SYSTEM REPORT

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Mobile robotics is powering Office Depot’s new demand-driven distribution center.

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A goods-to-person picking solution managed by 300 mobile robots is at the heart of the new Office Depot distribution center.

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With a new warehouse management system, Aetrex is winning the footrace against its competitors in the shoe business.

SPECIAL REPORT

34 Top 20 lift truck suppliers
The worldwide industrial lift truck industry spent the better part of 2009 in a rut. Sales were down 39%, but the worst may be over.

EQUIPMENT REPORT

40 Lift trucks get smarter
New technologies and usage practices can help you maximize your fleet’s productivity and longevity while reducing your carbon footprint.
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The robots are here

Whenever a new enabling technology starts to gain ground in a market, you tend to hear three distinct points of view concerning its eventual impact. There’s the “doubter,” who instantly dismisses it; there’s the “cautious manager,” who likes to wait and see how others are putting it to use; and then there’s the “champion,” who quickly embraces it and makes a strong case, right out of the gate, to put the technology to work despite its lack of operational history.

Over the past three years, I’ve spoken at length to supply chain professionals who fall into each of these camps when it comes to materials handling robotics; and quite frankly, each one made perfect sense to me. They spoke from their own unique position concerning the market they serve and the operations they run.

Like most new, highly touted, “game changing” materials handling technologies that earn the front pages of B2B media outlets like Modern, they may be a perfect fit in some operations while they may never work in others. And, as we learned during the great RFID push, when the initial tidal wave of publicity fades and the market finally grasps its abilities and limitations, new technology tends to eventually find a home as a customized solution for very specific operational needs over time.

But it’s imperative to note: Before you fall into any of these camps and race to a conclusion, you need to fully understand the abilities and limitations of the new products that the materials handling robotics manufacturers are offering the market. And, there’s simply no better way to do this than to read executive editor Bob Trebilcock’s illuminating feature “The robots are coming” (p. 26). This article is the continuation of a series we’re calling “Big Picture: Where business meets materials handling.” In these Big Picture stories, Trebilcock’s reporting and writing breaks out of the traditional “how-to” and “case study” mold to offer an objective, broad-sweeping look at how materials handling technologies and best practices are making an impact on overall business strategy.

This month, Trebilcock documents the robotic manufacturers’ journey into the greater materials handling market, from their introduction at ProMat 2007, through the steady acceptance by the analyst community, right up to the most recent implementations of robotic systems and the manufacturers who are now jumping on board with new innovations.

But most importantly, Trebilcock’s article reports on the practical benefits that robotics can bring to an operation if the technology is, in fact, a good fit. “There’s a lot of hype around robotics today,” says Trebilcock, “and I simply set out to put the market into perspective and allow the materials handling decision makers to decide for themselves what does and doesn’t make sense.”

I highly recommend reading Trebilcock’s Big Picture first and then turning back to page 20 to read this month’s System Report on how Office Depot, one of the earliest champions of robotic materials handling, was able to bend the conservative nature of retail distribution and roll out one of the most impressive robotic DC operations in the country. After digesting these two stories, I’d like to know what camp you find yourself joining.
Topic: Getting the most out of your operation

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* See session descriptions online at Dematic.com/conference

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IN ITS LATEST monthly report, the Conveyor Equipment Manufacturers Association (CEMA, www.cema.org) reported that its May 2010 Booked Orders Index was at 129. This figure is up three points over April 2010, marking a 2% monthly increase. The May 2010 Index also represents an increase of 18% from the May 2009 Index of 109.

According to Bob Reinfried, CEMA executive vice president, CEMA's Booked Orders Index uses the equation 1990=100 to measure its current industry statistics. In other words, the baseline calculation uses the figure 1990, which was a fairly representative year for the conveyor industry. Numbers to the right of the equals sign gauge where the industry stands in comparison to that year. Therefore, figures above the 100 mark indicate growth, while anything less indicates contraction in the industry.

CEMA's most recent monthly report reflects growth. Reinfried told Modern that these figures are particularly positive in light of the recent economic conditions in the market. Additionally, he said, CEMA members are encouraged by the new orders coming in.

While booked orders are picking up the pace, billed orders are down 5.2% compared to the same January through May timeframe of 2009.

What does this mean? Reinfried said, “This is telling me that right now [our members] are knocking down the backlog.”

However, with booked orders on the rise, the trend is changing. “So far this year, new orders are exceeding shipments,” said Reinfried. This is a very positive sign, he added, because at some point in time, these orders translate into billable goods that will ultimately be shipped to customers.

Reinfried said it’s difficult to say how long it will take for shipments to catch up to orders, but right now the conveyor industry is moving upward.

According to CEMA, the overall North American conveyor market was at $7.8 billion in shipments in 2008. In 2009, that figure contracted to $6 billion. CEMA is forecasting an increase of 2% to 3% for the overall North American conveyor market in 2010.
TWENTY YEARS AGO, Toyota Industrial Equipment Mfg., or TIEM, opened its first Toyota lift truck manufacturing plant outside of Japan in Columbus, Ind. In early August, the world's largest lift truck manufacturer (No. 1 on Modern's Top 20 lift truck suppliers list, p. 34) commemorated the plant's 20th anniversary.

The ceremony also celebrated the launch of the new 8-Series, four-wheel electric AC lift truck with a line-off ceremony. The new line of AC-powered lift trucks, which is said to deliver longer runtimes and quicker acceleration for increased productivity, will be manufactured exclusively on the 126-acre, 998,000-square-foot campus.

The anniversary and launch was attended by TIEM's 600+ associates; Tetsuro “Ted” Toyoda, president of Toyota Industries Corporation; Kazue Sasaki, president of TIEM; Brett Wood, president of Toyota Materials Handling, U.S.A.; along with other Toyota executives and leading Toyota lift truck dealers.

“Toyota prides itself on manufacturing products that embody industry leading safety, quality, durability and reliability,” said Sasaki. “During the last two decades, TIEM has achieved a number of manufacturing milestones thanks to the support of our customers, dealer body, associates and community. We look forward to another 20-plus years of manufacturing excellence in Indiana.”

Toyota has invested $113 million in the Columbus facility, which has built more than 350,000 lift trucks, Sasaki noted. The plant produces more than 78% of all Toyota lift trucks sold in North America.

The zero-landfill facility has been recognized by the state of Indiana as a recipient of the 2009 and 2005 Governor's Award for Environmental Excellence for Five Years Continuous Improvement.

SUPPORT SOFTWARE

THE IMPORTANCE OF information to the success of supply chains is stronger than ever given economic conditions, according to the Supply Chain Execution Systems & Technologies (SCE) Industry Group of the Material Handling Industry of America (MHIA, www.mhia.org). This data has been released as a part of the group's Summer 2010 Quarterly Report, “A Better Information Flow for Improved Supply Chain Execution.” Supply chain execution software and related data capture technologies are a key to creating a smooth, efficient, cost-effective flow of materials. The group is focused on information as it connects every link of a supply chain.

Supply chain execution solutions include enterprise resource planning (ERP), warehouse management systems (WMS), transportation management systems (TMS), warehouse control systems (WCS), and data capture systems, to name a few.

“The advantage to using data systems and getting information is it will move to scale,” said KardexRemstar’s Ed Romaine, chair of MHIA’s Supply Chain Execution Industry Group. “When business is slow, you can use these systems to find efficiencies and...
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reduce labor and inventory. When business is gang-busters they help you meet customer demand and expectations. Information flow within the SCE system allows you to work more efficiently, all the way from a work cell to a WMS and ERP system.”

The SCE group is shifting its focus to evolve with the industry and broaden its scope. In today’s environment, Romaine added, it’s all about gathering and processing information. True success comes from the right combination of moving material and the information systems associated with its movement.

Quarterly reports often highlight current trends. So, what are the trends to watch for? According to Steve Banker, service director of supply chain management for ARC Advisory Group, a couple of trends to watch in WMS are in software-as-a-service (SaaS) and the addition of images to RF scanners. In TMS, Adrian Gonzalez, a director at ARC, says there’s a movement toward a holistic, end-to-end TMS footprint. And in manufacturing execution systems (MES), Simon Jacobson, research director for manufacturing operation at Gartner, says there’s a need for better connectivity with the enterprise and the rest of the supply chain. “In the past, the supply chain had to respond to manufacturing. Now, manufacturing needs to respond to the supply chain. That’s an important change, and one the MES market is adapting to.”

ECONOMY

ISM manufacturing index shows positive signs, but warning signs persist

THE INSTITUTE OF Supply Management (ISM) has reported that manufacturing activity in July was basically flat compared to June.

The index the ISM uses to measure the manufacturing sector, or PMI, was 55.5% in July, which is down from 56.2% in June, 59.7% in May, and 60.4% in April. Any reading that is 50 or better represents economic growth.
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July represents the 12th-consecutive month that the PMI is more than 50, coupled with the overall economy on a growth track for 15 straight months.

Norbert J. Ore, chair of the ISM’s Manufacturing Business Survey Committee said in a statement that the manufacturing sector continued to grow during July but at a slightly slower rate than June.

“Employment [58.6% in July compared to 57.8% in June], supplier deliveries [58.3% in July compared to 57.3% in June] and inventories [50.2% in July compared to 45.8% in June] improved during the month and reduced the impact of a month-over-month deceleration in new orders [53.5% in July compared to 58.5% in June] and production [57.0% in July compared to 61.4% in June],” said Ore. “July marks 12 consecutive months of growth in manufacturing, and indications are that demand is still quite strong in 10 of 18 industries. The prices that manufacturers paid for their inputs were slightly higher but stable, with only a few items on the short supply list.”

Other notable readings from the July report include:

- prices at 57.5% compared to 57.0% in June,
- backlog of orders at 54.5% compared to 57.0% in June,
- customers’ inventories at 39.0% compared to 38.0% in June.

Even though the PMI has been down for three straight months, Ore explained that overall the manufacturing sector is relatively healthy and not hindering the economy, despite signs of economic stagnation in recent weeks.

“Last month, consumer readings were not good, and that makes you worry a little bit about what is going to happen in the second half,” said Ore. [Another thing] is second quarter Gross Domestic Product at 2.4% subject to revision. We expect the second half of this year to be not as strong as the first half, so a 2.4% second quarter GDP is worrisome heading into the second half of the year, particularly in regard to what the consumer is going to do.”

When asked about the respective 5.0% and 4.4% declines in new orders and production in July, Ore said the drop in new orders—considered a leading indicator of the PMI—is not welcome news, due to the uneven economy.

And the 4.4% gain in inventory levels shows that inventories continue to grow at a small rate but this jump, according to Ore, needs to be treated as just one month of growth. But he cautioned if there is another increase around the same size in August, inventories will need...
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to be closely monitored and could reflect an “involuntary inventory build up” at a time when consumers and businesses remain cautious with their spending.

Pricing in the PMI appears to have stabilized, falling to its current level of 57.5% compared to 77.5% as recently as May. This decline represents pricing power shifting back to manufacturers, according to Ore. If manufacturers were to start raising prices, he said it would raise the possibility of raw materials’ inflation, and if prices were to dip, there would be deflation, which Ore said would be worse.

A tricked-out Toyota 8-Series lift truck performed robotic pallet manipulation at U.S. Army Logistics Innovation Agency demonstrations at Fort Lee in Virginia, proving it’s capable of locating, lifting, moving and placing palletized supplies in an outdoor supply depot, and giving potential end users a glimpse into the future of materials handling.

United Natural Foods Inc., a national distributor of natural foods, has taken a giant step forward in its commitment to sustainability. As part of an initiative to transform its Sarasota, Fla., DC lift truck fleet, the company has installed new hydrogen fuel cell-powered trucks recently developed by The Raymond Corporation. Raymond says the hydrogen fuel cell-compatible orderpickers are the first of their kind in the industry.

Along with some of the world’s most recognized brands like Microsoft and Panasonic, Crown Equipment has been honored by the Industrial Designers Society of America with an International Design Excellence Award (IDEA) for its ESR 5000 Series of narrow-aisle reach trucks used throughout Asia and Europe. This is the 5th consecutive and 18th overall IDEA for Crown. No other company has won more IDEAs in the Commercial and Industrial Equipment category in the last 10 years than Crown.

Mitsubishi Caterpillar Forklift America (MCFA) recently donated a Cat lift truck model NR4000P to Houston Habitat for Humanity. The 4,000-pound capacity reach truck will be used to move building materials at the Houston Habitat for Humanity ReStore, a home improvement resale store where items are sold at greatly reduced prices. The donation, valued at $28,000, is comparable to underwriting more than two days’ worth of construction on a five-day house build.
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Buy right
“Let the dealer do their job.” That advice comes from Jim Shephard, founder of Shephard’s Industrial Training Systems in Memphis, Tenn., who is in the business of keeping lift truck fleets operating safety and efficiently. “It’s very important that the end user allow the lift truck company’s representative to make a site visit and complete a comprehensive site analysis in the areas the equipment will be operating,” says Shephard.

End users should point out every materials handling task to get the proper results. The best idea is to make a list of materials handling needs by percentage. Your list should include weights, product size, travel distance, stacking, distance, loading trailers and environment.

Don’t miss anything, Shephard cautions, because if even 1% of the process is abusive, it could mean trouble. That small percentage could cause a tremendous amount of maintenance and be your biggest problem.

Implement strict service cycles
Gasoline- and diesel-powered lift trucks are rarely used inside a warehouse or distribution center because of the potential exposure to carbon monoxide, explains Chuck Borman, manager of occupational safety programs for Safety Management Solutions, a safety consulting firm located in Chicago. However, propane-powered lift trucks operate inside and outside of buildings. “The most important rule of thumb is to keep the engine tuned,” Borman says.

Implement strict service cycles that include cleaning the engine, air filter, fluids, cleaning radiators and adjusting inching pedals. Borman also recommends periodic monitoring of all lift trucks, especially those with internal combustion engines.

By the industry’s calculation, every 250 hours on a lift truck equals 10,000 miles on a car. Shephard says, “You wouldn’t drive 10,000 miles without looking under the hood, would you?”

Review maintenance records
A regular review of maintenance records can tell you a lot. Use maintenance records to back track and determine if the cause of the problems is related to the operator or the process. Either way, the evidence will ultimately lead to a solution.

Operator training
If your problems lead back to your operators, training may be the solution. Train your operators to conduct thorough pre- and post-shift inspections. In a pre-shift inspection, check for loose wires, air intake hoses, clogged radiators, and check all fluid levels. Then get in the seat to ensure that all controls are functioning properly. Also check the location of gauges, switches and foot pedals. In a post-shift operation, it’s especially important to check for fluid leaks. And, both inspections should include a walk around. Because, as Shephard says, you can’t fix what you don’t see.

What operators do off the lift truck is as important as what they do when they’re on it. Make sure they know the best practices for before, during and after their shifts.
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When Office Depot decided to consolidate three distribution centers and a crossdock facility into one, new state-of-the-art DC in Newville, Pa., the office supplies retailer looked for an automated materials handling solution that was efficient and flexible. More importantly, they wanted a system that would deliver a competitive edge in the marketplace.

They found that edge in a goods-to-person picking solution featuring two different mobile robots (Kiva Systems, 781-221-4640, www.kivasystems.com). One robot handles cases while a larger robot moves pallet loads in the facility that went live just a few months ago.

Betting a part of your distribution strategy on robotic materials handling may seem like a risky move, especially given the conservative nature of retail distribution. But, Office Depot is convinced that the time has come for robotics in the DC; after three decades on the manufacturing line, robotics technology is proven, reliable and, says Office Depot, a potential game changer (for more on robotics, see p. 26).

“We believe that the future belongs to the brave,” says Brent Beabout, vice president of global network strategy and transportation. “We are in a commodity business and the supply chain is a differentiator. We plan to be on the front end of that.”

While some brick-and-mortar and dot.com retailers have implemented robotic solutions similar to the one in Newville to manage their direct-to-consumer orders, Office Depot is taking the technology deeper into its operations than other early adopters. “Most implementations are focused on one process, like each picking,” explains Juan Guerrero, senior vice president of supply chain. “Along with each picking, we are also doing case picking and full pallet movements with the robots. We will handle everything but non-conveyables or items that are just too heavy to go through the system.”

What’s more, Office Depot is using the robotic system to manage order fulfillment across all of its sales channels and not just direct-to-consumer. This includes store replenishment and bulk deliveries to business customers.

In all, 100,000 square feet of the 600,000-square-foot building are devoted to the system including the picking stations, which feature 300 robots and...
enough portable shelving space to manage three days of inventory. To minimize lift truck travel time, the mobile robotic system is augmented by a takeaway conveyor system and sliding shoe sorter.

Beabout and Guerrero say the robots have reduced the average travel by an associate from 7 miles per shift in a typical distribution center to less than half a mile; meanwhile the order cycle time has been reduced from 2 hours to 20 minutes. “This system is going to move us from where we were, which was industry-leading customer service levels, to a point well beyond that of our competitors,” says Guerrero.

**Starting from scratch**

Founded in Boca Raton, Fla., in 1986, Office Depot is a leading supplier of office products and services, with more than $12 billion in revenue, 1,500 retail store locations and 42,000 associates worldwide. The company does business in 52 countries.

The Newville DC was a result of a growth strategy that has been driven by acquisitions for much of the past 25 years. Those deals not only brought new retail locations under the Office
Depot umbrella, they also added warehouses and distribution centers. As of a few years ago, Office Depot had 33 buildings in its network, including several low-volume facilities. Typically, these came in two flavors: crossdocking centers to replenish retail locations and distribution centers to service business customers and direct-to-consumer Internet and catalog orders.

The collection of facilities was less than optimal. “We decided to use the recession to take a hard look at our network and optimize our systems,” says Guerrero. Today, the company has reduced that number to 17, with an ultimate goal of reducing the number of facilities in the network to 12.

To reach that number, Office Depot has closed and consolidated some facilities and upgraded the capabilities in remaining facilities. Newville, which currently serves 107 stores in the Northeast, was different. In that region, where the retailer operated four facilities with a total of 829,408 square feet, there was a unique opportunity to reduce the overall footprint of operations by building a brand-new facility because the leases were coming due on some of the buildings.

“We wanted to take a holistic view of our supply chain, and not just what happens within the four walls of the DC,” says Beabout. “As we did the research, we realized that none of the existing facilities in the Northeast was really centrally located to where we were doing most of our business from a transportation standpoint. It made more sense to start fresh.”

Newville had several advantages from a transportation standpoint, and it had an available pool of highly skilled potential employees: The company received 4,000 applications and interviewed 1,200 candidates to fill 250 slots. “You don’t get that kind of job pool in every area,” says Beabout.

**New facility, new technology**

Building a Greenfield facility also presented an opportunity to optimize the materials handling systems inside the DC with a new distribution model featuring two distinguishing characteristics.

Instead of operating separate DCs for store replenishment and direct-to-customer deliveries, Office Depot wanted a system that could integrate with its homegrown warehouse management system (WMS) to handle every line of business and sales chan-
our new pull model, every store will get a just-in-time delivery nearly every day of the week,” says Guerrero. “We’re beginning with the 107 stores served by Newville, and then we’ll roll this concept out across the country.”

After looking at traditional pick and pack solutions, including voice-directed pick modules similar to those used at other Office Depot facilities, Guerrero and Beabout chose mobile robotics, a technology they had been investigating for several years. The system uses a small robot to move mobile storage devices to and from associates at workstations, and a larger vehicle designed to handle full pallets. Once picks have been completed, the robots deliver the units to a conveyor induction station, where the shipping containers are placed on a conveyor and sliding shoe sortation system and are sorted to a shipping lane.

Several factors led to this choice:

**Goods-to-person:** In traditional pick modules, associates walk to pick locations. In the robotic solution, the robots bring the product to the associate’s workstation, saving steps. “A lot of the waste in the DC has to do with walking,” says Beabout. “In this case, that’s gone.” In addition to productivity improvements, the system was very accurate, which would reduce picking errors.

**Dynamic sloting:** The robotic system monitors the movement of SKUs and slots the inventory according to how fast the product turns over: The fastest moving items are stored closest to the workstations. That leads to better use of the robots and minimizes the size of the fleet required.

**Proven and reliable:** The robots were up to the task. “There was a concern about going away from a traditional automated materials handling system,” says Guerrero. “But, we did our due diligence. We visited systems that have been in operation in existing facilities, and we asked the hard questions you would ask about an automated system. The performance, recovery times from failure and risk management were robust enough for our operation.”

**Flexible and scalable:** There is no question that other automated materials handling solutions are effective in a goods-to-person environment, including mini-load automated storage and retrieval systems (AS/RS) and horizontal carousels. What tipped the scales in favor of mobile robotics was the flexibility to handle pieces, cartons and pallets and to easily scale in the future. “Reliability was important, but any solution had to be reliable for us to even consider it,” says Beabout. “We justified the system on productivity, the ability to co-mingle and pool inventory and the ease of adding to the system in the future. If your throughput or inventory grows in the future, all we have to do is allocate more floor space to the robotic system and add robots. We can do that overnight.”

According to Guerrero and Beabout, the building was also designed to further Office Depot’s sustainability goals. T5 lighting and energy efficient HVAC are used throughout the DC along with recycled materials wherever possible. Energy consumption is monitored, and Office Depot will use renewable energy resources to offset consumption. Finally, it was designed to have the lowest environmental footprint possible while still meeting throughput requirements. The company intends to seek Leadership in Energy and Environmental Design (LEED) certification from the U.S. Green Building Council.

Robotics may play a role there as well. “The facility is eerily quiet,” says Guerrero. “You don’t hear the robotics at work, so the only sounds are people talking, lift trucks or the outbound sorter, which is pretty quiet as well.”

While mobile robotics is providing answers to the distribution requirements in Newville, that doesn’t mean Office Depot will adopt the technology everywhere. “We don’t have stars in our eyes and we don’t pretend that robotics is the right solution for all of our facilities,” says Beabout. “We will assess each facility individually going forward. However, this was the right fit for this facility and our overall supply chain objectives.”
Putting robotics to work

A goods-to-person picking solution managed by 300 mobile robots is at the heart of a new Office Depot distribution center.

By Bob Trebilcock, Executive Editor

While a fleet of mobile robots sounds complex, the processes designed and implemented by Office Depot are deceptively simple. The distribution center also includes a regional print facility (13) for printing jobs that are too large for an Office Depot retail location.

**Receiving:** When a trailer arrives at the receiving area (1), pallets are unloaded by lift truck. A scan of the pallet label enters the pallet into the warehouse management system (WMS). Once the contents have been compared against an electronic advanced ship notification (ASN) and accepted in the WMS, the product is ready for putaway.

**Putaway:** The WMS directs putaway and can choose three paths for newly arrived product. Product that isn’t needed right away is transferred by lift truck to a bulk storage area, where pallets are stored on the floor (2) or in a pallet rack (3). The facility includes traditional pallet rack and sections of very narrow aisle (VNA) rack. Pallets with heavy or bulky materials such as paper are temporarily stored in a flow area (4) and then crossdock directly to the shipping area (5). The remaining product is putaway into portable shelving units and stored in the robotic storage and picking area (6) serviced by the mobile robots.

When a pallet of material is delivered to a picking and replenishment workstation (7) near the picking area, the associate chooses the putaway function for the system. That signals a robot to retrieve a storage unit from the storage and picking area (6) and present it at the workstation (7). The associate scans the bar code label on a carton and places a device with a light on the carton. When the storage unit arrives at the workstation (7), a laser directs the associate to the right location on the storage unit. The associate presses a button at the worksta-
tion to confirm the putaway.

When all the cartons for that unit have been stored, the robot returns the unit to the storage area (6) and delivers the next unit to the workstation (7). The system determines the putaway location for the unit based on the velocity for that SKU. Fast-moving items are stored closest to the workstations, slow-moving SKUs are stored further away.

**Picking:** A limited number of large non-conveyables are picked from storage by lift trucks and delivered to the shipping area (5). Similarly, cases of product that are too heavy for the robotic picking system, such as paper or bottled water, are picked to a pallet in a case pick area (8) and are then delivered to an outbound conveyor induction workstation (9) where they are placed on the outbound conveyor (10). They are then sorted by a sliding shoe sorting system (11) to an outbound shipping lane (12). Product may be palletized for shipping (5) or it may be floor-loaded for parcel shipments.

Everything else, including totes for store replenishment, direct-to-consumer Internet orders and orders for Office Depot’s business customers, are managed by the robotic picking system (6). The process is similar to putaway. The WMS system receives orders from Office Depot’s order management system and forwards that data to the robotic system. The system then prioritizes the orders that must be picked first to meet shipping cut-off times or customer requirements.

To initiate picking, an associate logs into a workstation (7) and chooses the picking function. That signals the system to retrieve a pod with empty shipping cartons for orders (6) and deliver them to the workstation (7). Meanwhile, the system also delivers the storage units (6) with the inventory for those shipping cartons to the workstation (7). When a unit presents itself, a terminal at the workstation will display a picture of the SKU, the SKU number, the number of items to be picked and the bin location where the product is located. A light also identifies the picking location.

When the associate scans the item, a light on the unit with shipping containers begins to flash to identify the right shipping container. Once the items are placed in the shipping container, the associate pushes a button on the unit to confirm the pick. When all of the orders for that unit have been completed, the robot delivers it to one of six lanes in the outbound conveyor induction area (9).

**Packing/shipping:** At the conveyor induction station (9), an associate places the cartons on the outbound conveyor (10). They are automatically scanned, which generates a shipping label that is automatically applied. The sorter (11) then sorts the carton to the correct shipping lane (12). As with other product, cartons may be palletized for delivery to a store, or they may be floor-loaded for a parcel shipment to a business or direct-to-consumer order (5).
THE ROBOTS ARE COMING

Robotic materials handling technology is changing the way we move products in the plant and the distribution center.

By Bob Trebilcock, Executive Editor
Back at ProMat 2007, small crowds gathered around the booths of Kiva Systems, Seegrid and RMT Robotics even though all three had relatively inconspicuous booths. The crowds gathered because each supplier was demonstrating something new: small mobile units that ran around the limited floor space.

Although Kiva displayed an integrated picking solution that included portable storage units, most people didn’t quite know what to do with these gizmos. They didn’t look like traditional robots since they didn’t have arms. But they were also smaller than a traditional automated guided vehicles (AGV) and used different guidance systems.

What they did have was pizzazz. The technology they previewed has since become known as mobile robotics: autonomous vehicles that can shuttle materials around a factory or distribution center. Of course, the materials handling industry is replete with cool technologies that never made it from the exhibition hall to the distribution center floor. Since then, however, the Kiva (781-221-4640, www.kivasystems.com) goods-to-person picking solution has found a home in a number of high-profile warehouses, including the Office Depot facility on this month’s cover (see page 20). In addition, Seegrid’s (877-733-4743, www.seegrid.com) riderless vehicles are being used by a leading grocer to deliver pallets to the shipping dock so that pickers can remain in the aisle doing more valuable tasks. And, RMT’s (905-643-9700, www.rmtrobotics.com) technology is being used to deliver small quantities of parts to the line in lean, just-in-time manufacturing environments.


Fast forward to next spring in Chicago and the Robotic Industries Association (RIA, 734-994-6088, www.robotics.org) will co-locate its Automate event with the Material Handling Industry of America (www.mhia.org) at ProMat 2011 (www.promatshow.com).

What’s going on here? In part, it’s opportunity. The biggest user of robotic technology is the hobbled auto industry. That has led robotic solution providers to look to the distribution center as a new market. “Today, materials handling is the No. 1 application for robots and the one with the most potential for growth,” says Jeff Burnstein, president of RIA (see 60 Seconds with, page 58).

This is not a one-way street, however. Systems integrators and conventional automation providers are seeing an opportunity to integrate robotic technology with their solution sets. Why now? “The technology has become more reliable and the cost of implementing a robot is in line with the cost of hiring an associate in a distribution environment, especially in a multi-shift operation,” says Bryan Jensen, vice president of St. Onge Co. (717-505-8016,
Consider some of the offerings coming to market from conventional automation companies:

- Intelligrated (877-315-3400, www.intelligrated.com) is offering robotic arm retrofits for its family of Alvey in-line case palletizers.
- JBT Corporation (215-822-4600, www.jbtc-agv.com) is developing an AGV mounted with a robotic arm that can retrieve parts from storage and place them on an assembly line.
- If you consider an AGV a mobile robot – and AGV makers are members of RIA–Toyota Materials Handling (800-226-0009, www.toyotaforklift.com) and SI Systems (610-252-7321, www.sipa-systems.com) have added small industrial AGVs to their product lines.

This robot roundup raises several questions for end users: Is it all hype? Where do robots fit today? How are robots being applied? What's next?

Do the robot

So, is it all hype? After talking to nearly a dozen systems integrators, analysts and robotics companies, it seems we are at an early adoption stage, but something is going on, in part because robotic technology is not new.

“Conventional robotic applications have been around for decades, especially in manufacturing,” says Markus Schmidt, senior vice president at Swisslog. “What’s changing is the development of mobile robotic solutions that bring scalability and ease of use to markets that weren’t properly served before, like distribution.”

From an operational standpoint, all those years on the assembly line have paid off: Robots are no longer science projects; they are proven and reliable.

The increasing demand to build mixed case pallets is one of the key drivers for stationary robotic materials handling.

From a technological standpoint, the software driving robots has become more sophisticated, allowing end users to solve more complicated distribution problems and achieve real fill rates. “Software allows us to use two robots to achieve throughput of 2,000 cases an hour,” says Frank Carzoli, director of business development for Axium. “And, the software allows us to build the pallet in a specific sequence for an aisle, optimize the positioning of every box to maintain stability while making sure we don’t put a case of bottled water on top of a carton of eggs.”

Those breakthroughs were mirrored by the development of more sophisticated warehouse control systems to integrate robotics with conventional materials handling for complete solutions. “The robotics industry has had the ability to randomly stack cases for about 10 years,” says Mike Cicco, director of material handling engineering for FANUC Robotics (248-377-7000, www.fanucrobotics.com). “Now, the materials handling industry has figured out how to automate the depalletizing and sequencing of cartons to the robot.”

Technological developments coincided with changes in the marketplace that have driven the need for new solutions.

One key driver is the need for flexible and intelligent materials handling, says Steve Banker, service director at the ARC Advisory Group (781-471-1100, www.arcweb.com). “A highly automated warehouse drives down your unit handling cost in a way that can’t be done in a manual warehouse,” says Banker. “The risk is that your order profile is going to change and the automation is no longer appropriate.”

Banker thinks of robotics as intelligent and flexible materials handling that fills a middle ground between the conventional manual DC and automation solutions like conveyor, sortation and AS/RS that are bolted to the floor. “The throughput with robotics is not as high as a custom warehouse,” says Banker. “But neither is the investment. You’re looking at a two-year payback compared to a five-year payback for conventional automation.” Meanwhile, if your order profile changes in a robotic-driven warehouse, you can easily change your layout or add another robot to meet increased demand. “It’s a much less risky investment,” says Banker.

Indeed flexibility has been the key theme from Kiva, whose mobile robots deliver product on portable storage shelves to an order selector. “Not even the rack is bolted down,” says Mitch Rosenberg, vice president of marketing. “If you need to move
your operations, you can load the system onto a truck and move it over a weekend without disrupting operations. That’s a major advantage of this kind of flexibility.”

Driver No. 2 is the explosion in the number of SKUs, according to Bill Torrens, director of sales and marketing for RMT Robotics. “When a facility goes from handling 200 SKUs to 400 SKUs or more, you need a lot more space to store and palletize the product manually,” says Torrens. Robotics can readily adapt to an order fulfillment environment that is complex and dynamic, where every order is different.

Driver No. 3 is the ability to integrate robots with materials handling. In the not so distant past, a company bought a robot and then figured out what to do with it. Today, the robot, software and end effectors, and the broader materials handling solution is more likely to come as an integrated package.

The solution Westfalia and KUKA Systems displayed at NA 2010 is an example of this trend: Westfalia’s warehouse management system (WMS) manages the receipt and putaway of product into an AS/RS or mini-load system. Meanwhile, KUKA’s software determines the sequence the cases need to arrive at the pallet and then builds the load according to predetermined rules. Once the pallet is built, Westfalia manages the delivery of that pallet to a stretchwrapper and a staging lane for shipment. “What you’re really talking about is an automated order fulfillment system that happens to use robotics,” says Dan Labell, Westfalia’s president. “Not a robotic solution.”

Driver No. 4 is the availability of labor in an aging workforce that is more prone to an ergonomic injury. “If you have 50 people bending and lifting to palletize, you’ve got 50 opportunities for an injury,” says Brian Keiger, technology sales leader for KUKA Systems.

Finally, automation, including robotics, may be a strategy to competing with low-wage countries. “Some look at robotics as taking away someone’s job,” says Keiger. “Then there are those who realize that those jobs are going anyway if you don’t do something.” KUKA is working on a robotics solution for one American manufacturer that is looking at automation as a way to reduce their costs and keep their production in the United States.

Where robots fit today
In the past, justifying the cost of a robot wasn’t easy, especially in the distribution center, because the cost of warehouse labor was so much lower than the cost of labor in a factory. “An order selector just doesn’t cost as much as an assembly line worker,” says Jensen of St. Onge. For that reason, some of the earliest applications for robotics in distribution were in pharmaceutical warehouses doing e-fulfillment. There, a robot was less expensive than a pharmacist earning a six-figure salary. But as the software has gotten better and the cost of processing technology has come
down, the cost of a robot is more in line with the cost of a distribution center worker.

For those reasons, robotics in the DC is primarily attacking labor intensive processes that also involve a level of complexity. “If you have very few SKUs or if you’re shipping full pallets, you don’t need robotics,” says Kiva’s Rosenberg. “If you have complex order fulfillment requirements, if your order profiles and SKUs change often, and if you expect your business or demand for a product to grow over time, robotics can meet those requirements.”

As with any form of automation, the savings are most attractive in multi-shift environments. The ROI, however, can come from other factors. A robot is repeatable, accurate and reliable. That reduces errors and product damage. Those are important to dot.com companies shipping directly to consumers as well as suppliers that might face fines from big box retailers if their orders are inaccurate. “If you ship something wrong to a big box retailer, it’s going to cost you a fortune,” says Axium’s Carzoli.

But automating labor-intensive activities isn’t the only way to justify robotics. The higher productivity and throughput rates that result from automation may allow a company to change its logistics network. “You may find your savings from robotics beyond the DC,” says Labell. Indeed, Office Depot is using Kiva as a strategy to consolidate four warehouses into one.

In manufacturing, mobile robotics has emerged as an enabler of lean manufacturing strategies. “Manufacturers have put a lot of money into automating their manufacturing cells,” says RMT’s Torrens. “But they still have a lot of lift trucks shuttling parts to the line.” To reduce traffic, it’s not uncommon to have an operator drop off a pallet with a hundred units even though only 20 are required. When the 20 are consumed,
the pallet is returned to the warehouse. That’s an extra step and it requires more real estate for storage at the line.

“...A small mobile robot can make more frequent deliveries in smaller quantities,” says Torrens. “...Instead of replacing a lift truck, they create a virtual conveyor within the building.” Much like your car’s GPS system, the robots have a map of the facility in their processors and decide autonomously how to get from point A to point B. If the vehicle encounters an obstacle or a traffic jam, like a GPS, it can recalculate and figure out another route to get to where it needs to go.
Putting robots to work

How are end users putting robots to work? That may be one of the more interesting developments. While there are a number of companies developing materials handling solutions for robotics, the problems they are tackling are as varied as the processes in a distribution center and factory.

For example: In a traditional pick-to-pallet operation, an order selector transports a pallet from a pick zone to a staging area at the dock. That transportation time is a necessary evil that adds no value to the order. Using a Segrid mobile robot, the order selector picks to a pallet on the vehicle. Once the picks are complete in that zone, the vehicle automatically travels to the next picking zone or the dock, while the order selector stays in the pick zone and picks to another pallet on the next vehicle. To find its way, the unit is guided by a vision system that compares the features of a facility with a map of the facility in its processor.

Kollmorgen’s Pick-n-Go laser guidance and vehicle control systems can be retrofitted to a company’s fleet of lift trucks, transforming an existing fleet into driverless laser-guided pallet trucks. In its partnership with Kollmorgen, Dematic is using the technology as a core component of an integrated, voice-directed picking solution. Laser-guided vehicles deliver a new pallet directly to a picker, who is then directed by voice picking technology to pick to a pallet. Once the picks in that area are completed, the truck automatically delivers the completed pallet to shipping while another laser-guided truck delivers a fresh pallet to the picker.

Mobile robots have captured much of the spotlight since ProMat 2007, in part because they are perceived to be so different from what has traditionally been on the market. But there are a number of innovative solutions using stationary robotics:

RMT, for instance, also makes an overhead gantry robot that automatically picks from large floor storage areas and delivers the product in the exact sequence needed to build a pallet for a store or a route delivery truck.

Axium has developed solutions for layer picking and mixed case picking using one and two robots from ABB (248-391-9000, www.abb.com/robotics). Axium has also developed a robot for piece picking. Currently in use at a 3PL, the robot picks individual cartons of cigarettes to a shipping container. The completed cases could then travel to another robotic station to be palletized. While other companies have developed robotic solutions to build mixed SKU pallets, Axium’s solutions are built on a compact 8-foot by 20-foot skid that can be easily shipped and tied into an existing production line at a facility.

What’s next

Each of the solutions identified above are already being used. At the same time, new solutions are being developed. “We expect to see robots with two arms and stationary robots on mobile vehicles in the future,” says the RIA’s Burnstein. “Those will open up new opportunities for robotics.”

For example, Universal Robotics, (615-366-7281, www.universalrobotics.com) a Nashville-based solution provider, is developing solutions using two-armed robots from Yaskawa Motoman Robotics (937-847-6200, www.motoman.com). One currently in development is designed to depalletize mixed size loads at the receiving dock, says David Peters, Universal’s CEO, especially loads that may have shifted in transit or damaged product.

The robot uses a vision system and special sensors built into the end effectors to identify and pick a carton from a pallet to a container in a crossdocking operation. “Because the robot has two arms, it can do a closure on the carton and apply force from both sides like a human would,” says Peters. Moreover, the solution is designed to fit in a footprint no larger than would be required by a person. “The idea is that we can drop this into an existing work cell without any modifications to your processes,” says Peters. The goal: Deliver an 18-month ROI.

JBT is piloting an AGV that is equipped with a stationary robotic arm. The arm is used to pick production components from a storage area and then to load them onto a production machine in the assembly area. The vehicle is in the factory acceptance stage now, says Mark Longacre, JBT’s marketing manager.

What all of these solutions illustrate is that robotics is clearly here today. “We’re still in the early adopter stage,” says FANUC’s Cicco, “but we have the possibility for this thing to explode.”

“We’re still in the early adopter stage, but we have the possibility for this thing to explode.”

—Mike Cicco
director of material handling engineering
FANUC

FANUC Robotics has developed a completely automated robotic line for a food manufacturer that picks the product after it has been manufactured and frozen and places it in a flow wrapper. Once the product is wrapped and shrink wrapped, a second robot puts two of the products in a shelf-ready box. Those boxes travel by conveyor to another station where a robot places six boxes of product into a shipping case. From there, the case travels to a palletizing station, where a robot places the cartons on a pallet.
Last year Aetrex, a family-owned global leader of pedorthic footwear and foot orthotics, completed its 12th-consecutive year of double-digit growth, doubling revenue in the past five years. “Our goal is to become a major brand in footwear,” says Jeffrey Pike, vice president of operations for Aetrex Worldwide, adding that the company is on the cusp of a major push into the consumer market on a global basis.

To continue that growth, Aetrex made a strategic decision five years ago to outsource its manufacturing and position the company as the expert in pedorthic footwear and foot orthotics, focusing on the design and quality of its products and customer care. “Once we decided to go offshore with our manufacturing, we realized that we needed a warehouse management system (WMS) that could support our objective of improving our distribution, customer service and distribution channels,” Pike adds.

The solution was a WMS (Tecsys, 800-922-8649, www.tecsys.com) that provides real-time intelligence to link its customers, management and distributors while managing 20,000 different stock keeping units (SKUs) and filling 2,000 orders and 20,000 lines per day.

Since deploying the WMS and related applications, Aetrex has gained a significant number of supply chain execution capabilities and benefits:

- The volume of business has increased by 80% with no addition to head count,
- Fill rates have improved by 45%,
- Inventory accuracy has improved by 70%, and
- Costs have been decreased by 24%.

To service customers, the system receives orders daily through electronic data interchange (EDI), which triggers the picking process from inventory. Orders can be picked one order at a time or through a batch order process. Non-distributor orders are usually shipped the same day, with rush orders given a priority; if an order is received by 2:00 p.m., it is shipped the same day.

Aetrex also uses the system to manage orders it places with its suppliers. Orders are placed monthly and can take up to four months before they are received at Aetrex’s central distribution facility. Upon receipt, shipments are scanned into the WMS, followed by a stringent quality control process that includes a final inspection of all incoming product before putaway.

To streamline operations, the WMS alerts receiving in advance of incoming products that should be immediately shipped or put away into a stocking location. Down the line, EDI enables the system to generate an advanced ship notice (ASN) to advise the customer on a timely basis. This enables Aetrex to automatically pass orders through the entire system from receipt of an order to shipping and billing. It also helps to maximize customer responsiveness, increase turnover, reduce cost and meet trading partner requirements.

“The WMS has enabled us to grow at a very aggressive rate and achieve our strategic sales and customer service goals,” says Pike. “It has enabled us to increase our productivity, our volume and be able to manage our distribution and sales commitments.”
The worldwide industrial lift truck industry spent the better part of 2009 in a rut. Sales were down 39%, but it appears the worst may be over.

The lift truck industry spent the better part of 2009 stalled out. In last year’s Top 20 lift truck suppliers story, Modern reported “the fourth quarter [of 2008] saw sales come to a screeching halt.” Unfortunately, that trend continued for the next four fiscal quarters; worldwide lift truck revenue for 2009 went in reverse, contracting by 39%.
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# World’s top 20 industrial lift truck suppliers

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<th>Rank</th>
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<th>2009 revenue*</th>
<th>North American brands</th>
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<td>13</td>
<td>$296 million**</td>
<td>Manitou</td>
<td>Ancenis, France</td>
</tr>
<tr>
<td>15</td>
<td>Zhejiang Hangcha Engineering Machinery Co.</td>
<td>14</td>
<td>$251 million**</td>
<td>HC</td>
<td>Hangzhou, China</td>
</tr>
<tr>
<td>16</td>
<td>Hyundai Heavy Industries</td>
<td>16</td>
<td>$237 million</td>
<td>Hyundai</td>
<td>Ulsan, South Korea</td>
</tr>
<tr>
<td>17</td>
<td>Tailift</td>
<td>18</td>
<td>$100 million**</td>
<td>Tailift, World-Lift</td>
<td>Taichung, Taiwan</td>
</tr>
<tr>
<td>18</td>
<td>Combilift</td>
<td>19</td>
<td>$98 million</td>
<td>Combilift</td>
<td>Monaghan, Ireland</td>
</tr>
<tr>
<td>19</td>
<td>Hytsu</td>
<td>N/A</td>
<td>$86 million</td>
<td>Hytsu</td>
<td>Shanghai, China</td>
</tr>
<tr>
<td>20</td>
<td>Hubtex</td>
<td>20</td>
<td>$60 million</td>
<td>Hubtex</td>
<td>Fulda, Germany</td>
</tr>
</tbody>
</table>

*Fiscal year 2009 worldwide sales revenue. **Figure based on industry estimate. Figures based on foreign exchange rates as of 12/31/09.
But before you read on about last year’s industry woes, know this: Things appear to be turning around in 2010. In fact, Jeff Rufener, president of the Industrial Truck Association (ITA, 202-296-9880, www.indtrk.org) and vice president of marketing for Mitsubishi Caterpillar Forklift of America (MCFA, 713-365-1000, www.mcfa.com), says, “last year we thought things couldn’t get any worse. The industry bumped along in 2009, but the last fiscal quarter started to show some increase.”

So, with the stage set for improvement this year, just how bad was last year? Wicked bad. According to ITA’s worldwide industrial truck figures, shipments were down 39% in 2009.

And, it was down around the globe. Europe and Oceania took the biggest hit, each suffering a 48% decline from the previous year. The Americas weren’t far behind, experiencing a 43% decline. Africa saw shipments decline by 40%, which is significant because last year it was the only region to hold its ground and avoid the economic attack. Asia’s decline of 23% was this year’s lowest, but still a big blow, considering it only saw a 5% decline last year. (See the “Worldwide lift truck orders” table on right.)

So now that we know how the worldwide regions held up, or down, how did the Top 20 lift truck suppliers fare independently? Last year’s top five suppliers—Toyota, Kion, Jungheinrich, NACCO and Crown—still hold the top five positions. (See the table on p. 36 for the complete list of the world’s Top 20 industrial lift truck suppliers.)

Toyota maintained the top spot with $4.6 billion in revenue. The Kion Group (North American brands: Linde, Still, OM and Baoli), which acquired the Chinese Jingjiang Baoli Forklift Truck Co. in January of 2009, remains in the No. 2 position with $4.1 billion in revenue.

Jungheinrich also hung onto the No. 3 position with $2.3 billion in revenue for 2009. Rounding out the top five, Crown (No. 4) and NACCO (North American brands: Hyster, Yale) (No. 5) trade places in this year’s ranking with $1.6 billion and $1.5 billion, respectively.

Each of these companies topped the billion dollar mark, and combined they reached more than $14 billion in revenue for 2009, compared to $20.1 billion in the previous year.

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of orders</th>
<th>Percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>207,082</td>
<td>-48%</td>
</tr>
<tr>
<td>Oceania</td>
<td>12,451</td>
<td>-48%</td>
</tr>
<tr>
<td>Americas</td>
<td>128,246</td>
<td>-43%</td>
</tr>
<tr>
<td>Africa</td>
<td>9,953</td>
<td>-40%</td>
</tr>
<tr>
<td>Asia</td>
<td>207,207</td>
<td>-23%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>564,939</td>
<td>-39%</td>
</tr>
</tbody>
</table>

Source: World Industrial Truck Association statistics

Making the list
To be eligible for Modern’s annual Top 20 lift truck suppliers ranking, companies must manufacture and sell lift trucks in at least one of the Industrial Truck Association’s seven truck classes: electric motor rider; electric motor hand trucks; internal combustion engine; pneumatic tire; electric and internal combustion engine tow tractors; and rough terrain lift trucks.

Rankings are based on worldwide revenue from powered industrial trucks during each company’s most recent fiscal year. Revenue figures submitted in foreign currency are calculated using the Dec. 31, 2009 exchange rate.
To make the list, suppliers had to make at least $60 million in revenue last year compared to $98 million in 2008.

New to *Modern*’s Top 20 worldwide industrial lift truck ranking this year is Hytsu, which has headquarters in Shanghai, China. It makes an appearance at No. 19 with 2009 revenue of $86 million.

The combined 2009 revenue for all 20 companies on *Modern*’s list comes to $20.17 billion, compared to $28.99 billion in 2008 and $31.67 billion in 2007. But that downward spiral appears to be reversing itself. According to Rufener, this year the industry’s growth is already better than expected. He says that in the April 2010 quarterly reports, ITA member companies are reporting 15% growth over 2009, and through May, the suppliers are expecting more than 40% growth over the same time period last year.

That growth is extremely positive and 40% is good. But, Rufener says to remember that the first three months of 2009 were very slow with plenty for room for improvement. “I don’t expect that rate to continue,” he says, “but I do think it’s realistic to expect 2010 to average out at 25% growth over last year.”

It’s also realistic and highly likely, Rufener adds, that the industry will wrap up the year in the black, not the red. Rufener attributes the annual growth to a number of factors. First of all, he points out that the capital goods business is cyclical. Secondly, he says, “The industry tends to track in proximity to what’s going on in the economy in general, meaning the industry is GDP-sensitive. GDP in excess of 2.6% almost ensures the lift truck industry will grow.”

The general economy isn’t the only factor playing a role in the industry’s P&L statement. According to Rufener, companies are doing a much better job of leveraging their existing businesses. For example, he explains, NACCO has had a change in their distribution strategy. Where some dealers would represent either Hyster or Yale, they...
Another example of maximizing an existing investment is the recent manufacturing and distribution agreement between Jungheinrich and MCFA. With the German company exiting the North American market, Jungheinrich products will be designed and manufactured at MCFA’s Houston, Texas, operation and MCFA will be the exclusive distributor of the Jungheinrich brand. Jungheinrich has a successful brand and MCFA has a strong distribution network. So, the strategy is to put the two together and grow the respective businesses.

Chugging along
For the past two years, Modern has recommended keeping an eye on the emerging lift truck markets in China and India. Unfortunately, during the past two years, we’ve watched the overall industry submerge. But, with numbers finally headed upward and the industry getting back on a growth track, the third time is the charm and we repeat again: Modern will be keeping tabs on emerging Indian and Chinese lift truck suppliers.

In China, so far from January 2010 to June 2010, domestic forklift sales hit the 90,000-unit mark, up nearly 113% from 2009. Sales are expected to grow further, possibly reaching 180,000 lift trucks by the end of the year.

We’ll also stay tuned into electric trucks. In 2005, 55% of all industry orders were electric. By 2009, that figure had grown to 68%. While the orders for electric trucks are relatively unchanged for 2010, we’ll watch to see who plugs in by the end of the year.

Last, and certainly, not least, Modern will carefully watch the greening of the industry. True, during an economic downturn, internal combustion orders go down and electric orders go up because industries like food and beverage that traditionally use electric trucks tend to be more recession proof. But even as the economy improves and internal combustion numbers increase, the shift toward electric will be sustained for ecological reasons.

“Green is significant,” says Rufener. “Concern for the environment, concern for the cost of fossil fuel, and advances in technology and performance will result in the continued purchase of electric lift trucks.”

*Projected revenue: Jeff Rufener ITA president and vice president of marketing for MCFA says he anticipates the 2010 worldwide industrial lift truck market to grow about 25% over 2009 numbers.
Regardless of the style, lift truck suppliers are developing technologies that drive productivity improvements for users. With emissions control regulations and an increasing desire among users to be more environmental and cost-conscious about energy use, a number of trends have surfaced in the industry.

“Suppliers are looking at technology to improve productivity,” says Jeff Bowles, product marketing manager for Mitsubishi Caterpillar Forklift America (MCFA, 713-365-1000, www.mcfa.com), manufacturer, marketer and distributor of CAT, Mitsubishi and Jungheinrich lift truck brands. “Typical truck and warehouse designs, as well as regulations, can limit things like maximum truck speed, for example. So the trucks have to become smarter to become more productive.”

Developments include increased use of AC and alternative power sources, green technologies, better monitoring of fleets and outsourced maintenance. Here are five of the hottest trends in lift trucks.

1. Electric overtakes internal combustion

More electric lift trucks are sold in the United States than internal combustion trucks, at a ratio of approximately 60:40, according to Martin Boyd, national product planning and marketing manager for Toyota Material Handling, U.S.A. (TMHU, 800-226-0009, www.toyota-forklift.com). This represents a reversal of the ratio from 30 years ago, Boyd says.
New technologies and usage practices can help you maximize your fleet’s productivity and longevity while reducing your carbon footprint.

“Electric drive-train technology has gotten much better with the introduction of AC power in the U.S. market, and fast charging technologies have also improved,” he explains. Other reasons for the shift include growing environmental awareness, volatile fuel price and legislative pressures from the Environmental Protection Agency (EPA) and California Air Resources Board (CARB) to control emissions, Boyd adds.

With 2009’s economic downturn, electric truck purchases spiked to 67% of the market, an anomaly Boyd attributes to the continued sale of non-durable goods—such as food and beverage—that are typically handled by electric trucks.

“Durable goods like home improvement supplies and luxury items are primarily handled by internal combustion lift truck products, so as the economy improves and people start spending again, electric truck market share will likely return to the 60% level.

2. Alternative power sources
While more battery-powered lift trucks are in service than ever before, they still require dedicated space for change outs and recharging. They also are prone to performance degradation over time: As the battery’s power is depleted, lift truck performance declines. For those reasons, lift truck suppliers and a few users are in the process of evaluating alternative power sources, including hydrogen fuel cells.

The fuel cells are identical in size to lead acid batteries, converting hydrogen to electricity, with water as the only emission. Unlike batteries, fuel cells produce constant voltage until the hydrogen is depleted. While they are available now, their initial cost and infrastructure requirements make them inaccessible to most users.

“We are working with a large number of customers and fuel cell suppliers to make sure the trucks work and customers are satisfied with the vehicle’s overall functionality,” says Dave Norton, corporate product engineering manager for The Raymond Corp. (607-656-2311, www.raymondcorp.com). “As to when we’ll be seeing widespread use of fuel cells in lift trucks, my guess would be within a five- to 10-year timeframe.”

Norton suspects that tax breaks and incentives from the government will encourage more users to exchange their batteries for fuel cells, but points out that—for now—the justification for their infrastructure depends on the user’s size.

In addition to the emissions, space savings and continuous power benefits of fuel cells, they also offer enhanced safety, says Jonathan Dawley vice president of marketing for NACCO...
Materials Handling Group (252-931-5100, www.nacco.com), the manufacturer of Hyster and Yale lift truck brands.

“We deployed fuel cells in 250 trucks for a Chicago-area grocery distributor last year, and their return on investment came not only from the elimination of a dedicated battery changing room and personnel, but also enhanced safety and productivity. People no longer had to drive outside their designated work areas to get new batteries; instead they were able to refuel or top-off when they had downtime.”

Another future option may be hybrid diesel/electric or propane/electric powertrain systems, adds Toyota’s Boyd. “We’re currently monitoring Toyota’s recently introduced hybrid diesel/electric forklifts in Japan. Hybrids deliver 50% better fuel economy, and a 50% cut in emissions.”

3. Sustainability
Both electric lift trucks and alternative power sources contribute to many companies’ sustainability goals. With “being green” on everyone’s mind, lift truck suppliers are unveiling a variety of features that conserve energy while at the same time maximizing productivity.

“In all trucks—diesel or electric—there’s a finite energy source: battery capacity or fuel tank size,” says MCFAs Bowles. “The emphasis in the last generation of trucks has been how to best make use of that finite level of energy.”

New technologies that offer better energy efficiency include regenerative lowering in high lift equipment, such as turret and reach trucks, that feeds energy back to the battery, and a toggle-on fuel saver mode for LPG trucks that lowers the vehicle’s performance to 92% of full power, but conserves 20% more fuel, says Bowles.

“Even component placement can improve energy usage, such as repositioning the motors, hydraulic pump and valve to the front of a three-wheeled truck to shorten some power cables and hoses and eliminate others to gain more energy efficiency by pushing oil and current through shorter distances,” he says.

4. Analytics and fleet management
While the amount of data available from the vehicles themselves is practically boundless, it’s taken users a while to figure out how to best gather and analyze the information. Enter improved data and fleet management software to help streamline the process.

“Wireless systems gather data, collate and crunch it, and then put it in a format that’s easy for the user to use for better management of operators and fleets,” says Matt Ranly, senior marketing product manager for Crown Equipment (419-629-2311, www.crown.com). “The data includes fuel or battery usage, impacts and their severity, truck operation, speeds, cycles, productivity and checklists.”

As a paperless approach, many systems offer dashboard reporting to filter the information and convert it into useful metrics that can be shuffled to reflect a period of time—from comparisons of one day’s shift to another, or several weeks or months of information for trend reporting.

5. Maintenance and leasing programs
More users are shying away from handling their own lift truck maintenance, says David Spears, manager of busi-
Cheese supplier reduces lift truck impacts

After increasing its fleet to 19 reach-fork and stand-up counterbalanced vehicles and upping the size of its main warehouse from 40,000 to 110,000 square feet, Masters Gallery Foods prioritized addressing lift truck impacts and reducing vehicle, product and facility damage. The cheese product supplier, with headquarters in Plymouth, Wis., has 50 lift truck operators working during three shifts each day.

To manage both vehicles and operators, the company installed the iWarehouse fleet optimization system (The Raymond Corp., 607-656-2311, www.raymondcorp.com). As operators weren’t always timely in reporting impacts, the initial goal was better management through better monitoring.

“Lift trucks required premature maintenance to hoses or wheels as a result of impacts,” says Dan Murphy, warehouse manager. “We needed to find out when impacts were occurring so we could assess the cause and determine if additional training was required or if something in the facility was contributing to incidents.”

The system draws real-time information from on-board vehicle computers. Data is accessible to warehouse managers through a Web portal. Managers are immediately alerted about impacts as well as their severity. Additionally, the system monitors the average uptime and productivity of the trucks—even at a second facility 20 miles away.

“Our goal is to have 80% of our fleet in operation,” adds Murphy. “I can evaluate times of the day when usage is exceeding or not meeting that target, to determine if we need more trucks or if we should hire additional operators during a particular shift.”

Within five months of installing the fleet optimization system, impacts were reduced by 88%, Murphy reports. Further, the tracking encourages accountability and efficiency, manages new employee vehicle speeds, streamlines maintenance and eliminates paperwork for the OSHA-required, pre-operation checklists—all of which have contributed to the company’s pursuit of increased productivity, he adds.
**Customizable plastic pallet**

The 2,800-pound capacity edge-rackable universal pallet is offered in a 48 x 40 inch footprint. Fully customizable to meet unique applications, the pallet can incorporate molded-in metal or plastic reinforcing rods for rigidity and anti-slip rubber plugs on deck, rails and feet to stabilize loads. To prevent loads from shifting in transport, a 0.25-inch or 1-inch perimeter lip may be specified. The pallet is easily cleaned with steam, hot water and detergents. For easy handling from any orientation, four-way beveled fork entry openings are standard. Buckhorn, 800-543-4454, www.buckhorninc.com.

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**Stackable, reusable plastic pallet**

Fabricated of recycled, high-density polyethylene plastics, RACX pallets may be used repeatedly rather than be discarded. Fully recyclable at the end of their life, the pallets feature a picture-frame bottom and runners on all four sides for added stability. Engineered so the bottom pallet can handle a full static load when loaded pallets are stacked two or more high, the pallets offer unsupported rack capacities up to 2,200 pounds. Static load capacities are rated to 25,000 pounds and dynamic loads to 5,000 pounds. The standard size is 48 x 40 inches and options include rubber grommets or lips to keep contents from slipping. Decade Products, 616-975-4965, www.decadeproducts.com.

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**Nail-free wood pallet**

Offered for purchase or through a pallet lease pool, the Bison all-wood pallet features nail-free construction to eliminate nail pops that could damage products or cause worker injury. The pallet does not contain harmful additives and does not use non-sustainable petroleum-based resins. The pallets weigh 55 pounds—30% lighter than comparable wood pallets—and last 2.5 times longer. Featuring stiff construction, the pallets reduce vibration during shipping, minimizing product damage and reducing product packaging. Miller Dowel, 847-441-5125, www.bisonpallet.com.

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**Online application simplifies pallet management**

The pooled pallet supplier’s online application, Portfolio Plus, reduces administrative tasks throughout all levels of your distribution supply chain. The system’s features include the ability to coordinate orders and collections, submit resolution requests, and display physical asset movements. Additionally, the system offers real-time analytics and account health monitors with professional support. CHEP, 866-855-2437, www.chep.com.

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**Nest empty plastic pallets for improved storage ratio**

The SG nestable plastic pallet formed through high-pressure injection molding offers heavy load carrying capacity and no flowering. Employing strong welds and enhanced rigidity, the pallet is light weight to improve manual and automated handling. When empty, the pallet’s high nesting ratio provides for better storage. Rehrig Pacific, 800-421-6244, www.rehrigpacific.com.
Corrugated export pallet for one-time use

A corrugated pallet—offered as an alternative to wood, composite and plastic—combines the cost savings of an ultra-lightweight pallet with the strength and durability of conventional pallets. The disposable pallet is constructed of single or double-wall corrugated board with weatherproof adhesives. Offered in four capacities from 275 to 500 pounds, custom models can also be created. Intended for one-time use, the pallets are exempt from ISPM 15 guidelines, making them ideal for export. PalletKraft, 800-513-7562, www.palletkraft.com.

Aluminum pallets offer strength, durability

Constructed from four different aluminum alloys in a proprietary manufacturing process, an aluminum pallet incorporates closed section, thin walls with durability to withstand everyday wear and tear. Offered in two versions—the C5 and M5—both pallets measure 48 x 40 x 5.6 inches. The M5 has tighter deck spacing than the C5. Edge-rackable, the C5 holds up to 2,800 pounds and the M5 up to 4,000 pounds. Both nine-block pallets feature four-way entry, customized deck coverage, no open cavities and are 100% recyclable. ALX Pallet Systems, 248-282-5520, www.alxpallet.com.

Pallet for stacking and racking applications

For use in both racking and stacking applications, the medium-duty 40 x 48 x 6 inch Stack’R pallet is made of polypropylene plastic for food and agricultural use or may be formed from polyethylene. The all-plastic pallet cannot harbor pests, mold or fungus. Capable of tolerating a range of temperatures, the reusable pallet is 100% recyclable. It is offered with an open or solid deck. Features include four-way hand and fork truck entry, easy cleaning and a light weight for improved ergonomics. ORBIS, 888-307-2185, www.orbiscorporation.com.

The reason is simple: square tubes expose more surface area of the positive plates to the electrolyte, which delivers higher sustained voltages (and higher work capacity) than in round or flat plate designs, throughout the discharge cycle.

We call this the Ironclad® Effect, because it’s an advantage you get with every Ironclad battery from EnerSys®. To find the Ironclad battery that’s right for your application, call 1-800-EnerSys.
Reusable plastic pallet

Priced 30% less than similar pallets, the LDS4845-DIM plastic pallet is made from a mix of recycled materials, including high-density polyethylene, poly-propylene, and low-density polyethylene. It is molded on a low-pressure injection press and measures 48.5 x 46 x 7 inches. Weighing 58 pounds, the pallet holds a 2,700 dynamic load and up to a 12,000-pound static load. Sanitary, reusable and recyclable, the pallet resists most chemicals and features a full 1-inch lip around its perimeter for load security. To enhance strength, peripheral bottom stringers are included. Flexcon Container, 973-467-3323, www.flexcontainer.com.

Injection-molded rackable, stackable and nesting pallets

High pressure, straight-injection-molded pallets are offered in two styles: nestable (NP) and heavy-duty rackable (RP). The NP line is intended for grocery distribution, food service, convenience store distribution, export and general manufacturing. The RP line is ideal for food processing/packaging, pharmaceutical, chemicals, paper, captive distribution and pooling. Both styles are made from 100% recyclable, high-density polyethylene or polypropylene and use 10% less plastic than comparable pallets, reducing their carbon footprint through the use of less materials and their lighter weight. Monoflo International, 540-771-3064, www.miworldwide.com.

Polyethylene structural foam pallet resists mold, infestation

Made from high-density polyethylene structural foam that resists mold, bacteria and insect infestation, a 40 x 48 inch pallet meets strict tolerances to work with automated packaging systems. The pallet offers one-piece molded flow-through construction to minimize trapped water and cross-contamination. Easily cleaned and sanitized, the pallet will not splinter, rot, rust or crease. To prevent products from slipping off the in applications where banding or strapping is not used, an optional 0.5-inch intermittent lip around the perimeter of the pallet may be specified. TMF, 866-713-9446, www.protechpallet.com.
**Wipe-on label printer applicator**

Applying labels up to 40% faster than standard tamp applicators, the model 450W label printer-applicator uses a high-speed, wipe-on module. The module is powered by fans, which create a vacuum that holds the label in place prior to application. As the product passes the applicator, the label is applied, then wiped down by a follow-along roller to create adhesion without skew. For easy servicing, the stainless steel base cabinet offers easy access. The applicator accepts labels from 3 x 4 inches to 6 x 13 inches. All settings are made through a color touchscreen operator interface. For corner wrapping, an optional secondary wipe can be added. **ID Technology, 888-438-3242, www.idtechnology.com.**

**Automated order fulfillment, storage system**

Comprised of a dense 3D grid of self-supporting bins, the AutoStore order fulfillment and storage system incorporates a series of independent robots to move the bins. Providing dynamic pick locations, no shelving and automated, goods-to-person order fulfillment, the system optimizes storage density and pick efficiency for small cases, piece-picked items and residual product storage. The system can be adapted and expanded for changing business conditions or retrofitted into existing facilities. **Swisslog, 757-820-3400, www.swisslog.com.**

**Multi-colored LEDs direct picking**

Allowing multiple order fillers to work in a single zone to offset peak demand, the Trak3 pick-to-light system features multi-colored indicator lights for color-coded directed picking. This enables up to four order fillers per zone for simultaneous filling of multiple orders, or the ability to direct operators to perform value-added services. The energy-efficient LED displays are easy to read, simple to install and require minimal training. The system includes at-a-glance workload status screens so supervisors can assess zones and view deployed workers with their associated color during demanding times. **Intelligrated, 513-881-5239, www.intelligrated.com.**

**Sorter processes 100+ packages per minute**

The MB-100 multi-belt sorter for mid-range sortation handles and sorts a variety of products into high-density after-sort divert lanes or workstations. Processing more than 100 packages per minute, the system handles package sizes from 6 to 36 inches weighing up to 75 pounds. Modular in design, the 90° transfers and 30° diverts can be relocated when product sizes or field situations change to enhance space utilization and minimize footprint. The system is ideal for applications requiring pre-sorting, value-added stations, kitting, pre-shipping and shipping. **HK Systems, 262-860-6715, www.hksystems.com.**
**Protect personnel around loading docks**

The barrier rail industrial safety system provides a physical blockade to delineate high-traffic areas within a facility and protect personnel around loading docks and other areas. Offered in single- and double-rail heights of 17 and 43 inches, respectively. The barrier is easy to install, remove and relocate. The system features 12-inch rail panels fabricated from high-strength, 14-gauge steel. Secured by a base plate, three different column designs (end, corner and interior) are offered to simplify layout and expandability. Quick-connect hangers secure rails to the columns without hardware for easy lift-out and quick access. For durability, a powder-coat paint finish in one of 14 colors may be specified. Cubic Designs, 800-826-7061, www.cubicdesigns.com.

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**Budget-friendly cushion, pneumatic tire IC trucks**

The internal combustion S50CT cushion tire and H50CT pneumatic tire lift trucks offer streamlined functionality, making them cost effective for moderate-duty use. The trucks feature sealed electrical connectors, O-ring face seal fittings on the chassis and operator-friendly ergonomics with extra foot space and adjustable tilting steer column. Easy to operate, both models offer enhanced fuel economy and lift up to 5,000 pounds. To navigate tight spaces, an electronically controlled transmission produces smooth direction changes. As options, an integral sideshifter optimally positions loads, while electronically controlled inching yields better load positioning control. Hyster, 800-497-8371, www.hyster.com.

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**Move air in any direction with pivoting, oscillating fan**

Ideal for operations that lack overhead space, the Pivot 180 fan can be installed on a column or other vertical structure. The oscillating fan allows generated air to radiate 100 feet outward, enveloping a 180° arc from side to side for a coverage area of 12,000 square feet. For more concentrated air movement, the oscillating function can be switched off and the fan aimed in one direction. The fan also pivots up and down. Features include a touch pad and dial controller to adjust air speed and a lightweight, low-profile cage. Big Ass Fans, 877-244-3267, www.bigassfans.com.

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**Staging buffer for food handling**

To increase warehouse performance in food production, wholesale and retail facilities, the multi-shuttle automated storage and retrieval staged buffer system increases throughput up to four times over conventional systems with a 50% reduction in footprint. Capable of fitting into overhead spaces and under or over obstructions, the flexible system consists of multiple levels of AS/RS rack structure, shuttles, conveyor and software. Each level of the rack structure includes input/output conveyor and a shuttle that travels horizontally to access loads stored in the rack structure (typically totes or trays). An extraction device on each shuttle accesses the loads in the rack. Dematic, 616-913-5931, www.dematic.us.
IC trucks with cushion, pneumatic tires

Lifting up to 5,000 pounds, the GC050LX cushion tire and GP050LX pneumatic tire internal combustion lift trucks offer agility and maneuverability. Ideal for moderate-duty applications, both models use 12% less fuel than comparable vehicles to move more loads per gallon. Features include heavy-duty construction with basic features. Streamlined and easy-to-operate, the trucks use an electronically controlled transmission for smooth direction changes and simplified navigation in tight spaces. For operator comfort, an adjustable steering column may be tilted and extra foot room is included. Optionally, an integral side shifter optimizes load positioning. Yale Materials Handling, 800-233-9253, www.yale.com.

Friction drive conveyor follows I-beam path

Offered as an alternative for overhead and inverted power and free conveyors, a friction drive conveyor system uses drive-wheel technology to move loads. The system runs on I-beam, eliminating custom track sections and making the system easier to install and maintain. The conveyor offers a smooth continuous flow of products up and down inclines and travels up to 240 feet per minute. A heavy-duty model moves loads up to 2,500 pounds; the light-duty model moves 250-pound loads. For speed adjustments, the conveyors are controlled by variable frequency drives. Jervis B. Webb, 800-526-9322, www.jerviswebb.com.

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Regardless of the setting, air movement is crucial to the success of any establishment. With over 40,000 fans in circulation, Big Ass Fans has spent the past decade perfecting the science behind air movement so facilities worldwide can benefit from the latest advancements in large diameter, low speed fan technology. Distribution centers, warehouses and manufacturing plants are notorious for fluctuating temperatures. Big Ass Fans are designed to combat those temperature variances to provide maximum comfort. The unique airfoil and winglet design allows the fans to lift air up and over machinery and racking, maintaining constant, steady air flow year-round.

Every ceiling, wall-mounted and mobile Big Ass Fan is custom engineered with patented, award-winning aerodynamic designs, improving air circulation in spaces with or without existing HVAC systems. Though large and powerful, they are also incredibly energy efficient relying on very small motors, particularly relative to the volume of air movement generated. The perfection of the design is owed to the engineering team, valuable customer input and achieving ISO certification to reinforce our commitment to overall product integrity.

As the makers of sustainable products, Big Ass Fans supports a significant number of LEED NC v2.2 credits sought by architects, engineers and designers. We engineer fans capable of reducing energy costs today and in the future – a prerequisite for building products engineered to last.

**WHAT WE DO:**
Everyday, CHEP issues, collects, conditions and reissues more than 300 million pallets and containers. These durable platforms help manufacturers and growers transport their valuable products to distributors and retailers throughout the supply chain safely and efficiently.

**OPERATIONS:**
More than 500 service centers around the world are key to the successful collection, repair and issuing of pallets and containers.

**CONTROL:**
Our asset base is 385 million pallets and containers strong. And we handle more than 3 million equipment movements everyday.

**SAVINGS:**
Our unique pooling system enables users to reduce the need for capital expenditures and concentrate on both their day-to-day operations and core business competencies.

**SERVICE:**
We service more than 345,000 customer locations including many of the world’s largest companies: Procter & Gamble, SYSCO, Kellogg’s, Kraft, Nestle, Ford and GM.

**PEOPLE:**
7,000+ experienced professionals

**SCALE:**
46 Countries and Growing

**EXPERIENCE:**
Established in 1954 (50+ Years of Pooling Experience)

**SUSTAINABLE:**
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Outstanding Customer Financing Opportunities through CLARK Material Handling Company

Over the last several years CLARK Material Handling Company has become a leader in providing financial solutions to its customers. Farruk Ghani, Vice President Finance indicated that “CLARK Material Handling Financial Services has greatly contributed to the excellent growth of the company through financial programs tailored to customer needs”.

CLARK offers a wide variety of financing options that help reduce a customer’s monthly payments and may lower debt on their balance sheet. CLARK provides a full compliment of commercial leasing options including both operating and capital leases, with great incentives such as 0% interest available up to 36 and 60 months respectively, as well as subsidized interest programs that are available for up to 84 months. CLARK’s residual lease programs offer higher residuals and low interest rates resulting in lower monthly payments for CLARK customers.

CLARK’s new “0% for 60 Months” capital lease ($1.00 Buyout) program reduces a customer’s cost of ownership and increases cash flows for qualified customers. And it may result in substantial tax savings as well. Under the recently enacted HIRE Act of 2010 which extended the 2008 / 2009 enhanced Section 179 deductions for the purchase of qualified equipment, eligible businesses may be able to write off up to $250,000 of qualified equipment purchases (be sure to contact your tax advisor or accountant for more details on Section 179).

CLARK’s no-hassle process and fairness in financing helps CLARK’s customers make the right decisions when purchasing material handling equipment. To learn more about CLARK’s financial services including its new “0% for 60 Months” program contact your local CLARK dealership or visit www.clarkmhc.com.

As the world-wide leader in stored-energy products and services, EnerSys® has a history of innovation and providing quality, reliable products that meet our customers’ needs. The EnerSys Financial SolutionsSM program adds to this legacy by offering leasing services that meet our customers’ diverse financial requirements as well. The EnerSys product line meets the wide range of application requirements demanded in today’s continuously evolving marketplace. It makes sense that EnerSys Financial Solutions services meet the wide range of financial requirements from customized programs to 100% project financing. EnerSys Financial Solutions will even provide financing for equipment not provided by EnerSys.

It’s just another way we offer our customers Power/Full Solutions
At HAWKER, green is not a color, it is a culture. Since the introduction of energy-saving LifePlus® smart charging technology over 25 years ago, HAWKER has led the materials handling industry with clean, innovative products and processes that maximize productivity and minimize environmental impact.

High-frequency smart chargers deliver the greatest efficiency and highest power factor available—reducing utility consumption and demand while prolonging battery life and reducing water usage. HAWKER’s LifePlus® TC3 and LifeSpeed™ 3000 high-frequency smart chargers offer the operational flexibility of opportunity and fast charging with least-cost electrical efficiencies.

Resource-friendly batteries. HAWKER, winner of the American Environmental Review award, is a model for controlling environmental integrity at the point of manufacture. Our Ooltewah, TN plant is the industry leader in environmental compliance, and was the first to introduce Water Less® technology which utilizes 20% less water than standard batteries. Of course, HAWKER offers a recycling program that meets all EPA standards and guidelines.

Single-source green solutions. HAWKER manufactures both batteries and chargers. This allows HAWKER to design complete power systems that can optimize productivity and minimize cost. HAWKER’s exclusive “Harness the Power” on-site assessments analyze operations and provide specific recommendations for improving material handling productivity.

Call 1-877-7HAWKER to learn more about these Leading Edge GREEN Power Solutions.

Komatsu Forklift U.S.A.—Corporate Profile

In March 2009, Komatsu Forklift U.S.A., Inc. announced that it would close its production facility in Covington, Georgia, and transfer forklift production to Komatsu America Corporation’s production facility in Newberry, South Carolina. Komatsu Forklift U.S.A. has also moved their headquarters to the Komatsu America Corporate offices in Rolling Meadows, Illinois.

New Products

To further Komatsu’s commitment to the North American market we are introducing new products. That product expansion is already underway as Komatsu rolls out new offerings for our customers. The new products include three-wheel and four-wheel TOTAL AC models of electric cushion tire and pneumatic tire lift trucks in addition to narrow-aisle reach trucks. “The market has been gradually changing to more electrics, and as regulations mandate cleaner engines, we continue to anticipate more companies looking toward greener alternatives with less environmental impact.” Allmandinger says. “We wanted to introduce products that would provide those alternatives to our customers.”

For further information, feel free to visit our website at www.kfiusa.com

Komatsu Forklift U.S.A.
One Continental Towers
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Rolling Meadows, IL 60008
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High-tech lift trucks for every warehouse application.
Designed specifically for warehousing markets, the Jungheinrich® North American product offering includes electric counterbalanced, narrow aisle and walkie products with capacities ranging from 2,000 to 11,000 pounds. Our extensive line of forklifts is well-suited for diverse product applications, from stacking and order picking to warehousing and food processing.

Ergonomics designed for the real world.
With Jungheinrich proprietary 3-phase AC technology and the quality and ergonomics you would expect from German engineering, Jungheinrich warehouse products deliver maximum productivity with low cost of ownership.

Supported by MCFA’s extensive North American dealer network.
Backed by more than 300 dealer and service facilities throughout the United States, Canada and Mexico, our industry-leading dealer network completes the Jungheinrich experience with professional, timely and reliable support.

To learn more about Jungheinrich and our full warehouse product line, visit jungheinrich-lift.com.

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- 72” (1.87M) Stacking Aisle with 48” x 40” (1.2M x 1M) Load
- Triple Masts with Lift Heights to 30’ (9.14M)
- Narrow 32” (813mm) Wide Front Axle for Improved Maneuverability
- AC Traction and Hydraulic Motors and Controllers – No Motor Brushes
- One AC Hydraulic Motor – No Power Steering Motor
- 110 FPM Lift Speed and 7 MPH Travel Speed
- Increased Run Time Compared to Comparable DC Model
- Improved Operator Comfort and Safety
- Low Cost of Ownership with Greater Productivity

LANDOLL CORPORATION
MATERIAL HANDLING PRODUCT DIVISION
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Psion Teklogix: Over 40 Years of Mobile Computing Expertise
Psion Teklogix is the pioneer in quality mobile handheld computers and their application in the industrial b2b markets around the world. Our mobile devices are rugged, resilient and built to last. They are tailor-made solutions through our open innovation philosophy in which we co-create mobile hardware, software and services, together with our customers and partners on our community site, ingenuityworking.com.

What is Ingenuity Working?
Ingenuity Working is a place where Psion Teklogix along with our customers, partners and developers can utilize social media tools to share information, co-develop solutions and accelerate the way we respond to market needs. Having an open platform of communication allows everyone to be involved first-hand in the development of new products and services. Additionally, you can use Ingenuity Working to access expertise of developers and other partners in the Psion Teklogix ecosystem or start a dialog on a topic of interest to you. By sharing information and using Ingenuity Working to foster ongoing, real-time dialog that transcends companies we hope to collectively drive technology that better meets our customers needs.

Join the conversation today! Log on to ingenuityworking.com
Business Runs Smarter With Raymond

For nearly 90 years, The Raymond Corporation has been a leading global provider of material handling solutions that improve space utilization and productivity, with lower cost of operation and greater operator acceptance. Raymond’s history of innovation in warehousing and distribution operations is unmatched, beginning in the 1930s with the invention of the first hydraulic hand pallet truck. Soon after, Raymond introduced the first double-faced wooden pallet, making it easier and more efficient to transfer goods — forever changing the material handling world.

Throughout the years, Raymond has taken a leadership role in creating new solutions for our customers, enhancing productivity while lowering the cost of operations. From the first narrow aisle lift truck in the 1950s to the first AC-powered lift truck in 2001 to the introduction of the Raymond iWarehouse® fleet optimization system in 2008, Raymond is committed to generating the right solutions and right support to help meet the needs of our customers.

Raymond’s CustomCare™ philosophy demonstrates that we are committed to understanding our customers’ businesses and delivering a comprehensive package of custom solutions and personalized service that will help drive their costs down while running their operations better, smarter and faster.

Sustainable Material Handling

From our beginning in 1913 as a maker of wooden crates, Rehrig Pacific Company has produced a continuous stream of sustainable transport packaging products for industry.

Today, Rehrig is a world leading manufacturer of reusable and recyclable plastic pallets, sheets, bins and containers. Our various product lines from milk crates to distribution pallets save millions of tons of packaging waste from reaching landfills every year.

A typical Rehrig customer is looking for reusable storage and transport containers or platforms to handle their products efficiently through the supply chain. Driving out costs and reducing their carbon footprint are vital factors. Depending on customer requirements, our products can contain post-consumer recycled materials (PCR) including HDPE from milk jugs or detergent bottles. Post-industrial recycled materials such as PP and HDPE from old crates, trays and pallets can be reused up to 100%.

Rehrig Pacific roll-out carts and collection containers are extensively used in recycling and waste collection programs throughout North America. Rehrig directly closes the loop in many programs by buying the PCR collected which helps cities expand their recycling programs and dramatically reduces plastic packaging waste. Rehrig now offers programs to major retailers to collect and reuse their cardboard boxes instead of sending perfectly good packaging to landfills or recycling, before its time.

For almost 100 years, Rehrig Pacific Company has been a leader in sustainability and environmentally-friendly business practices.

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Toll-Free: 800-241-9693
Email: info@rehrigpacific.com
Web: www.rehrigpacific.com
Sonoco company profile

Founded in 1899, Sonoco (NYSE: SON) is a $3.6 billion global manufacturer of industrial and consumer products and provider of packaging services, with more than 300 operations in 35 countries, serving customers in some 85 nations.

Sonoco is a proud member of the Dow Jones Sustainability World Index (DJSI), a global composite index that recognizes leading global companies in terms of economic performance, environmental stewardship and social responsibility. Sonoco also has been ranked as one of the 100 greenest large companies in the United States in Newsweek’s inaugural Green Rankings, which evaluated the country’s 500 largest companies on their environmental performance, green policies and reputation.

The new Firma line of carrier products from Sonoco was designed and built to overcome the drawbacks of using conventional pallets for the storage and transportation of goods around the world.

Sonoco’s experience in protective packaging and commitment to sustainability led the company to investigate cleaner, greener and more effective ways to transport a wide variety of products. Unlike heavy traditional pallets that can splinter, break or damage products, Firma carriers are designed to be lighter and cleaner, reducing freight costs and lessening the potential for workplace injuries and debris.

To learn more about which Firma innovation is right for you, visit sonocotranspack.com or call 888/875-8754.

Stanley Vidmar Offers Enhanced Adjustable Racking Product Line

Stanley Vidmar, a manufacturer of premium custom storage solutions, recently unveiled its enhanced STAK product line that combines the flexibility of an adjustable rack system with a built-in picker. A viable storage solution for virtually any industry, the new STAK product line offers more flexibility in terms of vertical storage, load capacity, and space-savings.

Vidmar’s base model of adjustable racking (known as STAK) is comprised of a system of removable, adjustable pallets and a captive lifting and handling device that facilitates storage and retrieval in as little as 2 minutes. One operator can efficiently manage loads weighing up to 4,000 lbs. in less than 250 square feet.

STAK Max possesses the same features as STAK but can be constructed up to 24 feet high. Each pallet can accommodate loads up to 2,500 lbs. Six additional pallet widths are available (19 sizes total) that provide greater flexibility, reduce total system cost, and offer a hoist upgrade to double the standard operating speed of the system. Vidmar also offers flow-through pallets for storage areas equipped with sprinkler systems.

Vidmar’s STAK Max 5000 pushes load capacities even further—up to 5,000 lbs. with all the features and benefits of STAK Max.

For more information on Vidmar storage solutions, call 800-523-9462 or visit StanleyVidmar.com.
Charging Ahead: Toyota Looking Forward

Toyota Material Handling, U.S.A., Inc. is addressing the current market challenges and maximizing opportunities in industries that show great promise—such as the electric lift truck market. Last year electrics represented 67 percent of all lift truck sales. Toyota has listened closely to its customers’ needs in this growing market and responded with the new line of 8-Series 4-wheel AC electric lift trucks.

As the No. 1 selling lift truck supplier in the U.S., this year Toyota introduced its new line of 8-Series 4-wheel AC electric lift trucks that are ideally suited for virtually every indoor material handling need. These AC-powered lift trucks deliver longer runtimes and offers improved performance speeds — up to 21 percent faster travel speeds over the previous model.

The new 4-wheel models are manufactured exclusively at the company’s zero-landfill facility in Columbus, Ind., Toyota Industrial Equipment Mfg., Inc. Today, 99 percent of Toyota lift trucks sold in America are manufactured in the U.S.

Toyota is positioned to meet customers’ needs with a total of 189 dealership locations throughout the United States offering comprehensive customer service and support, including one-stop shopping for both new and used lift trucks, rentals, parts and service, fleet servicing and financing.
Modern: RIA is going to co-locate its Automate show with ProMat in 2011 for the first time. Why now?

Burnstein: The time is right. Historically, 60% to 70% of industrial robots have gone into the auto industry. In the early years, it was welding. Over time, however, materials handling has become the leading application. While there’s a lot of materials handling in the auto industry, we think there is opportunity in other industries including food and beverage, pharmaceutical and distribution. In light of that, it’s time to position our show with an event that has a reach into those industries.

Modern: Are your members seeing interest in robotic technology from distributors?

Burnstein: Robots are being used now to do everything from making sushi to assisting in surgery. And, there is definitely a movement to get robots into the warehouse. We’re seeing some interesting things with industrial robotic arms on mobile bases. There are developments around two arm robots that can work side by side with people. Eventually those could be mobile. Now, when you get robots working side by side with people, safety becomes important, but the technology is moving toward intrinsically safe robots.

Modern: Robots aren’t new. What’s driving that interest?

Burnstein: Several factors. The technology has improved. It’s more reliable, and it’s more affordable. There are new products, particularly for warehousing, and new companies that did not exist before. On the other end, there is a recognition that automation gives us the advantage we need to compete with cheap labor. Businesses believed that everything had to go somewhere else because we couldn’t compete with low-cost labor. Now, I think people are realizing there are drawbacks to shipping everything off shore. Automation is getting a second look with companies that never thought about it before.
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