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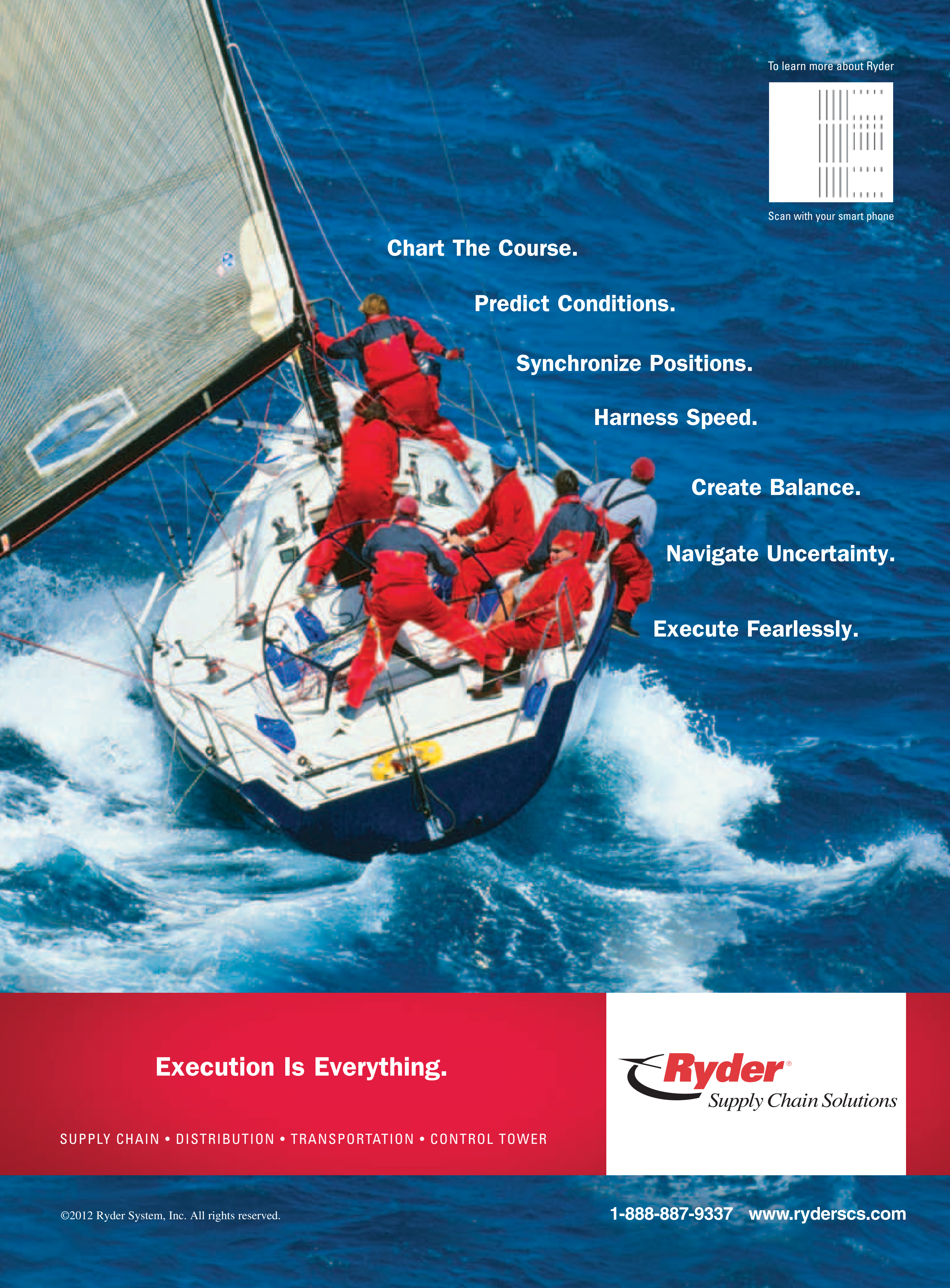

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CHECKINGIN

Keith Biondo

by Keith Biondo | **Publisher**

Green Leadership for Lean Times

Current economic conditions are cooling enthusiasm for green initiatives in some quarters. But not in Bentonville, Ark., where Walmart recently released its *2012 Global Responsibility* report. Someone once said, "as Walmart goes, so goes the nation." I don't know if that's true, but despite lean times, the retailer is providing leadership in supply chain sustainability.

Back when the economy was humming along in 2005, Walmart set a sustainability goal of doubling fleet efficiency by 2015. In 2008, the company delivered three percent more product while driving seven percent less, a savings of almost 90 million miles that year. Walmart also set what it recognized as vague company-wide goals for overall sustainability: To be supplied 100 percent by renewable energy; to create zero waste; and to sell products that sustain people and the environment. The retailer didn't know exactly how or when they would achieve these goals. But as with everything Walmartian, they wanted to be ambitious. And they still are.

Lofty goals? Yes, but no detail is too insignificant. Consider the replacement cap program for Glade aerosols, conducted in partnership with SC Johnson, that saved approximately 234,000 aerosols from the trash. What a great example of the business case for green. Walmart makes the money previously sent to the landfill, but the environmental ripples are far-reaching considering how much energy it took to make the metal, manufacture the cans, fill them with product, and ship them. All those savings go beyond Walmart and benefit their extended value chain partners.

Other notable achievements from the *Global Responsibility* report:

- In 2011, Walmart US prevented more than 80 percent of its waste from going to landfills, returning more than $231 million to the bottom line.
- Walmart US improved private fleet efficiency by almost 69 percent in 2011 vs. 2005.
- The retailer delivered 65 million more cases while driving 28 million fewer miles in 2011.
- Walmart is working with vendors globally to reduce packaging waste.
- The Environmental Protection Agency ranks Walmart as the second-largest onsite green power generator in the United States, generating 1.1 billion kilowatt hours annually.
- Walmart is working with Eaton, Meritor, Freightliner, and Peterbilt to co-develop more fuel-efficient and/or hybrid tractors.

For Walmart, being green and sustainable is core to operating efficiently, and that is closely tied to what they call their "productivity loop." They believe that loop is central to keeping their marketing edge.

Bottom line: Walmart may undertake green initiatives for altruistic "global responsibility" reasons, but being green keeps them lean and efficient, and tunes their productivity loop to keep prices as low as possible. ■

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Keeping Shipping Costs in Check

With fuel costs continually rising, and consumers demanding faster delivery—preferably for free—it is more important than ever for companies to control their shipping costs. John Haber, founder and CEO of consulting firm Spend Management Experts, offers these tips for managing freight costs.

1 **Carefully analyze your current carrier base.** Be sure to take into account all potential providers. If you send a significant number of business-to-consumer shipments, other carriers may offer alternate services to the major expediters and the U.S. Postal Service (USPS).

2 **Understand your unique shipping profile.** Being able to coherently discuss your shipments' characteristics—such as weight, zones, and product mix—gives you more negotiating power.

3 **Consider hybrid shipping services.** Because they use USPS for last-mile delivery, hybrid shipping services enable you to reduce or avoid costly delivery and fuel surcharges. Overall, hybrid freight costs are lower, and many companies offer the same transit times as UPS and FedEx shipments.

4 **Consolidate your carrier data into one central location.** This allows easier data access for making informed decisions, assists with management reporting, and can provide more comprehensive audit controls.

5 **Push back on annual rate increases.** Rates have increased twice in a single year for several transportation modes. Don't simply accept higher rates from your carriers—ask for something in return.

6 **Create solid contingency plans.** In 2011, supply chains were devastated by natural disasters and extreme weather. Make sure you have a tree of suppliers; you can never have too many branches.

7 **Prevent switching barriers.** Carriers provide subsidies for consulting and technology to create switching barriers. It's important to have platforms that support a multi-carrier environment. Ensure your logistics systems are open and capable of supporting multiple carriers so you can easily switch from one to another.

8 **Pay only what you contractually owe.** With skilled personnel and thorough audit processes in place, you can monitor service levels for potential refunds due to poor service.

9 **Understand time-in-transit differences between services.** Why pay more for an expensive airfreight delivery that arrives at the same time as a low-cost overnight ground shipment? Companies that make this mistake contribute to millions of dollars in overspending annually.

10 **Reduce payment cycles.** Because many organizations are extending payment terms, carriers may be willing to provide discounts for prompt electronic payments. At today's interest rates, the float from extending payment terms from 15 days to 30, for example, may not be worthwhile. ■


Con-way.
Menlo.
WORLDWIDE LOGISTICS

as told to Merrill Douglas

Mary Foster **has served as vice president, supply chain management, at Inteva Products in Troy, Mich., since 2007.** **Inteva is a major global supplier of automotive closure systems, interiors systems, motors, electronics, and roof systems.**

RESPONSIBILITIES

Direct and indirect material purchasing, logistics.

EXPERIENCE

Capacity planning, purchasing, Ford Tractor Operations; various positions in purchasing and production control, director of supply chain management, director of value chain optimization, director of business processes and planning, Ford Motor Company.

EDUCATION

Denison University, Granville, Ohio, BA, French, 1976; University of Detroit, Mercy, MBA, management, 1980

Mary Foster's Excellent Adventure

IN 2006, AFTER 30 YEARS WITH FORD MOTOR Company, I accepted an offer of early retirement with pleasure and gratitude. About one year later, I joined the executive team of Inteva, a new, privately owned company formed from two divisions of automotive parts supplier Delphi. It has been an adventure.

Part of the initial excitement stemmed from the fact that we had to create so much from scratch, including a logistics organization and network, and an indirect procurement organization.

I had little experience in indirect procurement, and we had no idea how many items and products we'd be responsible for buying. Often we discovered that we needed to purchase something only when an emergency arose. Somebody would say, "We need a forklift," and we'd say, "Who buys forklifts? I guess *we* do."

The day we launched as Inteva in 2008, a strike at American Axle impacted one of our largest customers' operations. We survived that strike and ran the business profitably for the year, but then came the economic crisis of 2009, including bankruptcy declarations by General Motors and Chrysler.

Because Inteva started in a market crisis,

The Big Questions

What do you do to recharge your batteries?
Boating with my husband on a lake in northern Michigan, where we have a house; power walking; and reading fiction.

What's your alter-ego dream job?
Coaching college football. I love the sport, the excitement, and the enthusiasm of college-age players.

Do you have a superstition?
I have to leave a house by the same door I came in. It's the Irish in me.

What's the biggest career lesson you've learned through a disappointment?
If you're in an environment involving corporate politics, you have to decide to play them or find someplace else to work. It's impossible to simply rise above them.

What's on your Bucket List?
Golfing at St. Andrews and Pebble Beach; watching a Final Four NCAA tournament game from floor seats; riding in a hot air balloon over the Loire Valley; and taking a cooking tour through Tuscany.

being resourceful and responsive is now ingrained in our culture. There's nothing we can't do as a team if we put our minds to it, and we're not going to let our customers down.

Recently, my work has involved a lot of process integration, as a result of Inteva's 2011 acquisition of the Body Systems business of ArvinMeritor (now Meritor). When that merger took effect, the size of our company doubled overnight.

Since then, we've been analyzing many business processes from both sides of the company. For each process, we determine the best practice, then apply it globally.

For example, we're working on "business opportunity-to-contract" – the process that starts when a customer asks us to quote a piece of business. It includes developing our internal costs, getting quotes from our suppliers, securing internal approval, then making an offer to a customer. We might go through this several times before the customer awards the business.

Supply chain processes inside the four walls are easy to streamline, document, and implement. But business opportunity-to-contract involves operations, sales, engineering, supply chain, and finance, making the challenge much more complex.

I'm extremely proud of the work we've done since Inteva was born four years ago. We knew we'd be successful, but before we launched we had no idea how many market and industry challenges we would face. Our CEO had confidence all the way through, and he treats his executives as a team. We make decisions with the full engagement of all. That's a major reason we are successful today. ■

NOTED

THE SUPPLY CHAIN IN BRIEF

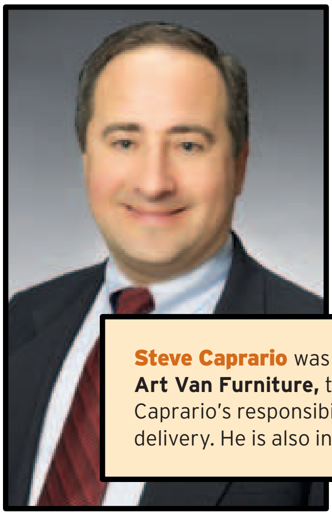
SEALED DEALS

◀ **Geodis Wilson** has been selected by stationery manufacturer **BIC** as a logistics partner in Dubai, UAE. Under a two-year contract, Geodis Wilson performs a variety of warehousing and logistics functions for the multinational company.

▶ **Organic Valley,** the largest organic food cooperative in North America, deployed new technology solutions from **NTE LLC,** a multi-tenant platform SaaS, on-premise ERP provider. The solutions replace Organic Valley's existing VAN systems and provide B2B collaboration with its trading partners.

Langham Logistics signed a three-year contract with **Toyota Motor Sales Inc.** to manage a logistics operation in Los Angeles. This operation handles the fulfillment and distribution of Toyota's marketing materials and trade show events, and distributes merchandise to dealerships.

UP THE CHAIN



Whirlwind Steel Buildings, which manufactures metal building systems and components, named **Manoj Lakhi** vice president of supply chain and strategic planning. Lakhi has been acting vice president in this area for the past five years.

J.C. Penney Co. appointed **John Singleton** as executive vice president, chief supply chain officer. Singleton previously worked for Abercrombie & Fitch, where he was responsible for distribution, transportation, trade policy, and brand protection functions.

Walgreens tapped **Reuben Slone** as its senior vice president of supply chain management. Slone assumes leadership responsibility for distribution, transportation, systems integration and engineering, and Lean and Six Sigma supply chain initiatives. Slone comes to Walgreens from OfficeMax, where he served as executive vice president of supply chain and general manager of services.

Steve Caprario was hired as vice president of warehousing and distribution for **Art Van Furniture,** the largest independent furniture retailer in the United States. Caprario's responsibilities include all facets of logistics, central services, and home delivery. He is also in charge of quality assurance and repair center operations.

m&a

Livingston International finalized the acquisition of the customs and trade compliance services of **JPMorgan Chase Bank N.A's global trade business.** This strategic acquisition includes the operations and technology of the former Vastera business, and builds on Livingston's international trade expertise and offerings within the United States and Canada, while expanding its services to Mexico, Europe, and Asia.

Transportation and logistics services provider **Roadrunner Transportation Systems** acquired **D&E Transport,** Clearwater, Minn., an asset-light flatbed carrier focused primarily on food and agricultural products. The acquisition broadens the service offerings within Roadrunner's truckload and logistics business segment, and expands its flatbed capacity and customer base.

Global lead logistics provider **Odyssey Logistics & Technology (OL&T) Corporation** purchased Palos Heights, Ill.-based **Interdom Partners,** one of the largest railway intermodal companies in the United States. This strategic acquisition expands OL&T's capabilities to support both the domestic and international shipping markets.

SCI Logistics purchased **White Glove Transportation Systems Ltd.,** a leading provider of highly specialized transportation solutions. The newly formed SCI White Glove Services will handle any shipment that requires special care and handling — not just to and from a loading dock, but also safe installation or removal of products.

recognition

Melton Truck Lines, an air-ride flatbed carrier based in Tulsa, Okla., received the **President's "E" Star Award for Export Service.** The "E" Awards are the highest recognition any U.S. entity can receive for making a significant contribution to the expansion of U.S. exports. Melton Truck Lines was recognized for facilitating export expansion through transportation.

Kimberly-Clark Corporation earned the **2012 Circle of Excellence Award** from the Distribution Business Management Association, a leading business and academic forum. The award recognizes Kimberly-Clark's leadership in sustainability and environmentally responsible supply chain management.

Avery Dennison, which specializes in labeling, packaging, and supply chain solutions, awarded **Con-way Freight** the distinction of **2011 Best Collaboration by an Indirect Supplier.** Award criteria includes consistently delivering superior quality, on-time and within-budget service, competitive pricing, constant benchmarking, and implementation of market best practices. Con-way Freight was recognized for excelling in all evaluated areas and for successfully reducing damage claims for Avery Dennison by more than 40 percent.

The National Shippers Strategic Transportation Council (NASSTRAC) presented its **2012 LTL Carrier of the Year** award to **YRC Freight,** a subsidiary of YRC Worldwide Inc. The annual NASSTRAC awards program recognizes carriers that have demonstrated excellence, and helps shippers identify the "best of the best" in carrier performance and value.

Michael Iden, a Union Pacific (UP) employee from Chicago, Ill., was awarded the **2012 John H. Chafee Environmental Excellence Award** by the Association of American Railroads for the highest level of environmental stewardship. As a 38-year veteran of the railroad industry, and general director of car and locomotive engineering at UP, Iden helped pioneer more than 40 new fuel efficiency improvement and emissions reduction technologies. He also played a key role in developing ultra-low emitting locomotives.

3 WAYS LOGISTICS CAN KEEP HIGH-TECH CUSTOMERS COMING BACK.

When UPS surveyed leaders in high-tech companies, we learned that a key challenge is maintaining the bottom line while improving the customer experience. This balancing act is not impossible. It just takes logistics, by UPS.

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TRENDS

SHAPING THE FUTURE OF LOGISTI

4 Supply Chain Predictions For the Next 4 Years

by Joseph O'Reilly

Four trends are expected to impact global logistics organizations over the next four years, according to Gartner, a consultancy based in Stamford, Conn. The predictions come as 60 percent of companies surveyed as a primer for Gartner's July 2012 Supply Chain Executive Conference in Sydney, Australia, say they view logistics as non-strategic.

"While logistics operations may be out of sight, out of mind, logistics is under significant pressure to deliver near-perfect performance, especially as business conditions become more complex, risky, and difficult," says C. Dwight Klappich, research vice president at Gartner.

Gartner predicts that by 2016:

1. More than 50 percent of Global 1000 logistics organizations will be required to systematically report verified emissions and environmental data. The shift from aspirations and feel-good platitudes about sustainable logistics to verified requests for accurate environmental and greenhouse gas emissions information and actual performance outcomes is being catalyzed by industry groups, market expectations, and regulations.

2. Fewer than 10 percent of logistics organizations will have a chief compliance and risk management officer. As supply chain complexity and risk grow, only 14 percent of companies are positioned to effectively exploit risk. Few have elevated compliance and risk management to an executive-level position. While compliance, risk management, and security are all issues supply chain management (SCM) organizations deal with today, responsibility for understanding and managing them is still scattered across the business.

3. Twenty percent of SCM organizations will adopt a supply chain execution convergence application strategy. In Gartner's survey, 35 percent of businesses identify as an issue the inability to synchronize end-to-end business processes, which will increase demand for SCM application convergence. Most SCM organizations struggle with functional and application silos that make orchestrating and synchronizing business processes nearly impossible.

4. Slower global trade growth will force shippers to adjust from proliferation to optimization of international flows. Shippers will evaluate global sourcing options more carefully in order to gain economies of scale and visibility, and to manage risks associated with volatility in currency exchange rates, taxes, and margins. To improve efficiency and reduce costs, companies will focus attention on supply chain execution elements, including network and inventory optimization, warehouse and inventory management systems, and transportation management systems.

Got Culture?

As on-demand transportation and logistics technology become more economical and easily deployed, and standards such as Lean, Six Sigma, and SCOR are more widely accepted within the supply chain, the importance of human capital continues to grow. Whether it's C-level leadership acknowledging and supporting supply chain, or a workplace culture that incentivizes performance, "people power" is emerging as a major competitive differentiator.

Land O'Lakes offers a telling example. At the April 2012 Supply Chain World Conference in Miami, Ken Litke, vice president of supply chain, spoke about how the company aspires to double the size of its business in the next five years. It's an ambitious goal. But Land O'Lakes

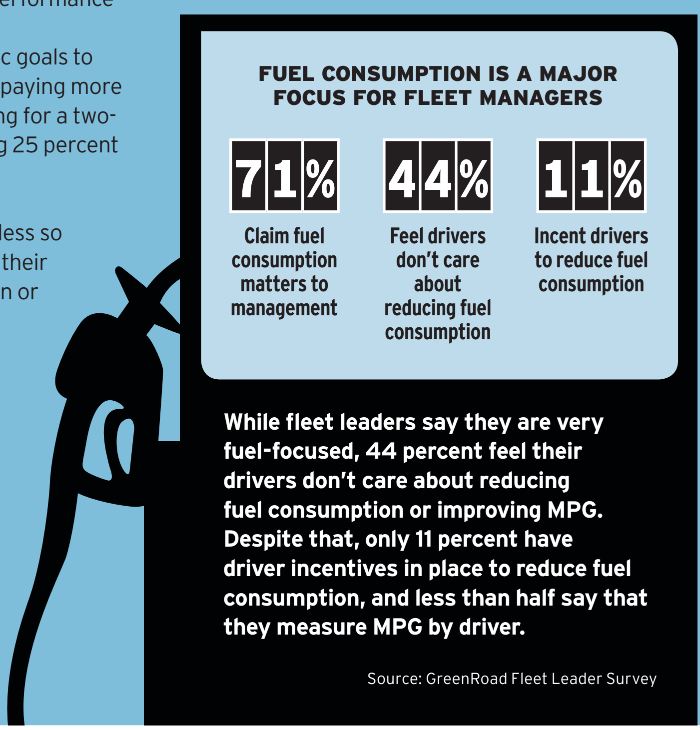
Pain in the Gas

Companies are paying close attention to fuel consumption—and for good reason, according to a recent GreenRoad survey of fleet operators. Sixty-one percent of respondents, covering a broad range of industries, fleet types, and sizes, report that fuel represents more than 25 percent of their fleet costs. Almost all those polled expect fuel costs to rise in the next year, according to the Redwood City, Calif.-based driver performance and fleet safety management company.

Surprisingly, only 55 percent of companies cite specific goals to reduce fuel costs—suggesting that many are resigned to paying more at the pump. The most conservative companies are aiming for a two-percent reduction, and the more aggressive are targeting 25 percent cuts over multiple years.

Among the survey's other key findings:

- Fuel consumption is a huge focus for management, less so for drivers (*see chart, right*). A majority of managers feel their drivers are not concerned with reducing fuel consumption or improving miles per gallon (MPG).
- While fleets generally measure MPG across a variety of metrics—specific vehicle, vehicle type, and division—only one-third of survey respondents claim to measure fuel consumption by driver.
- More than 50 percent of companies have specific goals for reducing fuel consumption, but their methods for achieving these goals vary. Approaches include everything from monitoring idling and leveraging more fuel-efficient vehicles to driver training, better reporting and communication, route improvements, and speed reductions.



has some experience: It doubled the size of its business over the past five years.

One growth driver is its Purina Mills feed operation. Land O'Lakes has ownership of all U.S. feed apart from the pet food business, which belongs to Nestlé. It's the world's number-one supplier of feed to zoos. Land O'Lakes also has an egg operation and dairy, the brand magnet.

"The company is very complex," says Litke. "Our dairy supply chain is demand-driven from a consumer perspective. But it's also supply driven, because cows don't care about seasonal peaks. We have to convert their perishable milk into dairy products in the spring when milk levels are high, but our demand peaks during the fourth quarter and holidays."

On the feed side of the business, Land O'Lakes has 30,000 SKUs produced – many made-to-order with a 24-hour lead time – at more than 60 global locations.

Land O'Lakes bases its dairy supply chain system on people and culture.

Given the complexity of its expanding global business, two years ago Land O'Lakes endeavored to set up its own processes, based on the Toyota Production System, to drive efficiencies throughout its supply chain. Litke refers to the model as the company's "house." The two guiding principles are process and culture.

"The foundation of our house is people and a winning culture," he explains. "Next are three cost pillars – labor productivity, line efficiency, and material yield – in addition to quality and food safety, customer service, and the environment. Finally, a roof of simplicity and continuous improvement covers everything we do.

"A pillar could fall and the house would stand," he adds. "But if our foundation crumbles, we're homeless. We spend a lot of time inspiring and empowering our workforce."

The Land O'Lakes Production System looks good on paper but the proof lies in the pudding – made with its dairy products, naturally. The company is working with facilities throughout its production network to increase operational performance and material yield by finding a better balance between people and process. Though Land O'Lakes has already begun the journey, it's still a work in progress. ■

GLOBAL

THE WORLD AT A GLANCE

by Joseph O'Reilly

Middle Eastern air carriers, such as Air Arabia, continue to lead the industry in growth.

Air Cargo Growth in Holding Pattern

Hitting bottom might be a sign of better things to come. Freight demand was down 4.2 percent year-over-year, according to the International Air Transport Association's (IATA) April 2012 global traffic results. While some of this volume degradation can be attributed to monthly volatility, some signs indicate that different areas of the world may be on the cusp of a growth trend after bottoming out at the end of 2011. Middle Eastern airlines, for example, are responsible for 80 percent of current cargo level improvements. Still, IATA is cautious about any mid-term optimism as Europe's economic woes continue to unfold.

Among IATA's domestic and international airfreight findings:

- Asia-Pacific carriers saw a 7.3-percent decline in demand in April, well ahead of 4.1-percent capacity cuts. This reflects weakening exports from China.
- European airlines saw a 4.9-percent fall in cargo traffic compared to 2011, despite cutting capacity by 0.2 percent.
- North American carriers showed a 6.4-percent drop in demand, with a 2.9-percent cut in capacity.
- Latin American carriers recorded a 3.6-percent fall in demand, even though capacity expanded by 8.8 percent compared to April 2011.
- Middle Eastern carriers were a bright spot, with a 14.5-percent increase in demand. But this was behind a 15.1-percent increase in capacity.
- African carriers showed a 6.1-percent increase in demand, behind a nine percent increase in capacity.

Singapore is the world's largest transshipment port for cargo containers bound for the United States. The two countries are working together on security initiatives.

U.S., Singapore Agreement Strengthens Security Commitment

U.S. efforts to secure supply lines at the point of origin reached another milestone with the recent agreement between the U.S. Department of Homeland Security and Singapore's government. The agreement reaffirms a shared commitment to address global supply chain security, while facilitating and sustaining trade growth.

Singapore is home to the world's largest container port and an airport that ranks 11th in the world in cargo tonnage. U.S. foreign direct investment in Singapore hit $106 billion in 2010 (the latest data available), marking a 19-percent increase from 2009.

The Joint Statement on Supply Chain Security sets out key principles that both countries agree should form the basis of efforts to enhance global supply chain security and resilience. These principles include adopting a risk-based and multilayered approach to supply chain security, reinforcing the importance of international cooperation, mutually recognizing national programs and measures, and establishing ongoing dialog with industry.

The joint statement builds on the two nations' existing cooperation in supply chain security, including development of the APEC Trade Recovery Program and Singapore's participation in U.S. initiatives such as the Radiation Detection (Megaports) Initiative.

South Africa Ripe for Fruit Crisis

South African fruit growers are counting on the transportation and logistics sector to help ensure industry survival, according to a recent article in *Engineering News*, a South African media outlet.

Deflated returns on export fruit sales, escalating production costs, exorbitant logistics costs, and inefficiency and ineffectiveness at the port level are converging to threaten the future of South Africa's fruit-growing industry, says Justin Chadwick, chairperson for Fruit South Africa, a domestic trade association.

The country's notoriously poor road infrastructure adds supply chain risk and cost. Fruit easily bruised during transport requires more packaging for protection.

South Africa's port situation is even worse. Fruit farmers exporting fresh produce face lengthy delays, and ships calling at the country's busiest container port in Durban are forced to wait or are redirected to other ports because of insufficient capacity. And a recent spate of labor strikes by port workers has only exacerbated the situation.

Shippers now have the options of paying extra for cold storage at the port or seeking alternative transportation routes through neighboring countries such as Mozambique and Namibia.

[ ]

Taiwan Faces Dropped Phone Calls…and Recessionary Fears

Europe's economic crisis is beginning to take a toll on Asian markets. For example, after being number-one for 14 years running, Nokia's shipments of 83 million handsets in the first quarter of 2012 ranked second among international vendors.

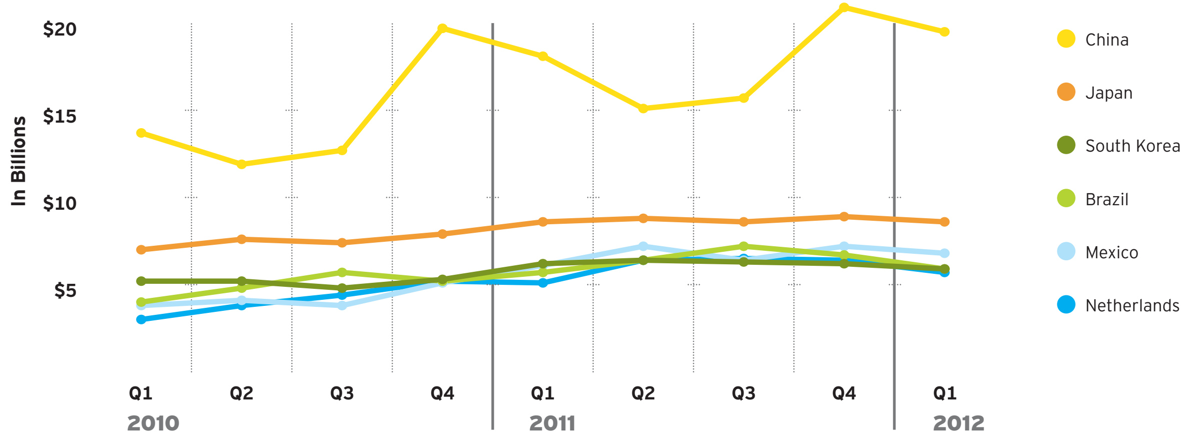
The decrease in Nokia's global share is especially disastrous for Taiwan-based handset makers with whom the company has had close partnerships. And South Korea-based Samsung Electronics, which topped the first-quarter list for both smartphones and handsets, is not picking up the slack by delivering new orders to Taiwan.

The same pessimism holds for other Taiwanese tech industries as downstream customers cut production orders amid tightening consumerism. The net effect is an uneasy fear of recession.

In May 2012, Taiwan's dollar fell to a four-month low and government bonds gained as investors cut stock holdings due to growing concerns that Europe's debt crisis will worsen and further dampen Asian growth.

U.S. Vessel Exports, by Destination Country

In terms of value, roughly 13 percent of U.S. vessel exports are destined for China, followed by six percent to Japan, and four percent to South Korea. Ocean exports in the first quarter of 2012 surpassed 2011 by nearly one percent.



Source: Zepol Corporation, www.zepol.com

BY CLIFF OTTO
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CNG Fuels Trucking Sustainability Efforts

Nearly 55 percent of U.S. executives report their organization now has a formal sustainability strategy in place, according to a KPMG International corporate sustainability study.

One development gaining momentum in the trucking industry is investing in vehicles that run on alternative fuels. Companies are exploring a variety of options, including electricity, ethanol, biodiesel, liquefied natural gas (LNG), and compressed natural gas (CNG).

Recently, CNG-powered vehicles have gained visibility as some larger carriers transition to CNG fleets. A substitute for gasoline, diesel, and propane, CNG is one of the cleanest-burning alternative fuels available, with near-zero emissions. Approximately 87 percent of natural gas is produced in North America, and there is enough domestic supply to last more than 150 years.

The Advantages

CNG fleets are an attractive option for companies committed to corporate sustainability programs. They offer significant benefits, including:

- **Reduced carbon footprint.** Natural gas-powered vehicles produce 95 percent less particulate matter than comparable diesel vehicles.
- **Stable costs.** Because the cost of CNG is less volatile than diesel, users have more control over fuel costs and surcharges.
- **Noise reduction.** Natural-gas-powered vehicles are significantly quieter than diesel trucks, both at idle and on the road.
- **Safer to use.** Lighter-than-air compressed natural gas is nontoxic and disperses quickly, so it is absorbed in the atmosphere instead of spilling on the ground.
- **Non-interruptible fuel source.** Because CNG comes from underground lines, its availability is not affected by weather events.

CNG trucks look virtually identical to their diesel counterparts, but are equipped with compressed natural gas fuel tanks in an enclosure behind the cab. With this fuel, trucks are able to travel approximately 400 miles per tank.

While the trucks may not look noticeably different, their impact can be remarkable. For example, 40 CNG trucks can reduce a fleet's carbon footprint by approximately 4.2 million pounds per truck annually—equivalent to planting 85,760 trees or taking 364 cars off the road each year. And the same fleet's noise level equates to the volume of just four diesel trucks idling.

Gaining Ground

Many CNG-powered vehicles are already in use—in fact, an estimated 112,000 are on U.S. roads today. The lack of infrastructure and significant investment required, however, have prevented widespread adoption.

CNG trucks are more expensive than comparable diesel models, and fuel for these trucks is not yet readily available in most states. To operate a fleet in most areas requires constructing a multi-million-dollar fueling station, which can be cost-prohibitive for many companies.

Nonetheless, plans to increase CNG's availability, along with growing awareness of the fuel's benefits, promise to expand the prevalence of natural-gas-powered fleets over the next few years.

Increasing interest in green logistics is likely to drive more companies to seek out other ways to be environmentally responsible, as well. It's exciting to imagine the potential when we work together to invest in a sustainable future. ■

THE **LEAN SUPPLY CHAIN**

BY PAUL A. MYERSON
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Inventory…What a Waste

We all know that inventory is a necessity. When you fully understand its purpose and cost, however, you realize why lean practitioners consider it one of the Eight Wastes.

Inventory can be among a company's most expensive assets, representing up to half of total invested capital. The major reasons for carrying inventory are to decouple or separate various parts of the production process, cover demand and lead time variations, take advantage of quantity discounts, and hedge against price increases.

Some companies may not realize the carrying or holding costs associated with inventory, however. These costs—which can range from 15 to 40 percent of the cost of inventory annually—include capital, taxes, storage, obsolescence, damage, and theft. The longer you carry the inventory, the more it costs your business.

In lean terms, inventory adds no value for the customer, because it covers a process's variations or wastes, such as long setup or changeover times, late deliveries, scrap, and downtime.

Diagnosing the Problem

Excess inventory is a symptom of underlying problems in a process. If we can get at the root cause of these variations and inefficiencies, we can lower inventory to just-in-time levels, and transition from a "push" to a demand "pull" environment.

Many tools can be used to identify and eliminate the causes of inventory inefficiencies, such as:

- **Value Stream Mapping.** Similar to a flow chart, this tool maps the current and future state of a process, separating value-added and non-value-added activities.
- **Root Cause Analysis.** This set of problem-solving tools aims to identify the root causes of problems or events.
- **The Five Whys.** Lean practitioners use this technique to examine the cause-and-effect relationships underlying a specific problem, ultimately leading to identifying its root cause.

THE 8 WASTES

1. Transportation
2. Inventory
3. Motion
4. Waiting
5. Overproduction
6. Overprocessing
7. Defects
8. Underused employees

Downstream in the demand chain, tools such as Collaborative Planning, Forecasting, and Replenishment (CPFR) help identify excess or insufficient inventory levels.

CPFR involves cooperatively managing inventory through joint visibility and product replenishment all along the supply chain. Information shared between suppliers and retailers aids in planning and satisfying customer demands.

Programs such as CPFR enable companies to minimize the bullwhip effect—the trend of increasingly larger swings in inventory in response to changes in demand, as you go farther back in a product's supply chain. These tools improve forecasts, and increase inventory turns and customer service levels.

Upstream in the supply chain, tools such as Vendor Managed Inventory and just-in-time systems ensure materials arrive when they are needed and help identify opportunities to work with suppliers to increase productivity and quality.

Once we determine the root causes of excess and unbalanced inventory, it is easier to solve the problem. To aid that endeavor, we must understand and consider the remainder of the Eight Wastes as they contribute to excess inventory, fail to add value for the customer, and limit supply chain capacity, quality, and velocity. ■

Parts of this column are adapted from *Lean Supply Chain & Logistics Management* (McGraw-Hill; 2012) by Paul A. Myerson with permission from McGraw-Hill.

3PL LINE

BY TROY RYLEY
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Nearsourcing to Mexico Improves Operational Efficiency

For years, Asia was the location of choice for low-priced manufacturing. The Asian shipping market was hit hard by the global recession in late 2008 and 2009, however, and the region became less appealing as a manufacturing site when labor costs began rising.

Then, as the global economy improved, demand for product quickly outpaced supply and led to a sharp increase in shipping rates, up in mid-2011 by a whopping 183 percent over the previous year, according to Drewry Shipping Consultants. Businesses struggled to find space on ships, and were forced to transport by air, quickly diminishing the appeal of Asia's low-priced production.

"Nearsourcing" to Mexico allows companies to address these issues. In addition to meeting the challenges posed by manufacturing in and shipping from Asia, Mexico has evolved into a business-friendly environment.

The government is aggressively working to streamline and simplify the process of doing business in its country by pursuing free trade agreements and simplifying bureaucracy.

Mexico produces high-quality products with a skilled workforce, while additionally decreasing time-to-market with its close proximity to the United States. As a result, goods turn faster, and factories are required to hold less inventory, speeding cash-to-cash cycles.

Furthermore, Mexico offers manufacturing and distribution centers that can receive raw materials and tariff-free goods, streamlining regulations for re-exportation. This ability has led to an 8.7-percent increase on year-to-date imports through Mexico.

Taming Fuel Costs

Location is also a key differentiator in offering valuable business benefits to transportation companies looking to lower fuel costs. The shortened travel time from Mexico to the United States drastically decreases fuel expenses. The reduced distance is also conducive for products that require quick speed to market, making it easier to forecast long-term supply and demand.

With so many challenges looming, intermodal transportation offers an opportunity for companies to further develop their business in other locations. Nearsourcing to Mexico provides companies access to rail, ground, and air shipments, as well as proximity to ports.

In contrast, the majority of Asia is landlocked, with a decentralized manufacturing landscape. Mexico's geography is more favorable to intermodal transportation, with a centralized community and better accessibility, facilitating improved customer service.

Nearsourcing for Success

Offshoring to Asia has been the choice of manufacturers for many years, but with inflated prices and capacity concerns, the challenges of manufacturing in Asia far outweigh the rewards. Companies learning about the benefits of nearsourcing to Mexico can easily leverage its geography and resources to decrease spending, improve customer service, and prepare for the future.

Nearsourcing is becoming more popular among manufacturers and buyers, and Mexico's reduced transit times and lower logistics costs make it a preferred location. ■

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IT MATTERS

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Sharing Data Creates Optimal Supply Chain Visibility

In the past decade, analysts have written volumes about the value of supply chain visibility and execution systems. It's hard to argue with the concept. When all supply chain partners' systems work together to fulfill orders perfectly, execute on-time shipments, and provide early alerts to problems, life is good.

Many companies have turned to on-demand supply chain solutions to achieve this connectivity. But before implementing an on-demand system, they must take three critical steps:

1. Overcome diverse technical competencies between participants in a supply chain community.

Problem: Rarely can a single operator own all, or even most, of the processes between the supplier and the retailer or end customer. Even the simplest operations may engage dozens of parties, each with different technical needs.

The greatest challenge is that most IT departments have their hands full managing internal systems, with little time or expertise to spare for the complexities of supply chain management.

Solution: Cloud solutions enable broader adoption of these typically sophisticated capabilities. Providing a hardware and software platform, in conjunction with a technical staff with deep domain experience, reduces the time and expense of selecting, buying, and implementing a system, and training workers.

Because cloud solutions become an extension of existing business systems, they typically deliver a much faster return on investment, and create economies of scale moving forward.

2. Perform logistics activities in a connected supply chain.

Problem: The logistics provider is responsible for execution, which entails knowing what to do, what is expected, and when to do it. Visibility simply isn't possible until a supply chain works.

Solution: Efficiency begins with creating the informational and operational processes necessary to execute orders, shipments, receipts, and payments. The system should track each stockkeeping unit to facilitate inventory replenishment; reduce inactive inventory and retail handling expenses; minimize stockouts; and optimize performance cycle times.

3. Analyze and monitor supply chain data through dashboards and visibility tools.

Problem: Without solid, well-thought-out business rules to manage the relationships among systems, inefficiency is certain, and logistics chaos may result. Business rules are essential for more accurate assessments when monitoring activity and inventory, measuring efficiencies, ensuring proper alignment of resources, and applying performance metrics.

Solution: Progressive supply chain management enterprises provide exception alerts, shipment and order status visibility, performance dashboards, and flexible reporting. Once established, these analytic and performance monitoring tools enable users to explore and analyze supply chain data from nearly any perspective. Dashboards can provide periodic, scheduled analysis of current supply chain status, including on-time shipment, short-order reports, and inventory turns.

Visibility is an invaluable byproduct of supply chain partner collaboration. As companies become more sophisticated in their use of powerful supply chain technologies, visibility becomes another demonstrable value. ■

GREEN IS STILL WHITE HOT

While freight costs and capacity dominate water cooler conversations, sustainability embers smolder deep within the supply chain. The fire is still perceptible. So are the justifications.

by Joseph O'Reilly

One reality of a successful revolution is that after the initial disturbance, everything recedes and slows down. The impulse for change becomes educated and strategic as players seek areas for reform. Then the movement accelerates again as new objectives emerge. The supply chain sustainability revolution is no different.

Sustainability took hold of the supply chain sector seven years ago as a result of countless triggers: Walmart; media and political representations of global warming/cooling; the wars in Iraq and Afghanistan and their impact on fuel prices; oil dependency and the promise of renewable energy sources; and the inevitable reality that supply chains had grown slack and inefficient after years of robust growth following the Internet boom.

Sustainability became a buzzword among consumers, a mark of progressiveness. And industry's response was immediate and sweeping.

But with this response came speculation. Were ambitious sustainability programs really sustainable? When the push and pull between cost consciousness and environmental consciousness eventually came to shove, what would give first?

This point was addressed by Walfried Lassar, Ryder professor and director of the Ryder Center at Florida International University, at the 2008 Green Supply Chain Forum, when he teased an audience of logisticians by asking if the green consumer phenomenon was nothing more than a fad. That question still resonates for some.

Moreover, outward signs today indicate that the sustainability consciousness has hit a headwind. When *Inbound Logistics* polled the motor freight industry in September 2011, only 15 percent of shippers identified "environmental, regulatory, and security compliance" as their greatest challenge. Among carriers, 21 percent viewed "green mandates" as a concern. In 2008, that number was 41 percent. Both shippers and carriers overwhelmingly cited transportation costs (fuel, drivers, and equipment) as their greatest challenge.

Why the anomaly? For one, the business case for being green is reducing costs. So it may simply be a matter of semantics. The U.S. recession forced industry into a position where it needed to squeeze out as much inefficiency and waste as possible to raise the bottom line. In the process, companies achieved notable sustainability gains—whether they recognized it as such or not.

Even today, shippers increasingly rely on asset-based supply chain partners to tackle the minutiae of reducing logistics costs, which also includes sustainability gains. For example, conducting business with a U.S. Environmental Protection Agency-designated SmartWay partner or a U.S. Green Building Council Leadership in Energy and Environmental Design-certified warehouse are two ways to incorporate sustainability as a standard operating procedure.

This demand, in concert with industry and government regulation, has pushed responsibility on the transportation and logistics sector to pick up and run with green initiatives. Many asset-based service providers have invested in equipment and technology far beyond what is regulated. Perhaps there is a genuine perception that industry is ahead of the curve.

Nick Pennell, founder of London-based sustainability consultant Lavery/Pennell, offers another consideration. In his paper, *The Business Case for Supply Chain Sustainability*, he points to a three-step phase where businesses unlock the true value of supply chain sustainability.

First, a corporation develops a sustainability baseline. Next, it comes to understand footprint and value drivers. Finally, the company identifies opportunities where it can align value and footprint drivers (reducing waste) or disconnects (transport time vs. fuel use). The majority of businesses have tackled the first step; the latter two remain unfulfilled, according to Pennell.

His premise suggests that while industry at large has identified sustainability impacts at certain links in the chain, and aggregated information around these points, many companies still don't understand the supply chain drivers that influence their environmental footprint and the value that is attached to them.

"Adversarial procurement relationships" and myopic goals that are static and predetermined, rather than fluid and opportunistic, prevent companies from going all the way with their sustainability efforts, according to Pennell. What's lacking, he says, is true partnership between companies and their suppliers. That's why

Logistics and transportation service providers continue investing in green. For example, Port of Seattle runs an aggressive recycling program *(left)*, while U.S. Xpress has invested in aerodynamically sound trucks with serrated mud flaps.

many businesses still find themselves measuring baseline metrics instead of pushing the needle, and seeking and/or seizing new opportunities.

SUSTAINABLE STIMULUS

The same can't be said for the transportation and logistics sector.

One marker of the ongoing supply chain sustainability crusade is the shift of transport modes and logistics nodes toward a new, more radical way of thinking and operating. The trucking industry, for example, has long been the standard-bearer for U.S. commerce and global supply chains.

As the most important link between the first and final mile—in developing third-world manufacturing countries and Main Street USA—trucking companies have gone to great lengths to optimize routes, streamline tractors and trailers, eliminate idling time, and reduce fuel consumption. In many instances, sustainability initiatives have enabled carriers to remain competitive and profitable.

One example is Chattanooga-based trucking company U.S. Xpress, which spent millions of dollars over the past three years to bring 4,500 new units on line. By the end of 2012, the carrier expects to rotate out all pre-2010 models, and the company fleet will be exclusively running 2010 EPA-engine specifications.

It's not just motor freight carriers that are investing in green. Ocean carrier Maersk Line has decreased vessel CO_2 emissions by 15.6 percent since 2007 on a per-container-shipped basis. Its 2020 goal is a 25-percent reduction. Maersk is counting on a combination of new energy-efficient vessels, improvements to existing vessels, and operational techniques such as steady steaming to meet this goal.

Maersk's green endeavors align with partner port efforts. The Port of Seattle, for example, offers the lowest carbon footprint for freight shipped by sea from Asia to major markets in the Midwest and East Coast, according to the Herbert Engineering Corp., an Alameda, Calif.-based ship design and engineering company.

West Coast third-party logistics providers operating around U.S. East Coast ports are etching their green marks, too. Performance Team, based in Santa Fe Springs, Calif., recently relocated a transload facility to an on-port terminal at Charleston, eliminating a 50-mile roundtrip drayage to an inland location. One customer estimates it will save 90,000 miles annually, which affects transport costs and carbon emissions.

In other cases, growing market share is a means toward greening the supply chain. Union Pacific has been laying its sustainability footprint for close to 150 years, since the completion of the Transcontinental Railroad in 1869. More recently, it acquired 100 new fuel-efficient locomotives, with plans to purchase an additional 200 in 2012. This investment has helped reduce its fuel consumption by 19 percent since 2000, equaling greenhouse gas emissions savings of more than 12 million metric tons.

These examples demonstrate that green investments and best practices are still in fashion. The fact that sustainability has lost some of the marketing buzz it carried a few years ago isn't necessarily a negative. It may be a sign that awareness is maturing and becoming more strategic, even expected.

Supply chain precedence supports this perception, albeit in a different context. U.S. businesses today embrace security and risk management much differently than they did prior to Sept. 11, 2001. Tragedy spurred action and behavioral change, much of which was legislated and is now regulated. Over the past decade, businesses—as well as the general public—have become acculturated to a new reality.

Sustainability is following a similar trajectory. As Pennell suggests, it's time for corporations to look beyond their own operational spheres and engage supply chain partners to push or pull sustainability standards and compliance, and share in its gains. Collaboration uncovers greener opportunities and attaches value across verticals. And sustainability is an ideal platform from which supply chain partners can engage and execute more sophisticated business process improvements.

The supply chain sustainability revolution is still spinning, even if it has slowed. Enterprises and industry are now exploring ways they can leverage existing investments and programs to identify areas for improvement. New objectives will be set: making renewable energy sources more affordable, raising the profile of intermodal transportation, and creating cross-industry benchmarks for sustainability performance, among others.

In the meantime, companies will stoke the fire knowing that green opportunities will continue to emerge. All it takes is a spark. ■

G75

75 GREEN SUPPLY CHAIN PARTNERS

Inbound Logistics' methodology for selecting 75 Green Supply Chain Partners (G75) considers a company's involvement in three areas: participation in public-private partnerships; corporate sustainability initiatives; and collaborative customer-driven projects. Within this context, four benchmarks carry weight in our decision-making: measurable green results, sustainability innovation, continuous improvement, and industry recognition.

As part of our due diligence, *IL* editors solicited more than 200 transportation and logistics companies to complete a questionnaire specifying their investments in sustainability—ranging from fuel-efficient equipment to corporate-sponsored recycling programs, and everything in between. We also conducted our own research, online and over the phone.

Our focus centers on asset-based companies that have demonstrated measurable progress over the past few years as they integrate sustainability into their respective enterprises. The list does not include companies that tout technology or intellectual capital as green enablers. It's not just a matter of being a facilitator and responding to customer demand; we value companies that are leading by example.

AEP River Operations

AEP River Operations recently received the 2011 WorkBoat Environmental Initiative Award. The recognition, given to businesses and government operations serving the U.S. maritime industry, judges nominees on successful efforts to incorporate environmentally sustainable practices into daily maritime operations; innovation, leadership and/or commitment toward environmental stewardship; and compliance with local, state, and federal environmental regulations and requirements.

Aspen Logistics

Aspen Logistics won the Orion Environmental Stewardship Award for retrofitting facilities with high-efficiency fluorescent lighting. Additionally, the 3PL's tractors are equipped with emission control reduction technologies, and it is certified by the California Air Resources Board regulations. Aspen has also been recognized by Southern California Edison for power savings in Salt Lake City, Utah, and Victorville, Calif.

C.H. Robinson Worldwide, Inc.

C.H. Robinson offers services that optimize business processes to efficiently use transportation and distribution network resources, ultimately driving out costs and minimizing carbon emissions. For example, the company's produce sourcing programs help reduce the distance from farm to table. Working directly with growers and retail customers helps allocate natural resources wisely and builds efficient farm-to-shelf distribution models.

Eco-friendly truck | Cardinal

Cardinal Logistics Management Corporation

Cardinal Logistics has invested in its fleet to help reduce fuel consumption and emissions, including installing auxiliary power units, setting automatic idle shutdowns, and increasing MPG efficiency by governing power unit speed limits. The company is also testing renewable fuels, investing in driver training, using technology to monitor vehicle performance, and creating more dynamic routing instructions that reduce miles and maximize backhaul opportunities.

Solar-powered warehouse | CEVA Logistics

CEVA Logistics

In 2008, CEVA introduced a corporate-wide program to reduce the environmental footprint of its business activities. More recently, the company shifted its attention to managing the environmental impact of the full product lifecycle, including the supply chain. This includes measuring and reducing customers' carbon footprints and emissions in warehouses, and improving fuel efficiency.

DB Schenker

DB Schenker's intermodal division helps shippers choose the optimal transportation mode through its online EcoTransIT World tool. The solution identifies a shipment's environmental impact in terms of direct energy consumption and emissions during transportation, and calculates the indirect fuel consumption and emissions related to production, transportation, and distribution of energy required for operating vehicles. DB Schenker Rail also uses wind turbines to power its freight trains.

Alternative energy | DB Schenker

DSC Logistics

One of the 3PL's 2012 green goals includes creating a DSC Sustainable Facility Certification to recognize sustainability achievements. Logistics centers will strive to implement specific items on a checklist – for example, high-efficiency lighting, low water use toilets, auto shut-off faucets, recycling programs, and motion-activated lights. The checklists provide instructions for the facilities, while also suggesting resources to help them achieve these goals. Upon attaining a certain percentage of listed items, facilities will be awarded Platinum, Gold, or Silver certifications.

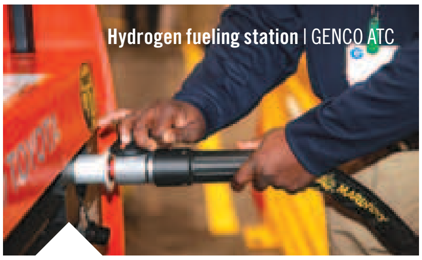
EA Logistics

"Delivered GrEAn" is EA Logistics' mantra, and the company has incorporated this commitment into its business value proposition. It computes emissions and provides shippers with free reforestation offsets to neutralize the CO_2 emissions from their shipments; its facility and house trucks are 100-percent carbon neutral; it uses biodiesel in its truck fleet and encourages biodiesel use among vendors; it has a no-idling policy at its facility; and drivers adhere to speed restrictions to reduce fuel consumption.

Urban delivery | Geodis Wilson

Geodis Wilson

Geodis Wilson's Blue Attitude Program is an internal promotion campaign that showcases and promotes sustainable development initiatives implemented in partnership with customers. For example, Geodis Wilson France set up an initiative in 2009 to reduce energy use and the number of products consumed in certain processes, as well as to improve on-site waste recycling – with a goal of covering 50 percent of emissions with offsets.



Hydrogen fueling station | GENCO ATC

GENCO ATC

GENCO ATC's focus on product lifecycle logistics allows it to reduce waste and energy consumption across the entire supply chain. Manufacturing, packaging, distribution, reverse logistics, repair, and other logistics functions often operate in isolation. Combining and optimizing these areas has a positive impact on the environment and the bottom line. GENCO ATC's holistic approach to supply chain business process improvement allows companies to integrate siloed logistics activities, then cut cycle times, reduce freight runs, and eliminate carbon emissions.

Hub Group

Converting truckload shipments to rail moves places Hub Group on the greening edge of the sustainability movement. Intermodal slashes fuel consumption and carbon emissions by as much as 65 percent for long-haul shipments. Rail is three times more efficient than truck, and railroad cars can move one ton of freight close to 500 miles on one gallon of fuel. Transferring truckload freight to rail also goes a long way toward eliminating congestion and reducing wear and tear on U.S. road systems.

Inmar

Inmar approaches sustainability broadly, eliminating waste – regardless of source – in product that goes to landfill, in redundant processes, and in inefficient transportation models that increase carbon footprint and costs. In 2011, Inmar's sustainability initiatives helped convert 3.4 tons of waste to energy, saving more than 3,880 barrels of oil and generating 2,185 megawatt hours of renewable energy – enough to power 190 homes for one year.


Solar installation | Kenco Logistic Services

Kenco Logistic Services

Kenco Logistic Services recently upgraded lighting at two customer-managed facilities in Chattanooga, Tenn., to reduce electricity use by 70 percent. The energy-efficient, high-intensity fluorescent lights use sensors to adjust warehouse lighting, automatically dimming when sunlight pours through the warehouse skylights and increasing light intensity at night and on cloudy days. The lighting array saves about 670,000 kilowatt hours annually. The project is anticipated to reduce greenhouse gas emissions by 14,000 tons over the fixtures' 20-year lifecycle. This is the air-scrubbing equivalent of a 149-acre forest, or removing 137 cars from the road, according to the U.S. Environmental Protection Agency.

Lynden

Lynden has focused green efforts on streamlining the performance of its assets. Its new cab design – with roof fairing, integrated sleeper, and aerodynamic mirrors and bumper – reduces drag. Lynden's tank trucks are equipped with a jacketing system and belly pan to cover cross-members and enclose outriggers and bolsters. The company is also experimenting with side skirts, "weed burner" exhaust (in which the exhaust pipe points down rather than up), and partnering with Washington State University's College of Engineering to model and refine the aerodynamics of milk tank trucks in its wind tunnel.

NFI

As part of the NFI Fit Fleet, the company has equipped tractors and trailers to reduce their carbon footprint and increase environmental friendliness. It has also been testing the use of natural gas in its fleet. In addition, NFI's intermodal department, NFI RoadRail, provides a transportation solution that double-stacks containers, and its solar division is dedicated to harvesting renewable energy to reduce utility costs.


Fit Fleet | NFI

Penske Logistics

Penske's commitment to sustainability focuses on responsible operations, improving fuel economy, and streamlining waste. As testament to this cause, Penske Truck Leasing, Penske Logistics, and Penske Truck Rental all participate in and support the U.S. Environmental Protection Agency's SmartWay Transport partnership as affiliate, carrier, and logistics partners. From a logistics standpoint, the 3PL helps shippers analyze and reduce their carbon footprints through better route optimization and trailer loading and unloading procedures.

Performance Team

From transportation operations to site selection, Performance Team's green efforts run through every facet of its company. For example, the company has improved aerodynamics and road safety by installing EPA SmartWay-certified hybrid trailer skirts on its trucks, and it now operates more than 70 Kenworth Clean Diesel tractors in its fleet. It also has a mandatory "no idling" policy. In terms of network design, Performance Team relocated a transload facility in South Carolina to an on-port terminal, eliminating a 50-mile drayage to inland Charleston operations. One customer estimates that it will eliminate 90,000 miles annually because of this move.

Ryder

In 2012, Ryder began offering customers the opportunity to take part in its Green Challenge, an innovative approach to optimizing supply chain processes. In addition to measuring the cost savings and efficiency gains of traditional supply chain improvements, the Green Challenge provides new avenues to make customers "greener." With the program, Ryder demonstrates how an alternative greener supply chain solution can help them significantly lower carbon emissions versus a model traditionally optimized for the lowest cost. The Green Challenge design takes into consideration three areas: transportation, facilities and building use, and network design.

Natural-gas vehicle | Ryder

CNG-powered truck | Saddle Creek Logistics Services

Saddle Creek Logistics Services

Saddle Creek Logistics Services has invested in alternative fuel vehicles for its for-hire fleet as part of the company's commitment to sustainability. The new trucks run on compressed natural gas (CNG), one of the cleanest-burning alternative fuel options available with near-zero emissions. Saddle Creek purchased 40 Freightliner CNG trucks in fall 2011 and plans to have 120 in its fleet by 2013. The first wave of tractors will reduce the fleet's carbon footprint by 4.2 million pounds of carbon per year – the equivalent of taking 364 cars off the road.

TransGroup

The 3PL's TransNeutral offering is an opt-in program that analyzes shipment-specific carbon footprints and enables companies to offset the CO_2 emissions that result from their shipments. Specifically, it uses a weight-based calculation to determine the amount of climate-effecting greenhouse gases a shipment emits. It then offsets those emissions by contributing to emission reduction programs involving reforestation, wind power, and biofuel-related farm renewal projects.

Transplace

Working with Sunny Delight Beverages Co., Transplace recently completed a successful implementation of a compressed natural gas fleet in southern California. The initiative has effectively lowered greenhouse gas emissions and reduced fuel costs for the beverage company. The five-year arrangement will transport Sunny Delight products to customers across the southern California market to cities such as Los Angeles, Mira Loma, Carson, and Riverside. Sunny Delight's network stands to save an estimated 400,000 gallons of diesel fuel in 2012 due to the conversion.

UTi

UTi recently undertook a project to evaluate opportunities for overall environmental improvement in its multi-client contract logistics facilities. One key recommendation was to implement processes and machinery that recycle dunnage into packing material for pick-and-pack operations. The 3PL expects this effort to divert all scrap cardboard, and eliminate much of the plastic packing material currently used in those operations.

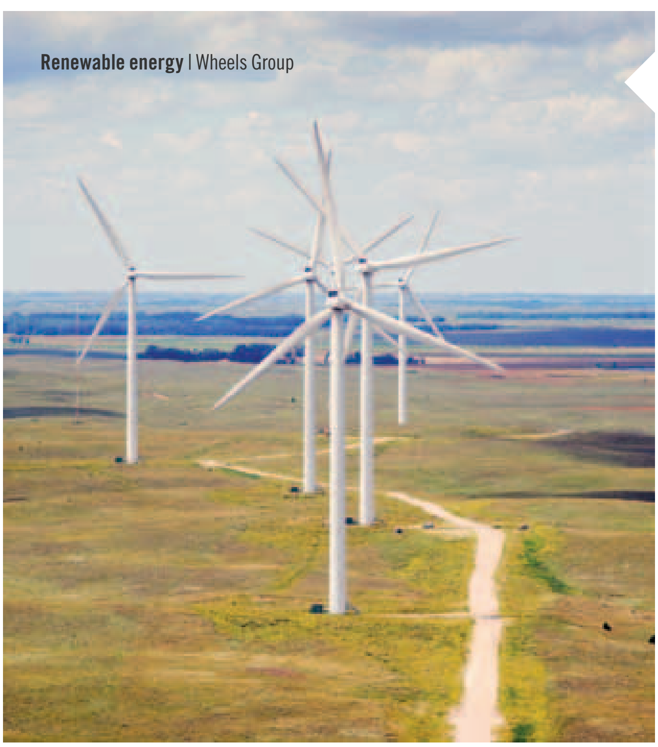
Weber Logistics

Over the past three years, Weber has reduced its fleet's carbon emissions by 37 percent – the equivalent of removing 2,047 cars from the road every year. In its warehouses, innovative lighting solutions have reduced electrical usage up to 30 percent, creating cost savings for its clients while reducing pollution. Weber has also made efforts to bring vendors in line with its own sustainability efforts.

Low-emissions vehicle | Werner Enterprises

Werner Enterprises

Werner Enterprises is investing in technologies, proactive strategies, and policies that increase fuel efficiency and decrease carbon emissions. The company is testing and implementing technologies that include wide-base tires/low rolling resistant tires, tire inflation systems, idle reduction tools, trailer tails, and its proprietary, SmartWay-certified advanced trailer skirt, ArrowShield. From 2007 to 2011, the company reduced its carbon footprint by 209,171 tons of CO_2 and the amount of fuel burned by nearly 19 million gallons. It has also reduced idling time 33 percent.



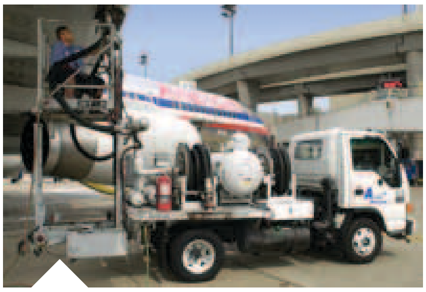
Renewable energy | Wheels Group

Wheels Group

Wheels Group's green policy is to consistently seek measures that will reduce activities that negatively impact the environment, and ultimately minimize its carbon output. The company has formed a Green Team with executive sponsorship to oversee a variety of projects that support its aim toward carbon neutrality. Wheel Group's strategy focuses specifically on waste reduction, recycling, re-use of materials, reducing energy consumption, migrating to renewable energy purchases, and working as an organization to achieve carbon neutrality.

Yusen Logistics

Yusen Logistics has made efforts to create its own standards with regards to environmental protection. Globally, it is acquiring the ISO 14001:2004 Environmental Management Standard across facilities to help improve environmental performance, and set targets and objectives. For example, Yusen has developed a closed-loop logistics process intended to reduce the supply chain's overall effect on the environment. The process emphasizes re-using and recycling materials, and includes end-of-life disposal options for products.



Fuel conservation | American Airlines

American Airlines

In 2011, American Airlines ordered 460 new planes from Boeing and Airbus. The airline expects the new aircraft to dramatically reduce costs because the planes are more fuel-efficient and require less maintenance than a more mature fleet. American's Fuel Smart program has saved more than 500 million gallons of fuel in five years, and reduced CO_2 emissions by 2.6 billion pounds annually through initiatives such as reducing auxiliary power use, single-engine taxiing, wing tip extensions, and high-speed tow tractors.

FedEx

In a new program called FedEx carbon-neutral envelope shipping, the expedited carrier calculates the carbon emissions generated by transporting an envelope to its destination, then pays a provider to offset those emissions for each envelope shipped. The program is one element of FedEx's EarthSmart environmental initiative focused on conservation, alternative energy, and transportation industry leadership. By rebalancing its fleet and optimizing routes, for example, FedEx Express has improved total fleet miles per gallon within the United States by 14.1 percent since 2005, saving more than 53 million gallons of fuel and approximately 521,000 tons of carbon dioxide emissions, with a goal of 20-percent improvement by 2020.

EarthSmart envelope | FedEx

Electric delivery van | DHL

DHL

With a goal of reducing its carbon footprint 30 percent by 2020, DHL is testing and introducing alternative drive technologies and renewable energies; renewing its air and ground fleet; promoting a partial shift from air to ocean and road; and extending to all shippers its optional carbon-neutral GoGreen service, in which it calculates all transport-related carbon dioxide emissions for shipments, then offsets them through external climate protection projects. In 2011, the company rolled out 30 battery-powered electric vans and 50 hybrid trucks, which will reduce fossil fuel use and cut CO_2 emissions by more than 50 percent each year compared to conventional vehicles.

Fuel-efficient plane | Lufthansa

Lufthansa

Lufthansa Cargo optimizes operational measures on the ground and in the air to cut fuel consumption and carbon emissions. The airline purchased five Boeing 777F aircraft, which create 20 percent less emissions than the MD-11, formerly the standard in fuel-efficient planes. Lufthansa also improved aircraft capacity utilization to meet rising demand with lower fuel consumption, and optimized routes to avoid detours. For example, optimizing its Far East route network, the airline reduced CO_2 emissions by 70,500 tons annually. With its sub-company Jettainer, Lufthansa developed a lightweight plastic container that is 26 pounds lighter than the 173-pound standard aluminum containers. Replacing the aluminum containers with the plastic ones could save an estimated 110,200 tons of CO_2 in the next 10 years.

Hybrid vehicle | Purolator

Purolator

Purolator's environmentally friendly initiatives include a strict no-idling rule for its drivers, a route optimization program that reduces overall distances traveled by vehicles, and environmentally responsible packaging. Since introducing hybrid electric delivery vehicles in Canada in 2005, Purolator has reduced greenhouse gas emissions by more than 2,300 tons, and cut fuel consumption by more than 170,000 gallons annually. Its Purolator express envelopes are made from 50-percent recycled fibers, and Purolator boxes are made from 95-percent recycled fibers. The expedited carrier also eliminated carbon paper inserts from domestic manual bills of lading, which reduced 24 tons of greenhouse gas emissions annually.

High-performance aircraft | Southwest Airlines

Southwest Airlines

Southwest Airlines developed a $175-million, six-year initiative to retrofit its fleet with advanced avionics to support Required Navigational Performance (RNP), the cornerstone of the Federal Aviation Administration's Next Generation Air Traffic Control System. RNP procedures are designed to conserve fuel, improve safety, and reduce carbon emissions, while simultaneously taking advantage of the high-performance characteristics that exist in an aircraft fleet. The airline also created the Southwest Airlines Green Plane, a test environment in which it evaluates the latest products that contain a high percentage of recycled content, minimize waste, or help cut fuel consumption.

Natural gas-powered vehicle | UPS

UPS

UPS pursues continuous innovation in a number of technological fields that affect its environmental sustainability. It equipped delivery trucks with a telematics system that collects information about the vehicles' mechanical performance, driver performance, and customer delivery data, then used that information to optimize its fleet. For example, package operations drivers in telematics-equipped vehicles eliminated more than 65,000 hours of idling time, which translates into fuel savings of more than 260,000 gallons. UPS also maintains a fleet of more than 1,100 natural gas-powered vehicles.

AL Pallet

AL Pallet's nine-pound, 100-percent recyclable aluminum pallets feature a lightweight design that differentiates it from wood and plastic pallets. Shippers can load more cargo on a pallet without exceeding weight limits, allowing them to better use assets and capacity while reducing fuel consumption and carbon emissions. The company also offers shippers an incentive-based recycling program designed to keep pallets out of the landfill.

CHEP

CHEP's pallet pooling model encourages repairing and reusing pallets, and recycling broken or damaged components rather than sending them to the landfill. The company collaborates with shippers to assist them in supply chain improvement initiatives such as packaging reduction, design, and testing; unit and trailer load configuration; platform and product damage reduction; and transportation optimization. In addition, CHEP sources timber from tree farms, which are a responsible and sustainable source of timber.

Pallet pooling | CHEP

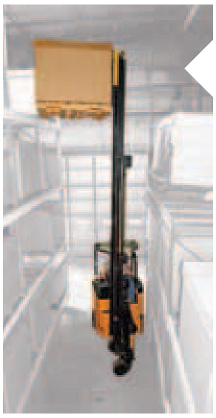
Hyster

Hyster's electric lift trucks feature a system that recaptures energy when lowering loads and during braking. This energy is then reused, lowering the truck's overall energy consumption. In addition to developing more fuel-efficient diesel-powered trucks, Hyster is collaborating on next-generation alternative energy technology to enable a broader group of customers to more easily transition from internal combustion engine trucks to zero-emission electric trucks. All Hyster sites have focused programs for extensive recycling of wood, cardboard, plastic, office paper, metals, electronics, lift truck batteries, tires, and oil.

iGPS

Completely recyclable iGPS all-plastic pallets weigh about 50 percent less than traditional wood pallets, which promotes better load optimization, more efficient fuel consumption, and reduced greenhouse gas emissions. If damaged, the pallets can be remolded into new ones, saving them from the landfill. iGPS offers a greenhouse gas calculator to help shippers determine the greenhouse gas emissions they could save by switching from multi-use wood pallets to all-plastic pallets.

Recyclable plastic pallet | iGPS


Electric lift truck | Landoll

Landoll

Powered by LP gas, a lower-emissions fuel alternative, Landoll's Bendi i4's internal combustion engine (ICE) is rated at 67 horsepower at 2400 rpm, and meets or exceeds emission standards for its vehicle class. Landoll also offers the eco-friendly, battery-powered Bendi Electric narrow-aisle lift trucks, available with 3,000- to 4,500-pound lift capacities, and three-stage tilting masts with lift heights up to 36 feet.

Wood pallet | PECO Pallet

PECO Pallet

PECO's wood block pallets are built from responsibly forested U.S. timber, and are constantly reused, repaired, and recycled. In addition to eliminating the waste of single-use pallets, PECO's pallets' structural rigidity and top-deck coverage eliminate the need for slip sheets or tie sheets to maintain product integrity, and allow manufacturers to use thinner-gauge cardboard packaging. The company's North American network of 77 pallet depots, 12 manufacturing locations, and 358 recovery sites in strategic locations provides thorough coverage, reducing transportation costs and fuel consumption.

Raymond Corporation

Powered by hydrogen fuel cells, Raymond's Eco-Performance lift trucks save energy by providing longer run-times between charges, which results in fewer battery changes, and reduced kilowatt use and CO_2 emissions. The lift trucks create power through regenerative braking, which saves power and results in less brake wear. Raymond's Swing-Reach truck uses up to 40 percent less energy than comparable lift trucks, while its regenerative lowering system returns 11 percent of energy used directly back to the battery.

Energy-efficient lift truck | Raymond Corp.

Toyota Industrial Equipment Manufacturing (TIEM)

Toyota is committed to constantly developing new and better technologies that raise the bar in terms of safety, reliability and performance, along with providing a line of cleaner and recyclable vehicles. Today, Toyota remains the first and only manufacturer to offer UL compliant Compressed Natural Gas (CNG) powered lift trucks. The majority of lift trucks sold in North America are manufactured at Toyota Industrial Equipment Mfg., Inc. (TIEM), a zero-landfill facility in Columbus, Ind. Looking at alternative technologies, Toyota launched the world's first internal combustion hybrid lift truck in Japan in 2009.

Electric fork lift | Yale

Yale

Yale has supported the adoption of greener technologies through engineering collaboration, analysis, and extensive internal and field validation testing. The company is investigating advanced, more efficient battery chemistries and technologies to reduce energy consumption, increase productivity, and cut toxic material content. Its zero-emission electric-powered lift trucks feature a system that recaptures energy during braking and loading; the energy is reused, reducing the truck's overall energy consumption. Also, an electronically controlled transmission significantly reduces tire and brake wear for internal combustion engine lift trucks.

APL

APL received the U.S. Coast Guard's Osprey award, its highest honor for excellence in marine environmental protection. The carrier's newest and largest vessel, the 10,700-TEU *APL Southampton*, is also its most environmentally friendly and fuel-efficient, fitted with a ballast water treatment system and an electronically controlled main engine. To curb CO_2 emissions over the next three years, APL plans to deploy 30 more new energy-efficient vessels and upgrade equipment used for intermodal shipments.

Intermodal shipment | APL

Clean air port operations | Evergreen Line

Evergreen Line

Evergreen won the Ports of Los Angeles and Long Beach 2011 Clean Air Action Plan Air Quality Award, an honor given for taking extraordinary measures to cut air emissions, modernize facilities, and implement innovative operations to reduce air pollution. The ocean carrier has also invested heavily in its Greenships vessels, designed to minimize the risk of oil pollution or fire resulting from grounding or collision. To pursue greater sustainability, Evergreen Line implemented Hong Kong's Fair Winds Charter, a voluntary clean fuels initiative for ocean-going vessels, and the Port of New York/New Jersey's Ocean-Going Vessel Low-Sulfur Fuel Program.

Kaohsiung Terminal | OOCL

Maersk Line

Since 2007, Maersk Line has reduced its vessel CO_2 emissions by 15.6 percent per container shipped, with a goal of 25-percent reduction by 2020. The carrier achieved these results by purchasing new energy-efficient vessels, improving energy efficiency on existing vessels, and implementing operational techniques such as steady steaming. Maersk Line also works with shippers to optimize routing, match import and export loads, and seek best mode and route combinations. Other sustainability initiatives include increased use of clean fuels in ports to reduce air emissions, a vessel recycling policy, and a global waste minimization and safe discharge program.

MOL

The ocean carrier's environmental strategy includes the Senpaku ISHIN project, a concept for next-generation vessels that will employ feasible technologies to reduce CO_2 emissions and other environmental loads. In 2011, MOL designed its hybrid car carrier, the *Emerald Ace*, to generate zero carbon emissions while berthed. The vessel is equipped with a hybrid electric power supply system that combines a 160-kilowatt solar generation system with lithium-ion batteries that can store up to 2.2 megawatts of electricity. The batteries store electricity generated by the solar system while the vessel is underway, allowing the diesel-powered generator to be completely shut down when the ship is in berth.

NYK Line

NYK Line is working to reduce greenhouse gas emissions by monitoring the operational efficiency of ships, and calculating environmental management indicators as mandated in guidelines issued by the International Marine Organization. The company has set a goal to reduce CO_2 emissions by at least 10 percent in 2013, compared to 2006. NYK Line has also organized a task force to pursue air pollution prevention, and has equipped 38 vessels with electronically controlled engines, which improve fuel consumption and reduce nitrogen oxide emissions.

OOCL

Reducing greenhouse gas emissions is a key part of OOCL's environmental program. In 1992, the carrier chose to change the design of its refrigerated container machinery to eliminate chlorofluorocarbons (CFC) production. Today, OOCL only uses CFC-free refrigerants for all its reefer containers. It also converted its Kaohsiung Terminal container yard in Taiwan to a green enterprise, replacing nine straddle carriers with six rail-mounted gantry cranes (RMGs). Run electrically and on a fixed-rail system, RMGs are emission-free, quiet, and provide a much safer working environment at the port. There are now a total of 14 RMGs in the terminal.

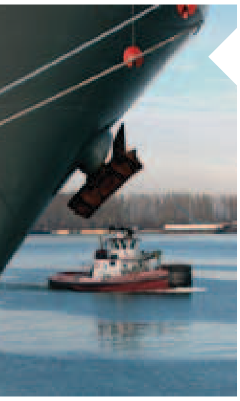
North Carolina Ports

The port authority's Project Energy initiative addresses environmental issues such as equipment electrification, fuel conservation, emission reduction, alternative and renewable energies, recycling, and hybrid technologies. It also acts to protect and enhance the surrounding community and environment. For example, at the Port of Morehead City, oyster shells collected from individuals and businesses across the state are loaded on barges and returned to estuarine waters to help turn the tide on declining oyster stocks and provide habitat for other sea life.


AMP equipment | Port of Los Angeles

Port of Long Beach and Port of Los Angeles

The EPA honored the ports with an environmental achievement award for their Technology Advancement Program (TAP), a joint initiative launched to accelerate the commercialization of port-related emission reduction technologies through testing and demonstration projects. The program has helped develop the world's first hybrid diesel-electric tugboat, and a unique pollution control device that attaches to a containership's boiler and auxiliary engine stacks to reduce emissions while at berth. The Port of Los Angeles further promotes air quality through its Alternative Maritime Power (AMP) program, which allows ships to plug in shore-side electrical power while berthed, rather than run on diesel power.


Hybrid tugboat | Port of Portland

Port of Portland

At the port's marine Terminal 6 (T-6), where cargo-carrying trucks waiting to be processed can line up 20-deep, an optical card reader reduces engine idling by processing up to three trucks per minute. This speedier entry into T-6 not only reduces greenhouse gas emissions, but also reduces air emissions, including particulate matter and hazardous air pollutants. The Port of Portland fuels all T-6 container-handling and dredge support equipment with ultralow sulfur diesel, and uses tugboats that can plug in and shut down their engines when docked to reduce emissions and fuel consumption.

Port of Seattle

The port's clean fuel incentive program for frequent-calling ships reduced sulfur dioxide emissions by more than 262 metric tons in 2011. Seventy-three percent of the 791 frequent vessel calls used cleaner fuels or shore power while at berth. The Port of Seattle also works with marine terminal operators to reduce cargo handling equipment emissions, and runs green purchasing and hazardous materials management programs. Its Clean Trucks Program requires drayage trucks to have 1994 or newer engines – estimated to be 2.5 to six times cleaner than older trucks.

Port of Tacoma

As a partner in the Northwest Ports Clean Air Strategy, the Port of Tacoma strives to reduce seaport-related air emissions in the region. The port also works to clean up property contaminated by decades of industrial practices, and return it to productive use under more protective measures. In addition, it undertakes water-quality projects focused on preventing pollution and managing stormwater. For example, the port, in cooperation with Totem Ocean Trailer Express (TOTE), planted a rain garden at TOTE's Tacoma terminal to treat industrial stormwater runoff.


Stormwater management project | Port of Tacoma

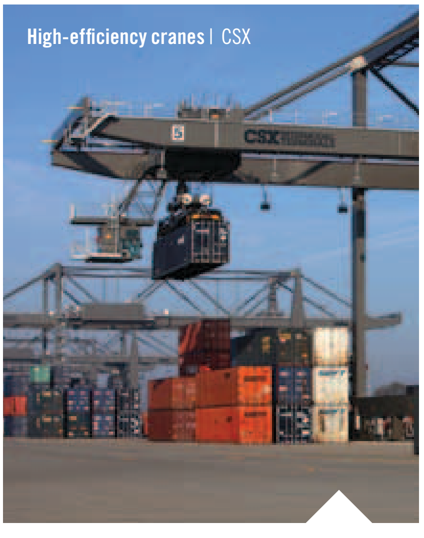
Low-emissions truck | Port of Virginia

Port of Virginia

In 1999, the Port of Virginia voluntarily implemented an emissions reduction program through a series of revisions to its cargo handling equipment purchasing policies. The port specifies to its suppliers that all new cargo handling equipment contain the lowest emission engine available on the market. From 1999 to 2005, air emissions from cargo handling activities at the Port of Virginia decreased by 30 percent, despite a 55-percent cargo volume increase. For 2005-2015, emissions are expected to decline by an additional 38 percent, with a 49-percent projected cargo volume increase.

BNSF

In 2011, BNSF customers reduced carbon dioxide emissions by more than 33,069,000 tons of CO_2, which is equivalent to reducing the annual fuel consumption and resulting greenhouse gas emissions of more than six million passenger vehicles. For the fourth year in a row, BNSF provided its intermodal, automotive, industrial products, and agricultural products customers with customized letters analyzing their total rail carbon footprint and savings compared to moving those shipments via the highway.



High-efficiency cranes | CSX

CSX

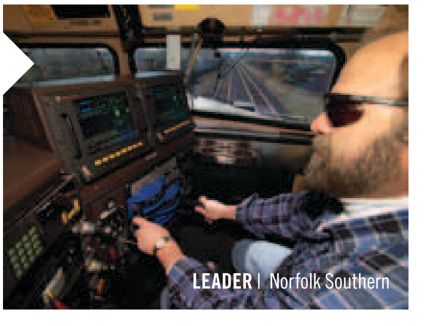
In 2011, CSX's new Northwest Ohio intermodal terminal opened, featuring high-efficiency wide-span cranes to support intermodal transportation. After achieving an eight-percent reduction in greenhouse gas emissions intensity nearly a year ahead of schedule, CSX continued that commitment by setting a new goal to further reduce emissions intensity by six to eight percent by 2020. Technology such as GenSet locomotives and trip optimization tracking will help meet that target. In addition to innovation in daily operations, CSX helps improve the global supply chain by providing shippers the opportunity to track freight emissions with an online carbon calculator.

CN

CN's eco-friendly equipment investments include 500 EcoTherm super-insulated containers that increase shipper efficiency and help reduce energy consumption for temperature-sensitive intermodal shipments, such as food, beverages, paint, and pharmaceuticals. EcoTherm retains the proper temperature for sensitive goods throughout a rail trip for up to 10 days with no need for an engine to burn fuel en route. CN is also making efforts to cut emissions and increase energy efficiency through fleet renewal and technological applications.

Upgraded fleet equipment | CN

Norfolk Southern



LEADER | Norfolk Southern

Maintaining a fuel-efficient fleet has long been a cornerstone of Norfolk Southern's sustainability efforts. In 2011, the railroad improved its locomotive fleet's fuel efficiency by 2.2 percent over 2009, resulting in diesel fuel savings equal to 10.2 million gallons, and reduced emissions of 115,650 tons of CO_2 equivalents. Its Locomotive Engineer Assist Display Event Recorder (LEADER) – an onboard, GPS-based computer system – prompts locomotive engineers with real-time information on optimum throttle, speed, and brake settings to achieve maximum fuel efficiency.

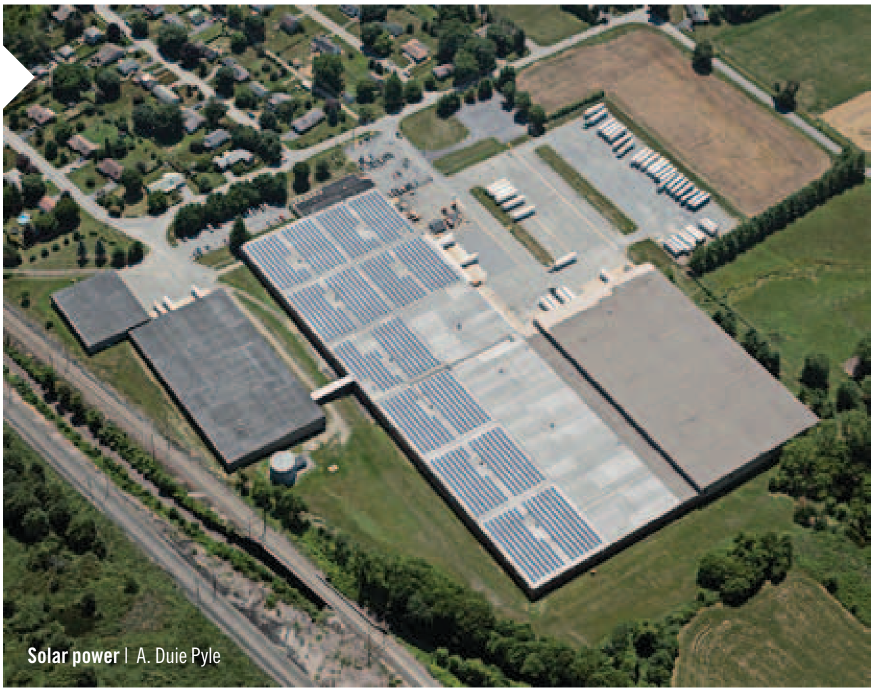
Fuel-efficient trains| Union Pacific

Union Pacific Railroad

Union Pacific's recent investments include 100 new fuel-efficient locomotives in 2011, with plans to purchase an additional 200 in 2012, retiring older, less fuel-efficient locomotives. This approach has helped reduce its fuel consumption rate by 19 percent since 2000, equaling greenhouse gas emissions savings of more than 13,227,700 tons. In 2011, the railroad recycled more than four million gallons of fuel and oil; 3,000 tons of paper, cardboard, plastics, and other solid waste; and 250,000 tons of metal.

A. Duie Pyle

Powering its Parkesburg, Pa., warehousing and distribution facility entirely by solar energy is just the start of A. Duie Pyle's sustainability effort. The carrier also implemented recycling and waste reduction of motor oil and tires; fuel-efficient equipment and engine idling controls; energy-efficient lighting; and company-wide programs such as sustainable cleaning product usage and waste-cutting printing and copying practices.



Solar power | A. Duie Pyle

ABF

Since 1976, ABF has voluntarily limited the maximum speed of its trucks, which reduces fuel consumption and emissions, partially offsets fuel economy degradation of the newer engines, and promotes safe driving. With a maximum speed of 63 mph, each ABF truck annually emits 33.5 fewer tons of CO_2 than identical trucks operating at 68 mph. ABF also maintains a long-standing no-idling policy. The carrier further reduces fuel consumption and enhances operational efficiency with practices that include a strict equipment maintenance schedule and an aggressive equipment replacement program – the average age of ABF road tractors is two years. This new equipment produces dramatically fewer particulate matter emissions than older equipment.

Speed-restricted truck | ABF

Averitt

Enlisting the help of its associates to promote environmental sustainability, Averitt's internal incentive programs reward workers for conservation efforts such as improving the company's miles-per-gallon rating, reducing energy usage, and raising environmental responsibility awareness. The carrier also stocks only ultra-low-sulfur diesel at its in-house fueling stations, and uses low-viscosity lubricants and engine oils, which lower maintenance service interval frequency and produce fewer waste products. In addition, it recycles all freon from tractor air-conditioning units; used oil and oil filters; scrap metal created from in-house maintenance and body work on tractors and trailers; and paper and cardboard used at its facilities and corporate headquarters.

Celadon

To save fuel and reduce emissions, Celadon has made equipment enhancements such as installing auxiliary air heaters on trucks to eliminate the engine's need to idle in cold weather; adding ambient air temperature sensors on all trucks to override the engine's ability to run between the ambient of 70 to 20 degrees F; and equipping trucks and trailers with the most fuel-efficient dual tires on the market. The company also reduced the weight of 2,149 trucks by 300 pounds each by converting them to aluminum wheels, reduced maximum road speed for the entire fleet, and cut the fleet's idle time by 19 percent.

Idle-monitoring program | Con-way Freight

Con-way Freight

Evaluating fuel consumption and equipment usage led the carrier to reduce truck speeds from 65 to 62 mph, install low-profile tires to improve rolling resistance and reduce weight, tune engines for optimal fuel economy, reduce trailer weight, and add idle-monitoring programs. Con-way Freight also developed a Web-based linehaul simulation tool to analyze and optimize its freight transportation network. Using this data, the carrier reduced transit times, cutting overall daily operating miles by 124,000 and conserving 2.6 million gallons of diesel fuel.

C.R. England

To create a greener fleet, C.R. England tests new products to find sustainable options such as tractors powered by liquid natural gas, a fuel that emits up to 30 percent less greenhouse gas than gasoline or diesel vehicles; fuel-efficient, ultra-lightweight day cabs designed for short-haul applications; aerodynamic trailer side skirts that contribute up to four-percent fuel savings; aluminum wheels to reduce vehicle weight; and tires with lower rolling resistance.

LNG-powered tractor | C.R. England

EPES Transport

In 2011, EPES Transport made a capital investment of almost $39 million in high-efficiency equipment, including tractors and trailers. The company reduced idle time by 33 percent and improved miles per gallon by two percent. EPES Transport is committed to reducing transportation costs for shippers and pursuing its environmentally responsible initiatives.

Intermodal shipment | J.B. Hunt

J.B. Hunt

In pursuit of its goal to reduce both the cost of transportation and its impact on the environment, J.B. Hunt has pursued sustainability innovations such as reducing tractor engine idling through driver incentive programs; installing on-board equipment such as direct-fired heaters and auxiliary power units; burning biodiesel fuels when available; governing top speeds on company-owned equipment to maximize fuel efficiency and safety performance; and converting over-the-road shipments to intermodal shipments, which saves an average of 200 gallons of fuel and two tons of carbon gas emissions per shipment.

Knight Transportation

As part of its environmental awareness campaign, Knight Transportation outfitted its entire 9,000-trailer fleet with SmartWay-certified aerodynamic trailer blades, which reduce fuel consumption by more than six percent. The carrier also implemented numerous environmentally friendly initiatives at its facilities, including installing a 200,000-watt solar panel system at its Phoenix headquarters. Overall, Knight Transportation has eliminated 900 million pounds of CO_2, four million pounds of nitrous oxide, and 100,000 pounds of particulate matter emissions annually.

New England Motor Freight (NEMF)

Rooftop solar installations at NEMF's terminals in Pennsauken and South Plainfield, N.J., provide 98.5 percent of Pennsauken's current annual energy consumption and 86 percent of South Plainfield's. Combined, the systems will eliminate 521 metric tons of CO_2 annually – the equivalent of CO_2 emissions from 58,414 gallons of gasoline consumed, or from the electricity used by 65 homes in one year. A third solar installation at the company's Elizabeth, N.J., headquarters is in the planning stages.

Solar installation | New England Motor Freight

Trailer skirting | Old Dominion Freight Line

Old Dominion Freight Line

In addition to adding eco-friendly features such as trailer skirting to its fleet, Old Dominion Freight Line installed rooftop solar panels on its Thomasville, N.C., warehouse. The 1.8-megawatt system completely covers the company's 160,000-square-foot roof and can produce more than 2.2-million kilowatt hours of electricity annually. The company also opened its first Leadership in Energy and Environmental Design-certified service center in Canton, Ohio. The building will create an estimated 19.7-percent annual energy savings, and reduce water use by 34 percent, saving more than 31,000 gallons of water annually.

RWI Transportation

RWI Transportation has established initiatives to protect the environment while maintaining the integrity of its primarily temperature-controlled, perishable shipments. To reduce fuel usage, door-open switches have been installed on all RWI trailers to shut off the reefer unit; automatic tire inflation systems are being retrofitted; and all new trailers have aerodynamic side skirts. In addition, RWI purchased intermodal trailers for transporting lettuce, a time-sensitive, difficult-to-handle load that is not typically transported by rail. These intermodal trailers have taken trucks off the road, reducing emissions and protecting the environment.

Tire-inflation monitoring | Schneider National

Schneider National

Since 1998, the carrier's investment in sustainable, low-emission engines has reduced particulate and nitrogen oxide emissions by more than 80 percent. Its green initiatives include reducing fleet speed to 60 mph; powering trucks with renewable fuels, including more than one million gallons of blended biodiesel annually; equipping trucks with energy-efficient and aerodynamic features such as low-rolling-resistance tires, trailer skirting, wheel covers, and tire-inflation monitoring systems; and employing an on-site team of engineers to test and validate new energy-efficient technologies.

Swift Transportation

Swift Transportation's specialized Clean Fleet of more than 1,000 EPA-certified 2007 or newer trucks is dedicated to adopting the latest green technologies. The company has won multiple awards for its sustainability leadership, including the Environmental Excellence Award from the EPA's SmartWay Transport Partnership.

U.S. Xpress Enterprises, Inc.

Since launching operations in 1986, U.S. Xpress has held the efficient use and preservation of resources as a core business value. Over the past three years, U.S. Xpress has made a multi-million-dollar investment to maintain a fuel-efficient fleet, purchasing 4,500 new units. By the end of 2012, the company will have replaced all pre-2010 models with trucks meeting 2010 EPA engine specifications. Other green fleet features and programs include fuel-efficient tires, aerodynamic mud flaps, an engine-controller-based fuel incentive program, stringent engine idle shutdown parameters, and a GPS dual-mode satellite communications system to improve routing and conserve fuel.

Fuel-efficient vehicle | U.S. Express Enterprises

Speed-restricted truck | YRC Freight

YRC Freight

YRC Freight addresses greenhouse gas reduction strategies by limiting truck speeds to 63 mph; using hotel rooms for driver stays instead of idling trucks overnight; extensively using intermodal service with railroad providers; setting limits on daily idling with over-the-road and city operations; using environmentally efficient longer combination vehicles where allowed; and maintaining an aggressive tire-pressure inflation and monitoring program. Looking ahead, the carrier is testing two diesel electric hybrids at a city pickup and delivery center in a large metropolitan area.

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Perfect Chemistry

For the right blend of expertise, experience, and equipment, many shippers of chemical products turn to specialized carriers and 3PLs.

Getting the right product to the right place at the right time while controlling costs is a tough job for any shipper. When the product you handle is corrosive, combustible, poisonous, temperature-sensitive, or otherwise finicky about its environment, the challenge grows even tougher.

The science of chemical logistics demands blending specific elements – knowledge, experience, and specialized equipment – in precise combinations to achieve the desired reaction. So it's no wonder many chemical companies rely so strongly on the bonds they've formed with their logistics and transportation service providers.

"The expertise they bring is the most valuable part of the relationship," says Mike Rohrbaugh, manager of supply chain at Cincinnati-based Pilot Chemical Company, which partners with ChemLogix, a non-asset-based third-party logistics (3PL) provider and technology company based in Blue Bell, Pa.

One issue that sets chemical logistics apart from many other logistics disciplines is the potential danger posed by the cargo. "Transporting chemicals presents unique shipping requirements because of the inherent danger and potential impact on health, safety, security, and the environment (HSSE)," says Chris O'Brien, senior vice president at Eden Prairie, Minn.-based 3PL C.H. Robinson Worldwide, Inc., which provides transportation management solutions to chemical manufacturers through its ChemSolutions division.

Concerns about HSSE demand that chemical shippers comply with a slew of safety regulations beyond those that apply to shippers in general. The requirements start with federal rules for transporting hazardous materials. Vehicles hauling hazmat loads must carry placards to indicate their contents – for example, a toxic gas, a flammable liquid, or an explosive.

Also, anyone who handles a hazardous load must be properly trained, certified, and equipped. "You've got to understand all the safety requirements for the kind of product you're shipping," says Ed Hildebrandt, senior vice president of operations at ChemLogix.

In addition to federal safety regulations, hazmat shippers also must comply with rules that vary as their loads cross state lines. "We need to plan which states we're transporting product through, and know their requirements," says Jeff Colonna, vice president of operations at Dupré Logistics, an asset-based logistics company based in Lafayette, La., that serves chemical shippers throughout the United States.

Then there are the safety rules that shippers and their customers create themselves. "Many of our major customers have extensive safety protocols for operating within their plants," Colonna says. "Our employees must be well-versed in the operational and safety requirements, which are different for every customer."

Carriers and 3PLs that manage chemical loads must implement stringent safety programs. The 3PLs also monitor safety at the carriers they employ.

"We pre-approve all transportation providers to ensure the appropriate level of driver training exists," says Bob Shellman, president and chief executive officer at Odyssey Logistics and Technology (OL&T), a global 3PL in Danbury, Conn., with a strong chemical logistics practice.

Equipment used to carry chemicals also merits close scrutiny. "The valves on a bulk truck, for example, must have the appropriate safety inspections, so if a valve breaks off, the inner seals and valves will hold, and product won't leak on the highway," says Shellman.

"Transporting chemicals presents unique shipping requirements because of the inherent danger and potential impact on health, safety, security, and the environment."

*– **Chris O'Brien,** senior vice president, C.H. Robinson*

To further ensure chemical loads' safety, carriers and 3PLs operate programs based on standards established by the chemical industry. C.H. Robinson, for example, is certified as a Responsible Care Partner under the American Chemistry Council's RC14001 specification.

"Each C.H. Robinson employee in the ChemSolutions group completes a certification training program before handling chemical shipments," says O'Brien. "In addition, C.H. Robinson has developed proprietary software that houses an HSSE management system and tracks chemical shipments."

Chemical shippers rely on the specialized industry knowledge of experienced third-party logistics providers such as A&R Global Logistics, which holds an annual quality and safety conference for its carriers and customers.

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Safety comes first in storage buildings, too. "Fire suppression systems must be compatible with the types of chemicals stored in the facility," says Mike Gingerella, vice president, client solutions at 3PL Weber Logistics, which operates a 250,000-square-foot warehouse for packaged chemicals in Santa Fe Springs, Calif.

A chemical warehouse must meet the local fire department's standards for firewalls and fire doors, and each storage room should be surrounded by a berm. "If chemicals leak, the berm keeps them contained to the room in which they're stored," Gingerella says.

In addition to keeping their own operations safe, some service partners also help chemical shippers with internal safety programs. ChemLogix, for example, offers compliance audits.

"We evaluate a company's existing practices and compare them to what best-in-class shippers are doing," Hildebrandt says. "Through this comparison, we help the shipper identify and fill gaps in its logistics processes."

A&R Global Logistics, a non-asset-based 3PL that manages plastics and other chemicals, holds an annual quality and safety conference for its carriers. "We invite some of our customers as well, and we discuss safety and quality issues, especially those that have risen recently, so we can learn from one another," says John Ciszek, chief operating officer of A&R Global Logistics.

Security Concerns

Along with safety, companies that manage chemicals must keep a close eye on security. Complying with U.S. Drug Enforcement Agency regulations for controlled substances has long been a safety and security concern. Since the Sept. 11, 2001, terrorist attacks, the U.S. Department of Homeland Security (DHS) has imposed new, more stringent regulations.

"If someone is ordering or handling excess volumes of certain types of chemicals, DHS wants to know," Gingerella says. The agency also conducts regular inspections of

Complex Challenges, Sophisticated Solutions

Numerous challenges have prompted specialty chemicals manufacturers to seek help from third-party logistics providers (3PLs) in recent years. Greater supply chain complexity; the need to comply with ever-more stringent trade, security, and environmental regulations; changing patterns of production and consumption; and the continual drive to operate more productively and profitably are just a few of those challenges.

Such complex demands require sophisticated solutions. "Notwithstanding pressure to reduce costs in the short term, 3PL assistance typically goes well beyond finding the cheapest transportation rates available. It encompasses optimizing supply chains and overall logistics processes for even larger, longer-term savings," says Arnie Bornstein, a spokesman for Philadelphia-based BDP International, whose company – a non-asset-based 3PL – includes a division focused on chemical logistics.

One case in point is a U.S.-based specialty chemicals company whose products include plastic additives, flame retardants, pool and spa products, seed treatments and miticides, urethane polymers, and components for lubricants. As the company started to expand its Asia-Pacific operations, it needed to add warehouses to its network, increase control over and visibility into logistics processes, improve efficiency, and reduce costs.

The company turned to BDP for help, working with the 3PL's Singapore operation. Today, BDP manages two warehouses in Singapore for the customer – one for chemicals and hazardous cargo, and the other for chemicals and general cargo.

BDP also manages a bulk shore tank storage and distribution center in Taiwan for the customer's petroleum additives unit, plus the warehousing and distribution operations in Shanghai.

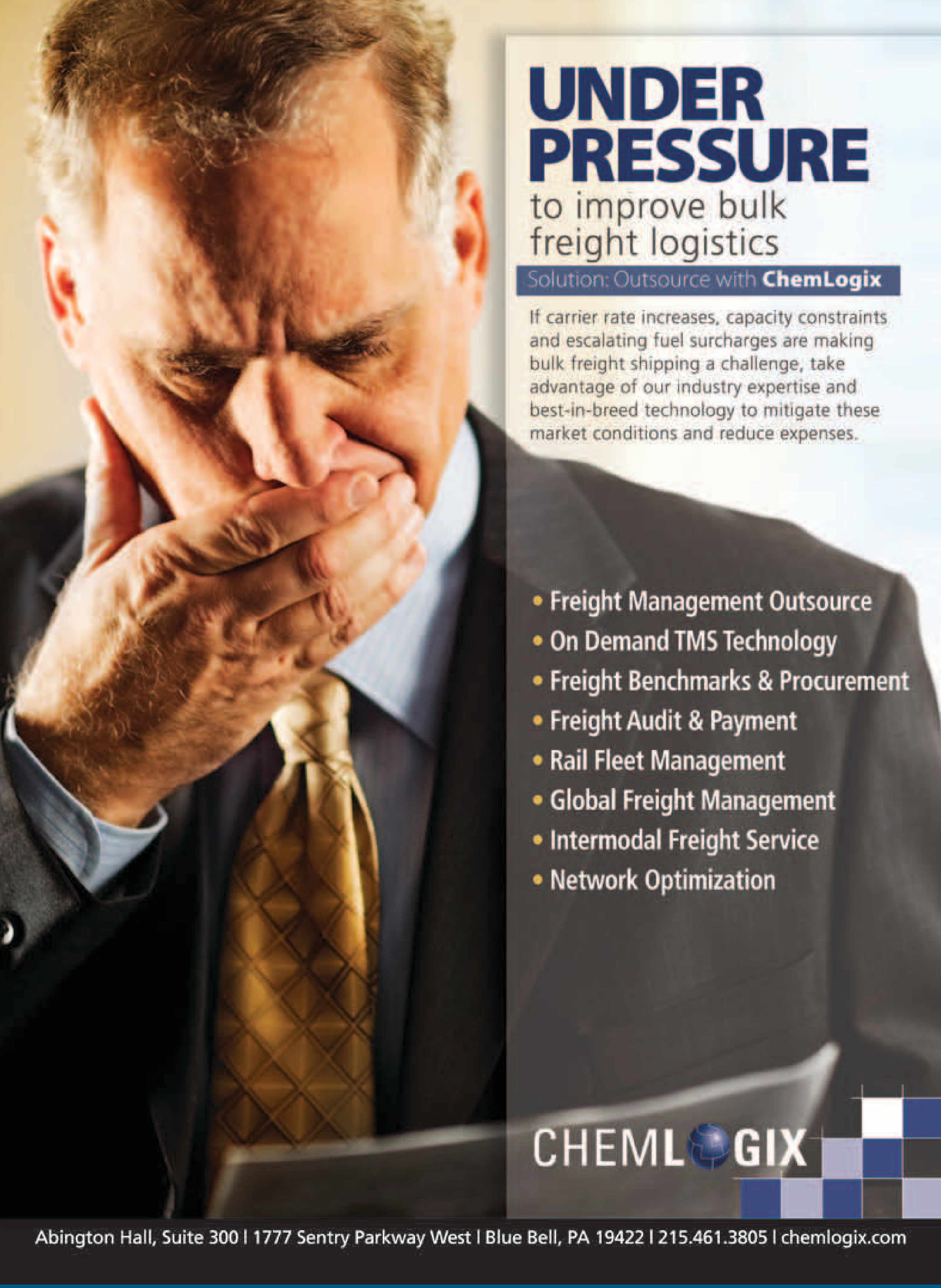
Thanks to these services, the shipper can now bring products closer to its Asia-Pacific customers, which gives it better control over shipments and inventory, according to the chemical company's regional logistics director.

"Shipments are turned around more quickly because much of the inventory is in Asia," Bornstein says. "Products can arrive in Singapore from the United States and be re-exported to other locations in the region within days."

Using the BDPSmart customer service portal, the shipper can follow cargo through every milestone as it executes an international order.

Rather than simply seeking the lowest transportation rates, the chemicals manufacturer has gained measurable results by taking central control over its global business units to improve shipment visibility and optimize expenditures. The company is also looking both upstream and downstream to monitor the performance of various points in its supply chain.

"This ultimately improves productivity and profitability," Bornstein says.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Proper handling of chemical shipments in transit includes pairing the product with the right type of equipment, keeping it at the correct temperature, and cleaning the container thoroughly between shipments.

facilities used to manage chemicals, and reviews all the related documentation. "Complying with multiple agencies is complex, but important," he notes.

Some of the products chemical shippers move can be used as ingredients in illicit drugs or chemical weapons. "We need to understand the regulatory issues related to those types of products, so we can ensure they aren't accidentally shipped to companies that may use them for illegal purposes," says Shellman.

In addition to staying abreast of where they may or may not ship certain products, service providers address security by ensuring chemical loads reach their destinations intact.

"Any time a customer entrusts a load to us, it is under a Dupré employee's care, custody, and control," says Colonna. If the load travels via dry van or reefer, the trailer's doors are locked and sealed. Also, the company's Qualcomm TrailerTracs system allows it to monitor the exact location of every shipment in the supply chain.

Making Matches

While it takes great care to keep hazardous loads safe and secure, it requires specialized equipment to move any kind of chemical, hazardous or not. Different chemicals have different properties and needs, so it's crucial to match each product with the right container.

The tank trucks that transport bulk liquid chemicals over the road come in different sizes and configurations, single- and multi-compartment versions, and other variations. One factor that determines the kind of tank used is the product's viscosity and density.

If the truck stops short at a traffic light, for example, the momentum of the liquid in the tank causes a "sloshing effect" that might propel the truck into the intersection.

"One way to minimize safety issues is to keep the vessel as full as possible," Hildebrandt says. This requires knowing the product's density, and putting it in the correct size tank.

A tank used to transport chemicals might unload at the top, bottom, or center. "The tanks also have special hoses and fittings," Hildebrandt says. When transferring the liquid for storage, the fittings must match the equipment available for unloading at the storage tank. There are many options, and it is important to choose correctly.

"As many as 170 accessorials could be involved with shipping a liquid product," Hildebrandt says. "That's why it's difficult for shippers to manage this process and keep everything under control."

ChemLogix also helps chemical shippers manage railcar fleets and maintenance. "We track inspection

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time requirements to ensure railcars are stopped for inspection, so they're not sitting unused and out of compliance," Hildebrandt says.

Dupré Logistics provides a variety of logistics and transportation services, as evidenced by its broad range of trailing equipment, including crude, chemical, and gasoline tankers; dry and temperature-controlled vans; reefers; and flatbeds.

"Dupré designs a logistics solution that considers shippers' various needs, and typically results in custom-building equipment for that application," says Colonna.

Equipment used to move dry bulk chemicals also needs special fixtures for loading and unloading. "Most plastics trailers have blowers and vacuums," says Ciszek. Drivers responsible for transferring plastic pellets from a railcar to the truck attach a hose between the two. "They plug it in, then vacuum the product out of the railcar."

Employees transferring those plastic pellets – or anyone else involved in moving chemical products – must fully understand the product to handle it correctly.

"If you use too much pressure, the plastic can melt, creating strands and clumps," says Ciszek. The correct pressure depends on the properties of the product being transferred, the distance over which it is being blown, and, if the driver is transferring it to a silo, the height of the storage facility.

To avoid contamination, it's also crucial to clean tanks and containers thoroughly before filling them with another product.

Some chemicals require special treatment during transport. "If the product being loaded is a reactive product," says Shellman, "the appropriate inhibitors must be included to prevent polymerization,

Responding to Market Change

Faced with the chemical market's demand fluctuation and unpredictability, many chemical companies seek ways to better manage overhead costs such as warehousing and distribution. National third-party logistics provider WSI has helped a number of chemical companies consolidate their storage and labor needs, reduce costs, and boost operating flexibility.

For example, one of the world's leading producers of polymers and high-performance plastics has, in recent years, spun off several business units and reconfigured its supply chain. The company found it no longer had the volumes to support its large West Coast distribution center, and turned to WSI for help. WSI assumed operation of the facility, giving the customer much-needed flexibility in storage volume and handling capacity.

"The facility was a fixed cost. We took over the operations and made it a variable cost," explains WSI spokesperson Rob Kriewaldt. "We helped the customer dramatically reduce costs, while utilizing excess capacity in the facility for other customers and expanding our offerings to include import/export services due to the facility's strategic location."

Similarly, when the customer wanted to downsize its East Coast distribution operations, it closed a New York City area facility and moved into a WSI location in Allentown, Pa. "They wanted flexible space and labor costs," Kriewaldt says. "We've given them the ability to grow and shrink their space as needed, as opposed to having a fixed cost every month.

"The chemical industry is cyclical," he adds. "Our services allow chemical shippers to tailor their costs to the ups and downs of their business cycle."

Outsourcing warehousing and distribution to third-party logistics provider WSI gave one leading plastics producer better flexibility in storage volume and handling capacity.

which is an expansion of the product that can cause a leak or issue."

A chemical warehouse also must accommodate products with diverse characteristics. Weber's facility has 13 rooms, including spaces dedicated to flammables, corrosives, oxidizers, and toxins. Some rooms are temperature-controlled to protect chemicals sensitive to heat or cold.

"Maintaining the correct temperature helps expand the product's shelf life and keeps it at peak performance," Gingerella says.

Even ordinary supply chain challenges take on complexity when the products in question are chemicals. "Typically, chemical products move from a processing plant to customers who have an immediate need for them," says Colonna. This creates time constraints on the supply chain.

"One delayed truck could shut down an entire plant, so systems must be in place to ensure carriers deliver the results the shipper expects," he adds.

Tight Deadlines, Scarce Capacity

Guaranteeing those results can be tough in a segment of the transportation market where capacity is especially tight. In the dry bulk segment, for example, most carriers are small companies that operate only 50 to 60 trucks. "And they're not growing," Ciszek says. "They're not adding terminals, drivers, or equipment."

Training drivers to handle a specialized commodity is difficult, and it is also hard to secure loans for pressurized tractor-trailers outfitted with blowers and other special equipment. So the pool of trucks and drivers available for hauling dry chemicals isn't likely to increase.

"The driver shortage is magnified for us because we're transporting hazardous chemicals," says Joel Bishop, purchasing and transportation manager for the water treatment chemicals division of GEO Specialty Chemicals in Little Rock, Ark. "Drivers must do more than operate trucks – they also carry a responsibility for safety."

Burgeoning demand is putting greater pressure on this limited supply of equipment and drivers.

To meet chemical shippers' unique needs, Dupré Logistics operates a variety of specialized trailing equipment, including crude, chemical, and gasoline tankers; dry and temperature-controlled vans; reefers; and flatbeds.


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Plastics manufacturers are generating more product, so there is more to haul.

Because natural gas – an important raw material for plastics – is inexpensive right now, many plastics manufacturers have expanded their operations. "But carrier capacity isn't growing with them," Ciszek notes.

Natural gas has also created capacity problems for companies that ship bulk liquids, because drilling in the Marcellus Shale has attracted hordes of tank trucks and drivers to Pennsylvania and Ohio. "That has been a huge drain on the already finite driver pool," says Hildebrandt.

Divide and Conquer

Tricky as it is to ensure a steady supply of tank trucks, it can be even trickier to obtain enough trucks with tanks divided into multiple compartments. There simply aren't many of them on the road, and demand is growing.

"Some of our customers – particularly the distributors – are trying to transition to a just-in-time environment," says Rohrbaugh at Pilot Chemical, which supplies specialty chemicals to makers of detergents, personal care products, lubricants, latex applications, and other products.

The switch to a just-in-time supply chain dictates more frequent deliveries of smaller quantities – for example, three 15,000-pound loads per week instead of one 45,000-pound load. The most efficient way to meet that need is to deliver several products at once, which creates demand for multi-compartment shipments.

To help shippers avoid the capacity crunch and meet service obligations, 3PLs rely on their extensive carrier and customer networks. The 3PLs use those networks, for example, to build continuous loads for their carriers.

"When we're handling multiple shippers and carriers, we can connect the dots to fill trucks, giving shippers the capacity they need at the lowest possible cost, and keeping trucks moving," says Ciszek.

Knowledge is Key

Access to scarce capacity is just one benefit chemical shippers gain from 3PLs and carriers that understand chemical logistics inside and out. Because they work with so many customers – and, in the case of non-asset-based 3PLs, so many carriers – those partners' knowledge

In addition to operating trucks, drivers transporting chemical shipments carry a responsibility for safely handling products, correctly managing equipment, and carefully following procedures.

base runs both broad and deep. They stay updated on safety requirements, industry best practices, market activity, and industry conditions that affect their customers.

"Service providers must keep abreast of all regulations, new equipment, and best practices for managing the process," says Hildebrandt. A chemical company's own logistics professionals might know a great deal, but their experience will be limited to the issues they have faced on the job.

"If you don't have critical mass inside your own logistics organization, you will never be able to keep up with what's happening in the market," he adds.

Every 3PL customer benefits from the knowledge their 3PL accrues while working with all its other customers.

Pilot Chemical, which outsources all its freight management to ChemLogix, has benefited particularly from the 3PL's knowledge of market trends. For example, ChemLogix made sure the shipper always had enough trucks when capacity tightened in 2007 and 2008.

As the economy started to improve, the 3PL helped Pilot obtain more favorable freight rates. Then, as carriers started to consolidate, shrinking the pool of trucks again in 2009, ChemLogix advised Pilot to add a new carrier to its roster.

"They made suggestions so we could be proactive and do business differently, which ensured we would be in a better position to serve our customers," Rohrbaugh says.

For GEO Specialty Chemicals, Dupré Logistics provides a dedicated fleet to move shipments of liquid aluminum sulfate from 14 manufacturing plants to paper mills, municipalities, and other industrial customers. Dupré also backhauls sulfuric acid to those plants.

The logistics partner has helped GEO optimize its transportation network to create money-saving efficiencies. Dupré also ensures GEO's hazardous chemicals are transported safely.

Many newer safety regulations – such as those covered by the Federal Motor Carrier Safety Administration's Compliance, Safety, and Accountability (CSA 2010) initiative – are complicated. Dupré understands those rules well.

To further ensure compliance with federal regulations, Dupré has taken the additional step of implementing electronic driver logs.

Tackling the Tactical

Although shippers of all kinds rely on the broad knowledge and market clout of their service providers, 3PLs and carriers with expertise in chemical logistics offer additional advantages.

"A lot of logistics departments are resource-starved," says Ciszek. That makes it hard for them to give enough attention to matters such as regulatory compliance.

"We can provide the resources to perform audits, for example, which many customers don't have the time or personnel to complete," he adds.

Shippers that manage their supply chains in-house typically spend a lot of time focusing on items that require a tactical response, such as tendering orders, tracking shipments, and resolving claims.

"New approaches to outsourcing are helping chemical manufacturers drive down costs in the short term by eliminating tactical responses, which, in turn, allows time to focus on strategic needs," says O'Brien. "That helps them build smarter, stronger supply chains for the long term."

Relying on a 3PL or carrier with the right knowledge, experience, and resources also frees companies to focus on their main line of business.

"We decided to outsource because we're a chemical company, not a transportation company," says Rohrbaugh. While Pilot's employees possessed the expertise required to handle logistics, they had other duties to attend to as well.

"They didn't have time – and we didn't have the resources – to manage all this ourselves," he says.

Chemical companies that outsource some or all of their supply chain activities can concentrate on their core business. "By integrating our people and systems, we design a specific solution that will create operational efficiencies and financial savings that allow our customers to be more profitable," says Colonna.

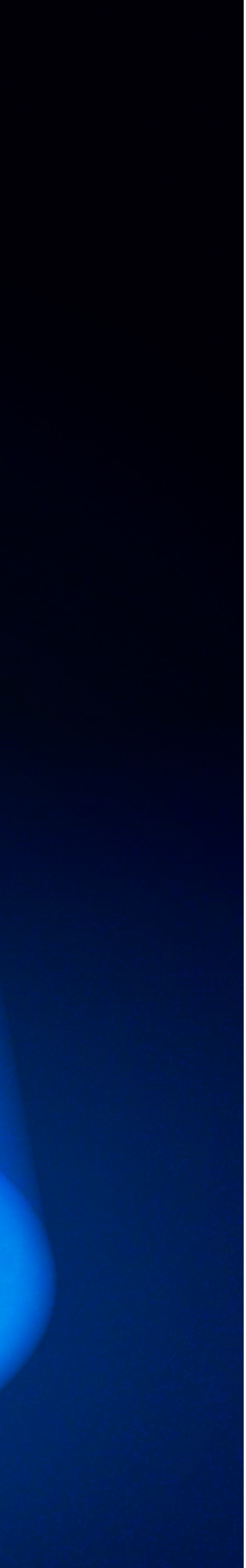
When shippers and service providers develop the right kind of chemistry, the results can be spectacular. CL

> ***"Typically, chemical products move from a processing plant to a customer who has an immediate need for them. One delayed truck could shut down an entire plant."***
>
> – ***Jeff Colonna,*** *Dupré Logistics*

THE ILLUMINATING POWER OF YARD MANAGEMENT SYSTEMS

Trailer yards can be supply chain black holes between the visibility provided by transportation and warehouse management systems. Yard management systems shed light on trailer and shipment location.

BY JUSTINE BROWN



Logistics technology solutions can reveal hidden bottlenecks and improve efficiencies. One such tool is a yard management system (YMS), which can help prioritize shipment arrivals, identify trailer contents, manage yard jockey activity, standardize yard processes, reduce the time needed to allocate vehicles to loads, and avoid unnecessary vehicle movements.

"Managing a trailer yard can pose significant challenges," says Nathan Harris, president of YardView, a Castle Rock, Colo.-based YMS provider. "Using a yard management system can help ensure workers don't waste time hunting for trailers, or parking trailers in the wrong location. It shows the entire view of a yard, and helps companies manage operations more effectively. A YMS can play a large role in improving the overall flow of goods."

For shippers, YMS solutions deliver valuable information. "The difference between using a YMS and not using one is the difference between 2012 and 1512," says James Noseworthy, yard manager for Keene, N.H.-based C&S Wholesale Grocers, one of the largest U.S. grocery wholesalers. "Yard management systems take you out of the Dark Ages, providing visibility, downstream reporting, and complete control of assets—their location, condition, and contents."

This view into trailer yard operations has had a beneficial effect on some companies. "At the beginning of the supply chain, many companies control information through an enterprise resource planning (ERP) system," says Gregory Braun, vice president of business development at Montreal, Canada-based YMS vendor C3 Solutions. "On the other end of the production process, they use a warehouse management system (WMS). But before yard management systems existed, companies lost visibility from the time goods arrived in the yard to the time they were unloaded. Yard management systems give companies visibility to the whole process so they can better serve their customers."

Time is Money

When drivers arrive at warehousing facilities, their shipments often need to be unloaded within a specified time. If they aren't, the carrier typically charges the distribution center a daily penalty.

"The faster trucks can be checked in, unloaded, and sent back on the road, the better it is for everyone," says Jon Donchey, chief operations officer at New York-based YMS provider Exotrac.

Yard management systems can improve shipment transfer in and out of the yard, promoting improved service levels, saving time and money, and enhancing the logistics process. In fact, a YMS can often boost a yard's productivity by up to 30 percent.

"Many companies need to improve their yard operations' efficiency and effectiveness," says Braun. "The most immediate need is to be able to better organize yard jockeys. A YMS tracks where trailers are, and where they need to go."

C&S Wholesale Grocers first experienced the benefits of a yard management system when it acquired a company in northern Pennsylvania that already had a YMS in place. The wholesaler then acquired another business that had purchased, but not yet implemented, a YMS. Realizing the benefits the first company was deriving, C&S decided to adopt the YMS for the new company, and to move forward with a multi-site configuration.

"Now the YMS is a tool we can't live without," Noseworthy says. "Before we used it, if we needed to know how many refrigerated units were in a particular yard, we had to make phone calls and send yard jockeys to gather information. It could take a few hours to determine the answer. But by then, the answer may have changed.

"Integrating the YMS with the WMS gave us control and visibility we didn't have before," he adds.

A YMS can also significantly reduce labor and administrative costs. Exotrac, for example, uses cloud-based software for its real-time logistics solution, which includes client-level customization, as well as barcode and GPS technology. Using handheld mobile scanners and trailer identification, companies can customize the specific data they receive.

"It took one facility four hours every morning to conduct yard checks," says Donchey. "Using a YMS reduced that time to 90 minutes. Yard jockeys can spend a lot of time looking for a specific trailer, but with a YMS, they know exactly where it is. It's easier to keep track of details."

Cost Considerations

For some companies, cost can be a deterrent to implementing a YMS. Today's tight economy can make it difficult to justify the investment. But while a YMS used to require a significant cash outlay of up to $500,000, costs have come down, putting a YMS in reach for many companies. Additionally, many businesses can quickly achieve return on investment.

"As a function, yard management tends to get overlooked, compared to warehouse or transportation management," says Dr. Aleks Gollu, founder and chief technology officer of PINC Solutions, a Berkeley, Calif.-based company whose clients include SC Johnson, Kraft Foods, and Cost Plus World Market.

"Warehouse and transportation management are low-hanging fruit—direct budget line items people can track," Gollu continues. "Yard management, however, can be a black hole—the part of the supply chain network where inefficiencies persist."

A closer look at inefficiencies buried in the yard reveals significant impact on the entire supply chain. "When drivers arrive at a facility with a trailer, they often spend two to three hours checking in," Gollu notes. "But driver time is at a premium—the average driver is worth $50 per hour. Inefficient yard management that causes you to detain a driver longer than needed costs money."

Minimizing Losses

Without a YMS, trailers can become lost in the yard. If a trailer contains time-sensitive product such as produce, the result can be a complete loss. "A good YMS maintains product visibility and improves yard jockeying system efficiency," says Noseworthy. "Not knowing where a product is—even for a few hours—occurs much less frequently."

> **Yard management systems take users out of the Dark Ages, providing visibility, downstream reporting, and complete asset control.**
>
> —**James Noseworthy,** yard manager, C&S Wholesale Grocers

Prioritizing trailers is easier with this visibility. "A YMS helps you see the total picture. What trailer has been sitting for three weeks? Which one is loaded with food and needs to be handled right away?" explains Harris. "It gives you thorough visibility of what is going on in the yard. You can see if units are damaged, and address problems faster. The YMS greatly improves communication between departments and processors in the yards."

Shippers that use YMS solutions stand to gain significant advantages. "We implemented a yard management system because we had issues tracking trailers," says Scott Fisher of fresh meat product supplier Farmland Foods, which uses YardView. "It was inefficient to track 200 to 400 trailers manually."

Farmland Foods implemented YardView on two campuses, each with multiple facilities. "Knowing where shipments are, and being able to get them out the door faster, has made us about 30 percent more efficient," Fisher says.

The Big Picture

Yard management systems not only provide visibility into the yard, but also help companies see the big picture. Rather than working in silos, workers view the entire supply chain process, which can help them identify potential delays to improve overall efficiency.

"Forward visibility is one of the greatest benefits of a YMS," says Noseworthy. "Everyone in the process sees the big picture, instead of just knowing their own part and having to communicate the old-fashioned way to find out what other areas are doing."

Connecting the dots effortlessly benefits the entire organization. "The YMS provides visibility that gets everyone on the same page, no matter where they are in the supply chain," says Harris. "Workers may not understand that if they make a mistake, it can affect the jobs of three other people downstream.

"Tracking processes manually can cause communication breakdowns that create big problems," adds Harris. "But a YMS automatically generates information and directs workers correctly. There is no mix-up in communications as in the past. The system creates accountability."

"The benefits of YMS come down to visibility, communication, and accountability," agrees Donchey. "It also helps to have some metrics. What can we learn about our operations using the YMS solution's reporting capability?"

Thanks to the light YMS solutions shed on yard operations, companies can more clearly see opportunities for improvement through the whole supply chain. ■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AIR CARGO'S FUTURE:

READY FOR ANYTHING

BY LISA TERRY

Developing international markets and growing consumer confidence raise hopes for increased airfreight demand.

The airfreight industry added a new route in May 2012: from earth to space. The unmanned, privately owned SpaceX Falcon 9 rocket's nine-day trip delivered a payload of 1,300 pounds of food, clothing, and scientific cargo to the space station—potentially the first of many commercial cargo transports into space. Closer to home, the outlook for the airfreight industry is mixed. Bright spots such as the rise of e-commerce – which frequently involves expedited shipments – combine with a still-faltering economy, increasingly onerous security requirements, and high fuel costs.

Overall, airfreight traffic declined about one percent from 2010 to 2011, according to Air Cargo Management Group (ACMG), and annual growth averaged just 2.6 percent from 2001 through 2011—less than half the historic rate.

The news, however, is not all bad. In 2011, international express shipment volumes grew 3.6 percent, reaching 2.3 million daily shipments. And in 2012 to date, the total airfreight market has grown four percent, according to the International Air Transport Association (IATA), with Middle Eastern airlines leading the pack.

Demand has picked up for Asia-to-United States air freight, and anticipated tech product launches could drive volume increases in the second half of 2012. Air cargo traffic between the United States and South America has also been heavy.

AREAS OF CONCERN

The global air cargo industry faces its share of challenges. These include:

- **High fuel costs.** Fuel costs continue to impact air freight, but most players view the price volatility as a cost of doing business over which they have little control. Fuel represents almost half the global expenses for air cargo carrier Cargolux, for example, and the first-quarter fuel bill at Southwest Airlines Cargo was $478 million higher in 2012 than in 2011.
- **Europe's economic woes.** "The economic crisis is heavily impacting the European airfreight market, with the exception of Germany, which has a strong economy," says Michael Steen, chairman of The International Air Cargo Association (TIACA). As declining consumer confidence weakens demand, the implications for the global economy – and airfreight demand, specifically – are uncertain.
- **Nearshoring.** A nearshoring trend is bringing some U.S. brand manufacturing back to Mexico from China, leading to a mode shift from air to over-the-road.

Many of freight forwarder Mach 1 Global Services' customers have moved production from China to India or Vietnam. In the past two years, several companies have returned to Mexico based on current total landed cost calculations.

"Many companies actually spent more moving to China," says Rob Lively, chief operating officer, Mach 1 Global Services. An airfreight shipment from China to the United States that costs $20,000 might cost just $7,000 from Mexico.

While air cargo carriers face challenges, they also can seize opportunities. Developing markets are a particularly bright spot. As labor rates rise in coastal China, many manufacturers are shifting production to the country's inland regions, Asian countries west of China, Africa, and South America, particularly Brazil. Interest is also growing in Russia.

Airfreight carriers are responding with new routes and services to these developing locations. Lufthansa, for example, operates a cool pharmaceutical hub in India to accommodate pharma shippers.

The outlook for domestic air cargo traffic is a mixed bag. North American carriers showed a 6.4-percent drop in demand with a 2.9-percent cut in capacity in April 2012, compared to April 2011, according to IATA. But growing U.S. consumer and business confidence has many experts optimistic about the balance of 2012.

For largely domestic air cargo carrier Southwest Airlines, 2012 is far surpassing the past few years, with stable vertical markets such as life sciences, pharmaceuticals, and diagnostic specimens—as well as the more volatile electronics, retail, and automotive industries—all doing well.

The airline is poised to introduce a GPS solution that enables shippers to track the location and condition of high-value, time-critical, or other important shipments. Air cargo users such as Quick International Courier, a Southwest customer, view GPS as adding even more visibility to a supply chain that has already benefitted from technology's ability to transact and track shipments.

Air carriers are responding to shipper demands. For example, Lufthansa offers refrigerated air cargo containers for temperature-sensitive products.


GEODIS
wilson

For example, life sciences customers will be able to ensure a package's temperature and integrity are maintained. "We've always had to give up control at some point," says Robert Mitzman, president and CEO of Quick International Courier. "Eventually, we will have visibility into a shipment's entire trip."

In the expedited domestic market, shippers and forwarders have faced capacity constraints in the past year. "We're holding our own; supply is meeting demand," says Lively. But issues such as rising fuel costs, shrinking capacity, increasing regulations, and customers accepting longer transit times in exchange for lower costs concern him. "The long-term direction of the domestic airfreight market is uncertain," he adds.

REGIONAL ALTERNATIVES

Sometimes meeting airfreight challenges calls for creative solutions. One example is the use of regional airlines to avoid the congestion and delays that can occur at major airports. Regional airlines tend to use smaller airports and require less time for tendering. Shipments also need less robust packaging, because handling is often manual.

A less-congested airport can also mean more on-time flights and faster movement from plane to cargo facility. Southwest Airlines cut its teeth on this approach, and continues to use smaller airports such as Houston's Hobby Airport, while also serving larger airports.

One shipper applying this strategy is Clinical Pathology Laboratories Southeast (CPLSE), a division of Sonic Health Care, based in Sydney, Australia. When the company consolidated several labs it had acquired throughout the Southeast, it needed a fast, cost-effective way to move specimens into its main U.S. facility in Orlando, Fla. Ground transportation was not fast enough to accommodate the overnight results clients expect.

CPLSE tried buying a plane and hiring pilots, but ran into on-time issues and frequent cancellations. So the company approached both national and regional cargo airlines for a solution. Today, the bulk of CPLSE's daily shipments move via AirNet Cargo Charter Services, a small-package express cargo airline based in Columbus, Ohio.

In addition to improved on-time performance and fewer cancellations compared with its own plane, CPLSE enjoys the service levels of a regional cargo carrier, says William Pesci, division president of CPLSE. AirNet's management, for example, meets with CPLSE regularly to enhance service, and ensure that tendering daily loads runs smoothly.

"With national carriers, the service may not be as personal," Pesci notes.

AirNet moves critical small-parcel cargo, such as diagnostic samples, through its scheduled and on-demand services to secondary airports in North America, such as Teterboro, N.J. The company's fleet of smaller aircraft, including Learjets and Cessnas, carries payloads up to 3,000 pounds, partnering with ground courier services to complete deliveries.

This approach minimizes security processes, while accommodating industry-specific requirements such as spill kits, radiation exposure placards, and Hepatitis B shots for pilots. AirNet screens cargo, but "we don't have to go through the known-shipper process, or a two-hour lockout," says Frank DiMaria, senior vice president of sales and marketing for AirNet. "We can tender planeside."

Smaller forwarders are experiencing similar success. "Small niche carriers are able to grab market share from larger companies, particularly in pharma, trade shows, and perishables," says Brandon Fried, executive director of the Air Forwarders Association (AFA). "Companies are restocking their shelves; inventory is down and demand is up."

EVER-INCREASING SECURITY

Moving goods safely and securely is a priority for airfreight carriers. But mounting regulation is challenging their ability to operate efficiently. Costs associated with security today are 10 times more than in 2001, reports Lufthansa.

"Security is a double-edged sword," says Lively. "Protecting the public is paramount, but it is hurting the industry, and poses a challenge for all air cargo carriers. We are collectively trying to find a middle ground."

In May 2012, the U.S. Transportation Security Agency (TSA) set a Dec. 3, 2012, deadline for passenger air carriers to begin conducting 100-percent cargo screening for explosives on international flights bound for the United States, as prescribed in the 9/11 Commission Act. Currently, about 80 percent of all incoming international cargo

SHIPPERS REMAIN HIGH ON AIR FREIGHT

Current airfreight market conditions have shippers such as Fairchild Semiconductor, a leading global provider of semiconductor technologies, feeling confident. Despite its considerable use of airfreight lanes, primarily in the Pacific Rim, the company's well-negotiated, long-term contracts mean "we have not felt the effects of shrinking capacity," says Bob Scribner, director of global logistics and trade compliance. "I don't expect a price increase in this year's contract renegotiations; in fact, I expect to save a little bit, because Fairchild is a steady user and fair to vendors."

For Fairchild Semiconductor, tight cycle times and a short inventory pipeline mean at least 90 percent of its cargo moves by air, including packaged and consolidated air express, and standard freight forwarder-type pallet loads.

The company makes smart use of intermodal transport. China remains a major location, but to reach countries such as Thailand and Malaysia without the cutoffs and delays that can occur with air shipments, Fairchild has shifted some cargo to long-haul trucking for distances of less than 1,000 miles.

"The journey takes about 24 hours longer, but it comes at significantly lower costs," says Scribner.


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LIGHTS OUT ON NIGHT FLIGHTS

Air cargo carriers and shippers are decrying the recent upholding of a night-time flight ban at Germany's Frankfurt Airport. The ban prohibits flights between 11 p.m. and 5 a.m., and restricts flights just before and after that time period.

The International Air Cargo Association (TIACA) predicts economic fallout, including reduced future investment by companies at the airport, job losses, increased trucking, and higher consumer prices for products such as perishables.

The ban has cost Lufthansa more than $32 million in lost revenue and less-productive aircraft use, as well as schedule restructuring.

"Our Chicago-to-Frankfurt flight used to depart at 2 a.m. or 3 a.m.; now it leaves 12 hours later," says Michael Göntgens, spokesman for air carrier Lufthansa Cargo AG, whose main hub is in Frankfurt. "That's a less-attractive schedule for customers."

Air cargo carrier Cargolux, whose main hub in Luxembourg has long banned night flights, advocates tying the level of some landing fees to the noise emissions of the aircraft, as is the practice in Luxembourg and Amsterdam.

Many airfreight industry experts question the ban's validity. Brandon Fried, executive director of the Air Forwarders Association, notes that the ruling is based on vague scientific evidence, and cites the dramatically reduced noise levels emitted by today's aircraft. They are 90 percent – about 30 decibels – quieter than the first jets introduced nearly 40 years ago, according to TIACA.

and 100 percent of high-risk international cargo is screened, according to the TSA.

The requirements build risk-based, intelligence-driven procedures into the prescreening process, with enhanced screening for high-risk shipments, and other physical screening protocols for lower-risk shipments.

Complying with this requirement has proved challenging for air cargo carriers. "TSA has no jurisdiction overseas," notes AFA's Fried. "Carriers have to enter into agreements with other countries to screen cargo the way the United States does."

Efforts to harmonize requirements among countries are moving slower than hoped, and the AFA anticipates that if the United States can't get other governments to cooperate, the burden will shift to carriers. "If that's the case, airlines will probably not be totally prepared, leading to congestion, delays, and missed flights," Fried says. The organization advocates a program that differentiates screening requirements for frequent, known shippers from occasional shippers.

ACHIEVING HARMONY

The Global Air Cargo Advisory Group (GACAG) is spearheading efforts to harmonize several aspects of international air freight, including security regulations. Currently, efforts to reconcile security processes among countries are piecemeal, although the agreement signed in May 2012 by the European Union and the United States to mutually recognize each other's known shippers represents progress.

"Now that the United States and the European Union have signed a long-awaited accord to recognize each other's airfreight security regulations, airlines are hoping for swift implementation to achieve efficiency gains," says Frank Reimen, president and CEO of Cargolux.

Changes are also afoot in the United States' Air Cargo Advanced Screening Pilot Project, in which forwarders and carriers submit advanced electronic house bill of lading (BOL) data from shippers. Currently, the BOL must be filed four hours prior to the aircraft's arrival in the United States; a proposed new rule would require it before departure.

"This is a paradigm shift," says Fried. "Many airlines hold on to this information and file it after departure," which gives them buffer time to compile data. If the rule passes, airlines will need to build extra time into their procedures – time that could endanger last-minute shipments, such as critical medical cargo.

Evolving U.S. cargo screening requirements are also challenging the air cargo supply chain. The voluntary Certified Cargo Screening Program is expanding from phases covering express and passenger air carriers and freight forwarders to include heavy all-cargo air carriers. To date, more than 55 percent of air cargo is screened prior to its arrival at the airport, according to the TSA.

GREENER SKIES

Sustainability is also becoming an increasing concern, but it can be challenging for shippers to directly pressure carriers on sustainability issues. "We find it difficult to push freight forwarders to decrease carbon fuel use," says Bob Scribner, director of global logistics and trade compliance for manufacturer Fairchild Semiconductor. "They're at the mercy of commercial airlines."

Airlines stand to make the largest sustainability gains by replacing aging aircraft with new, more fuel-efficient models. Aircraft currently in use are 70 percent more fuel-efficient than the first generation of jets, emitting proportionally less carbon dioxide (CO_2), according to IATA.

The newest generation of airplanes offers an additional 15- to 20-percent improvement in fuel usage and CO_2 emissions, as well as reduced footprints.

The industry's planned transition to biofuels has the potential to make aircraft carbon-neutral, because burning the fuel only releases the carbon absorbed by the feedstock plants that make up the fuel.

Airlines have also pushed for more efficient air traffic control systems, which TIACA says could improve fuel efficiency and CO_2 emissions by up to 12 percent. In the United States, the FAA Modernization and Reform Act of 2012 includes $11 billion toward modernizing the air traffic control system, including switching from radar tracking to GPS. Efforts to improve coordination among air traffic control authorities in Europe, however, continue to languish.

Some air shippers avoid congestion and delays by turning to regional carriers. AirNet Cargo Charter Services, for example, flies critical small-parcel cargo, such as diagnostic samples, through scheduled and on-demand services.

Another ongoing issue is Europe's Emissions Trading Scheme for aviation, a tax on airlines intended to fund environmental efforts. TIACA contends that the money is better spent enabling airlines to purchase new, more energy-efficient aircraft, an investment many cargo carriers are making. An extensive backlog exists for widebody freighters following a record year for freighter orders in 2011, which could mean excess capacity in the airfreight market in 2012.

Enthusiasm is also widespread for advancing the use of electronic documentation, which promises to enhance the industry's security, efficiency, and sustainability by replacing paper documentation with online transactions. Interest in IATA's electronic air waybill (e-AWB) project is particularly high. GACAG is currently reviewing the project – which promotes electronic, harmonized Customs procedures as well as other initiatives – to recommend an industry roadmap.

The e-AWB is intended to replace the 30 different paper documents an airfreight shipment generates with electronic communication. It removes the requirement for a paper waybill, and promises to enable more accurate information, deliver confidentiality and efficiency, reduce paper handling costs, and expedite delivery times. IATA has set a goal for 15 percent e-AWB usage by the end of 2012, 70 percent by the end of 2013, and 100 percent usage the year after.

But questions remain as to how to resolve multiple e-commerce platforms, who will fund the required infrastructure, and how to ensure pervasive government support of paperless Customs clearances. "We need to make sure the value proposition is shared," says AFA's Fried.

The airfreight industry is depending on the efficiencies promised by new freighters, electronic documentation, harmonized standards, and updated air traffic control systems.

Despite economic uncertainties and regulatory requirements, air cargo carriers are ready for anything. ■

BEATING THE ODDS
IN LATIN AMERICA

Multinational corporations are gambling on the Latin American market's growth potential. But when it comes to meeting the region's supply chain challenges, all bets are off.

By Lisa Harrington

"Latin America has transformed itself into a set of fast-growing, emerging economies," says Jose Fernando Nava, president, Latin America, for DHL Supply Chain. "Many countries have developed sound economic policies, with good reserves. The level of public debt is lower compared to other economies. Commodity exports have risen for the past several years, and internal consumption is flourishing."

Consumer credit, which was largely absent 15 years ago, is becoming more available in the larger countries—fueling economic activity. "Home loans, which we have always taken for granted in the United States, were non-existent in Latin America 20 years ago," says Nava. "Today, credit is present in many forms—for car, construction, and home loans, as well as credit cards."

These developments have created internal demand, which has attracted new investment by many global players in industries such as consumer goods, high-tech, and electronics. The region also is benefiting from a recent shift in global manufacturing strategy for large multinational corporations.

"Companies that had located all their manufacturing plants in China are looking to reduce supply chain risk by moving some production to Mexico and Brazil to serve the Americas market," notes Claudia Roa, vice president of Latin America for DHL Customer Solutions & Innovation.

"Doing business in Latin America, however, is rife with complexities," Roa cautions. "Logistics costs are high compared to other regions of the world—about 15 percent of the cost of goods sold. Countries are trying to find ways to reduce these costs, but it will take time."

In the meantime, supply chain management in these countries requires creativity, perseverance, investment, good partnerships, and strong local relationships.

UNIQUE CHALLENGES

Emerging growth economies pose unique challenges for all supply chains, and Latin America is no exception.

Underlying supply chain development is the fact that Latin American consumers are

becoming more sophisticated. "A few years ago, if consumers in Mexico bought chocolate from a convenience store, it would be white because it was so old," Nava explains. "They wouldn't even think about returning it, because that was the norm."

Today, that's not acceptable. Supply chains must be able to deliver quality in both product and services, while becoming more efficient and effective.

Third-party logistics (3PL) companies are investing aggressively in Latin America, particularly in Brazil, Mexico, Chile, Argentina, Colombia, and Peru. Brazil ranks third behind China and India in market compatibility, market size, and growth prospects for 3PLs, according to Agility's latest *Index of Logistics Services Development in Emerging Markets*.

"Though Brazil's infrastructure score remains weak, investment is set to intensify in the run-up to both the 2014 World Cup and 2016 Olympic Games," the study says. "When respondents were asked to rank countries with the biggest potential to become a major logistics market in the future, Brazil placed third in the survey."

Mexico clings to top-10 status in the Agility index. "Mexico has seen a continuous decline in its score due to high levels of crime and violence caused by drug-related trafficking," the report indicates. "On the plus side, the country has seen reasonable economic growth in recent years, and benefits from a strong service sector.

"In addition, foreign direct investment into Mexico remains high, and does not seem to be deterred by crime levels—reflecting the relatively easy access to its market and economy Mexico offers international companies," the report says.

Going forward, the following five issues will play a major role in how successfully Latin America develops as a manufacturing, distribution, and logistics market:

1. LAGGING PRODUCTIVITY. Weak productivity is the main reason for Latin America's relatively slow growth. Since 1991, average productivity in the region has increased by only 1.4 percent each year—much less than in Asian economies. Restrictive labor rules and sector-specific regulations persist across the region, limiting the capacity of more productive companies to expand. High social taxes and stringent job security laws make firing redundant employees difficult, and employers reluctant to hire.

"Boosting productivity and competitiveness remains a key policy challenge over the medium and long term," agrees Nicolás Eyzaguirre, director of the International Monetary Fund's Western Hemisphere Department.

2. LACK OF SUPPLY CHAIN EXPERTISE. "Compared to developed countries, Latin America has to invest more in training, especially at the managerial level," Nava comments. "The challenge is that universities in Latin America are not yet offering logistics degrees. It's only a topic within other curricula, such as industrial engineering. People entering the logistics field have to learn everything from how to manage a distribution center to how to interact with customers. This takes time.

"The managerial level is where Latin America's talent issue is most acute," he continues. "High unemployment levels may suggest plenty of workers are available. But that aggregate number doesn't capture the scarcity of trained logistics talent."

3. SYSTEMS. The third big issue for logistics operations in Latin America is information systems and infrastructure.

"The region is comprised of emerging economies, so systems infrastructure generally lacks sophistication or, in some cases, availability," Nava reports. DHL's strategy is to invest in systems and build the same common platform in Latin America that it operates in North America.

Technology is particularly important when managing transportation in Latin America. "Transportation is highly fragmented," Nava explains. "We have to deal with many owner-operators. And in Brazil,

each state levies myriad regulations and taxes. That creates a lot of transactions for our transportation management system (TMS) to handle. A TMS is still too expensive for a single company to justify, particularly in a region where capital is tight. Latin American companies without a TMS end up doing a lot of manual work."

4. SECURITY. Crime is pervasive throughout Latin America, and takes a heavy toll. The homicide rate in some Latin American cities is extremely high. Rio de Janeiro has 33 homicides per 100,000 people each year, compared with four in New York City in 2009 and three in Toronto in 2007, according to a McKinsey & Company report. Monterrey's homicide rate grew at an "astonishing" rate in 2011-2012, says the report, due to increasing drug-related violence.

Economists estimate that Mexico's security issues could reduce the country's GDP by one percent to two percent in 2012.

Organized crime is becoming more sophisticated, requiring 3PL providers to

invest heavily in increasing the standards and sophistication of their security systems and procedures.

"Security is a never-ending battle because the moment you think you're up to speed, something new arises," says Nava. "It drives costs up."

Surface transportation is the most difficult security risk area of the supply chain in Latin America. "There usually aren't multiple routes to destinations within a country. In many cases, criminals simply block the highway and start checking trucks to see what products they like," Nava reports. "The police are understaffed so they cannot patrol every road. On certain routes, DHL uses a private security force to escort its trucks."

To combat highjacking, more trucks—especially in Brazil and Mexico—are being equipped with state-of-the-art GPS tracking systems so they can be monitored in real time wherever they are. Subscription-based tracking solutions will more than double by 2014 in Latin America, according to C.J. Driscoll & Associates. Brazil, in particular, will see significant growth thanks to a new regulation, Contran 245, which will require GPS tracking devices in all vehicles sold there.

"Some Latin American carriers are more advanced in tracking than we are in the United States," notes Wendy Herrick, vice president of customer service and logistics for North America, Unilever, and former director-logistics for the Americas for Unilever. "Go to a transportation office, and you'll find a huge control room with screens monitoring every truck and every delivery. The security problem has actually helped develop transportation in Latin America."

5. TRANSPORTATION INFRASTRUCTURE. Latin America is a long way from perfect in terms of infrastructure. Ports are congested, roads are inadequate, and the pace of investment is slow.

"Many countries are concerned that the pace of growth will outstrip the rate of infrastructure improvement, which, in turn, will keep logistics costs high," observes Roa. "Increasingly, countries realize that if they don't improve, the region will not be able to grow and compete."

More progressive Latin American countries such as Panama, Colombia, and Uruguay have established free-trade zones, which attract heavy distribution-related investment. In Panama, logistics hub development is booming, a by-product of the country's progressive stance on trade and the expansion of the Panama Canal.

Unilever is among the fast-growing consumer goods companies in Latin America and is supporting that growth with investments in manufacturing and distribution facilities.

UNILEVER'S LATIN AMERICA STRATEGY

Clearly, global corporations see Latin America as a high-growth market for the next decade or more. Unilever is no exception. "Latin America is a big opportunity for us," notes Herrick. "Our first-quarter 2012 results show tremendous growth there."

Unilever is investing heavily in manufacturing capacity throughout the region. In April 2012, the company announced plans to invest $500 million in production and distribution facilities in Mexico. Earlier in the year, Unilever CEO Paul Polman unveiled plans to build production and distribution facilities in Colombia to support growth there. The company will invest about €75 million over the next three years to build a state-of-the-art laundry detergents factory and distribution complex at Palmira, Valle del Cauca, to increase

Unilever's capacity for growth, and meet increasing demand for laundry products in Colombia and other parts of Latin America. The goal is to enable Unilever to produce locally and/or regionally, thereby delivering products more quickly to consumers.

"Unilever has set an ambitious goal—to double the size of its business while reducing environmental impact," says Pier Luigi Sigismondi, Unilever's chief supply chain officer. "These new facilities will help us continue to grow in Colombia.

"Our business in Latin America makes up a significant portion of the 54 percent of business that Unilever currently generates from emerging markets," Sigismondi says. "We expect that figure to rise significantly in the future."

Unilever ties supply chain network design directly to supporting its growth vision in Latin America. "We have a clear strategy by customer channel," Herrick notes. "The drug store and value channels are big in Brazil, for example. We look at the market as a matrix, considering the end-to-end supply chain, not just distribution or manufacturing. We then identify what it will take to support growth in these channels."

In many cases, Unilever partners with 3PLs to handle warehousing and transportation. "3PLs with experience in Latin American countries know how to manage the complexities," says Herrick. "In Brazil, for instance, transportation is complicated. Carriers use five or six different truck sizes, depending on the channel requirements. They tailor the equipment to the type of customer.

"The transportation industry is fragmented in Latin America, with a lot of small players," Herrick continues. "That

Ocean Rates and Capacity Outlook

With ocean trade a critical lynchpin of Latin America's future prosperity, what does the near-term capacity and rate picture look like? To find out, *Inbound Logistics* spoke with Mike Wilson, senior vice president, business operations, for Hamburg Süd North America, one of the major liner companies servicing the Latin America trades.

"The container trades in Latin America will likely experience what the liner industry calls the 'cascading effect' – big ships displacing small ships," Wilson notes. While this effect may mean lower rates in the short term, it raises real concerns for the long-term health of containership companies and, thus, the future of capacity.

"Between 2005 and 2009, global liner capacity grew ahead of cargo growth," Wilson explains. "In 2011-2012, cargo capacity and growth nearly equalized, but excess capacity continued to build as new ships entered the ordering, construction, and delivery pipeline. As these new ships come online in the next few years, ship supply will outstrip demand, based on anticipated cargo levels worldwide.

"Supply/demand equalization could take place by 2018, if no new ships are added," he continues. "Unfortunately, this is not likely to be the case, as economics (fuel, capital) will drive the trend toward newer and bigger ships with a lower capital and operational cost per slot."

Given this reality, what do carriers do with their older, smaller, less-efficient ships? "The initial step to improve utilization was to 'slow steam'—run slower, which means carriers needed more ships deployed," says Wilson. "Once slow steaming is maximized, excess capacity is moved to other trades. This is called 'cascading.'

"Cascading, however, only works to the point of saturation in the receiving trade," he continues. "Cascading is happening in the Latin American trades today, as well as in other areas of the world. This has a negative effect on rates, and subsequently on carrier balance sheets. This may be good for shippers in the short term, but eventually, unless volumes increase, carriers will decide to tie up vessels —take them out of service and wait."

Rates will improve at that point, as capacity and volume find more equilibrium. This could create service issues in high-growth trades such as Brazil and other Latin American economies.

Container shipping lines such as Hamburg Süd are "cascading" vessels, which will impact rates and capacity.

"As volume in these trade lanes continues to grow, and capacity in other trades is in excess, the 'cascading' of vessels into these trades is a likely outcome," asserts Wilson.

makes it more difficult to manage, especially when handling volume spikes. And having no rail service in Latin America puts pressure on pricing."

Unilever uses a mix of local and big-name global 3PLs to service its business in Latin America. "It hasn't been easy for some global 3PLs to break into the market," Herrick notes. "We want to see more 3PL presence in Latin America. It serves our mutual best interests and injects healthy competition."

NIKE'S BRAZIL BOOM

With Brazil hosting the World Cup in 2014 and the Summer Olympics in 2016, it's no surprise that Nike views the country as a huge opportunity. In fact, Nike's operations there are poised to become one of the company's largest in the world.

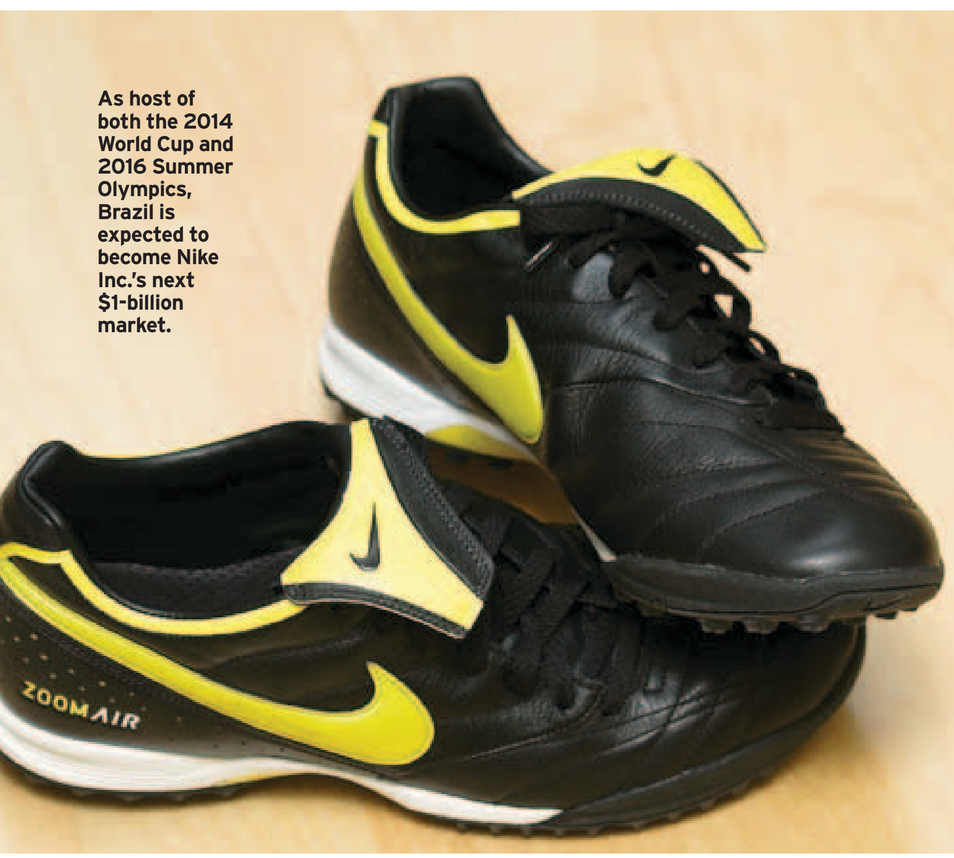
As part of its Brazil market strategy, the footwear giant introduces a new line of products every three months, creating peak volumes on specific launch dates. This seasonality demands supply chain flexibility and visibility to ensure product launches are managed efficiently and cost effectively.

"We receive products from hundreds of factories worldwide and deliver them to thousands of stores across Brazil," explains Leonardo Silvério, national logistics manager for Nike. "The only way to succeed in managing this complex supply chain is to work closely with reliable partners — whether they are suppliers or retail clients."

Nike partnered with DHL Supply Chain to implement an integrated logistics program in Brazil. DHL responds dynamically to order requests from Nike using sophisticated order management and fulfillment systems and processes, integrated route and shipment planning, and delivery service management. Specific components of the program include:

- Monitoring products at every stage in the warehousing and distribution process through RFID systems.
- Real-time monitoring of work flow and productivity in the DHL-Nike distribution center, visible to associates via television monitor.
- Assembling products in accordance with the retail customer's request (size, color, model, quantity).
- Labeling or placing alarms on products so they are delivered to the retailer ready for sale, including the price or bar codes to be used for store inventory control.
- Transmitting information in real time when the delivery is accepted or rejected.

Its 3PL partnership with DHL Supply Chain has enabled Nike to improve customer service levels throughout Brazil while keeping up with rapidly growing order volume. The solution has reduced overall supply chain costs, and outperformed expectations in 42 categories including inbound, outbound, picking, and shipping, within the first 45 days of operation.



As host of both the 2014 World Cup and 2016 Summer Olympics, Brazil is expected to become Nike Inc.'s next $1-billion market.

ALL ABOUT GROWTH

From a supply chain perspective, Latin America "is all about growth," according to Herrick of Unilever. "From the shipper perspective, you have to have the wisdom to take a step back, and understand the culture and how you do business there. It's exciting to be part of a growing area. It's like going back to the 1950s and 1960s in the United States, when businesses were keen to grow and develop."

Understanding the true dynamics of the market, such as infrastructure and distribution challenges, is crucial. "When companies consider entering the Latin American market, they need to realize that each country has different complexities and challenges," Roa advises.

"Many regulations can impact logistics and supply chains," Roa adds. "If companies want to invest, they must understand these regulations, and work with stable logistics partners that can guide them in the process."

[CAREER SOLUTIONS]

BATTLE & BOARD

THE MILITARY-

Military skills are put to good use in the private sector. The traits of an exceptional soldier – leadership, persistence, teamwork, order – are also the traits of exceptional logistics professionals.

by Kimberly Johnson

EFIELDS

ROOMS

–PRIVATE SECTOR CONNECTION

The Marine Corps is world-renowned as the U.S. military's first responders. They storm the beaches. They kick in doors. They also helped pave the way for expedited freight to arrive at its destination, quickly and on time.

So says Frederick Smith, founder, president, and CEO of FedEx. He joined the Marine Corps in 1966 after graduating from Yale, and served two tours in Vietnam—experiences that played a great role in shaping the largest overnight delivery company in the United States.

"I do not believe I could have built FedEx without the skills I learned from the Marine Corps," Smith told *Fortune 500* magazine recently. "My four years in the Marine Corps left me with an indelible understanding of the value of leadership skills. It boils down to looking after your people and ensuring that, from top to bottom, everyone feels part of the team. Like in the Marine Corps, FedEx is a team effort, and it takes all 300,000 of us working every day to satisfy our customers."

Give and Take

Napoleon Bonaparte may have said it best: "An army marches on its stomach." For as long as there have been military forces, there has been a need for logisticians to keep them organized and ready to fight. That military sense of teamwork, leadership, and order has been applied to the private sector as well.

Like companies in the private sector, the military is increasingly seeking to boost efficiency, says Bobbi Wells, managing director of air operations planning and analysis for FedEx. "We have ongoing discussions with military organizations about what we can learn from them and what they can learn from us," she notes. "We both benefit."

As a former Army logistician, Wells has a unique view into the symbiotic relationship between the military and FedEx. She began her career more than 20 years ago, transitioning from her college's ROTC program to Army active duty. She began earning her pay as a truck platoon leader in Ft. Sill, Okla. From there, she was sent to Germany for four years, where she joined the 3rd Armored Division.

"In Germany, I expanded my logistics experience by adding maintenance skills to my portfolio," she says. "The 3rd Armored Division's tracked and wheeled vehicles required heavy maintenance and constant resupply of fuel and bullets."

The job was rarely static. "Resupplying vehicles in garrison was predictable and stable," Wells says. "But when the vehicles were deployed or on maneuvers, it became more of a logistics challenge. We had to have all the supplies available at the closest possible point to each vehicle's location, and we had to be responsive to every unit."

The post gave Wells a hands-on lesson in solving problems by using available resources. She also got a lesson in the ingenuity of soldiers. One example is how they improved the vehicle refueling strategy.

The refueling strategy in Germany at the time was to establish fuel farms with large bladders (inflatable rubber containers used to store fuel in strategic locations). "When the Division was on the move, soldiers would run the track vehicles directly over the Autobahn rather than load them on railcars to move them to maneuver areas," Wells recalls. "So the soldiers would pull vehicles over en masse to the established depot areas to refuel."

Soldiers under her command engineered a better solution. "Using the equipment that was issued to them, such as piping and spigots, my soldiers designed a refueling system called Refuel on the Move, which was set up like a gas station on the roadway," Wells says. "It was not only flexible and quick to implement, but it also provided a more efficient and effective way to refuel vehicles. Soldiers could pull up along the road and refuel several vehicles at the same time, which made the vehicles less vulnerable because they weren't congregating in a large location."

Experiences like that left a lasting impression on Wells. "The biggest lesson I learned was that if you encourage and support the people on the front lines—whether they are soliders or private sector workers—they can solve any problem put before them," she says.

GUARDED DECISIONS

The cross-over lessons between the military and private sector are not always complex. Sometimes, they are quite simple.

Andrew Carpenter, a logistics account executive for Cincinnati-based freight brokerage firm Total Quality Logistics (TQL), says he learned the value of persistence in the two years since he joined the National Guard. He initially decided to join the service as a way to pay off his student loans. It was a decision TQL fully supported, he says.

In fact, that support was so meaningful to Carpenter that he nominated the company for the Patriot Award, sponsored by the National Committee for Employer Support of the Guard and Reserves.

As a 2nd Lieutenant in the Guard, Carpenter commands a distribution platoon and is responsible for supplying fuel and ammunition to a squadron of 300 soldiers. "My monthly activities include evaluating the soldiers' fuel and ammunition needs—how much, where, and when?" he says.

"Persistence is the quality I use most in both my work for TQL and the military, whether it's chasing down a customer to get freight, staying on my drivers to ensure they pick up my loads, or delivering fuel and ammo to 300 soldiers," Carpenter says.

Attention to detail is key in both the military and corporate logistics, he adds. "In the private sector, some customers don't supply the information you need. If you don't have that information, you might show up with the wrong equipment, so the load doesn't get moved," Carpenter says. "If that happens in combat, a soldier could die or a mission could fail."

Training with Industry

Wells' military career took a pivotal turn in 1990 when she became the second army officer to participate in FedEx's Training-With-Industry program, which was designed to allow officers to study in the civilian world for one year.

"The Army wanted to learn as much as possible from the business world," Wells says. "The missions, goals, and approach could be different, but many daily tasks and functions offered tremendous opportunity to learn from one another.

"The benefit of the program to the civilian company was having someone on staff who could provide a different perspective and approach that might be refreshing to the organization," she adds.

The benefits, she found, became apparent for both parties in ways big and small. As one small example, FedEx didn't have a way of denoting altered or new material in its manuals, so the company adopted a military strategy—it used a heavy font bar to the left of the new text.

FedEx operations also left a lasting mark on the military when an officer in the training program implemented the hub-and-spoke concept of logistics management while at his next duty station in Europe. "A hub-and-spoke system seems elementary now, but 20 years ago the military wasn't doing it," Wells says. "The military draws tremendous efficiencies from it."

The military is also evaluating ways to reduce its footprint by narrowing the number of supply facilities, improving their reaction time, and developing a more efficient model for executing the logistics support mission, Wells says.

Another pressing issue for the military is item visibility in the resupply chain. "If supply sergeants for a forward-deployed unit can't see the item they ordered and don't have information about its delivery time, they might react—because they can't afford to wait—by ordering several more," she says.

The military's influence is also seen in FedEx's command and control over global

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operations. The global operations department has responsibility for managing line-haul operations, including the fleet, aircraft connectivity, and FedEx trucks. Managers in that department are delegated greater responsibility for making decisions.

"They may decide to re-route planes to recover some overflow volume, with the focus on 100-percent service flow every day," Wells explains. "That command and control responsibility and organization is taken directly from the military."

FedEx continues to inject military thinking into its operations through another strategy—its talent. In the past two years, the company has hired more than 3,000 veterans through its "Hiring Our Heroes" program.

The Big Picture

Connected Logistics, a Huntsville, Ala.-based information management and logistics automation provider, also brings military knowledge into its operations, and has had the military ask for its help on logistics issues.

"I have seen commanders seek the expertise of industry to resolve complex logistics problems," says Billy Pratt, director of operations for Connected Logistics. Before joining the company, Pratt was the senior logistician for the Chief Information Officer for U.S. Forces in Europe. There he managed materiel readiness and logistics support for strategic architecture and systems.

"I have been a logistician all my adult life, including 27 years in the U.S. Army," Pratt says. "I have always seen a connection between industry trying to improve the way the military conducts business, and industry learning from the complex environment in which the military operates to improve its efficiency as well."

Connected Logistics was founded on that link to the military. The company was established in 2007 by Forest Bourke, who worked for Pratt in 2002 when he was the G-4 officer of the 3rd U.S. Army—the Coalition Forces Land Component Command for Operation Iraqi Freedom and Operation Enduring Freedom.

"During that time, we needed real-time visibility on the battlefield to determine where our assets were to sustain U.S. forces in theater, how those assets were moving from location to location, and the demands on that inventory to support the soldiers, sailors, airmen, and Marines," Pratt says. "We had no information technology (IT) architecture that could deliver that real-time information when we were sitting in Kuwait's command operations center."

To remedy that situation, Pratt asked then-Lt.Col. Bourke to develop a solution that would allow command to see its resources, then flex and move supplies to where they were required on the battlefield. Bourke worked with industry partners and developed what would become the "Logistics Common Operating Picture."

"Bourke linked an IT system with appropriate radio-frequency identification (RFID) technology to a small aperture terminal satellite system with a laptop," Pratt explains. "That enabled logisticians to communicate their requirements within the existing IT system.

"The Logistics Common Operating Picture allowed us logistics visibility across the theater of operations, primarily Kuwait and Iraq," he adds. "We could then communicate those requirements back to the United States so we could get the required materials where they were needed on the battlefield to support the soldiers."

This system became what is today the Battle Command and Control's Service Support System (BCS3), a satellite-connected real-time account of materiel movements.

Because the system allowed the Army to see where their trucks were moving, they had real-time visibility when things went wrong. "During one combat incident, we saw trucks move in directions where there were no soldiers," Pratt recalls. "We knew that convoy of fuel had been hijacked. And, because of the RFID technology, we knew the trucks' exact location, and were able to get them back."

Even though both men are now retired from the service, Pratt and Bourke continue the initiative. "Connected Logistics primarily operates at the intersection of information technology and logistics services," Pratt explains. "We are agnostic in regard to IT systems and hardware. We look at how information technology can best facilitate decision-making for our clients." In fact, all the leaders at Connected Logistics are logisticians who are focused on providing an IT solution to facilitate rapid decision-making.

"The Army wanted to learn as much as possible from the business world. The missions, goals, and approach could be different, but many daily tasks and functions offered tremendous opportunity to learn from one another." — **Bobbi Wells,** FedEx

The company has an established contract with the U.S. Army "to manage the world's largest supply chain—sustaining Army soldiers," Pratt says. The Army's Enterprise Information Systems integration program is responsible for the Enterprise Resource Planning solution and architecture for the Global Combat Service Support Army. The architecture governs the management of the Army's supply chain financials.

Connected Logistics' military association has also led to its participation in an assessment of how defense logistics agencies' strategic depots are positioned to best support Army requirements worldwide. The assessment also involves business process engineering to see how shipments can get where they need to go, faster and more efficiently.

"There is a strong synergy between the U.S. military and industry in applying innovation to solve complex logistics challenges," Pratt says. ■


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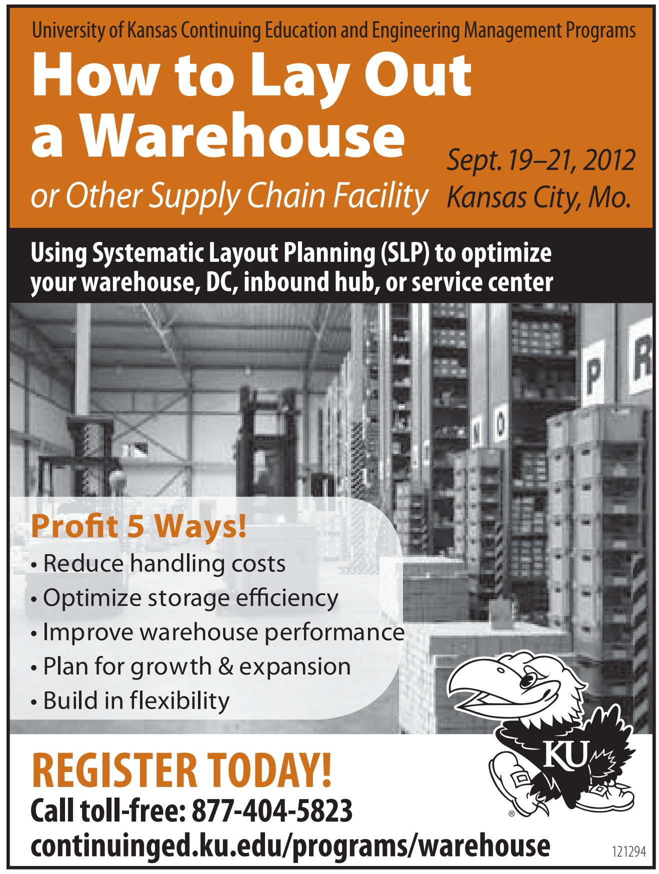
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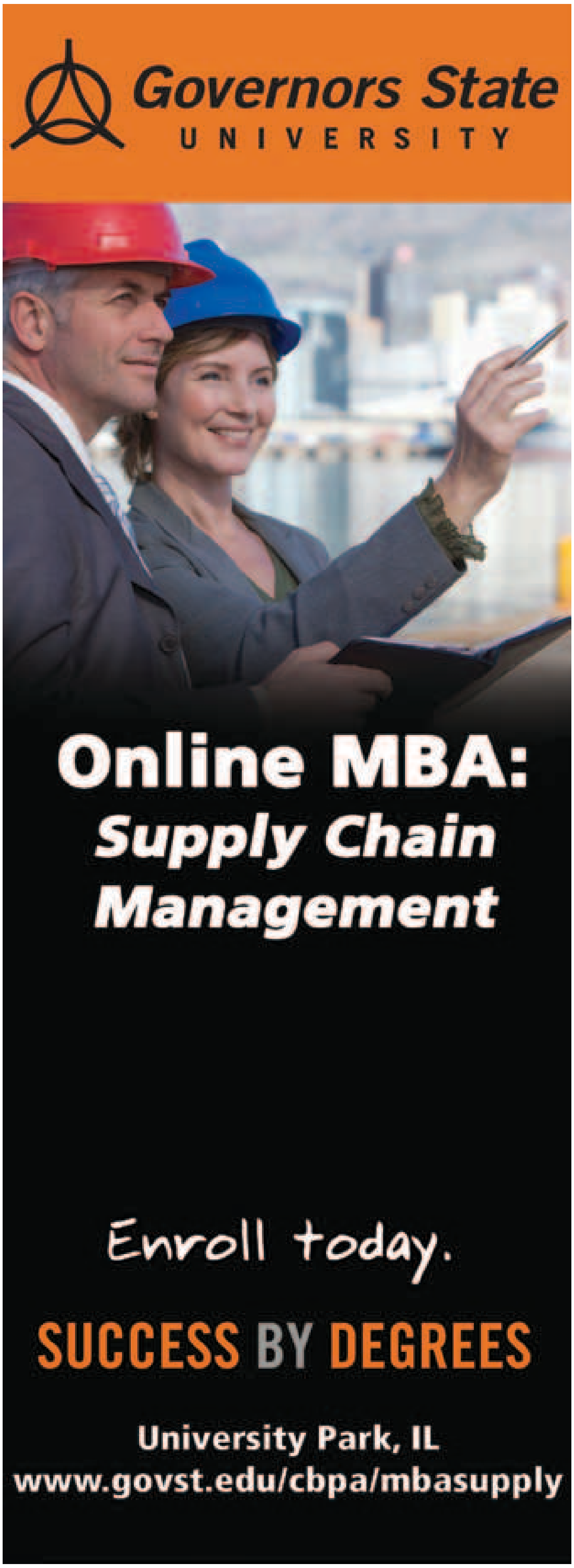

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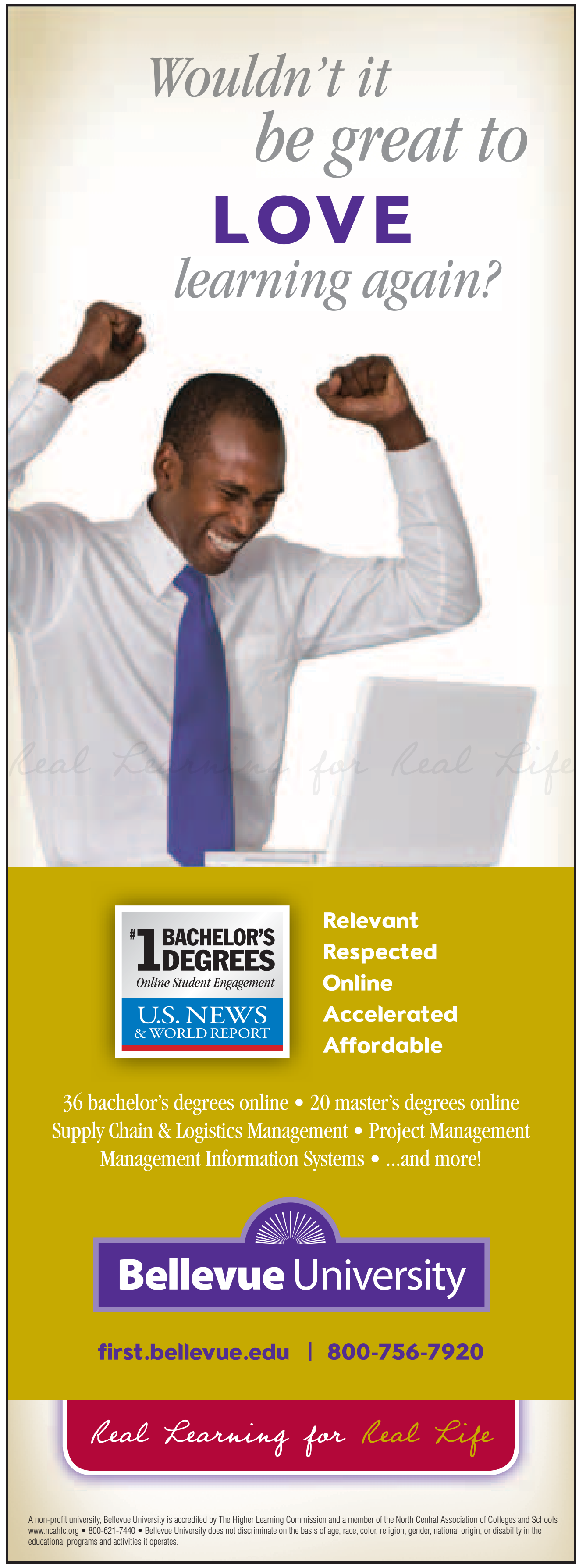

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Casebook | by Cindy H. Dubin

Supporting a Glass Act

It's common to hear about U.S.-based companies moving operations to Mexico to conduct business less expensively, but it's not often you hear about a Mexico-based firm moving its inbound logistics operations to the United States. Yet that's just what automotive glassmaker Vitro did.

When Mexican automotive glassmaker Vitro opened a distribution center in the United States, it became crystal clear that the site would need a logistics-savvy workforce.

Vitro became a leading glass manufacturer in Monterrey, Mexico, thanks to U.S. automakers sourcing components from Mexico after the North American Free Trade Agreement was signed. The 103-year-old company manufactures automotive glass products through four subsidiary companies: Auto Templex, Vidrio Plano de Mexico (Automotive Area), Crinamex, and Vitemco.

Vitro also manufactures replacement automotive glass products, which include tempered and laminated glasses, supplying the U.S., Canadian, Caribbean, and Middle Eastern markets.

Vitro ships laminated windshields and tempered parts made in Mexico to satellite facilities to integrate additional components with the products, then moves the products just-in-time to a nearby location for final assembly.

To serve Detroit automakers, Vitro was shipping automotive glass and accessories from Garcia, Mexico, via railcar to a distribution center (DC) in Detroit, run by Melvindale, Mich.-based third-party logistics provider Evans Distribution Systems. The products were then distributed to the Big Three automakers – Ford, General Motors, and Chrysler.

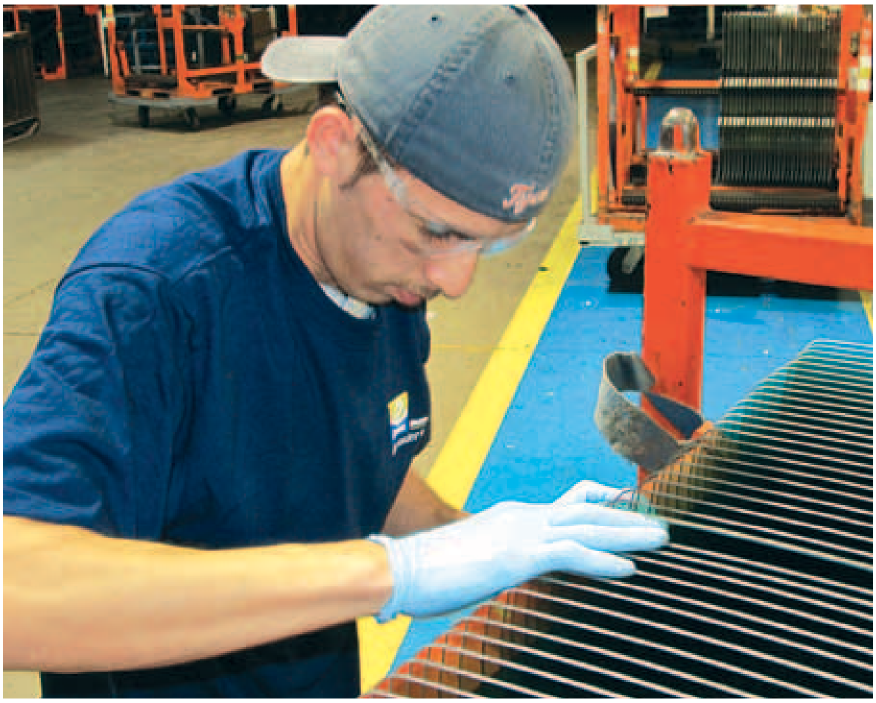
Vitro manufactured the automotive glass in three Mexican plants. Initially, the glass was shipped via full container to the automotive assembly plants, where additional pieces were added. Eventually, the automakers required its suppliers, including Vitro, to first perform those value-added assembly services, then ship the glass.

Closer to the Customer

"We used to ship 75 windshields per container to the Evans DC for distribution to the automakers, who performed the final assembly services," explains Luis Corona, manager of Vitro's Westland, Mich., DC. "With their new requirements to install the accessories before shipping, we could only fit 30 windshields per container. Transportation costs began to rise."

To help reduce those shipping costs, Vitro decided to open its own distribution center in southeast Michigan to assemble the automotive glass accessories and attach them to the glass. In 2008, the DC began receiving products from its manufacturing locations in Mexico, and performing the final assembly tasks.

"The increase in products requiring value-added operations, such as molding assembly and primer application, created the need to consolidate our subcontracted U.S. operations into one manufacturing location," says Corona. "Vitro's U.S. facility transitioned from a receiving and shipping point for our products manufactured in Mexico to a final assembly and



Mexican automotive glassmaker Vitro enlisted third-party logistics provider Evans Distribution Systems to staff its U.S. distribution center.

Nearshoring: A Shatterproof Strategy

Mexican automotive glassmaker Vitro opening a distribution center in the United States to better serve its customers is just one example of the growing nearshoring trend. Forty-two percent of respondents to a survey by research firm AlixPartners indicate they are currently nearshoring or will be within the next three years. The top reasons they cite include reduced freight costs, lower inventory in-transit costs, and improved speed to market.

Typically, companies venturing into nearshoring set up shop in Mexico to import to the United States. But for Vitro, nearshoring meant opening a warehouse and distribution center in Westland, Mich., to supply Detroit's auto industry.

"We need to be close to our customers to support their just-in-time (JIT) requirements," says Luis Corona, manager of Vitro's Westland DC. "We can't deliver JIT from a facility located 2,000 miles from customers."

Vitro is not alone in its decision to bring operations into the United States. Fifty-two percent of business executives surveyed in a University of Tennessee study expect nearshoring back to the United States to increase over the next two years.

"Many shippers in the automotive and other industries are implementing nearshoring strategies. As fuel costs escalate, they are leveraging steamship and container capacity to reduce logistics costs," says Leslie K. Ajlouny, vice president of business development for third-party logistics provider Evans Distribution Systems. "This results in shifting value-added functions—such as repacking, quality inspection, and light assembly—to U.S. third-party service providers located near end customers.

"In addition to reducing total supply chain costs, this strategy often results in improved customer responsiveness, quality, and supply chain continuity," she notes.

value-add operation."

Before moving forward, Vitro discussed its plan with Evans, because moving the operations from Evans' DC to a Vitro-managed site would affect the 10-year relationship between the two companies. Together, they evaluated alternatives and brainstormed potential solutions.

Flexible Support

Because the auto industry is so unpredictable, it is critical to employ a flexible staff that can support operational changes.

"Although our managers are Vitro employees, we wanted a staffing company to handle the other operations," Corona says.

But Evans was not set up to offer staffing solutions for outside customers—it only staffed its own warehouses.

"Because we wanted to preserve our relationship with Vitro, we decided to extend the recruiting, training, and staffing services provided by our own human resources department," explains Leslie K. Ajlouny, vice president of business development for Evans Distribution Systems.

The solution offered two strategic advantages. First, the model ensured a smooth transition and a seamless, low-risk implementation.

Second, outsourcing the labor provided the immediate scalability often critical to support an increasingly uncertain automotive industry.

After the staffing discussion with Vitro, Evans launched Evans Resource Solutions (ERS), a staffing service that places logistics workers in temporary positions. ERS now provides Vitro with employees to handle a multitude of functions, from unloading railcars to picking up glass, putting it into machinery, completing product assembly, and loading outbound shipments.

Staffed to Meet Demand

Evans provided eight employees for Vitro when the DC first opened. Now, ERS supplies 58 workers, and expects to increase this number to 70 by the end of 2012. An overall increase in manufacturing, and new programs instituted by GM and Chrysler, drove the workforce expansion.

"We already know what we will be building next year for automotive customers," says Corona. "Programs come and go in this industry, but based on what customers have told us, we expect to increase our staffing by the end of 2012 to support those programs."

Hiring ERS employees provided Vitro with a reliable workforce, and the company plans to continue the relationship with Evans.

"Low turnover and absenteeism rates, safety, on-time delivery orders for our customers, and a great amount of flexibility to meet the fluctuating requirements of our automotive clients are some benefits we get from working with Evans," Corona says. ■

DC Solutions

Materials Handling: A Better View

When it came time to expand its manufacturing facility's materials handling system, global visual technologies company Christie took a big-picture approach. With production already at capacity and limited room for expansion, Christie installed two Shuttle Vertical Lift Module (VLM) storage and retrieval systems from Kardex Remstar—recovering 70 percent of its floor space, doubling capacity, and cutting labor requirements in half.

Visual technologies manufacturer Christie sees clear benefits from its new storage and retrieval system.

Christie offers diverse visual display solutions for business, entertainment, and medical use. With more than 100,000 projection systems installed worldwide, Christie technologies include solutions for cinema, large audience environments, control rooms, business presentations, training facilities, 3D and virtual reality, simulation, education, media, and government.

The company's manufacturing facility in Kitchener, Ontario, Canada, is the worldwide center for advanced manufacturing of all Christie projectors. With more than 200,000 square feet of production floor space and 600 employees, the certified ISO 9001:2000 and ISO 14001 facility houses top-of-the-line technology, equipment, and employees. The manufacturing process is based on the Kaizen Lean Manufacturing philosophy that focuses on continuous improvement processes and the 5S methodology.

Meeting Customer Needs

As Christie expanded into new markets and territories, the number of orders increased – and so did production requirements. All Christie projection systems are configured to order, but customers were also demanding quick delivery times. While increasing capacity, Christie sought to give its customers the best of both worlds: custom-built projectors with 24-hour order turnaround time.

To meet this goal, Christie needed to double the number of sub-assembled projectors kept on hand. Previously, the company maintained an inventory of 100 sub-assembled projectors, each stored on a two-foot by three-foot cart.

"To double inventory with the previous cart system, we would have had to expand the work area to make room for 200 carts on the floor, buy more carts, and hire more people," says Philip Hibberd, senior manufacturing engineer, Christie.

Taking a closer look at material flow throughout the manufacturing process, it was evident to Christie that expanding the work-in-process area with carts would not fit the lean manufacturing philosophy it had worked so hard to achieve. Christie looked for a solution that provided increased capacity, required less floor space, and created more efficiencies.

The Shuttle VLM provides a 70-percent floor space savings compared to the 600 square feet Christie's previous system occupied.

After extensive research, Christie implemented two Shuttle XP VLMs. Each currently holds 100 sub-assembled projectors, with room for more, which allows inventory to increase based on sales projections.

Including the work aisle, each Shuttle VLM occupies only 180 square feet. Compared to the 600 square feet occupied by the previous cart system, the new equipment provides a 70-percent floor space savings.

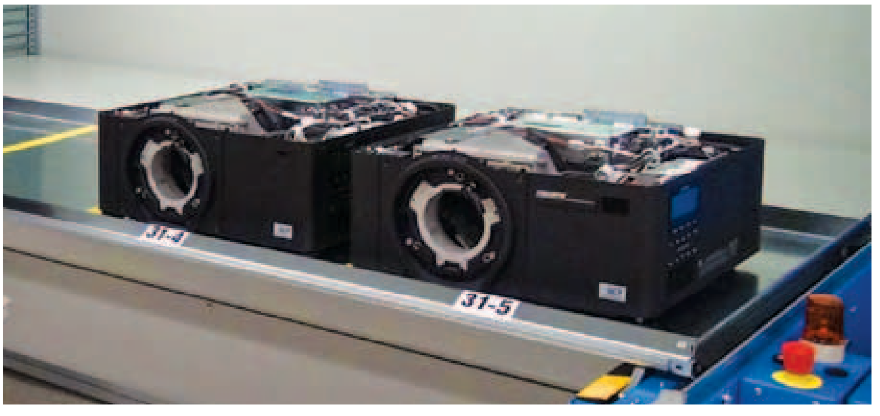
Adding the second VLM allowed Christie to double capacity and only occupy an additional 180 square feet. "We used the recovered floor space to expand the sub-assembly process from six assembly stations to nine," notes Hibberd.

Ergonomics and Safety

With each projector weighing approximately 52 pounds, worker ergonomics and safety is a concern. "The projectors are heavy, and lifting them puts employees at risk of injury and projectors at risk of damage," says Hibberd.

The carts previously used for projector storage had to be shuffled around if workers needed to reach one in the back. Employees were pushing and pulling carts all day long, leading to fatigue. Hoists were available to move projectors from a workstation to a cart and vice versa, but not all employees used them.

Each VLM is equipped with automatic tray extraction, and a hoist is mounted at the access point. The projectors are stored close together on the trays, making



When a projector is ready for picking, the operator uses handheld controls to position the hoist near the desired projector, hooks the hoist onto the projector, lifts it into the air, and lowers it onto the cart.

it difficult to access the sub-assembled projectors without using the ergonomic hoist.

Once the tray is delivered to the access opening, it is automatically pushed onto an extraction table for easy access.

When a projector is ready for picking, the operator uses handheld controls to position the hoist near the desired projector, hooks the hoist onto the projector, lifts it into the air, and lowers it onto the cart.

The operator confirms the pick, and the tray returns into the VLM. The worker then unhooks the projector from the hoist and wheels the projector to a work table nearby.

Improving Efficiencies

With Christie's old system, picking and finishing the sub-assembled projectors required four workers. Using a first in, first out (FIFO) picking strategy, it took workers an average of 15 to 20 minutes to find a specific projector.

"The sub-assembled projectors all look the same, so workers had to check each serial number until they found the correct one," says Hibberd.

With the VLMs, only two workers are required, and the system delivers projectors to them in less than one minute. Christie is now able to retrieve the projectors more than 90 percent faster, using half the labor.

The VLMs have also allowed Christie to vary labor requirements based on demand. When orders increase at the end of the month, the company can add workers to the VLM area quickly and easily. Variable labor provides Christie increased productivity when needed to meet higher demand.

The Final Stages

After projector models are sub-assembled and tested, they are delivered to the Shuttle VLM work-in-process area for storage. Projectors are received into the VLM inventory, and stored by serial number and sub-assembly date so they can be easily identified for FIFO picking later in the process.

Customer orders are received and processed using Oracle's JD Edwards software, then sent to the *FastPic* inventory software that manages the VLM workstation. The operator in the work-in-process zone is tasked with identifying the correct sub-assembled projector by serial number, finishing the assembly work, and delivering it to final electrical testing.

After testing, workers apply UL-approved labels and move the projectors to shipping, where they are sent out to meet the 24-hour turnaround time customers expect.

"The VLMs fit nicely into our facility's lean flow," says Hibberd. "From sub-assembly to testing to storage to configuration to verification testing to shipping, we strive for a lean process. The VLM helps cut wasted time and effort from our materials handling process." ■

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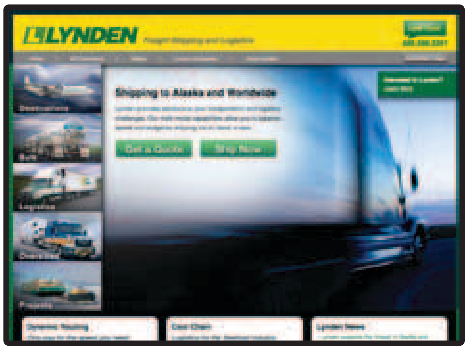

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BDP International • www.bdpinternational.com

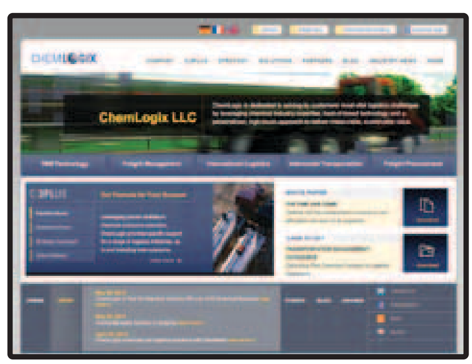
Some of the world's most respected companies rely on BDP International to handle their demanding air, ocean, and ground shipments, and logistics challenges. Browse BDP's web site to learn how it has helped companies reduce costs, improve efficiencies, and streamline processes using its global network of operations spanning 122 countries, including more than 20 offices in the United States. BDP's broad spectrum of services and customer support make it a trusted company for a full range of integrated solutions.

C.H. Robinson Worldwide, Inc. • www.chrobinson.com

Founded in 1905, C.H. Robinson Worldwide, Inc. is one of the largest third-party logistics companies in the world, providing multimodal transportation, fresh produce sourcing, and information services to more than 32,000 customers globally, ranging from Fortune 500 companies to small businesses in a variety of industries. For more information about our company, visit our Web site at www.chrobinson.com.

ChemLogix, LLC • www.chemlogix.com

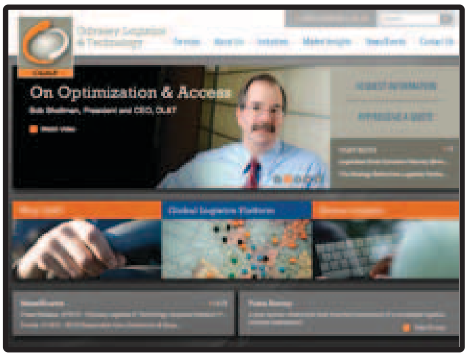
ChemLogix, LLC is the leading provider of comprehensive chemical industry logistics management outsourcing and technology services that, together with its supply chain consulting resources, enable its clients to improve performance and drive economic value. ChemLogix is dedicated to solving its customers' most vital logistics challenges by leveraging chemical industry expertise, best-of-breed technology, and a personalized, high-touch approach to deliver measurable, sustainable value. For more information, visit www.chemlogix.com or email information@chemlogix.com.



IN THIS SECTION:
Chemical Logistics

Dupré Logistics • www.duprelogistics.com

With specific emphasis in the chemical, consumer products, and beverage industries, Dupré's unique solutions provide expertise in dedicated fleets, transportation management/brokerage, materials handling, and reverse logistics. Dupre works to understand your business and measure how our system meets your expectations.



Odyssey Logistics & Technology • www.odysseylogistics.com

Odyssey Logistics & Technology combines deeply skilled industry professionals with a leading technology solution to provide multi-modal logistics management services to the chemical industry and other process manufacturers. Odyssey Logistics & Technology enables these companies to outsource any part of the management and transportation of their raw materials and finished goods. They achieve cost savings through reduced transportation and infrastructure costs, measurable customer service and process improvements, and improved data quality and management.

Weber Logistics • www.weberlogistics.com

As a full-service, complete logistics provider, we are experts at non-asset freight management; asset-based LTL and TL services, including temperature-controlled; dedicated and shared warehousing; distribution; cross-docking/pool distribution; transloading; network optimization modeling and analysis; retail compliance; order fulfillment; material handling; supply chain management; real estate development; and personnel staffing. We have been in business for 85 years and specialize in working with importers; retailers; food, beverage, and CPG companies; and chemical and paper manufacturers.

WSI - Warehouse Specialists, Inc. • www.wsinc.com

Reliability is everything. At WSI, that has been our approach to integrated logistics and supply chain solutions for more than 40 years. Our promise of Condition, Count & Time ensures accurate, timely, and sound performance—every time. Recognized as one of the top 3PL companies in North America, WSI delivers custom solutions for warehousing/distribution, fulfillment, transportation, import/export, information technology, and customer support services. Depend on WSI for increased efficiency, reduced costs, and absolute reliability.

ECONOMIC DEVELOPMENT

ElectriCities of North Carolina • www.electricities.com

This membership organization includes public power communities in North Carolina, South Carolina, and Virginia. ElectriCities also provides management services to the state's two municipal power agencies – North Carolina Municipal Power Agency Number 1 and North Carolina Eastern Municipal Power Agency. ElectriCities serves the needs of public power communities through collective strength, wisdom, and action while promoting more success for its citizens. For more information, contact Brenda Daniels at (800) 768-7697, ext. 6363.

Hoosier Energy • www.hepn.com

Hoosier Energy is a generation and transmission cooperative providing electric power to 17 member electric distribution cooperatives in central and southern Indiana, and one member cooperative in Illinois. Based in Bloomington, Ind., Hoosier Energy operates coal, natural gas, and renewable energy power plants and delivers power through a 1,450-mile transmission network. Hoosier Energy is a Touchstone Energy Cooperative, one member of a nationwide alliance of electric co-ops providing high standards of service according to four core values: integrity, accountability, innovation, and commitment to community.

EDUCATION

Governors State University • www.govst.edu/cbpa

Governors State University's College of Business and Public Administration provides an accessible, high-quality education to a diverse student body primarily from the Chicago area, while actively engaging in research and service to the community. The university's MBA with a supply chain management concentration provides tomorrow's executives with the strong business foundation needed to compete in a global market.

KU Continuing Education
www.continuinged.ku.edu/programs/warehouse

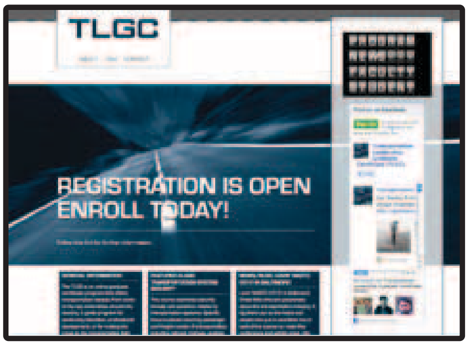
If you are planning to change the layout of your current warehouse, or expanding into a new one, University of Kansas' seminar, *The Warehouse and Distribution Center Layout*, Sept. 19–21, 2012, in Kansas City, Mo., will help. The techniques presented are field-proven and derived from successful implementations. Case exercises are adapted from real situations and projects. You will profit in five ways: reduce handling costs, optimize storage efficiency, improve warehouse performance, plan for growth and expansion, and build in flexibility.

MIT Supply Chain Management Program • http://scm.mit.edu

MIT's Supply Chain Management (SCM) program attracts business professionals from across the globe to experience its unique combination of master's level coursework, professional development, and industry interaction. Started in 1998 by the MIT Center for Transportation & Logistics, SCM students hone their supply chain expertise through an intensive nine-month program that provides proficiency in both problem-solving and change leadership.

Mount Royal University (MRU) Continuing Education
http://bit.ly/MtRoyal

The Supply Chain Management Extension Certificate offered through Continuing Education at MRU gives students the knowledge and expertise employers are currently looking for. Currently offered on evenings and weekends, students can earn their extension certificate while still maintaining their full-time jobs. Through lectures, field trips, case work, real-life examples, and a final paper, students gain the skills they need, and which can be applied today. Highly qualified, working instructors bring current best practices and proven strategies to our highly interactive classrooms. Visit our web site for a full listing of courses.



Regional University Transportation Centers • www.transleader.org

The online Transportation Leadership Graduate Certificate (TLGC) Program is a unique opportunity for professional development and career advancement. For transportation industry leaders, the TLGC provides the education needed beyond a bachelor's degree, addressing critical transportation issues such as policy, management, safety, security, logistics, and more. Students can select four graduate-level, online courses in their areas of interest that are taught by leading faculty at universities around the United States to earn the certificate.

University of Arkansas-SCM Research Center • scmr.uark.edu

Supply Chain Management at the University of Arkansas offers undergraduate, graduate, and doctoral logistics programs within the Sam M. Walton College of Business. The undergraduate and graduate programs have been ranked among the top 10 public university supply chain programs by *U.S. News and World Report*. With both an outreach center and department dedicated to supply chain management, you will find an array of educational options including conference information, executive education classes, and current research.

GLOBAL LOGISTICS

Quick International Courier • www.quickintl.com

Quick International Courier is a full-service global priority transportation and logistics company, shipping life-saving organs and blood for transplant and research; critical parts for the high-tech, medical, and manufacturing industries; as well as high-security, confidential, and valuable items for the legal and entertainment industries. Quick provides a wide range of priority services: next-flight-out, next-drive-out, secure handcarry, warehousing, third-party logistics, and aircraft charters. With a focus on providing global logistics, Quick is at the forefront of innovation, offering precision, individualized service, and dependability.

LOGISTICS IT

Dutycalc Data Systems • www.dutycalc.com

Drawback software and services from a drawback company makes good sense. Dutycalc's Drawback.NET software package is recognized as the number-one Drawback Management System nationally. More than 300 system users benefit from our 30-plus years of drawback expertise. Additional services offered include application prep, rulings, claims prep, ABI drawback claim filing, audit assistance, compliance assessment, and more. Whether your needs are software or services, Dutycalc is the logical choice. For a free online system demo, email info@dutycalc.com, or call 530-637-1006 (PST).

Paradox Software Consulting • www.paradoxsci.com

Paradox Software Consulting offers software tools and consulting services to plan and execute logistics and supply chain management functions of any-size trucking or logistics company. For over 15 years, we have been offering tools for logistics planning in the areas of vehicle routing and scheduling, continuous move planning, fleet sizing, and resource scheduling. For supply chain planning, we provide tools for network design and fulfillment planning. Call 772-224-1116, visit www.paradoxsci.com or email info@paradoxsci.com for more information.

RAIL/INTERMODAL

Union Pacific • www.up.com

Union Pacific Corporation operates North America's premier railroad franchise, covering 23 states in the western two-thirds of the United States. Union Pacific Railroad links every major West Coast and Gulf Coast port and provides service to the East through its four major gateways in Chicago, St. Louis, Memphis, and New Orleans. Additionally, Union Pacific operates key north/south corridors and is the only railroad to serve all six major gateways to Mexico. UP also interchanges traffic with the Canadian rail systems.

REAL ESTATE

I-35 Logistics Park • www.kessingerhunter.com

Located at 155th and Old Highway 56 in Olathe, Kansas, in the Greater Kansas City region, Kessinger/Hunter & Co., the regional affiliate of Cushman & Wakefield, is currently constructing Building B, which is an 821,663 SF (divisible) building ideal as a distribution center facility. Foreign Trade Zone eligible, it is located 1.5 miles from the new I-35 & 159th St. Interchange. For more information, contact Daniel B. Jensen, Principal with Kessinger/Hunter & Co., at (816) 842-2690 or djensen@kessingerhunter.com.

RECRUITING

Franzetta & Associates • www.franzetta.com

Franzetta & Associates, Inc. is an all-encompassing supply chain consulting firm. One of the services we provide for our clients is specialty-focused recruiting. Through the years, our impressive list of clients includes Fortune Top 10 as well as mid-market and small firms. We know the business and understand your needs. We have access to many top-notch logisticians, and will be able to more than accommodate your requirements. We nurture close relationships with our clients and recruits to ensure success for both. E-mail: resumes@franzetta.com or call 814-466-9010.

SUPPLY CHAIN MGMT/OPTIMIZATION

MIT Center for Transportation & Logistics • http://ctl.mit.edu

The MIT Center for Transportation & Logistics is a dynamic solutions-oriented environment that has changed the way the world works by innovating essential industries and services through supply chain management. Launched in 1973, the MIT Center for Transportation & Logistics has been a world leader in supply chain management education and research, and has helped numerous companies gain competitive advantage from its cutting-edge approach.

TRUCKING

ABF Freight System Inc. • www.abf.com

ABF has never had more to offer our customers than we do today: Global supply chain services providing both FCL & LCL solutions; warehousing with over 80 warehouse locations; a Dual-System® Network providing regional and national LTL service; truckload and intermodal; expedited and time-specific services; white-glove inside delivery. All of these services are linked by one platform, providing seamless visibility and world-class customer service. How can ABF help you? Call 877-ABF-0000, visit abf.com, or follow us on Facebook and Twitter.

White Paper Digest

Industry experts amass supply chain management best practices and skill sets, and invest in new research and evaluation tools. Now you can benefit. *Inbound Logistics* has selected this collection of whitepapers that will give you a jump on important supply chain issues. For more information on any of these whitepapers, visit the Web sites listed below.

C.H. Robinson Worldwide, Inc.

TITLE: ***Key Factors in Motor Carrier Selection: Balanced Risk Assessment***

LENGTH: *8 pages*

DOWNLOAD: *www.chrobinson.com/en/us/Resources/White-Papers*

SUMMARY: As companies navigate an environment of changing motor carrier safety rating assessments and regulations, many express concern about their risk profile and potential involvement in lawsuits. This whitepaper explores:

- Ways to mitigate risks in motor carrier selection.
- Seven items to consider when structuring a motor carrier qualification process.
- Comprehensive risk management through 3PLs.

RWI Transportation

TITLE: ***2012 Temperature-Controlled Transportation Report***

LENGTH: *16 pages*

DOWNLOAD: *http://rwitrans.com/resources/whitepapers.asp*

SUMMARY: This study, based on a survey of North American shippers, examines the top challenges faced in temperature-controlled transportation. It provides interesting insights and information about best practices, common challenges, and emerging trends in today's temperature-controlled market. The report is provided by RWI Transportation, an asset-based logistics company offering temperature-controlled transportation. RWI manages in excess of 100,000 shipments annually, including both temperature-controlled and dry freight.

GENCO ATC

TITLE: ***Product Lifecycle Logistics in the Consumer Product Goods Industry***
LENGTH: *6 pages*
DOWNLOAD: *http://bit.ly/Kkuupy*
SUMMARY: Consumer packaged goods manufacturers look for efficiencies in every nook and cranny of their supply chains. Still, millions of dollars in potential savings remain elusive. Discover how Product Lifecycle Logistics breaks through barriers and exposes the savings delivered through supply chain efficiency.

DRS Technologies

TITLE: ***Advanced Communications Technology in a Rugged Tablet***
LENGTH: *5 pages*
DOWNLOAD: *http://drsarmor.com/pdf/ARMOR_X10gx_White_Paper.pdf*
SUMMARY: Mobile computing has evolved from a specialty to a requirement for productive, task-oriented, and customer-focused employees. Rugged tablets like the ARMOR™ X10gx from DRS Technologies have changed how and where employees work, increasing their ability to connect and share information with colleagues and customers, and delivering the communications mobility needed to put the right person in the right place with the right information.

Amber Road

TITLE: ***Three Common Supply Chain Issues That Affect Your Bottom Line***
LENGTH: *6 pages*
DOWNLOAD: *http://bit.ly/Mdk4sh*
SUMMARY: Amber Road's expert eBook, *Three Common Supply Chain Issues that Affect Your Bottom Line*, discusses areas in the supply chain where companies may be losing money, and uncovers strategies to prevent this loss. Key takeaways include:

- How to reduce expedited shipments with better planning and supply chain visibility.
- How to avoid detention and demurrage fines.
- How to communicate efficiently with trading partners.

TransportGistics, Inc.

TITLE: ***Inbound Transportation Management and Control: Low Hanging Fruit and How to Grab It***
LENGTH: *9 pages*
DOWNLOAD: *http://bit.ly/ylE7Ep*
SUMMARY: When it comes to managing your transportation program, the overriding theme must be control, yet many organizations have not applied the same efforts to inbound transportation management as they have to outbound management, making it a great opportunity for efficiency and cost savings. This whitepaper identifies and discusses the most important, perhaps simplest, of steps necessary to improve inbound transportation management, as well as the opportunities that this improvement will yield.

Share your whitepaper with *IL* readers!

WhitePaper Digest **is designed to bring readers up-to-date information on all aspects of supply chain management. We're building a database of SCM whitepapers, and you can help. E-mail us with whitepaper recommendations: editorial@inboundlogistics.com**

OCEAN

CaroTrans

A new office in Seattle, Wash., provides enhanced, expedited import and export ocean transportation services, including less-than-containerload, full-containerload, and breakbulk. CaroTrans also created a specialized division to handle breakbulk, out-of-gauge, and roll-on/roll-off services from its 14 U.S. offices.

www.carotrans.com 253-277-1898

Mitsui O.S.K. Lines (MOL)

MOL's new 42-day China-Middle East service from Shanghai calls Ningbo, Kaohsiung, Shekou, Singapore, Port Kelang, Jebel Ali, Karachi, and Mundra.

www.molpower.com 800-449-7575

Inchcape Shipping Services

A new Global Marine Travel office in Singapore provides ocean shippers with landside commercial and humanitarian logistics, transportation, offshore support, and other associated marine services.

www.iss-shipping.com 251-461-2700

MOBILE APPS

GreenRoad

The GreenRoad Central mobile app, available for Apple and Android devices, provides access to driver safety scores, idling rates, and trip details.

www.greenroad.com 888-658-4420

▲ 3PLs: Crowley

Crowley's Caribbean logistics unit acquired a second warehouse adjacent to its existing facility in Guaynabo, Puerto Rico, increasing its distribution center space on the island to 119,800 square feet. Serving as a centralized routing center, the DC supports Crowley's logistics services, which include liner shipping from Jacksonville, Fla., Pennsauken, N.J., and 24 Caribbean islands; air freight; export and import consolidation; warehousing and inventory management; customs brokerage; freight forwarding; intra-island trucking; crossdocking; container loading; and picking, packing, crating, and labeling.

www.crowley.com 800-CROWLEY

PACKAGING

Storopack

AIRplus Bubble on-demand protective air cushion packaging features narrow individual sections to help efficiently wrap small items. A single section contains two rows with seven round air chambers each.

www.storopack.us 800-827-7225

AIR

Towne Air Freight

Towne Air Freight now offers airport-to-airport, airport-to-door, door-to-airport, door-to-door, and local cartage service to Denver and Salt Lake City from more than 65 locations nationwide.

www.towneair.com 800-GO-TOWNE

3PLs

Geodis Wilson

A new cross-border truck route between Singapore and China offers shippers full-containerload (FCL) and less-than-containerload (LCL) service. FCL containers are sealed from door to door and opened only if required by Customs, while LCL containers are consolidated at Geodis Wilson facilities along the route, and fed into the main road network by regional trucks.

www.geodiswilson.com 732-362-0600

FREIGHT PAYMENT SERVICES

A3 Freight Payment

A3 Freight Payment now provides invoice automation and validation; data capture; rate and service audit; cost accounting; exception management; and business intelligence.

www.a3freightpayment.com 901-759-2966

EXPEDITED

UPS

To enhance its early-morning delivery coverage, UPS increased by 2,600 the number of ZIP codes eligible for its Early A.M. and Next Day Air services. More than 80 percent of U.S. businesses can now receive guaranteed early-morning UPS deliveries.

www.ups.com 800-PICK-UPS

LOGISTICS EDUCATION

University of Denver

The University of Denver's college of professional and continuing studies, University College, created a new major in Global Commerce and Transportation. Available online, on campus, or a combination of both, the degree covers transportation safety and security issues, law and policy, economics and finance, international trade, supply chain and logistics, and transportation modes and nodes.

www.universitycollege.du.edu 303-871-2291

◀ **Packaging: Sealed Air**

Designed for use on Sealed Air Fill-Air 2000 and Fill-Air Cyclone packaging systems, Fill-Air R5 inflatable void fill packaging film contains a minimum of 10 percent pre-consumer recycled content, and can be processed with polyolefin films through most recycling programs.

www.fillair.com 800-648-9093

▲ **Warehouse Equipment: Columbus McKinnon**

The Yale LodeKing electric wire rope hoist lifts loads weighing up to 60 tons. The hoist features a center drive configuration for improved load centering, and vertical lift design for better load control.

www.cmworks.com 800-888-0985

EQUIPMENT POOLING

IFCO Systems

A new service center in Portland, Ore., extends the reusable plastic container (RPC) provider's North American network. Every day, the 85,000-square-foot facility washes more than 40,000 RPCs, and ships and receives 25 to 40 truckloads of RPCs for grocery, retail, and grower shippers.

www.ifco.com 877-430-IFCO

SOFTWARE

Vigillo

The Web-based *Vigillo Intervention Manager* application automates manual paper processing to mimic the Federal Motor Carrier Safety Administration's (FMCSA) Compliance, Safety, Accountability audit process, filtering key audit targets such as crash, driver, and vehicle data to help carriers prepare for FMCSA Carrier Intervention audits.

www.vigillo.com 503-688-5100

OAG Cargo

Designed for logistics professionals involved in shipment planning, *Cargo Flights* software gives instant access to more than 700,000 direct and connecting flights–including international, domestic, and non-stop schedules–and enables the planning of complex routings.

www.oagcargo.com 630-515-5300

SECURITY DEVICES

Cambridge Security Seals

The new Heavy-Duty Pull Tight (HPT) seal offers 40 percent more tensile strength than similar alternatives. Available in four lengths, HPT seals can be customized with logos, printed information, variable numbering, and bar codes.

cambridgesecurityseals.com 845-520-4111

▲ 3PLs: FedEx SupplyChain

New and expanded visibility and control features, as well as 100 new stocking locations, support worldwide FedEx Critical Inventory Logistics customers with high-value, critical orders. Global event management establishes a plan and milestones for each critical order to help ensure on-time delivery.

www.fedex.com 800-GO-FEDEX

CALENDAR

July 16-18, 2012, Performance-Based Logistics (PBL), Washington, D.C. Suitable for both logistics-focused military personnel and military equipment manufacturers, this logistics conference provides an understanding of performance-based logistics and offers insights on next-generation lifecycle product support assessment and implementation.

888-482-6012
www.wbresearch.com/pblusa

July 23-24, 2012, Gartner Supply Chain Executive Conference, Sydney, Australia. This event, sponsored by information technology research and advisory company Gartner, offers attendees insights and planning tools, case studies delivered by leading supply chain executives, and ample opportunities to share best practices in focused roundtable discussions.

203-964-0096
www.gartner.com

September 6-7, 2012, Fall 2012 Supply Chain Leaders Forum, University Park, Pa. Sponsored by the Center for Supply Chain Research at Penn State's Smeal College of Business, this program for mid- to senior-level supply chain managers and executives addresses how organizations are struggling to manage internal talent inventory and external talent resources to attract, retain, and develop the right people for the job.

814-865-0585
www.smeal.psu.edu/cscr

September 9-11, 2012, SCOPE Fall, Dallas, Texas. The Supply Chain Operations Private Exposition delivers a mix of strategic presentations and panels from industry thought leaders; shipper-led case studies; targeted research meetings with leading solutions providers; and networking opportunities with high-profile industry peers. Speakers include Robert Boller, vice president of sustainability, Jackson Family Wines; Steve Sigrist, vice president of supply chain and sales operations, Newell Rubbermaid; and Dr. Omera Khan, senior lecturer in logistics and supply chain, Hull University Business School.

310-706-4150
www.scopewest.com

September 30-October 3, 2012, CSCMP Annual Conference, Atlanta, Ga. At the Council of Supply Chain Management Professionals' conference, learn ways to cut supply chain costs, boost efficiency, and improve your bottom line; network with colleagues; and discover new and innovative ideas that will keep you and your supply chain competitive.

630-574-0985
http://cscmpconference.org

October 2-4, 2012, Transportation and Distribution Planning and Management, Atlanta, Ga. This Georgia Tech Professional Education course focuses on understanding capacity development, freight consolidation, network alignment, and synchronization. Attendees develop the principles, practices, and tools required to address all major issues and tradeoffs in domestic and international transportation, including key financial and performance indicators for transportation, and designing supply chains to minimize transportation and distribution costs.

855-812-5309
www.pe.gatech.edu

October 14-16, 2012, APICS International Conference & Expo, Denver, Colo. At the Association for Operations Management's annual conference, educational sessions focus on finding solutions to the challenges supply chain and operations management professionals face today – and in the years to come. Educational sessions cover topics including globalization opportunities and challenges; integrated supply chain management; and inventory optimization.

800-444-2742
www.apics.org

October 21-25, 2012, American Association of Port Authorities 101st Annual Convention, Mobile, Ala. Through committee meetings, business sessions, and networking opportunities, port professionals and others in the marine transportation industry explore the latest global economy trends and expectations; the need for infrastructure investment; and how shippers, carriers, service providers, and the local business community can help green the cargo supply chain.

703-684-5700
www.aapa-ports.org

November 11-13, 2012, IANA Intermodal Expo, Anaheim, Calif. The Intermodal Association of North America presents its 30th annual trade show, highlighting the latest products and services for freight transportation and distribution operations.

866-438-3976
www.intermodal.org

November 12-14, 2012, SCMchem 2012, Phoenix, Ariz. Addressing the supply chain concerns of chemical manufacturers, this event provides the insight and strategies necessary to maximize resiliency and security within the entire value chain. In addition, roundtable discussions, panel debates, and case studies deliver opportunities for peer-to-peer benchmarking and customized learning.

888-482-6012
www.wbresearch.com/scmchem

January 21-24, 2013, ProMat, Chicago, Ill. See the latest materials handling solutions and innovations the industry has to offer. At this event, sponsored by the Material Handling Industry of America, attendees learn to streamline operations and improve visibility; maximize efficiency, flexibility, and supply chain security; cut costs; and reduce their carbon footprint.

800-345-1815
www.promatshow.com

POSITIONS WANTED

Gabriel De La Iglesia | **507-226-0882**
gabrieldelaiglesia@hotmail.com

Recent graduate seeks professional supply chain management and logistics position.

Education

2012 — Georgia Institute of Technology, Atlanta, GA:
M.S. in Supply Chain Engineering

Universidad Latina de Panama, Panama City, Panama:
M.S. in Supply Chain Management, Aug. 2012

2006 — University of North Florida, Jacksonville, FL:
B.B.A. in Transportation and Logistics & B.B.A. in Management

Experience

Demand Metric Research Company, Inc. — Business Analyst and Consultant / Sales Rep

Grupo Alcoholes S.A. — Logistics Manager and Supervisor

Cloud University Certificate: Elements of Cloud Computing

SAP Enterprise Resource Planning (ERP) Certification

Microsoft Word, Excel, and PowerPoint

Fully Bilingual

Jennifer Forsyth | **231-330-8950**
jennifer.forsyth2@gmail.com

FUTURE ANALYST

Recent college graduate with Bachelor's Degree in Business Management looking for fulfilling career in logistics. Prefer Great Lakes Maritime area but am open to all places. Leader, self-starter, athletic-minded individual. Could lead your company to a better future.

Paul Hodgson | **(+44)199-3837 Ext. 586**
paul.m.hodgson@hotmail.co.uk

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Ex-RAF Supplier looking for supervisory supply chain or logistics position. Reliable, hard-working, hands-on team player hoping for a position with promotion prospects.

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3PLs

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www.chrobinson.com — 800-323-7587

CaseStack — pg. 23
www.casestack.com — 855-638-3502

DSC Logistics — pg. 31
www.dsclogistics.com/sustainability — 800-372-1960

Geodis Wilson — pgs. 79, 87
www.geodiswilson.com — 877-469-0510

Kenco Logistic Services — pg. 109
www.kencogroup.com — 800-758-3289

Lynden — pg. 54
www.lynden.com — 888-596-3361

Menlo Worldwide Logistics — pg. 9
www.menloworldwide.com — 630-449-1084

Panalpina — Insert 16–17
www.panalpina.com — 973-683-9000

Performance Team — pg. 25
www.ptgt.net — 866-775-5120

Ryder Supply Chain Solutions — Cover 2
www.ryderscs.com — 888-887-9337

Saddle Creek Logistics Services — pg. 29
www.sclogistics.com — 888-878-1177

SDV — pg. 12
www.sdv.com — 718-525-8100

TransGroup Worldwide Logistics — pg. 105
www.transgroup.com — 800-444-0294

UTi Worldwide — pgs. 88–89
www.go2uti.com — 562-552-9400

Werner Enterprises — pg. 3
www.werner.com — 800-228-2240

WSI (Warehouse Specialists, Inc.) — pg. 71
www.wsinc.com — 920-731-3115

Air Cargo

Southwest Cargo — pg. 76
www.swacargo.com — 800-533-1222

Career Development/Education

American Society of Transportation and Logistics Inc. (AST&L) — pg. 100
www.astl.org — 202-580-7270

Bellevue University — pg. 107
first.bellevue.edu — 800-756-7920

Executive Masters in International Logistics (EMIL), Georgia Tech — pg. 99
www.emil.gatech.edu — 404-385-2538

Governors State University — pg. 101
www.govst.edu/cbpa/mbasupply — 708-534-5000

Institute of Logistical Management — pg. 102
www.mylogisticscareer.com — 888-ILM-4600

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http://ndsu.me/tlgcil — 701-231-7938

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www.du.edu/transportation — 303-871-4702

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continuinged.ku.edu — 877-404-5823

University of San Diego — pg. 97
www.sandiego.edu/msscm — 619-260-7901

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www.whitman.syr.edu/scm — 315-443-3751

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