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THE MAGAZINE FOR DEMAND-DRIVEN LOGISTICS • JUNE 2013

THE LEAN SUPPLY CHAIN

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by Felecia Stratton | **Editor**

Getting Green, Going Lean

Creating a viable and sustainable green strategy can be a challenge for companies that want to be good corporate citizens, but also remain competitive. If customers are focused on price, how conscious is your green conscience when you need to drive out costs–at all costs?

It's a valid question in today's economy as companies deliberate capital investments, sourcing strategies, and even requests for proposals. Do you choose the lowest-cost transportation and logistics provider, or the one that costs more but offers green solutions?

It doesn't have to be an either-or proposition. Countless companies have successfully integrated sustainability objectives with sound business principles. *Inbound Logistics*' annual Lean and Green issue salutes these best-in-class cases.

Our 75 Green Supply Chain Partners list (*page 55*) offers a sampling of logistics leaders that have made sustainability a priority, and continue to push the needle in terms of innovation and execution. They "get green"–and are helping to bring more shippers and suppliers into the fold.

Some shippers have taken their own green lead; Walmart chief among them. Sustainability and supply chain excellence are one and the same for the world's largest retailer. A green project needs to make good business sense to get the green light; in turn, a venture is only worth pursuing if it receives Walmart's green thumbs up. Follow *Green Logistics the Walmart Way* (*page 49*) for an updated view into how the company created an organizational culture where sustainability permeates all aspects of its supply chain, extending to its suppliers and customers as well.

Walmart has built a culture that integrates green into its business processes. In other cases, synergies are less apparent.

Merrill Douglas' article, *The Lean Supply Chain* (*page 40*), demonstrates how shippers and service providers are incorporating Lean best practices into their operations to better match demand to supply, react faster to market change, reduce inventory carrying costs, and eliminate waste. In principle, Lean doesn't always correlate with green. Carrying less inventory requires more frequent shipments of smaller quantities, which increases transportation costs and carbon emissions.

Demand-driven logistics practices, however, are a perfect focal point to integrate green with Lean, which helps reduce material and time waste, ensure more accurate fulfillment, and thereby eliminate inventory obsolescence and returns. Moreover, shippers can offset frequent deliveries and higher transportation costs by working more collaboratively upstream in the supply chain, pooling shipments, rationalizing assets, optimizing loads, and achieving greater economies of scale.

Understanding the interplay between supply chain execution excellence and sustainability excellence is critical to developing a long-term strategy that strikes the proper balance; and achieves success at getting green and going lean. ■

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10TIPS

STEP-BY-STEP SOLUTIONS

by Deborah Catalano Ruriani

Optimizing Warehouse Operations

Warehouse operations efficiency is key to the success of any company that processes, inventories, and ships orders. When efficiency lags, products may not arrive at customer destinations on time, orders can get lost, and low inventory levels can result in stockouts. Here's some advice on optimizing warehouse operations from Chris Castaldi, manager of business development at materials handling equipment systems integrator W&H Systems.

1 **Minimize the number of touches.** Manual operations slow movement through the warehouse and can introduce errors. Automate picking, packing, and shipping processes to minimize the number of times humans touch products and orders.

2 **Offload some WMS processes to a Warehouse Control System (WCS).** WCS solutions help manage materials handling equipment in real time, which will maximize system throughput and performance, and provide visibility to potential logjams.

3 **Stock materials using logical sequencing that is meaningful for workers.** Prevent goods from being misplaced by storing them where workers will intuitively look for them.

4 **Gather real-time operations intelligence on warehousing processes.** Ever-changing customer demands dictate the flexibility requirements of existing facilities. To support continual warehouse process improvement, and ensure business goals are being met, gather and analyze real-time data from order fulfillment technology and materials handling equipment. Benchmarking performance and analyzing collected data can facilitate more informed decisions about how to respond to changing customer requirements and business goals.

5 **Upgrade selectively.** Don't just implement the latest, greatest module from your WMS vendor. The added complexity may slow operations, befuddle staff, and generate unnecessary work.

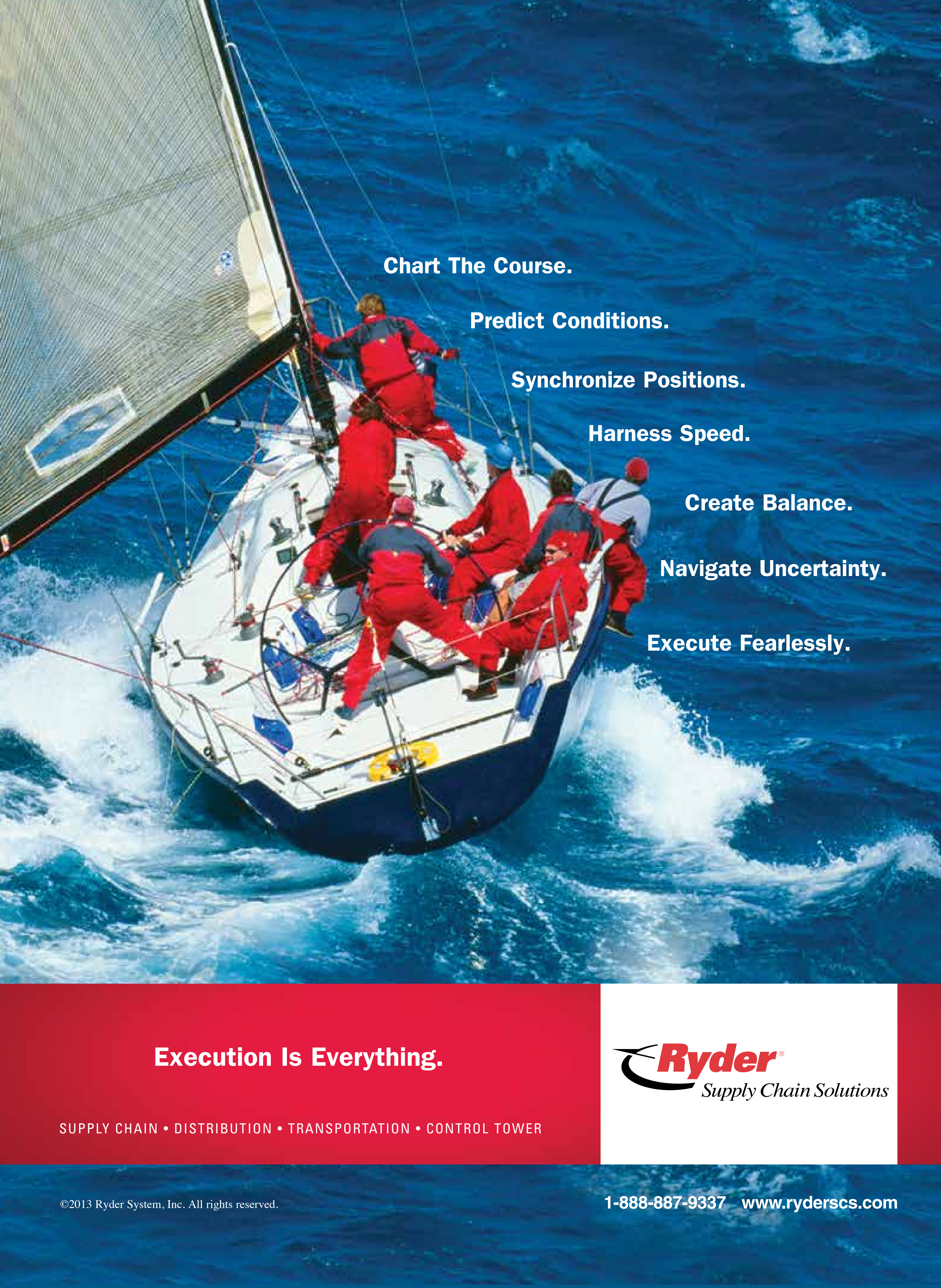
6 **Gain end-to-end visibility throughout the facility and processes.** Eliminating silos in the warehouse – from the loading dock through delivery and transport operations – removes barriers to growth and innovation. In many organizations, supply chain executives and corporate operations plan independently, often negatively impacting corporate goals. Maximize profits and establish competitive advantage with cross-functional organizational plans.

7 **Align warehouse operations with key business goals.** Even if facing pressure from customers to implement changes, don't ignore your overall business objectives. Focus on actions that meet strategies.

8 **Implement equipment to automate warehousing processes.** Warehouse automation increases throughput, eliminates errors, and heightens shipping, picking, packing, storage, crossdocking, and labor performance.

9 **Establish flexibility and agility in the warehouse.** You want to be able to make changes fast when you face competitive pressures. Select a WMS that seamlessly integrates with your ERP and supply chain systems.

10 **Establish key performance indicators.** Measure results, and implement changes to improve your business performance. ■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as told to Merrill Douglas

Dino Lanno has been senior vice president, supply chain at Safelite AutoGlass in Columbus, Ohio, since 2007.

RESPONSIBILITIES

Procurement, transportation, distribution, manufacturing, inventory management, and wholesale sales.

EXPERIENCE

Facilities engineer, WearEver Aluminum; product development engineer, Hamilton Beach Procter Silex; engineer manager, plant manager, WearEver Aluminum; regional warehouse manager, director of materials management, vice president of enterprise procurement and wholesale sales, Safelite AutoGlass.

EDUCATION

BS, electrical engineering, University of Michigan, 1981; MBA, general business administration and management, Ohio University, 1990.

Dino Lanno: Best in Glass

I GREW UP IN DETROIT, SO I HAVE THE AUTO INDUSTRY in my blood. When I earned my engineering degree in 1981, I knew exactly where I wanted to work. But because the automakers weren't hiring many engineers at that time, I took a job with WearEver Aluminum in Ohio instead.

After serving in several engineering jobs, in 1990 I made a big change, accepting a procurement position with Safelite AutoGlass. That move into the supply chain seemed scary at the time, but my engineering work had actually prepared me well for procurement. Knowing how things are made, and what they cost, helped me negotiate.

Safelite's retail organization currently includes 669 retail stores, plus Mobile Pro technicians, who serve customers in smaller markets. Our wholesale business sells to other companies that do auto glass replacement.

We manufacture about 25 percent of our product in Enfield, N.C., and buy the rest from suppliers around the globe. The product flows into our distribution centers in Braselton, Ga., and Ontario, Calif. The DCs deliver to 92 warehouses which, in turn, deliver to our stores, Mobile Pros, and wholesale customers.

In 2011, we added 14 hub facilities – mini-DCs – that serve multiple warehouses in our larger markets. For example, the Columbus hub ships to Indianapolis, Cleveland, Cincinnati, and Pittsburgh. That puts inventory closer to the market, so the warehouses can get any products they need within hours, rather than days.

One of the biggest projects I've led at Safelite started in 2007, when the

The Big Questions

Do you have a hidden talent?

I've played guitar since I was 13. I retired from a bar band five years ago, but I still play lead guitar on my church's praise and worship team, and I've performed at weddings and reunions.

When you're not working, what do you enjoy doing?

I enjoy car hobbies and boating, and I love music. I'm active in my church, and I serve on the boards of several organizations, including our local Meals-on-Wheels, Mission Emanuel, and the Center of Science and Industry.

If you could take back one sentence you've ever spoken, what would it be?

"Honey, let's stop at two children."

If you were stranded on a desert island, which three artists' music would you want to have with you?

Eric Clapton, Jimmy Page, and Joe Bonamassa.

company began doubling its size through acquisitions. Our supply chain network was already at capacity; we had one small DC and 80 warehouses that were badly in need of capital improvements.

Over the next few years, we completely re-engineered our supply chain. We renovated, expanded, or relocated 65 of our 80 warehouses and added 13 more. We replaced the DC with two new, state-of-the-art facilities, and added 11 hubs.

That project came in under budget and ahead of schedule. It has given the company unrivaled inventory availability, while providing enough capacity to grow. Now we're starting a project to optimize the final link in that chain—deliveries from the warehouses to our retail stores and wholesale customers.

I'm also proud of two other projects. One established a recycling program for the broken windshields we remove from cars. The broken glass now becomes material for fiberglass, and the windshields' PVB liners go into carpet backing and other products.

The other project involved developing collapsible, reusable steel pallets, which we use to ship glass from our DCs to the warehouses. Once we unload the product, the pallets fold down, maximizing the number that fit in a trailer. Both the pallets and the broken glass go back to the DCs, creating closed loops for our carriers, who can offer us lower freight costs as a result.

Along with working on projects such as these, I spend much of my time helping people on my team develop as leaders. When you create a climate where people can develop their management skills and come to work excited about their jobs, the result will be super-high performance. ■

NOTED

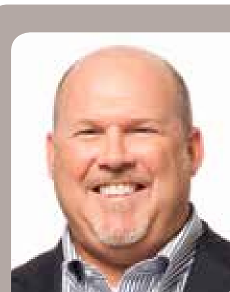
THE SUPPLY CHAIN IN BRIEF

UP THE CHAIN

Hickory Farms, a Toledo, Ohio-based retailer of specialty foods and holiday gifts, named **Ty Hanline** vice president of supply chain. The company promoted Hanline due to his success as director of logistics, where he achieved 99-percent on-time deliveries and significant cost reductions.

Starbucks appointed **Deverl Maserang** to lead the coffee company's global supply chain. In his new role as executive vice president, Maserang is responsible for end-to-end global supply chain operations spanning manufacturing, engineering, procurement, distribution, planning, transportation, inventory management, and worldwide sourcing.

E-cigarette manufacturer **FIN Branding Group** named **Joe Cipolla** vice president, supply chain. Cipolla handles procurement through distribution and warehousing, maintaining relationships with FIN's internal partners and vendors, and overseeing the end-to-end supply chain.



Los Angeles-based weight-loss company **ViSalus** named **Greg Schwartz** as senior vice president, global supply chain. In this position, Schwartz provides planning, leadership, and strategic direction for ViSalus' supply chain management operations.

recognition

▼ **Con-way Freight** received the **LTL Carrier of the Year Award** from Technicolor Home Entertainment Services. To earn the award, carriers must excel in areas including on-time pickup and delivery, security compliance, communications, capacity, green initiatives, invoice and billing accuracy, technology systems performance, claims, and customer service.

Motorola Solutions and Bluestar awarded **Supply Chain Services**, a supplier of bar-coding and data capture solutions for distribution and warehousing, with the **Rockout 2012 VIP Hall of Fame** award. The company received the award for achieving the highest percentage of growth in the second half of 2012 for the central United States.

Union Pacific Railroad received the **2012 Supplier of the Year Award** during General Motors' 21st Annual Supplier of the Year ceremony. Union Pacific received the award for being innovative, delivering quality products and services on time, and creating outstanding value.

J.B. Hunt selected **Dayton Freight** as its **2012 Carrier of the Year**. J.B. Hunt chooses one carrier each year for outstanding service; this is the first time Dayton Freight has received the award.

GOOD WORKS

▶ **Total Quality Logistics** raised $17,025 for the Yellow Ribbon Support Foundation, which provides post-secondary education scholarships in the name of fallen military personnel from the Greater Cincinnati area. The money was raised through Total Quality's $1-Per-Load fundraising effort during one week in May 2013, when one dollar from every load TQL arranged was set aside for the annual donation.

Reusable plastic container (RPC) supplier **IFCO Systems** provided containers to Feeding America San Diego to meet the nutritional needs of school kids during the summer. Feeding America San Diego received the RPCs in mid-May 2013, and used them to transport grocery products from its facility north of downtown San Diego to more than 190 partners.

SANY, a manufacturer of construction machinery and equipment, rushed truck cranes, excavators, vehicles, and five rescue teams to aid in recovery efforts after an earthquake ravaged Sichuan Province in China. The equipment was used to flatten land for emergency tent shelters, and to distribute food, water, and other necessities.

m&a

Barcoding Inc., a provider of enterprise-wide mobility solutions, acquired **Miles Technologies**, a bar-coding and RFID equipment vendor. The merger increases Barcoding Inc.'s presence in the central United States, and expands its RFID capabilities.

Transportation and logistics provider **Roadrunner Transportation Systems** purchased **Wando Trucking**, a provider of intermodal transportation and related services in the southeast United States. The Wando purchase enhances Roadrunner's Southeast presence and provides better access to the Port of Charleston and the Port of Savannah.

Connecticut-based **Odyssey Logistics & Technology** affiliate **OL&T FoodTrans** bought **Hawaii Intermodal Tank Transport (HITT)**, a temperature-controlled logistics and transportation provider. HITT will be integrated with OL&T, and will continue to provide transportation of food-grade products under the name AsepTrans.

GREEN SEEDS

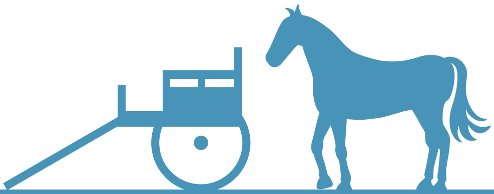
▼ Houston, Texas-based **Silver Eagle Distributors** participated in the Houston-Galveston Area Clean Vehicles/Clean Fleet campaign, a collaborative effort to address air-quality issues. Silver Eagle promotes clean air through a combination of compressed natural gas trucks and clean diesel fuel usage for regular trucks.

SEALED DEALS

CHEP, a provider of managed pallet-pooling solutions, extended its contract with **Johanna Foods**. CHEP will continue working with the food manufacturer to transport its juices, yogurt, and beverage lines to independent grocery stores, retailers, and distributors.

Global logistics provider **Agility** signed a deal with Egypt-based home appliance company **Universal** to provide warehousing services. Agility will manage the storage of various components for appliances in 6th of October City, Egypt.

In cooperation with the **Kansas City Area Development Council**, Michigan-based automobile equipment manufacturer **Adrian Steel** expanded its operations into Kansas City, Mo. Adrian will use its new 32,000-square-foot facility to manufacture parts for the Ford Motor Company.



THE PROBLEM WITH A LOT OF SUPPLY CHAIN SOLUTIONS IS THAT THEY DON'T FIRST DEFINE THE PROBLEM.

Today, global logistics providers must have the tools to manage customer supply chains. A global office network, transportation and distribution services, integrative IT platforms, and so on. With these tools in place, one might think that is enough. It isn't. However, they all have to be in the "cart."

At MIQ, we believe what should come first is a customer partnership based on a deep understanding of their core business. Thus, we hire the best talent in the industry to analyze each customer's needs/problems, then dip into the cart for solution tools specifically designed to address them.

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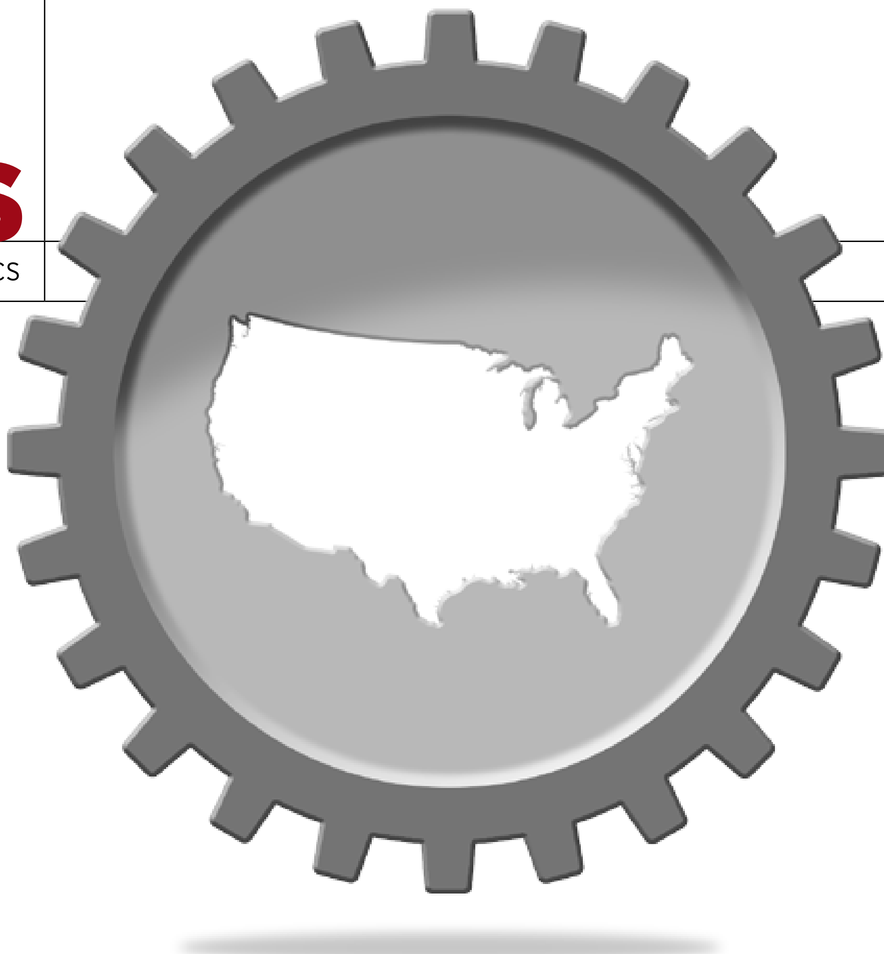


Is American-Made on the Mend?

Rumors abound that U.S. manufacturing is making a comeback. The promise of cheaper domestic energy sources—and rising labor costs elsewhere around the world—are tipping the total landed cost balance off its Far Eastern axis. Does this portend a domestic manufacturing renaissance?

by Joseph O'Reilly

A recent report by AlixPartners suggests companies are open to the idea. The consultant's annual *Manufacturing-Sourcing Outlook*, which surveyed 137 C-level manufacturing company executives, reports that the cost of U.S. production will reach the cost to produce and import from China by 2015.

The study also finds that the United States has reached parity with Mexico as the preferred location for nearshoring production of goods intended for U.S. consumers (*see chart, next page*).

While perceptions are changing, countless variables predicate whether certain industries jump to bring production home, maintain the status quo, or look elsewhere.

Over the past few years, *Inbound Logistics* illustrated some notable examples of smaller companies that successfully reversed course in their sourcing strategies. Idaho-based Buck Knives, and Utah-based Mity-Lite, a folding table and chair manufacturer, leveraged Lean manufacturing principles to create more production bandwidth and drive down costs—allowing them to pull back production from Asia to serve

U.S. customers. Nearsourcing is also gaining traction among energy-intensive industries, where the promise of natural gas is a major consideration.

But speculation of a seismic manufacturing shift is tempered by equal doses of reality. Structural changes have to happen for Made in the USA to become fact rather than fiction.

"Evidence for a structural renaissance is scant so far," says Goldman Sachs chief economist Jan Hatzius. "Measured productivity growth has been strong, but U.S. export performance—arguably a more reliable indicator of competitiveness—remains middling at best. And at least so far, there is not much evidence for large positive spillovers from the U.S. energy cost advantage to broader manufacturing output."

A.T. Kearney researchers Patrick Van den Bossche, Pramod Gupta, and Chui Lee reach a similar conclusion in a recent article, *Is the United States Ready to Take Manufacturing Back?* In 1970, 25 percent of the U.S. workforce was involved in manufacturing; today, that number is less than nine percent.

As a consequence of this generational shift, the researchers point to two specific challenges: equipment maintenance and upkeep that has been ignored or postponed; and the loss of operational expertise and experience as older laborers, engineers, and technicians retire.

Hatzius and others suggest that recent U.S. manufacturing upticks have been a reaction to Europe and Japan's struggles, not a sign of long-term change. But one supply chain trend favors more nearshoring developments throughout the Americas, which may bring focus back to the United States.

Global companies are decentralizing their supply chains as a means to reduce transportation costs, increase market responsiveness, and allay risk. In effect, regionalization is trumping globalization.

More companies are looking at postponement strategies that allow them greater flexibility to add value to inventory closer to demand. This way they can achieve greater economies of scale through better mode allocation and optimization as product moves inbound.

Another point: In the next 15 years, one billion new people will enter the middle class, bringing with them $14 trillion in consuming power.

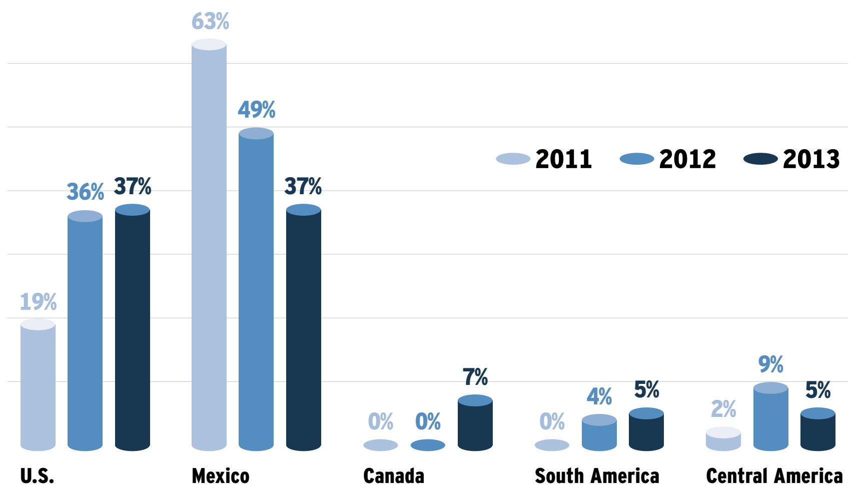
"Ninety-five percent of the world's consumers and purchasing power is outside the United States," said Adam Feinberg, vice president of U.S. international sales for UPS, at the Georgia Logistics Summit. "Yet only one percent of the 30 million U.S. businesses participate in exports. And of that one percent, 60 percent ship to only one other destination."

pulling back in the short term, especially if they have future aspirations of growing their sales reach into that region. Total landed cost analysis works both ways.

U.S. manufacturing may be better positioned to serve certain markets (U.S. included) and industries moving forward. But manufacturing and export competitiveness are intrinsically linked—and dually depend on energy, environmental, and transport policies that defray higher production costs. U.S. agriculture exports have always been a strength largely because of the transport system's efficiency, not labor cost. One balances out the other.

Most Attractive Nearshoring Locations

The United States continues to close the nearshoring gap with Mexico. Thirty-seven percent of respondents to an AlixPartners survey chose the United States as their preferred nearshoring location—the same percentage that chose Mexico.



Source: AlixPartners Manufacturing-Sourcing Outlook

It's not only Americans who like Made in the USA. Global demand for U.S. consumables will grow as middle-class demographics change. Feinberg cautioned against protectionist measures that artificially stimulate the buy-American philosophy at the risk of other countries retaliating by not buying U.S. exports—which could indirectly threaten U.S. jobs.

Moreover, companies that have invested significant time, effort, and capital building supplier connections in offshore networks—notably Asia—will likely resist

But what if antiquated transportation networks continue to fail? And how will U.S. manufacturing fare if a carbon taxing scheme ever takes hold?

U.S. manufacturing hype is real. But it's tempered by the fact that companies are taking a measured approach to re-shoring. It's part of a risk-averse regional supply chain strategy rather than a full renaissance.

Growth will be incremental, not monumental. And a number of policy pieces and structural changes must fall into place before any larger change is realized.

Ethnic Foods Beef Up Supply Chain Challenges

Ethnic diversity is increasingly apparent in the food supply chain, presenting challenges for food suppliers, distributors, and retailers that have to ship and stock to changing demand.

"We offer a variety of ethnic foods; that's part of the excitement," explained Mike Hardy, distribution manager for Austin, Texas-based Whole Foods, during a presentation at the Georgia Logistics Summit in spring 2013.

Like Whole Foods, many food retailers are tailoring SKU selectivity to different markets and ethnic communities – which means their inventory profiles are changing and expanding. And it's not just imports.

FPL Food, an Augusta, Ga., beef company, operates three plants in the Southeast that are certified to produce Halal beef in accordance with Islamic law. Much of the product is bound for locations such as Qatar, Kuwait, and Dubai. While American diversity is driving "food excitement" at the store shelf, global homogeneity—namely an expanding middle class—is radically changing U.S. agriculture prospects.

That shift is crystal clear to Lee Bonecutter, vice president of FPL Food. "Over the next 20 to 30 years, the world population will grow; that includes an additional three billion middle-class people around the world who like beef," he explained at the Georgia Logistics Summit.

While beef consumption continues to decline in the United States, exports are on the rise.

In the United States, however, the love affair with beef is waning—partly due to economy, changing demographic shifts, cultural mores, and consumer tastes. Between 2011 and 2012, U.S. beef consumption dropped six percent.

Meanwhile, U.S. beef exports continue to rise. Producers averaged $277 per head in 2012, a six-percent increase year over year. More telling, in 2008, the global population consumed 58 pounds of beef, pork, and poultry on average per year; in 2012, that number jumped to 75 pounds.

The change is overt within the ranching industry. The U.S. cattle herd is the lowest it has been since 1952, added Bonecutter. Ranchers are losing nearly $100 per head because of rising feed costs—partly attributed to corn ethanol subsidies that are increasing demand and raising prices, as well as recent droughts.

To meet demand—particularly offshore—FPL is bringing beef in from farther away. In just three years, the company has expanded its sourcing activity from 12 states to 26 states and Canada. This increases transportation costs, which is reflected in the marketplace.

But retailers and distributors such as Kroger, Walmart, Tyson, and U.S. Food Service are getting smarter at how they manage these downward pressures—and it may be a sign of things to come as the food supply chain tackles food quality and safety regulations.

When Bonecutter joined FPL in 2007, less than five percent of the company's outbound product was backhaul or customer-coordinated truck moves. Today, 85 percent is controlled by the customer. Food shippers are making a commitment to inbound logistics to manage variability, quality, safety, complexity, and cost.

3PL Relationship Key to Competitive Advantage

The third-party logistics (3PL) industry is one of the supply chain's fastest-growing segments. In 2011, the U.S. value of the 3PL market was close to $134 billion, with estimates suggesting 2013 growth will hit 12 percent—compared to overall U.S. GDP expansion of just three percent. The importance of relationships between shippers and their 3PL partners was the topic of a panel discussion among leading 3PL representatives at KC SmartPort's second-annual Momentum industry forum in April 2013. Here are some highlights of that discussion, which was hosted by Chris Gutierrez, president of KC SmartPort.

CG: What strategies do companies need to leverage over the next few years to increase efficiencies and/or improve competitiveness as it relates to using 3PLs?

Carl Fowler, senior director, Menlo Logistics: The first strategy is collaboration with customers, competitors, carrier partners, and other supply chain parties. Maximize all the assets in the network, ask why you need to move a product, and look for collaborative ways to do that more effectively. Second, establish an organization-wide supply chain strategy; turn your supply chain into a competitive advantage.

Roger Scarbrough, CEO, Scarbrough International: Data has become critical to the global supply chain. Understand how to integrate data so you can feed it to your 3PL. Accurate, real-time information is key to finding the best solutions.

CG: What advice can you offer to companies looking to improve or add to their international supply chain?

Scarbrough: Study your supply chain and know your needs. Do a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, and interview multiple 3PLs to find a compatible partner. Also, accept that compliance is here to stay. Companies are no longer able to protect confidential information from the government. Embrace government programs. You can be on one of two lists: the trusted trader list or the target list.

CG: What regulatory actions should supply chain companies be following?

John Wagner Jr., president, Wagner Logistics: As the economy improves, carrier capacity—and anything that limits it—is a concern. As CSA regulations are refined, some will be good, but some penalties will be unfair and affect competitiveness. On the warehousing side, watch FDA food safety requirements, especially traceability, which can be a minefield for 3PLs.

Fowler: Another regulation that bears mentioning is cap and trade. It is already in effect in Australia and parts of Europe, and many in the industry believe it is inevitable. Don't wait for a mandate. Successful companies will be those that thought ahead and put plans in place to implement it.

Todd Snyder, vice president, UPS Customer Solutions: One group on the forefront of the healthcare industry is the Pharmaceutical Distribution Security Alliance, of which UPS is a founding partner. Twenty-five other companies are joining with us to address widely differing state regulations. We are working now to stress to Congress the importance of passing regulation for a single platform across the United States, which would help to defray rising healthcare costs.

CG: Many small changes happen over time in the supply chain then, all of a sudden, there is a paradigm shift. What is the next major change?

Snyder: I'm hearing a lot about vested outsourcing. Companies need to look at the right measures, work together to do more than just scrutinize rates, and search broadly for the right partner.

Scarbrough: Technology will continue to automate the 3PL business. This adds serious vulnerability to technical systems and the supply chain. Contingency planning is critical due to our dependence on technology.

Wagner: I am watching the growth of online purchasing in retail. Inventory is expensive to carry and vendors are responding by adding consumer fulfillment. That multi-channel fulfillment will continue to grow because it makes so much sense.

Taking the LEAD

In a move that reflects an emerging generational gap within the transportation sector, the American Trucking Associations (ATA) started the LEAD ATA program to help groom tomorrow's trucking leaders.

"In the 80 years since ATA was founded, we have always relied on industry leaders to be our spokesmen and our examples of what trucking means to the country," says Bill Graves, president & CEO, ATA. "LEAD ATA will help us nurture and cultivate our next generation of leaders, and ensure that the legacy those giants have left us is entrusted to sure, steady hands."

The program is sponsored by onboard communications hardware company PeopleNet, and provides young trucking executives with educational opportunities designed to highlight how the regulatory and legislative process affects the trucking industry, as well as demonstrate the tools available to industry executives through ATA. Each year, a new class will be accepted into the program.

Shipper Forecast: Cloudy

Shippers are operating in a slightly improved but negative environment, according to transportation forecasting firm FTR Associates' most recent Shippers Conditions Index (SCI). Trucking capacity and supply "remain in precarious balance at the moment, with very limited demand growth keeping shipping costs in check," says the report.

The SCI for March 2013 eased from February's level of -9.5 to a current reading of -7.3. The index is a compilation of factors affecting the shipping environment. Any reading below zero indicates a less-than-ideal environment for shippers. Readings less than -10 signal conditions are approaching critical levels based on available capacity and expected rates.

FTR expects shipping conditions will further deteriorate as freight improves seasonally and Hours of Service rule changes go into effect on July 1, 2013.

"Current shipping conditions remain calm, but storm clouds are on the horizon," says FTR senior consultant Lawrence Gross. "FTR projects the Hours of Service changes will reduce trucking productivity by about three percent.

"While our estimate of the productivity hit is less severe than some, even a three-percent decline will be sufficient to tip the balance of supply and demand significantly away from shippers, assuming the economy continues to maintain at least the anemic growth levels seen recently," he adds. ■

GLOBAL

THE WORLD AT A GLANCE

by Joseph O'Reilly

ASEAN country Singapore is well-established as the world's foremost transportation hub.

ASEAN Countries Attracting Attention

As Europe's economy copes with a sweeping debt crisis, and its Asian trade partners absorb the impact of declining exports and rising inflation, Southeast Asia is quickly becoming a center of attention—and transportation and logistics investment.

Malaysia, for example, is looking to become a key transportation and logistics hub for the Association of Southeast Asian Nations (ASEAN). Sharing borders with Brunei, Indonesia, Singapore, and Thailand, the country's unique location on both the Asian mainland and the Malay Archipelago is favorable to new investment and growth. Malaysia's government is planning to develop a global logistics hub—with four integrated logistics centers—in the Iskandar Malaysia development region located along the busy Straits of Malacca trade.

In 2012, Malaysia's trade with ASEAN amounted to $115.9 billion—or 27.3 percent of the country's external trade—with room for more growth. In an effort to stimulate intra-Asia trade development, the ASEAN Economic Community (AEC) plans to remove restrictions for logistics services by 2013, and allow other member countries to assume up to 70 percent equity participation in these services.

Other countries in the region have equally ambitious designs. At the extremes are Singapore, well-established as the foremost shipping hub in the world, and India and Indonesia, which remain independently saddled by poor transportation infrastructure and high logistics costs. In between, Vietnam has generated a great deal of buzz as a low-cost manufacturing alternative to China, and Laos is slowly emerging as a contender.

Landlocked Laos has captured China's attention because it's the key to a lucrative Thai consumer market. Lao transport infrastructure is notoriously lacking. Approximate to Utah in land area, it has 329 miles of paved roadways and two miles of rail—a spur from the capital city of Vientiane across the Thai border. China is looking to help the Communist government expand its rail presence with a $7.2-billion loan to finance constructing a 261-mile high-speed rail link between Kunming in southern China and the Lao capital.

Laos also acquired a $5-billion loan to construct a 140-mile rail line running across the southern part of the country to connect the Thai and Vietnamese borders. While there are concerns that Laos may be assuming more debt than it can handle, threatening a tenuous socio-economic balance, the potential benefits seem to be worth the risk. The country has no coastline or seaports, which puts it at a considerable disadvantage compared to other ASEAN neighbors. Better rail connectivity will help reduce transportation costs, and create a blueprint for future economic development.

China stands to gain even more, according to the *Financial Times*. The country invested $3.3 billion in Laos in 2012, mostly directed at its wealth of natural resources. Apart from tapping Thailand's growing consumer base, a Lao rail link would provide access to a new deepwater port project in Dawei, Myanmar. This would allow China a more direct overland route to a "new" western seaboard, as opposed to shipping around the Malaysian peninsula and through the Strait of Malacca.

Australia Cuts Regulatory Restrictions

Australia's Productivity Commission may take a thresher to regulatory bureaucracy in the food supply chain—a measure sure to please farmers who have long called for reform.

The review will form part of the federal government's inaugural National Food Plan, which will outline how Australia can become a more efficiently regulated country. The effort, which is expected to begin in 2014, will identify reforms that have the greatest benefit to the food industry and consumers.

The commission is taking a similar approach in other areas. It is undertaking a study to benchmark regulator engagement with small businesses to identify best practices and determine whether they can be used more widely to help reduce the compliance burden on companies.

In the mining sector, Australia's Productivity Commission is exploring how regulatory improvements may pave the way for a more efficient licensing process to counter a drop in new mineral site discoveries.

McDonald's is Lovin' Transparency

In yet another effort to bring more visibility to its supply chain, the fast food company's UK business has launched a program called "Quality Scouts" that invites members of the public to go behind the scenes to see how products are made.

Quality Scouts will investigate and chronicle the supply chain process from some of the 17,500 British and Irish farms that supply McDonald's, on through to food production and restaurants. The public will meet and interview farmers, food suppliers, and McDonald's employees to discover more about what's in their product and how it is made. McDonald's will then publish the Quality Scouts reports on its interactive Web site, whatmakesmcdonalds.co.uk, later in 2013.

Given the recent horsemeat scandal in the United Kingdom and Europe, knowing more about where food comes from is an important issue for most UK adults, according to a recent Populus poll of 2,000 consumers. Four out of five people say it is important that ingredients are traceable to the farm they came from, and more than half of adults (53 percent) consider how food is produced when deciding what products to buy.

Earlier this year McDonald's Australia introduced a mobile app that allows consumers to track the supply chain of their orders.

McDonald's UK is inviting consumers to a behind-the-scenes tour of its supply chain.

India Connects With USC

First, India eased restrictions on foreign direct investment for single- and multi-brand retailers. Then, the government gave Amazon permission to set up a wholly owned subsidiary to serve the domestic market. Now, Mumbai-based SP Jain Institute is offering a master's degree program in supply chain management through the University of Southern California's (USC) Marshal School of Business.

Students have the option of on-campus learning at USC in Los Angeles, or long-distance online coursework.

"The program is aimed at facilitating the needs of working professionals in the Asia Pacific region who wish to expand their knowledge of global supply chain management," the institute says.

The partnership is yet another sign that India is gradually easing its protectionist tendencies to tap outside resources and help spur a sputtering economy.

Mexico Loses its COOL

The U.S.-Mexico tariff truce may be short-lived. Less than two years after the countries finally came to an agreement over a NAFTA provision that would allow Mexican trucks on U.S. roads—thereby removing retaliatory duties Mexico had placed on U.S. exports—a dispute over the fairness of U.S. country-of-origin labeling (COOL) rules raises fresh concerns.

Mexico says the new U.S. rules for meat labeling are even more onerous than a set of regulations the World Trade Organization (WTO) declared unfair in June 2012. In May 2013, the Obama administration unveiled the latest requirements to comply with the WTO decision that upheld complaints by Canada and Mexico. Canada said it will also fight the revised COOL mandates.

Under the new regulation, labels will include descriptions such as "Born, Raised, and Slaughtered in the United States" for U.S. animals. Meat from other countries could carry labels such as "Born in Mexico, Raised and Slaughtered in the United States."

Mexico argues the new COOL rule does not comply with WTO requirements, and will cause even more damage to Mexican meat exports. [ ]

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Transportation Payment – Bank on a Better Way

The definition of "carrier" is pretty straightforward: an entity that transports freight. Carriers are in the transportation business, plain and simple. Actually, not so simple. Carriers are also in the credit business. Unintentionally, to be sure, but they are. When carriers set payment terms of 45 days, they are essentially extending credit to the shipper for a month and a half.

From the shipper's standpoint, those delayed payment terms are necessary, even critical, to maintaining cash flow in a competitive marketplace. That's understandable, but so is the fact that many carriers would love to get access to the payment earlier if they could. How can shippers and carriers bridge that divide? How can shippers keep enough cash on hand for their operations even while carriers get paid faster if that's what they want? The answer is simple: by using a bank to facilitate the transaction.

FINANCIAL LEVERAGE. When a bank is the transportation payment provider, both shippers and carriers can benefit from the sort of trade finance arrangements banks make every day. A shipper can still take 45 days to pay, for example, but the carrier can get paid as soon as the shipper approves the invoice.

Speed of payment is only one part of this critical business transaction. The process of freight payment can be quite complex, and has spawned numerous audit and invoice processing solutions from myriad providers. Among these many alternatives, a financial institution provides uniquely powerful advantages for dependable, secure, cost-efficient payments.

PAYMENT EXPERTISE. Moving funds is what financial institutions do. No other organization can offer the level of payment reliability that a bank can provide. In fact, a bank is the only entity that can make a payment directly on a shipper's behalf. If the shipper's provider is not a bank, that entity works through a bank to make those payments.

TRUSTED, TRANSPARENT FUNDING SOURCE. Most shippers closely monitor the safety of their physical supply chain. That same care should also be applied to a shipper's financial supply chain. Recent high-profile litigation should highlight the need to carefully consider a freight payment provider's financial stability, its risk of defaulting, the visibility it offers into its payment process and the degree of control it exerts over funds. Ultimately, the only institution that can guarantee funds will be delivered exactly when promised, to whom promised, is a bank.

FUND SAFETY AND SECURITY. Financial institutions are closely regulated in the way they manage their funds – and those of their clients. By law, they do not, for example, commingle a shipper's funds with those of other customers. When a bank manages your payments, creditors can be more confident they will be paid in full and on time.

Like most large organizations, banks are required to comply with safeguards, like Sarbanes Oxley and Office of Foreign Assets Control checks. Few can rival their proficiency in complying with such regulations. In many cases, working with a bank relieves a shipper of having to conduct its own regulatory compliance exercises, because the bank will be doing it anyway for its own purposes.

COST SAVINGS. A shipper who makes an inaccurate payment has to spend time tracking and reconciling – a tedious process. When a bank handles invoice management and payment, invoice questions are addressed up front before payment. Payment won't be sent until both trading partners agree to the amount—saving time, money and headaches. A cost-efficient invoice management and payment system allows trading partners to work collaboratively online to adjust invoices, agree on a final amount, and authorize payment. To pay for post-payment audits to catch inaccurate payments caused by incorrect invoices is to spend money unnecessarily.

STRONGER RELATIONSHIPS. In looking for ways to sustain strong relationships with carriers, faster payment is a good place to start. Shippers that consider the carrier's needs when choosing an invoice management and payment solution create true end-to-end efficiencies and savings for both parties.

When a bank provides the invoice management as well as the payment, both shippers and carriers benefit. Shippers know that invoices are being processed with high efficiency and low cost, and payments are being made reliably, securely and quickly. Carriers can depend on faster payment, which gets them out of the money-lending business and enables them to be what they want to be: carriers.

Natural Gas For Long-Haul Trucking: Working Together to Get It Right

JASON MATHERS

Senior Manager
Environmental Defense Fund

Q: The trucking industry is poised to increase its use of natural gas for heavy-duty, long-haul freight. Is this a good idea?

A: Natural gas sounds like a dream proposition. It's cheap, domestic, and, when it burns, it emits a quarter of the carbon dioxide (CO_2) of diesel fuel—and few other pollutants. So it potentially solves the two most pressing environmental issues related to freight: the volume of pollutants that diminish air quality, and greenhouse gas emissions that hasten climate change.

But there's a catch. If it doesn't burn, and instead escapes into the atmosphere, natural gas, which is mostly methane, is a greenhouse gas many times more impactful than CO_2. Unless we're very careful about how we deploy this solution—how we capture, distribute, and burn it—we could actually be worse off, environmentally speaking.

When it comes to air quality, the trucking industry has made enormous progress—reducing particulate and nitrogen emissions 95 percent over the past 25 years. Going forward, the key environmental focus in trucking must be greenhouse gas emissions.

Q: Why is methane leakage and its impact on climate change so concerning?

A: As a global warming pollutant, methane is like CO_2 on steroids. Even small amounts of leakage can erase the benefits of switching from diesel to natural gas.

About 1.5 percent of total natural gas production is lost to leakage, according to the most recent EPA greenhouse gas inventory. While different studies put that percentage higher or lower, our best science suggests we must limit these emissions to one percent or less. That's the total amount of methane that can escape, systemwide, before the environmental benefits of switching from diesel to natural gas disappear.

Q: How can we solve the problem?

A: The first step is fully understanding it. The Environmental Defense Fund is sponsoring a study by West Virginia University to measure methane leaks at various stages in refueling and operating trucks that run on liquefied natural gas. Other sponsors include Volvo, Cummins Westport, Westport Innovations, PepsiCo, and Shell; they all recognize the importance of working across the industry on a practical, sustainable solution. Study results, due out in early 2014, will give us an understanding of what actions are needed to drive down leakage rates to acceptable levels.

Q: In the meantime, what can shippers do to keep this issue front and center?

A: Stay informed, and ask questions. Learn what fuel suppliers, truck manufacturers, and for-hire fleets are doing to minimize fugitive methane emissions.

Natural gas is a homegrown resource that can reduce fuel costs, make us more energy independent, and create a safer planet. But the methane emissions issue must be solved for natural gas to realize its full potential in long-haul freight.

The good news is that the right players have banded together to drive toward a solution. With continued collaboration and a unified commitment to high performance standards, we can tackle this challenge and ensure natural gas is a win for shippers, carriers, and future generations.

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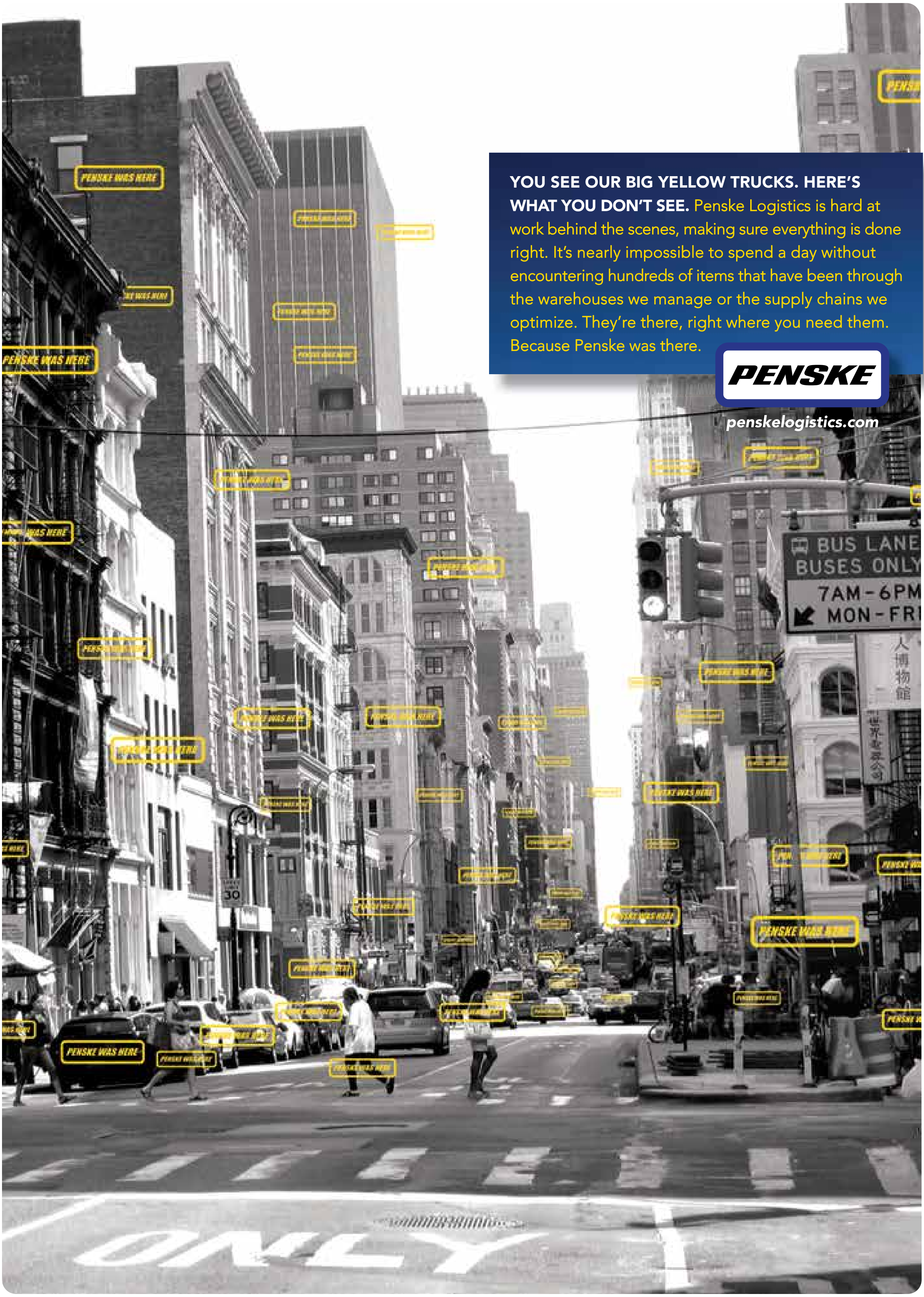
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THE LEAN SUPPLY CHAIN

BY PAUL A. MYERSON
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Reducing Defects and Errors: Don't Make the Same Mistake Twice

One popular definition of insanity is "doing the same thing over and over again, and expecting different results." So why does that occur all the time in business? Whether it involves producing many items with the same defects, or continuous incorrect inventory counts, we keep shooting ourselves in the foot.

Although 85 percent of quality issues are reportedly due to process and materials, it is common practice in some organizations to accept operator error as the cause of a defect.

Operator error often indicates a deeper problem, however, and using that excuse not only prevents finding a true solution to the problem, but also creates fear and mistrust within the organization.

In supply chain and logistics, we encounter controllable performance failures such as shipping the wrong product to a customer, receiving an item incorrectly, and making data entry errors. All of these issues are avoidable.

The Lean manufacturing principle "Quality at the Source" states that quality is not only measured at the end of the production line, but at every step along the way. Under this principle, quality is the responsibility of each individual who contributes to the production or on-time delivery of a product or service.

Instead of focusing so much on final inspection, we should make it everyone's job to ensure they provide only good material or information to their customer—not just the ultimate customer, but everyone to whom they pass product or information to complete the next step in the process.

An Ounce of Prevention

We don't create defects and errors on purpose, so how do we avoid them? A concept known as Poka-Yoke or Mistake Proofing can help. A Poka-Yoke is any mechanism or process that prevents mistakes or defects by forcing the user to do a task only one way. An example of a poka yoke is the dispensing nozzles on diesel fuel pumps. They are larger than the nozzles used for regular gas, and will not fit into non-diesel vehicle tanks.

Here are some ways to apply Mistake Proofing and Standardized Work in supply chain and logistics operations:

- Institute system-directed cycle counting at warehouses to improve inventory accuracy and get to the root cause of issues.
- Use Six Sigma and Statistical Process Control to reduce process variation that can create waste.
- Communicate with customers and suppliers via electronic data interchange to reduce errors and improve productivity.
- Standardize processes to reduce variations. Instruct all workers to use the best practice method, and create visible reminders to ensure a task is done the same way each time, no matter who performs it.
- Organize your workplace using the 5S method—Sort out, Set in Order, Shine, Standardize, and Sustain—for a clean, safe, efficient, and uncluttered environment.

If we can abandon the notion that "mistakes happen" and—instead of pointing fingers—get everyone involved to solve the problem, we can make progress toward reducing and eliminating defects and errors. ■

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

VIEWPOINT

BY CHRIS SWEARINGEN
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Sensor-based Logistics: Monitoring Shipment Vital Signs in Real Time

The global supply chain's rapid growth is encouraging companies to look for new ways to improve efficiency, cut waste, and enhance supply chain dependability to deliver a superior customer experience. One tool for accomplishing these goals is sensor-based logistics (SBL).

SBL provides full visibility inside shipments while they're in motion, helping to ensure they reach their destination in the customer's anticipated condition. It is an emerging logistics model in which multiple sensors transmit cargo data to multiple partners, enabling them to collaborate and respond to unexpected situations.

The sensor devices detect current shipment location and environmental variables such as temperature, light exposure, relative humidity, and barometric pressure, then wirelessly communicate these variables to the shipper. Accompanying management software displays, stores, and analyzes the data.

Keeping Customers Informed

Using GPS technology, SBL allows shippers to create customized, location-based alerts called geofences to inform them if a shipment deviates from its route, and whether it is scheduled for timely delivery.

A range of industries can benefit from SBL. For example, healthcare and pharmaceutical companies shipping items that are either very difficult or impossible to replace—such as tissue specimens for clinical trials and/or diagnostic testing—need the environmental variables of these packages carefully maintained while in transit. By monitoring factors such as light exposure, temperature, and humidity, an SBL solution could save the specimens from damage.

Another life science scenario involves hospitals transporting irreplaceable tissue biopsies and bone marrow samples. The samples have a 48-hour window of variability, so successful delivery in the desired condition within this timeframe is imperative. Based on certain parameters, hospitals can receive personalized alerts to intervene, or reroute a shipment if necessary to preserve the samples.

SBL systems can also prove beneficial for the aerospace industry, especially when a plane is rendered Aircraft on Ground (AOG). Missing or delayed repair parts can result in substantial part replacement or rush delivery costs. AOG personnel using SBL software can actively monitor the location of critical aircraft parts from origin to destination.

Using customer-established geofences, AOG personnel receive constant location updates and arrival notifications that provide immediate visibility so they can be prepared to either reroute the part or employ the necessary personnel to shuttle the part to the plane.

Increasing Recovery Time

Keeping customers informed extends past simple package delivery, however. By receiving continuous data while shipments are en route, users can take advantage of intervention services such as re-icing cold chain shipments, inspecting and repackaging damaged goods, or involving law enforcement to pursue stolen products. Instead of reacting to supply chain faults, SBL places control in the hands of the management team to proactively avoid these issues.

SBL systems give users the control and insight needed to make better business decisions and stay ahead of the competition in a fast-paced and ever-changing marketplace. This, in turn, can lead to a superior customer experience and higher profit margin. ■

SMART MOVES

BY DARREN MAYNARD
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Logistics Staffing: Find a Way or Make One

The saying "find a way or make one" has always appealed to me because it prioritizes the need to first look for existing solutions before coming up with new ones. There is always a solution, and giving up is not an option.

Why, then, do so many companies look outside for new logistics hires rather than invest in training to develop current employees' skills relevant to the organization's needs?

Currently, I am an advisor to five CEOs. One technology company CEO was struggling with finding a strong software implementation staff focused on global supply chains.

Finding new hires was a cost, culture, skills, and scope challenge. The typical candidates were expensive, not very technical, unwilling to work the hours the CEO needed, and unable to handle the growing scope of capabilities required to satisfy the customer base. Perhaps it was worth not finding a way, but making one.

We started by assembling an internal team to identify the core characteristics of exceptional company employees. These characteristics were focused on a strong work ethic, superb analytical skills, and a general ability to learn abstract concepts broadly.

We agreed we wanted "blue-collar" graduates, which we identified as people who worked second jobs, or worked while in school to help pay tuition. We decided business students with math or engineering minors matched the skills we sought. We then contacted universities to start the recruiting process.

Basic Training

Separately, we began to construct our own training program with the company's product managers. This presented its own challenges. With the speed of the company's growth, these managers had never focused on internal training, and educational materials did not exist.

One employee complained that he had to learn the hard way, so why should graduate hires be spoon-fed? We managed to move past this type of reservation, and built a 13-week program. It started with one week of intensive product immersion across all products, and a second week where students had to present products to prove their understanding.

All the training led to extended projects that exposed new hires to different areas of the business; and culminated with them becoming full employees after 16 weeks. The added benefit of this approach was that we could choose the departments they moved into based on both need and their demonstrated skills.

After current employees complained that they had not been given such a broad education, we expanded the training program to include them.

The first year we started slowly, with two classes of three students. Yes, we made mistakes. I misjudged one student's ability to accept positive feedback, and had three graduates in tears by simply asking, "Is this your best effort?"

Today, the company hires 20 graduates a year, the training program is the main source of staffing, and we have had little turnover.

Skeptics in the logistics sector have questioned me on the value of this approach, believing that people will leave immediately after they have been trained and garnered experience from the company. While there have been some cases of this during the past five years, it was only at levels of attrition typical of any company.

The word spread back into the colleges we recruited from, and while we initially had trouble attracting talent when competing with companies such as Microsoft and Google, we now are recognized for the training program and for being an exciting place to work.

When staffing up your company's logistics operations, if you can't find the right employee, make one. ■

THE LEAN SUPPLY CHAIN

WATCHING YOUR WASTE LINE

Lean logistics can help your company shed fat and build muscle.

by Merrill Douglas

From its origins in Japanese industry, the Lean philosophy has spread around the world and beyond the factory floor, into business administration, healthcare, government—and logistics.

For companies working to reduce costs while enhancing performance, the Lean approach is a natural fit. Viewing the world through a lens of continuous improvement, and armed with waste-fighting tools such as value stream mapping (VSM) and 5S, companies are slimming down, toning up, and working out efficient materials flow all along the supply chain.

Lean initiatives can focus on specific logistics processes, or they can embrace entire supply chains. LeanCor Supply Chain Group spends a lot of time helping global companies succeed at the end-to-end approach. To keep those projects manageable, "efforts start with just a few stockkeeping units (SKUs)," says Robert Martichenko, chief operating officer at the Florence, Ky.-based third-party logistics provider.

Lean projects begin with team members drawn from throughout the supply chain spending several days describing the current state of each SKU's entire path, from materials suppliers to end consumer. They then spend several more days mapping a future state—the leaner supply chain the company wants to achieve.

As it proposes a change—for example, to move smaller shipments more often—the group describes every consequence that change might create.

"Setting a future state for inventory levels will drive future lead times," says Martichenko. "That, in turn, will drive a future state for how often a company will make a product or order it from a supplier."

The group conducts a "gap analysis," determining the steps the company must take to achieve the future state. Members then validate that analysis. What would happen, for example, if the company received a product every 15 days instead of every 30? Could the factory or the supplier accommodate that schedule? What else would have to change?

Based on that analysis, the team develops a list of necessary tasks and assigns them to individuals, with time frames. They also perform a failure mode effects analysis (FMEA), examining risk factors attached to the proposed changes.

"Then we begin implementation, which comprises very disciplined plan, do, check, act (PDCA) cycles, and continue to make sure that we're moving toward our goals," Martichenko says.

If all goes well, the last step is determining how to scale up the solution to include more SKUs.

The ultimate goal is to get product flowing through the supply chain based on the pull of customer demand. "Overproduction is the worst waste," Martichenko says. The faster goods move through the system, the closer a company gets to making or ordering exactly the product it needs to fill customer orders—and not one bit more.

Redrawing the Map

When executives at Tim Horton's, an Oakville, Ont.-based quick-service restaurant chain, began to look for Lean opportunities several years ago, their first order of business was to get acquainted. Players responsible for purchasing, product introduction, distribution, and other key functions were surprised to learn how little each knew about the roles the others played.

Correcting that gap results in significant payback. "Identifying everyone's function can quickly generate a 10- to 15-percent improvement in communication and productivity," says Tony Soumas, director of supply chain improvement and planning at Tim Horton's.

Through a VSM exercise, the group developed a detailed picture of all the processes that made up the Tim Horton's supply chain. Then they mapped a future state—the way the supply chain would work once they identified and eliminated processes that didn't add value. Their next step was determining how to remove some of that waste.

One area they focused on was product replenishment. At the time, each of the company's five distribution centers managed that process independently.

"This exercise revealed an opportunity to centralize that function," says Soumas, who also serves as a Lean coach for The Leading Edge Group, Toronto. Centralization led to better communication with vendors and, ultimately, greater efficiency.

Tim Horton's is committed to Lean principles that emphasize respect for people, focus on the customer, and work to eliminate waste, ensuring that time spent at work adds value.

Since then, Tim Horton's has centralized other supply chain functions as well, creating the organization that Soumas now heads. That group manages product flow and provides essential coordination.

"Whether it's crisis management, or a quick product introduction that has to happen overnight, this core team has the expertise and connections with the rest of the network to make it happen," Soumas says.

As Tim Horton's fine-tuned its supply chain strategies, it developed ways to translate high-level goals into specific improvements in day-to-day work. For example, its high-volume warehouse in Guelph, Ont., implemented a paced production system that matches staffing to customer demand each day. This system ensures there's always just enough labor—not too little, not too much—to do the work required during the shift.

The new approach has proven especially effective in the frozen foods area, which sees the most variable demand. "That's where the opportunity existed to pace the product, so that a set group could operate as a team and manage the rate at which the product had to be picked and processed, regardless of day," Soumas says. Tim Horton's is now working to implement that process in other DCs as well.

Down to the Root

Miami-based third-party logistics provider Ryder System Inc. has ample experience with large-scale Lean initiatives. But Lean practitioners also know the value of projects that zoom in on specific points of waste. Consider the time Ryder worked with a food manufacturer to reduce product damage.

The problem had multiple causes. "Some damage occurred at the manufacturing site, some during transportation, some within the warehouse, some while unloading, and some because the packaging wasn't adequate," recalls Robert Arndt, Ryder's vice president of Lean supply chain solutions.

The first step was to collect data on the types of damage incurred—was the product smashed, crushed, or held past its expiration date?—and where it was identified. "We worked with finance and operations," Arndt says. "We drilled down beyond the numbers, to where the numbers were coming from."

Following the trail backwards, the team identified the root causes of damage, and identified potential solutions that would make the biggest difference. "For instance, maybe we use a process where we shouldn't be double-stacking products,

At Ryder's Lean problem-solving meeting, engineers participate in a value stream mapping exercise to identify waste in a process.

or we should only stack them three high, not four," Arndt says. "Or maybe we have to go back to the packaging department and request a different kind of corner post, because the one we're using isn't strong enough to support the product in that container."

By attacking a widespread problem one root cause at a time, the Lean team can eventually cut damage in half—say, from $20 million annually to $10 million. But the effort doesn't end there. "Maybe a few months later, we'll go back to see if we can get that $10 million in damage down to $5 million," Arndt says.

Maintain the Gain

Any company can focus on a problem area and create a success story. "But if a company really wants to become world-class, it has to maintain those gains and use that success as an opportunity to explore the same area again," Arndt says.

Also, involving front-line employees in Lean initiatives is crucial. Implementing workers' suggestions increases the chance of sustaining the improvements gained.

"Because they do the work every day, and they're part of the team, front-line employees ensure that their ideas stay in place because they didn't come from senior management," Arndt says.

Even if one section of your operation is as lean as a champion greyhound, excess flab in an adjacent function can harm your entire business.

That was the case for one customer of Kenco Group, a Chattanooga-based 3PL. The customer's plant in Chihuahua, Mexico, applied a range of Lean tools to keep components flowing to the production line just as they were needed. And the facility was exceptionally neat. "You could eat off the floor," says Jason Minghini, Kenco's vice president of best practices.

But during a visit to that plant, when Minghini stepped through a gate into the inventory storeroom, he couldn't believe he was still in the same building. Product moved in and out without regard to logical flow, and visual systems to help manage the work were not in place.

"A telltale sign is when you walk through a warehouse and you notice expedite labels on boxes," Minghini says. "And when you open a box, only one or two parts have been removed." Clearly, the plant was wasting money playing a constant game of catch-up.

Parts shortages kept shutting down production. "Up time and on-time delivery rates were low," Minghini says. "And premium freight costs were through the roof."

So Kenco and its customer started applying the same Lean principles to the parts warehouse that were used in production.

Within the enterprise resource planning (ERP) system, they set up an electronic version of a kanban—a visual signal to indicate when it's time to bring in more materials. "As materials were pulled from the warehouse, a replenishment cue was generated and sent to suppliers," Minghini says.

Kenco and the customer worked with suppliers to keep product arriving in a steady stream, rather than in fits and starts, and they reduced the lead time on those orders. They also reorganized the warehouse and added visual management tools.

Seeing Results

As a result of those changes, the company increased up time on its production line, cut its use of expedited freight, and boosted on-time deliveries. The improvements spilled over to Kenco's DC in Louisville, Ky., which sends shipments to the manufacturer's customers.

"As we increased on-time delivery at the manufacturing center, on-time delivery from the distribution center improved as

"We go beyond the basics to deliver comprehensive logistics solutions."

BILL BERG, SENIOR DIRECTOR - DEDICATED OPERATIONS

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Whatever It Takes!

well," Minghini says. That, in turn, boosted customer satisfaction.

The Lean principle of standardized work was the focus of a project that supply chain consultant Paul Myerson, managing partner of Logistics Planning Associates, Matawan, N.J., once led for a toy retailer. Standardized work maintains that there is one best way to perform a task. To make sure employees follow this procedure exactly, the employer provides detailed, documented instructions and visual aids.

Standardized work is especially important for reducing waste at the start of a shift. "In any operation, startup usually is slower and workers don't get going as quickly as possible," Myerson says.

Myerson's client wanted to improve productivity on a large DC's loading dock. To achieve that goal, the company needed to provide clear instructions for loading and unloading trucks, and to stage all the equipment exactly where workers needed it.

First, Myerson worked with the company to determine the best way to do the work. Then, team members produced step-by-step instructions in both English and Spanish, illustrated with photos. They also organized the work space to promote efficiency, putting markings on the floor to show the right locations for various equipment and supplies.

"They used mobile desks equipped with everything from a calculator to tape and reports," Myerson says. "Every item was in the same spot on each desk. All the equipment and supplies were there for startup, so unloading was quick and easy, and done the same way every time, no matter who did it."

Once a company implements a standard process, employees must continue to adhere to that standard. But there's no easy answer to how you sustain a Lean practice once it's in place. "It's cultural," Myerson says. "You need top-down support from management, as well as good training for employees."

Some companies designate a Lean coordinator to oversee all Lean activities; others just keep following up to make sure improvements stay in place.

One key is making a serious commitment. "Many U.S. companies look for a home run, and if they don't hit it, they quit," Myerson says. But Lean is an incremental process.

"Companies might only make small improvements at first, but over time they make significant improvements," he adds. "Those are the companies that succeed."

Creative Cleanup

If you want to see Lean in action, look at a NASCAR pit. "When a driver pulls in, the pit crew changes four tires, wipes down the windshield, adds fuel, gives water to the driver, and boom—he's out of there in 11 seconds," says Joe Perillo, senior director of supply chain operations, logistics, and lean enterprise at PTR Baler and Compactor, Philadelphia.

5S ensures every part has a home, and workers know exactly where it goes.

Lately, Perillo and his team have been turning a narrow, cluttered parts warehouse into something more like a pit at a Sprint Cup race, using the Lean tool known as 5S: Sort, Straighten (or Set in Place, or Stabilize), Shine, Standardize, and Sustain.

When workers needed to pull a part from this warehouse for production, they used to spend not 11 seconds, but 45 minutes searching the space and hauling other items out of the way. Workers asked for more help, but what the space really needed was vertical shelving and a good cleanup.

"We had to get rid of unnecessary items, sort through the materials, then identify and put in place a process to maintain the space that way," Perillo says. "Every part has a home, and the cues are visual, so workers know exactly where it goes, by location and by part number."

The 5S team originally chose one method of organization, but after consulting with the material handlers, it shifted some product to different spots. Like Arndt at Ryder, Perillo says it's crucial to include front-line workers in a Lean initiative. "They are the people who are doing the job; they live it every day," he says.

A well-organized warehouse makes better use of available space. "As the company grows, we're not building new buildings; we're using the space we have," Perillo says. Workers can find the parts they need, and if inventory runs low, the gap on the shelf provides a clear visual cue.

The 5S embodies an important principle: "Creativity before capital," says Perillo. Rather than spend $1 million on a new warehouse to store PTR's growing inventory, he and his team pushed to get more use from the existing space.

"We tripled our storage capacity and improved efficiency," he says. "It now takes only 10 minutes to find a part, pull it, and get it out of the building."

Seven Miles of Spaghetti

Another Lean practitioner who likes to tap the wisdom of front-line employees is Charlie Jacobs, director of process improvement at APL Logistics, a global 3PL with U.S. headquarters in Scottsdale, Ariz. "One of the most powerful benefits of Lean is that you're not bringing in experts," he says. Instead, you're teaching the people who work in a process every day to use Lean tools to eliminate waste.

Some years back, a tool called a spaghetti chart helped workers who received and picked product for one APL customer, a motorcycle manufacturer, become vastly more efficient.

"Workers were bumping up against each other," recalls Jacobs. Because the loading dock was cluttered with inbound and outbound freight, employees picking new orders had to line up the bikes in the aisles. When the dock cleared, they'd move the product again to stage it for shipping.

After drawing all their movements on the chart, which looked like snarled strands of pasta, workers saw how much redundant effort they made driving product around the warehouse.

"We don't want workers going back and forth on the same paths," Jacobs says. "We

For one company, a disorganized rack system *(left)* wasted worker time and effort. After APL Logistics implemented the 5S Lean technique, however, workers can easily locate equipment and supplies *(right)*.

want them to go down each path one time, and that's the only time they make that trip for processing an order or receipt."

Once they realized how knotty the process had become, workers could untangle it. "They moved receiving to another shift, so the dock wasn't always congested," Jacobs says.

They also redesigned workflows to reduce the number of times product stopped in its progress from storage to truck. "Continuous flow improves efficiency and reduces the costs associated with the process," Jacobs says. It also reduces opportunities for errors and delays.

Ultimately, the Lean project saved the operation seven miles of travel per day. That made for a big improvement in time savings and the fuel consumed on the equipment to drive those seven miles.

When employees conduct a project like this, often the solution seems so simple they wonder why they never thought of it before. But when you're working in the thick of things each day, it's hard to see the larger patterns. A Lean project gives employees a chance to step back. "They can look at their operations from a different perspective," Jacobs says.

Going Flexible

At manufacturer MACtac, a new piece of equipment made it possible to slim down part of the transportation network.

Based in Stow, Ohio, MACtac makes pressure-sensitive adhesive products used in label printing, packaging, manufacturing, and other industries. Traditionally, bulk adhesives arrived at its plants in tank trucks. But in 2007, supply chain manager Chris Barushak and freight and logistics manager Frank Andrulis decided to try something different—a flexible tank, or "bladder," mounted on a reel inside a standard 52-foot trailer.

Tank trucks create several kinds of waste. "If you're waiting to offload adhesive within a certain time after the arrival, you'll pay demurrage charges," Barushak says. "You'll also have to wash out the tank every time, whether product sticks to the sides or not."

And returning the tanker costs money. "You have to pay for empty miles," he notes.

To confirm that the flexible tank could cut that waste, Barushak and Andrulis mapped the process from end to end. Then they imagined a future state: "If we received product with the flexible tank, how would that process look?" Barushak says.

With one flexible tank, they found that savings would kick in only if the plant took three to four adhesive deliveries per week—no fewer and no more. So they had to apply the new process to an adhesive that MACtac consumed at the right frequency, then smooth out production levels to match that schedule every week.

They also had to find a supplier willing to use the flexible tank. To sweeten the deal, MACtac changed its shipping terms from freight on board (FOB) destination to FOB origin. "If MACtac took responsibility for the adhesive once we loaded it, then we could get a discount," Barushak says.

To make sure the new process would go well, MACtac conducted some 5S projects inside the truck and at the unloading site, then used a Lean tool called Poka-Yoke to error-proof the process. The team also practiced loading and unloading the bladder with water before moving on to adhesive.

Not only did the new process eliminate empty-mile charges for the tank truck, but using a flexible tank helped MACtac win better transportation rates. Once it offloads the adhesive and rolls up the bladder, the company loads the trailer with outbound freight.

"The more round trips we do, the lower the cost," Barushak says. The carrier provides a dedicated team of drivers to make all the deliveries and pick up all the outbound freight.

The first adhesive deliveries using the new process started in 2009. "Over the past three years, we saved more than $750,000," he adds.

Some Lean projects such as MACtac's deliver measurable savings. Some improve key performance indicators. And for some, the best measure of success is a blood pressure cuff: when you eliminate waste, you handle fewer emergencies and suffer much less stress.

The payoff from any one Lean initiative might be modest, like the single pound you lose the first week you give up desserts. But pounds add up, and so do the benefits you gain as you find new ways to trim fat from the supply chain. With a devotion to Lean principles and continuous improvement, a logistics operation can grow slender, powerful, and fast. ■

Green Logistics The Walmart Way

Why sustainability best practices are part of the retailer's supply chain DNA.

by Joseph O'Reilly

Every once in a while, a company comes along that separates from the herd and differentiates itself through leadership, vision, innovation, and a capacity to change the marketplace. Walmart is one of those companies.

In a marketing and consumption-driven world, where being green often costs more, the Bentonville, Ark.-based big box retailer broke the mold by rolling back prices and preconceptions in the interest of both the environment and economy. It created a business case for sustainability that permeates all facets of its organization—and extends to suppliers and customers, as well.

"Early in our journey toward sustainability, it was clear that any efforts we undertook had to make good business sense," explains Jeff Smith, senior director of logistics maintenance and purchasing, Walmart. "We have never been interested in trying to create an image of sustainability just for the sake of the image. Every idea is challenged from a business standpoint, and has to demonstrate that it is a good use of our resources."

In 2009, when Walmart announced it was introducing a sustainability index to evaluate product supplier performance, it pushed the needle forward in a seismic way. Others have innovated more, and some have pushed carbon-less further, but no company has spread the gospel of green quite like Walmart.

Going Green in a Big Way

The five-and-dime thrift shop that Sam Walton built into the world's largest retailer is changing expectations in a big way. Consider that Walmart is succeeding where many governments have failed: legislating behavioral change by raising awareness, facilitating best practices, sharing information, and holding suppliers and partners accountable—all within the framework of sound business principles.

Green is not a contrived part of the business that preys on consumer conscience at the store shelf, then fails to deliver at the loading dock. Business strategy and sustainability go hand-in-hand.

For Elizabeth Fretheim, Walmart's director of business strategy and sustainability, the retailer's ethos is an augmented reality.

"Within the transportation function, for example, we want to accomplish three goals: fill every trailer to capacity; drive those trailers the fewest miles possible; and use the most efficient equipment," she explains. "All these efforts drive sustainability, as well as operational efficiency."

Walmart's green strategy is centrally organized; it has a clear roadmap for where it wants to go. In its quest for a 100-percent renewable energy power supply, for example, the company aims to procure seven billion kilowatt hours of renewable energy globally every year by 2021 – a 600-percent increase over 2010 levels – and reduce by 20 percent the kilowatt-hour-per-square-foot energy intensity required to power its buildings globally during the same period.

Thriving on Collaboration

With that direction, Walmart has made a concerted effort over the past several years to put in place organizational structures that ensure broad support for various business units, and that each unit has the autonomy to pursue projects that support these goals. Such an approach thrives on collaboration.

"We need to be well-aligned with buyers to ensure we can fill trailers both inbound and outbound," says Fretheim. "Without that collaboration, it is difficult for us to achieve our goals. Even though our metrics are logistics-focused, what we are trying to do affects the entire company."

Smith recalls attending a recent training class for senior directors where they focused on collaboration to help achieve strategic execution.

"Sustainability is an ideal gateway to establishing relationships internally with other business units and externally with business partners," he says. "The sustainability projects I work on drive collaboration, which can then be leveraged in many other areas of the business."

The organization is filled with examples of this type of collaboration—from the real estate division's efforts in developing renewable energy projects and vetting new technologies, to the logistics department testing and implementing the use of hydrogen fuel cells in the warehouse. Everyone is accountable for Walmart's performance.

Walmart's sustainability initiatives include projects such as installing solar power generating systems (*left*), operating micro turbines to harness wind energy (*center*), and recycling corrugated cardboard (*right*).

"For Walmart to be successful, we rely on associates at every level to help us not only drive the strategy, but also raise new ideas," Fretheim says. "I need people on the DC dock to tell me when trailers are coming in less than full. Even though I have sustainability in my title, a lot of people within Walmart carry that responsibility."

A Corporate Culture of Green

Walmart's success is no doubt partly attributed to its leadership. CEO Mike Duke, an engineer by trade, relishes detail. Speaking at Walmart's semi-annual Sustainability Milestones meeting in July 2009, Duke stated: "The engineer in me likes data. I like research. I like metrics. More than anything, I love an elegant process for arriving at innovative solutions that are both profitable and sustainable."

It's not hard to see the impetus for much of what Walmart has endeavored to do. And the company's success demonstrates the importance of having executive-level buy in. Equally important is growing an organizational culture that embraces the CEO's mission. Walmart employees are an integral part of its sustainability program, and the company invests in their development.

For example, the company engineered its My Sustainability Plan program, with the guidance of consultancy BBMG, to provide a framework for individuals and organizations to augment their respective well-being. It provides a tailored scorecard to help users incorporate sustainability into their own lives. It's pragmatic in the sense that developing happier employees reduces costly turnover. But it also contributes to a happier shopping experience for the customer. It's the essence of the iconic Walmart greeter or yellow smiley-face sign.

"As associates bring these sustainable best practices into their personal lives, we believe they'll carry them back to work—if you get into the habit of turning off lights at home, you will do the same when leaving a meeting room," says Fretheim.

In this manner, employees become invested in green. When you consider the breadth of Walmart's global workforce—2.2 million people in nearly 30 countries—that's a sizable group of disciples living and breathing Walmart's word.

Walmart's mission, though, extends well beyond the enterprise—and that's where the company has earned its reputation. The much-ballyhooed supplier sustainability index introduced in 2009—which measures a product's sustainability using various metrics across nearly 200 product categories and more than 100,000 global suppliers—has some aggressive targets.

By 2017, Walmart expects to buy 70 percent of the goods it sells in U.S. stores and U.S. Sam's Clubs from suppliers that use the index to evaluate and share the sustainability of their products. Taking it one step further, the company hopes to begin using these same standards to influence the design of its U.S. private brand products.

Spreading the Word, Worldwide

The Walmart Foundation has also provided a $2-million grant to help support the launch of The Sustainability Consortium—a group of green-minded global companies—in China, to help provide training and develop partnerships that will improve sustainability in-country.

Those are future aspirations. The returns are equally bold.

In 2012, the EPA Green Power Partnership recognized Walmart as the largest on-site green power generator in the United States, with more than 200 solar projects across the country. Renewable energy now provides 21 percent of Walmart's electricity globally. In 2012, the company delivered 297 million more cases while driving 11 million fewer miles, increasing fleet efficiency by 10 percent in 2012 alone — and by 80 percent since 2005. Walmart also fulfilled its 2009 pledge to reduce greenhouse gas emissions 20 percent by 2012—one year early.

Walmart's achievements resonate internally. But they are more persuasive beyond the organization.

"Few companies have the size and scale to communicate with and potentially influence other companies," says Smith. "We have a platform to show our peers where we see success both as a business and as a responsible corporate citizen, then encourage and challenge them to do the same."

The sustainability index is the embodiment of this advocacy. It provides a platform for companies to jump from and climb back on as they follow their own unique green journeys. Many companies have already made significant progress pushing sustainability projects, but have no means to benchmark performance.

"Sustainability can be a complex subject," explains Fretheim. "Trying to understand if a process is greener than what you're already

doing—when you're trying to drive that down into every level of your business—is difficult. The business understands the business goals. It's more difficult to perform sustainability assessments at every level."

The index has become a de-facto standard for businesses to follow. If nothing else, it gives partners an idea of the types of questions they should be asking themselves, or areas of the business where they should focus attention—whether it's renewable energies, energy efficiency, or waste reduction.

"The idea is to help suppliers understand how they can improve their logistics functions—not only from their plant to our DC or store, but also back through their supply chain to raw material sources," Fretheim says.

Christopher Schraeder, senior manager of sustainability communications for Walmart, goes one step further, suggesting, "It starts to shift the conversation from 'Should we be doing this?' to 'How do we do this?'"

In time, the expectation is these suppliers will return the favor and say, "Hey Walmart, look at what we're doing."

Owning Green

One challenge organizations encounter as they chase sustainability gains is distilling the true value of their investments so they can demonstrate ROI to the CFO and continue to raise expectations and inject capital in new projects. If business and sustainability strategy aren't aligned, that task is difficult.

At Walmart, the two objectives are firmly knotted. One supports the other. An efficient supply chain is a green one—and vice versa. Everything is measured and benchmarked, and the company goes to great lengths to track ROI on each investment.

"If a sustainable initiative is good for the business in general—and we believe this is true—then each project we implement supports our business, and empowers our efforts to be more sustainable," says Smith.

Making a Positive Impact

There is no downside when it comes to sustainability, provided companies approach it with the right motivations and perspective. "Based on the positive impact our efforts have had on our business, you'd have to question why companies would choose not to engage in this area to improve their performance when the opportunity is before them," says Smith.

Walmart's objective is to make sustainable best practices a standard course of doing business—so companies will eventually have no other option than to follow a new status quo. Bringing customers into the fold will require a similar metamorphosis. Consumers today have a choice. When that decision pits cost against conscience, especially in today's economy, the answer for many is simple—with no regrets.

"We don't think our customers should have to make a choice or trade-off between a product that is sustainable and a product that's not," Schraeder concludes. "We're trying to look at how we conduct our business, work with suppliers, and approach and view our entire supply chain to make sure that every product we put on our shelves is driven by sustainable practices." ■

INBOUND LOGISTICS'

G75

75 GREEN SUPPLY CHAIN PARTNERS

THE SUPPLY CHAIN HAS BEEN ON THE GREENING EDGE OF INNOVATION BY NATURE OF THE BUSINESS. Doing more with less to reduce waste in time, material, and cost is inherently green.

Although it can be difficult to determine green ROI, many companies, industries, and governments have made great strides pushing the sustainability envelope in regulations, innovation, and compliance. For example, in the United States, the Environmental Protection Agency's Smartway Partnership has engaged shippers, logistics providers, and carriers, creating a cross-industry platform.

Driven by regulation and compliance, consumer demand for greater transparency, and brand exposure, many U.S. companies have shown a genuine interest in joining the sustainability crusade. To pursue these goals through their supply chain operations, they engage like-minded logistics and transportation providers, purchase fuel-efficient lift trucks, and adapt waste-reducing pallet and packaging strategies.

Inbound Logistics' 75 Green Supply Chain Partners (G75) highlights sustainability leaders in the logistics and transportation sector. The selection process 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 sustainability investments and commitment. We also conducted our own research, online and over the phone.

The G75, presented alphabetically, centers on 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; *IL* values companies that are leading by example.

ABF Freight System

By using liquefied petroleum gas-powered forklifts in all ABF facilities; recycling all used oil, antifreeze, cleaning solutions, and engine batteries; implementing alternative soil disposal options in lieu of land filling; and ensuring practices are in place to protect the environment, ABF has integrated environmental values into its decision-making processes. The carrier considers the environmental impact of any proposed actions.

AL Pallet

AL Pallet provides shippers with 100-percent recyclable or reusable aluminum pallets. The company also offers an incentive-based recycling program to encourage customers to recycle pallets instead of throwing them away. The lightweight pallets allow shippers to load more freight without exceeding weight limits, creating fewer shipments and reducing fuel consumption and carbon emissions.

APL

By 2015, APL plans to reduce its cargo transportation- and handling-related greenhouse gas emissions by 30 percent from 2009 levels. To this end, APL introduced 10 new environmentally friendly, energy-efficient vessels, with plans for another 22 to be delivered over the next two years. The ocean carrier also began testing an advanced emission-control technology known as a seawater scrubber, in which seawater is used to scrub contaminants from ship engines and boilers before exiting the ship's exhaust stack, drastically reducing greenhouse gas emissions.

Averitt Express

A founding partner of the SmartWay program, Averitt Express consistently looks for creative ways to reduce its carbon footprint. Employees are rewarded with gift cards, new vehicles, and performance bonuses for their efforts to help the carrier with its sustainability program. Averitt makes new equipment purchases with fuel efficiency in mind, and all its facilities recycle as much paper, cardboard, oil, and filters as possible.

Energy-efficient vessel | APL

CARB-compliant reefer | Alliance Shippers Inc.

Alliance Shippers Inc.

In support of its environmental efforts, Alliance Shippers Inc. installed a solar array on its Keasbey, N.J., facility, gaining 80-percent energy independence, and reducing carbon emissions at the site by 70 percent. The 3PL consolidates less-than-containerload shipments into full containers to further reduce its carbon footprint; it also moves shipments via intermodal. After a series of engine and reefer replacements, and new equipment purchases, the company's fleet is now 95-percent CARB-compliant.

BNSF

BNSF began a testing program using liquefied natural gas locomotives to further reduce harmful emissions. BNSF replaced 2,700 locomotives in the past decade with a model that is 15 percent more fuel efficient. The railroad has also equipped 70 percent of its locomotives with idle-control mechanisms that save fuel and reduce emissions by automatically shutting down locomotives that are not in use.

Low-emissions forklift | CAT Lift Trucks

Cardinal Logistics Management Corporation

Cardinal Logistics is committed to improving the environmental performance of its operations through initiatives that increase fuel efficiency, reduce greenhouse gas emissions, and improve air quality. The 3PL stands behind that commitment with investments in fuel-efficient equipment; testing programs with compressed natural gas-powered trucks; fleet modifications to increase miles per gallon; and fleet monitoring technology coupled with driver training in order to identify problems with specific trucks or drivers.

CAT Lift Trucks

CAT's DP40N1-DP55N1 series lift trucks feature a new diesel engine that increases fuel efficiency by 22 percent and reduces emissions levels. The trucks also meet the Environmental Protection Agency's new Tier 4 Final standards for diesel exhaust, which govern diesel particulate and NOx emissions. CAT also provides a line of electric lift trucks that produce zero emissions.

Lightweight trailer | Celadon

Celadon

Celadon made myriad changes to its fleet to reduce emissions and fuel consumption. The carrier reduced the weight of 2,149 fleet trucks by 300 pounds each by converting them to aluminum wheels. It removed an additional 260 pounds from 1,899 of those trucks through other modifications. The company also switched its trailer fleet to lightweight trailers, introduced biofuels into the fleet, installed auxiliary power units on all new fleet trucks, and equipped trucks and trailers with fuel-efficient tires.

CEVA Logistics

CEVA Logistics is greening its global footprint by investing in eco-sustainable sites and improving existing warehouses. These facilities are constructed from recyclable materials, powered by solar energy, and feature eco-efficient lighting. One warehouse in San Pietro Mosezzo, Italy, has been equipped with more than 9,600 photovoltaic panels. The site can produce 2,500 megawatt hours of energy per year, saving 1,300 tons of CO_2 emissions annually.

C.H. Robinson

C.H. Robinson views sustainability as a way to add value, improve efficiencies, and invest in the long-term success of shippers, contract carriers, growers, employees, and communities. The 3PL 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 allocates natural resources wisely and builds efficient farm-to-shelf distribution models.

CHEP

CHEP's Green Lanes program helps companies eliminate empty backhauls by working with third-party transport companies to fill empty trailers. Green Lanes has eliminated more than four million miles of transportation, and six million pounds of CO_2 emissions. CHEP creates its wood pallets using a heat-treating method rather than chemical-treating. It also sources the wood from sustainable tree farms, and encourages repairing, recycling, and reusing pallets, rather than throwing them out.

Con-way Inc.

Con-way Inc.'s green efforts extend throughout its subsidiary network. Menlo Worldwide Logistics set up a solar-powered warehouse that provides 90 percent of its own electrical needs, established a zero-waste operation in Kansas City, and obtained Energy Star or LEED certification at three facilities. Con-way Freight began testing a CNG truck pilot program in Chicago, and relighted 200 service center locations, achieving a 50-percent energy savings. Con-way Truckload's energy conservation initiatives resulted in purchasing 140 new tractors with SmartWay-approved engines.

Crown Equipment Corporation

Crown provides lift truck users with options to increase their sustainability footprint. The company's lift trucks are made from more than 60 percent recycled steel, and are up to 99-percent recyclable upon retirement. Additionally, Crown's commitment to sustainable manufacturing includes ISO 14001 certification of its environmental management systems, and two manufacturing facilities and one retail location that have achieved zero landfill status. The company also reuses or recycles scrap metal, paper, solid waste, and chemicals used in its manufacturing processes.

Recycled manufacturing parts | Crown Equipment Corp.

C.R. England

C.R. England expanded its liquefied and compressed natural gas fleet for testing in some regional and short-haul applications, where the local infrastructure supports the vehicles. The carrier also implemented fuel-efficient TempStack 53-foot refrigerated intermodal containers to reduce carbon emissions, and trained drivers to save fuel by eliminating out-of-route miles, limiting idle time, and controlling their speed.

CRST International

CRST International is a member of the EPA's SmartWay Transport Partnership, and maintains a top SmartWay score of 1.25. As part of this effort, CRST constantly tests new equipment to improve fuel efficiency. Recent tests include fuel-efficient tires and several brands of trailer side skirts. The company also employs route-mapping software to ensure drivers are using the most efficient routes, and governs trucks at 65 mph to ensure maximum fuel miles per gallon.

CSX

CSX locomotive engineers are trained on locomotive simulators, where they learn to improve their awareness of fuel-efficient train handling. The company is also utilizing locomotive Event Recorder Automated Download (ERAD) technology that provides feedback to engineers on how to improve fuel efficiency, performance, and safe operations. Over the past four years, ERAD has contributed to CSX saving more than 20 million gallons of fuel. CSX has also put into service several GenSet locomotives, which improve fuel efficiency by 25 percent.

Emissions-reducing rail transport | DB Schenker

DB Schenker

DB Schenker focuses on improving its customers' carbon footprint. Through its Eco Solutions offering, the 3PL provides solutions for every transportation mode to help companies reduce their CO_2 emissions along the entire transportation chain. Parent company DB Group has also reduced its own specific CO_2 emissions in rail transportation by more than 40 percent. Additionally, the company set a goal to reduce all transport-related emissions by 20 percent by 2020.

Carbon-neutral shipping | DHL Express

DHL Express

In 2013, DHL Express expanded its GoGreen environmental services program by introducing carbon neutral shipping to its recyclable DHL Express Envelope. The company calculates the CO_2 emissions associated with handling and transporting every individual DHL Express Envelope, then offsets the carbon impact of these emissions through investments in recognized climate-protection projects.

The Dependable Companies

In 2011, Dependable partnered with Premier Power to engineer and install a 1.2-megawatt solar photovoltaic system at its Los Angeles headquarters to offset its daily operational output. Incorporating 5,292 solar modules, the installation is the world's largest rooftop solar system on an industrial high-rise.

DSC Logistics

DSC helps shippers optimize their networks to deliver carbon footprint reductions. For example, for one large food processing customer, the 3PL identified a savings opportunity by rerouting international shipments from South America through both East and West Coast ports in lieu of West Coast ports exclusively. The network optimization saved the customer $1 million in transportation costs, while reducing truck miles, carbon emissions, and fuel consumption.

The Fabri-Form Company

The Fabri-Form Company's reusable, recyclable plastic pallets, containers, and packaging help shippers reduce the amount of material they dispose of, decreasing the negative impact on the environment while increasing the bottom line. Fabri-Form's products provide a high return on investment and lower transportation costs, and can be repurposed into new product at the end of their lifecycle.

FedEx

In 2008, FedEx announced it would seek to reduce carbon emissions intensity from its FedEx Express aircraft and improve the fuel efficiency of its vehicle fleet 20 percent by 2020, compared to 2005 performance. Less than five years later, it has nearly achieved these goals. Now the company has increased its aircraft emissions goal to a 30-percent reduction by 2020.

Freightliner

At the 2012 American Trucking Associations' Summit on Natural Gas in Trucking, Freightliner announced the debut of a customer demonstration program in the United States and Canada for its new Freightliner Cascadia 113 natural gas day cab. Natural gas vehicles can contribute considerable fuel-cost savings, making them a smart choice for increasing profitability while benefitting the environment.

Geodis Wilson

Since it established its Blue Attitude sustainable development program in 2008, Geodis Wilson has put in place a dedicated governance structure to work with customers and help them maintain their own green strategies. For example, Geodis has adapted its IT capabilities to help shippers optimize scheduling and deliveries within cities, thereby reducing CO_2 emissions and costs.

Materials recycling | GENCO

GENCO

Through a holistic approach, GENCO provides logistics solutions for the entire product lifecycle. In 2012, the company processed and properly disposed of more than $5 billion worth of pharmaceutical returns; achieved $84 million in Lean Six Sigma process improvement cost savings; processed 600 million consumer product returns; and recycled 50 million pounds of materials.

Environmentally responsible port operations | Georgia Ports Authority

Georgia Ports Authority (GPA)

The GPA has voluntarily undertaken a series of initiatives designed to increase the productivity and capacity of the port in environmentally responsible ways. In 2012, the GPA and its partners developed an electric-powered rubber-tired gantry crane (ERTG) system, the first of its kind in North America. The ERTGs reduce diesel consumption by up to 95 percent per crane. The GPA is also cutting emissions with the use of electric refrigerated container racks. Its current 64 racks power more than 1,500 containers at one time. Supporting poultry and other chilled produce exports, each rack avoids the use of 54,000 gallons of diesel annually. The port will add 20 more racks in 2013.

Hub Group

Hub Group's expertise converting freight shipments from over the road to intermodal has helped customers significantly reduce their fuel consumption and CO_2 emissions. In 2012 alone, the 3PL prevented 3.5 billion pounds of emissions – the equivalent of planting more than 40 million new trees. To help project CO_2 savings, Hub offers unique dashboard technology that allows customers to track their carbon footprint.

Inmar

Inmar approaches sustainability by eliminating waste in product that goes to landfill, in redundant processes, and in inefficient transportation models that increase carbon footprint and drive up costs. Its sustainability initiatives have 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.

J.B. Hunt

J.B. Hunt has pursued sustainability initiatives such as reducing tractor engine idling through driver incentive programs; installing on-board equipment including direct-fired heaters and auxiliary power units; burning biodiesel fuels; governing top speeds on company-owned equipment to maximize fuel efficiency and safety performance; and converting over-the-road shipments to intermodal.

Kalmar

Kalmar's DCG150-12 forklift trucks use Cummins EU Stage IIIB / EPA Tier 4i emissions-compliant diesel engines – which feature a diesel particulate filter – cutting particulate emissions by 90 percent, as well as reducing nitrogen oxide emissions by half.

Electric lift truck | Hyster

Hyster

Hyster recently introduced an optional Environmental Package that allows its electric lift trucks to operate in harsh weather conditions outside a plant. This works well for facilities with multiple buildings, where users can gain efficiencies by operating between buildings inside and out. This new package makes green a viable alternative for industries that traditionally relied exclusively on internal combustion engine lift trucks.

Kenco

Kenco began working on sustainability dashboards in 2012 with a pilot group of sites it manages for a major manufacturer in the healthcare industry. The dashboards bring together an array of data to display progress on key sustainability metrics such as electricity, natural gas, and water use. Baseline data on each metric is monitored to set goals toward lowering costs, reducing energy use, and producing less waste in customer warehouses.

Kenworth

Kenworth's assembly plant in Renton, Wash., recently received a 2012 Gold Award presented by the King County (Wash.) Industrial Waste Program. The recognition is for compliance with the plant's industrial wastewater discharge permit. Kenworth's plants in Renton and Chillicothe, Ohio, both hold the ISO 14001:2004 certification for effective environmental management systems established to help build Class 8 trucks in an environmentally sustainable manner.

Landoll

Landoll supports greener warehouse and manufacturing operations by offering lift trucks powered by lower-emissions fueling alternatives such as LP gas. In addition, battery-powered lift trucks such as the Bendi Electric Narrow Aisle series provide lift capacities up to 4,500 pounds so facilities can improve their carbon footprint without sacrificing power.

Lufthansa

At its third Climate Care Conference in Frankfurt, Lufthansa Cargo reaffirmed its ambitious plans to reduce emissions 25 percent by 2020 – having already cut emissions by 10 percent. As part of this effort, the airline expects the debut of two Boeing 777 freighters in 2013 will help it meet this goal. The aircraft is the most efficient and quietest freighter of its class, generating approximately 20 percent fewer emissions than the existing MD-11 freighters in the airline's fleet.

Fuel-efficient truck | Lynden

Lynden

Lynden's truck fleet is among the most fuel-efficient in the nation based on the EPA's SmartWay program criteria. The company has continued to improve its equipment with more efficient engines; aerodynamic side skirts, tanker, and trailer design; wide-base single tires; and idle-reduction equipment. The improved use of routing software has similarly improved fuel savings, as well as on-time delivery.

MOL

In June 2012, MOL launched a car carrier equipped with a hybrid power supply system that combines solar power generation with lithium-ion batteries, and is preparing to launch a very large iron ore carrier and a Cape-size bulker, both featuring high-efficiency waste heat energy recovery systems. MOL is also reducing NOx, SOx, and other pollutants while at berth by limiting the use of conventional diesel-powered generators and receiving electric power supply from onshore instead.

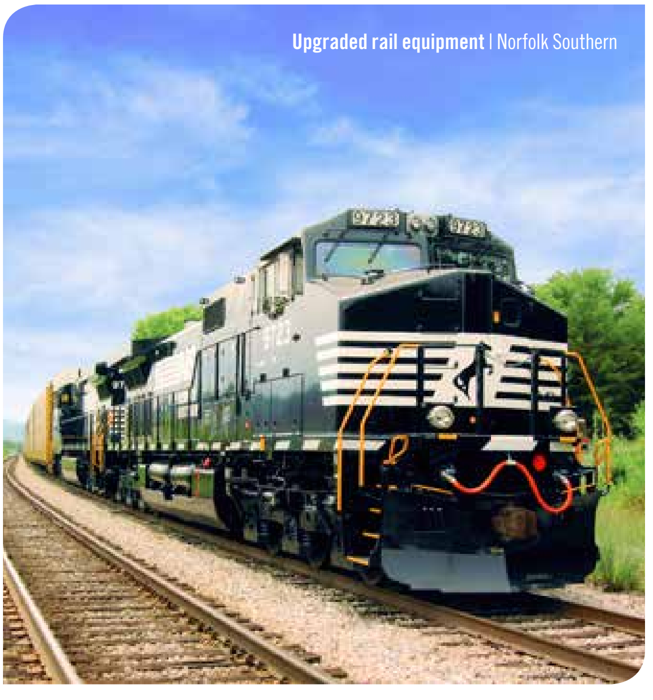
Onshore electric power supply | MOL

Murphy Warehouse Company

Murphy Warehouse Company has made environmental sustainability a cornerstone of its long-term business strategy. Through a comprehensive environmental management system, the company has made significant investments – including energy savings and power generation, carbon sequestration, pollution abatement, recycling, and resource management – to upgrade its campuses. At its new 350,000-square-foot Eagan, Minn., logistics campus, Murphy recently completed $4 million in property upgrades, many of them environmental initiatives, from solar panels to LED lighting.

NFI

To reduce carbon emissions and improve fuel efficiency, NFI outfitted its Fit Fleet tractors and trailers with Smartway-certified tires, computer-regulated speed governors, biofuel, synthetic oil, automatic tire inflation systems, and electric standby motors on refrigerated trailers. In addition, it recycles the Fit Fleet's tires, electronics, batteries, metals, and waste oil and fluids through EPA-registered recycling companies. NFI also uses propane-powered forklifts, and reduced its plastic wrap use by 57 percent per pallet by using a high-stretch film. Its void fill packaging operations use environmentally friendly, biodegradable void fill materials, and the company has implemented a National Pallet Buy Back Program to recycle the broken pallets accumulated in its distribution facilities.



Upgraded rail equipment | Norfolk Southern

Norfolk Southern

To reduce its carbon footprint, Norfolk Southern has focused on locomotive and facility energy use, its two largest sources of emissions. To address these emissions, the railroad has developed strategies to improve energy efficiencies across its 22-state network. Other initiatives include equipping office buildings and other facilities with more energy-efficient lighting, heating, and cooling systems. It has also incorporated sustainable designs and materials into new construction projects. Norfolk Southern has attained 60 percent of a five-year goal to reduce emissions per revenue ton-mile 10 percent by 2014.

NYK Line

To improve energy and economic efficiency, NYK has installed E·COOL – a next-generation energy-saving fluorescent lighting system – on six NYK-operated car carriers. Since April 2012, the ocean line has replaced approximately 13,000 fluorescent lights with E·COOL, and expects a power-consumption savings of around 40 percent compared to the use of conventional fluorescent lamps. NYK is also promoting fuel savings with its FUELNAVI fuel-consumption monitor, a device that provides a real-time indication of fuel-consumption performance measured as distance traveled per ton (or day) of fuel consumed.

Energy-saving vessel | NYK Line

Old Dominion Freight Line (ODFL)

ODFL is adopting technologies to reduce emissions and improve fuel efficiency, such as wide-based tires, reduced highway speeds, idle reduction, automatic tire inflation, improved freight logistics, and longer combination vehicles. ODFL is also working on an extensive, ongoing driver training program enhanced by on-board telematics. These combined programs have increased fuel efficiency by four percent since 2010, saving almost 49,000 metric tons of CO_2 – the equivalent of taking more than 10,000 passenger vehicles off the road.


Efficient container loading | OOCL

OOCL

OOCL's efforts to restrain its impact on air quality and climate change have focused on improving its vessels and facilities. In the United States, for example, its vessels comply to the 0.5 percent (for diesel) or 1.5 percent (for gasoline) sulfur content requirements when sailing within 24 nautical miles of the California Baseline and at berth. All new OOCL facilities are equipped with Alternative Maritime Power (AMP) Systems, also known as cold ironing, which allow vessels to use shore-supplied electricity instead of burning fuel when at berth. Using AMP technology has resulted in an average 95 percent reduction in NOx, SOx, and particulate matter emissions per vessel call.


Recycled pallets | PECO Pallet

PECO Pallet

PECO Pallet's pallet pooling network offers a sustainable shipping platform for grocery and consumer goods manufacturers throughout North America. Built from responsibly forested U.S. timber, and kiln-dried to prevent infestation, moisture, and mold, PECO's pallets are constantly reused, repaired, and recycled. PECO's North American network includes more than 500 recovery sites, pallet depots, and manufacturing facilities in strategic locations to reduce transportation costs and fuel consumption. The PECO logistics team also works to ensure full truckloads and fuel-efficient transportation, shipping pallets by rail whenever possible.

ORBIS Corporation

As a manufacturer of plastic reusable containers, pallets, dunnage, and bulk systems, ORBIS Corporation helps companies reduce their impact on the environment through re-use of packaging to move product throughout the supply chain. At the end of their life, the products can be recovered, recycled, and reprocessed into new packaging products. With its proprietary environmental analysis tool, ORBIS works with companies to evaluate and compare packaging alternatives and calculate environmental impacts, including greenhouse gas emissions, energy usage, and solid waste. In addition, at its Urbana, Ohio, plant, ORBIS replaced its forklift fleet with all-electric forklifts that produce 70 percent fewer smog-forming emissions, and 26 percent less particulate matter.


Stackable pallets | ORBIS

Penske Logistics

By ensuring nearly 75 percent of its carriers are EPA SmartWay program partners, Penske Logistics has improved fuel economy to achieve a 32-percent reduction in CO_2 emissions – equivalent to removing from the road more than 16,000 passenger vehicles using 8.8 million gallons of gasoline annually. Penske Logistics is now also SmartWay certified for its transportation management approaches as a logistics provider, and has earned the EPA program's highest rating of 1.25, representing outstanding environmental performance.

Clean diesel tractors | Performance Team

Performance Team

To maintain and enhance environmental causes and conditions, Performance Team uses clean diesel tractors for its port operations and dedicated retail fleet operations, and maintains an on-terminal transload facility at the Port of Charleston that reduces drayage miles by 85 miles per round trip. The 3PL installed trailer skirts that improved fuel efficiency by up to seven percent, and switched to T-5 fluorescent lighting fixtures at all its locations, cutting electric consumption by half. Finally, implementing SmartWay-approved low roll resistance tires improved fuel efficiency by up to three percent.

Environmental leadership | Port of Long Beach

Port of Long Beach

Guided by its Green Port Policy, the Port of Long Beach has made substantial improvements in reducing harmful air emissions from port-related operations, improving water quality in the harbor, protecting marine wildlife, and implementing environmentally sustainable practices throughout the port. In addition, it encourages shipping lines' sustainability efforts through its Green Ship Incentive Program, a voluntary clean-air initiative targeted at reducing smog-causing nitrogen oxides by rewarding qualifying vessel operators for deploying their greenest ships to the Port of Long Beach. The port's shore power and clean truck initiatives also contribute to sustainable port operations.

PITT OHIO

After creating a cross-functional sustainability team, PITT OHIO invested in innovative solutions to improve its energy usage and reduce its carbon footprint, including researching alternative fuel vehicles such as CNG vehicles and electric forklifts, installing panels at new and existing facilities, and upgrading information technology to reduce power. In 2012, PITT OHIO reduced its carbon output by three percent over 2011 levels through improved fleet fuel usage and reduced utility consumption at its facilities.

Solar panels | Port of Los Angeles

Port of Los Angeles

Through initiatives such as its Clean Truck Program and Alternative Maritime Power, the Port of Los Angeles continually addresses major sources of emissions at the port: ships, trains, trucks, cargo handling equipment, and harbor craft. In June 2013, it announced plans for its Energy Management Action Plan (E-MAP) initiative, designed to improve the port's energy efficiency. With the demand for electricity expected to increase dramatically in coming years, the port is developing the E-MAP as a guide to improve its energy profile into the future and address expanded use of shore power; electric cranes, yard tractors, and other cargo handling equipment; and future automation.

Port of Seattle

The Port of Seattle was the first in North America to provide infrastructure for two ships to simultaneously utilize shore power and turn off their engines. Its At-Berth Clean Fuels Program encourages shipping lines to voluntarily reduce vessel emissions at the port by incentivizing use of low-sulfur fuels. In 2011, the Port of Seattle set 25-year environmental goals that include reducing air pollutant emissions by 50 percent from 2005 levels.

Port of Tacoma

As a partner in the Northwest Ports Clean Air Strategy, the Port of Tacoma works to reduce maritime-related air emissions, which fell by as much as 40 percent since 2005. The port also works with tenants and the local utility to retrofit lighting to conserve energy, save money, and provide brighter, safer working conditions. With land available for development, the port also cleans up property contaminated by decades of industrial practices to put it back into productive use.

Filtration boxes | Port of Tacoma

Energy-efficient Belgium facility | Prologis

Prologis

As part of its commitment to renewable energy, Prologis has developed 39 million square feet of facilities meeting sustainable building standards; completed energy efficiency improvements in more than 50 percent of its global property portfolio totaling 270 million square feet; and installed 83 megawatts of solar electric capacity. In 2012, Prologis saved enough energy to power nearly 100 million square feet of its global portfolio – the equivalent of about 40,000 homes.

Raymond Corporation

Lift truck manufacturer Raymond employs a design philosophy it calls Eco-Performance because it increases productivity while reducing energy consumption on every truck. Raymond's ACR System technology provides quick acceleration and smooth directional changes, which lowers each truck's rate of energy consumption, and adds up to changing batteries less often. One example is Raymond's 9000 Series Swing-Reach trucks. By using up to 40 percent less energy than other lift truck models, the Swing-Reach trucks save as much CO_2 as a car uses over one year. Fewer battery changes mean fewer carbon emissions, maximum ecologic benefits for the planet, and greater energy savings for users.

Purolator

As an integrated freight and parcel solutions provider, Purolator is committed to reducing its environmental impact, and adheres to an established environmental policy that includes greenhouse gas reporting and eco-friendly packaging options. In addition to operating a large hybrid electric vehicle fleet, and training drivers on eco-driving practices, Purolator stays ahead of the curve by continually exploring new technology that contributes to a sustainable future.

Ruan

Ruan is a 2012 SmartWay Excellence Award recipient for its commitment to helping lead the freight industry to a more sustainable future. The carrier operates the largest renewable compressed natural gas-fueled (CNG) Class 8 tractor fleet in the nation. Ruan's environmental program provides guidelines and measures for reducing fuel consumption, reducing or eliminating materials for disposal, preventing pollution, and effectively addressing unauthorized releases. As part of its environmental leadership role, Ruan co-chairs the Environmentally Sustainable Methods for Achieving Responsible Transportation (E-SMART) project, which is developing dairy-specific transportation guidelines to cut carbon dioxide emissions by 165,000 metric tons annually, potentially saving 16.5 million gallons of diesel.

Natural gas-powered truck | Ruan

LNG truck | Ryder

Ryder

Ryder currently deploys more than 300 natural gas vehicles (NGVs) in customer operations, and expects to have 450 NGVs in service by the end of 2013. The 3PL has made significant investments in maintenance infrastructure in every market where it has NGVs, and will soon open its first two L/CNG fueling stations in California. Ryder provides application and performance feedback to vehicle manufacturers so they can continue to improve their green technology. Ryder is a charter member of the NGV Fleet Forum, a member of the Department of Energy's National Clean Fleets partnership, and the recipient of the 2011 NGV Achievement Award.

Saia LTL Freight

As a Smartway partner for many years, Saia LTL Freight has limited the speed of its tractors and operated under a no-idling policy. It was the first non-bulk LTL carrier in the United States to earn RC14001 certification through the American Chemistry Council's Responsible Care Program. The rigorous certification reflects Saia's commitment to product stewardship, distribution, community awareness, emergency response, and pollution prevention. In addition, 28 Saia facilities have been certified ISO 9001:2000, the industry standard for a systematic approach to quality management.

CNG fueling station | Saddle Creek

Saddle Creek Logistics Services

Saddle Creek operates more than 100 trucks that run on compressed natural gas (CNG); this fleet will reduce the 3PL's carbon footprint by 11.4 million pounds in 2013 alone. In addition to the CNG fleet, Saddle Creek's sustainability efforts include controlling speed (65 mph), reducing idle time, using satellite monitoring for optimal vehicle performance, utilizing tire auto-air inflation systems, improving truck utilization, and adding trailer skirts to make tractors more aerodynamic. In its warehouses, Saddle Creek uses motion-sensitive lighting, quick-recharge electric forklifts, and recycling programs.

Swapping fuel tanks | Schneider

Schneider National

Schneider National's most recent green initiative comprises a complete transition to the latest clean-diesel engines. In 2012, Schneider National replaced one-third of its fleet (3,000 tractors) with EPA-compliant engines, representing the largest equipment investment in the company's history. These tractors have aerodynamic features – including wheel covers – that reduce drag. Most of them also have fairings that have been redesigned to optimize fuel efficiency and improve mileage per gallon, as well as Predictive Cruise Control.

Singapore green hub | SDV

SDV

Global third-party logistics provider SDV created the SAVE program, an environmental customer solution that makes carbon reduction the new driver of logistics performance. SDV's SAVE program comprises three elements: A CO_2 calculator that lets customers measure the carbon footprint of their supply chains; the design of eco-responsible solutions that optimize the supply chain and reduce CO_2 emissions; and a voluntary carbon-offsetting scheme that lets customers participate in climate change programs.

South Carolina Ports Authority

The South Carolina Ports Authority's goal is to be the greenest port in the Southeast. To that end, the port has implemented a truck replacement program that incentivizes drivers of old, dirty trucks to buy new, cleaner trucks. The port electrified its ship-to-shore cranes, and plans to electrify the rubber-tired gantry cranes at the new inland port to protect air quality. A new electrified agricultural commodities transload facility will replace existing diesel operations, completely eliminating all emissions from the activity. And a Rapid Rail matchback system ensures the fewest number of unnecessary truck trips.

Green operations | South Carolina Ports Authority

Swift Transportation

Swift employs the latest technology to reduce the carbon footprint of its Clean Fleet, which utilizes EPA-certified 2007 or newer trucks and trailers, and 2009 tractors. Swift's truck fleet is fully exempt from port "dirty truck" fees, and is California idle-compliant. Swift is a charter member of the EPA's Smartway program.

TransGroup Worldwide Logistics

TransGroup was the first third-party logistics provider to become a SmartWay partner and continues to work with customers, carriers, and the SmartWay partnership to reduce the environmental impacts of their collective transportation and logistics operations. TransGroup offers TransNeutral, eco-responsible transport logistics solutions that include greenhouse gas-limiting warehousing and distribution services, asset recovery and reverse logistics, end-of-product-lifecycle disposition, and shipment emission metrics.


Eco-friendly lift trucks | TIEM

Toyota Industrial Equipment Mfg. Inc. (TIEM)

TIEM operates under a global earth charter that promotes environmental responsibility throughout the company. During the manufacturing process at its zero-landfill plant in Columbus, Ind., TIEM analyzes and minimizes the environmental impact of every product at every stage of the production cycle – from design and development to raw material and parts procurement to manufacturing and product disposal. In addition, TIEM requires its top 65 suppliers, who account for more than 75 percent of the materials purchased locally, to be ISO 14001 certified or have an equivalent Environmental Management System. TIEM also requests that all suppliers use environmentally friendly materials and processes.

Transplace

Proprietary technology called Optimal Carrier Assignment allows Transplace to search for SmartWay carriers as a selection criterion when multiple carrier choices are available. In addition to selecting SmartWay carriers, Transplace continually evaluates opportunities to convert truckload freight to intermodal or rail. It also employs software tools that enable customers to consolidate orders into environmentally conscious routings, mode selections, and carrier assignments. Transplace works with customers' private and dedicated fleet operations to increase backhauls and reduce the total number of trucks on the road, thus reducing fuel consumption and lowering overall carbon emissions.

U.S. Xpress

Efforts to reduce fuel consumption are the most critical component of U.S. Xpress' sustainability initiatives. These efforts include route optimization; a modern fleet of trucks with fuel-efficient tires, aerodynamic mud flaps, engine governing, and road speed policies; fuel-fired bunk heaters for cold weather; and temperature-sensitive auto shut-off functionality to aid in idle reduction. U.S. Xpress has developed an industry model partnership with the University of Tennessee at Chattanooga's SimCenter for Computational Engineering that allows the company to test truck prototypes before they are manufactured to ensure high performance, improved aerodynamics, and reduced fuel consumption.

Trailer with aero mud flap | U.S. Xpress


Fuel-efficient locomotive | Union Pacific

Union Pacific

Recent investments illustrate Union Pacific's dedication to sustainability. The rail purchased 100 new fuel-efficient locomotives in 2011, and plans to purchase an additional 200 in 2012, retiring older, less fuel-efficient locomotives. This proactive approach helped reduce UP's fuel consumption rate by 19 percent since 2000, equaling greenhouse gas emissions savings of more than 12 million metric tons. Through an aggressive recycling initiative, in 2011 the rail captured and recycled more than four million gallons of fuel and oil; recycled more than 3,000 tons of paper, cardboard, plastics, and other solid waste; and recycled 250,000 tons of metal.

LNG fueling | UPS

UPS

For the fourth year in a row, UPS improved its carbon intensity—keeping its carbon at a lower rate than volume growth. The expeditor also increased its alternative fuel technology and fleet by 35 percent, and logged more than 246 million miles by alternative fuel and advanced technology vehicles. UPS gained more than 100,000 pledges from employees to act more environmentally responsible at home and at work, and launched a new international forestry initiative to plant, protect, and preserve trees.

UTi

As part of its thinkgreen program, UTi uses its proprietary ECOTool to provide carbon footprint calculations for the emissions associated with any of its third-party logistics services – including all transportation modes and warehousing activities. The company offers network, inventory, and routing optimization, along with packaging and warehouse efficiency improvements, to drive inefficiency out of the supply chain, leading to cost reductions and environmental gains. Its non-asset-based model allows UTi flexibility in brokering freight among an array of carriers against a client's specific green criteria.

Weber Logistics

Weber's drayage solution uses only clean certified trucks at ports and railyards, meeting EPA standards for clean-diesel trucks. In addition, the third-party logistics provider has purchased machinery that recycles dunnage into packing material to be used as protective filler during shipping, greatly reducing the use of plastic filler. In addition, Weber requires all its vendors to pass a Scope 3 emissions test to ensure they are contributing to the company's sustainability goals.

Werner Enterprises

Through numerous sustainability initiatives and capital investments, Werner is making strides in improving miles per gallon (mpg) and reducing emissions. Due strictly to mpg improvements from these fuel-savings initiatives, Werner saved more than 77 million gallons of fuel between 2007 and 2012, which equals a reduction of more than 860,000 tons of CO_2 emissions. The carrier's fuel-efficiency initiatives include: the use of aerodynamic trucks and trailers, weight reduction strategies, automated tire inflation systems, the newest diesel engine technology, a computerized truck idling program and paperless log system for drivers, speed management, and continual in-depth testing of the latest fuel-saving technologies.

Electric lift truck | Yale

Yale

Yale is one of the largest volume producers of zero-emissions electric lift trucks in North America. Innovative transmission designs reduce tire and brake wear in Yale's internal combustion engine (ICE) trucks, which are powered by cleaner-burning alternative fuels. Yale was one of the first lift truck manufacturers to introduce hydrogen-powered fuel-cell trucks. Yale trucks also feature engineering that cuts energy consumption through weight reduction, drive train efficiency, and hydraulic efficiency. All Yale electric lift trucks recapture energy during braking and lowering of loads, allowing the energy to be reused.

Fuel-efficient fleet | YRC

YRC Worldwide

The motor carrier company promotes pollution prevention, waste reduction, and conservation across its daily operations. YRC Worldwide is a charter partner of the EPA's SmartWay voluntary emissions reduction program, and has been recognized with the SmartWay Excellence Award; YRC also was named a SmartWay Champion. The company's subsidiaries – YRC Freight, Holland, New Penn, and Reddaway – are all undertaking a number of different measures to reduce their emissions profiles. These measures include converting the entire fleet to fuel-efficient tires, switching to synthetic motor oils, and expanding the use of alternative fuels.

LATIN AMERICA LOGISTICS

KEEPING UP WITH THE LATIN BEAT

The region's improving infrastructure and trade policies offer companies supply chain expansion opportunities.

As Europe deals with a lingering credit crisis, Asia feels a corollary pinch amid shifting demographics, and the U.S. economy sputters along, Latin America at large is following the beat of its own parade. From Nuevo Laredo to Tierra de Fuego — and all points in between — the percussions are growing louder and faster as businesses explore new opportunities to expand their supply chains.

The rumors and realities of re-shoring favor development in countries such as Mexico and Brazil. But that potential extends beyond the "expected" into the interior of South America, as well as the Caribbean and Central America. And it's no longer a supply-driven paradigm. Growing middle-class consumption is shifting trade balances as companies look to Latin America not only as a place to manufacture and source from, but also as an export destination. Proximity to U.S. markets, more conciliatory trade policies, improving transportation infrastructure, and rising standards and expectations are combining to feed interest and investment in the region.

To get a better perspective of what this new direction means for U.S. businesses, join *Inbound Logistics* as we go on the ground in Mexico, Argentina, and South Florida to provide three different takes on how the Latin American market is heating up, and the opportunities and challenges confronting growth-minded enterprises.

Mexico on the Move

While much attention and publicity naturally gravitates to U.S.-Mexico border dramas — whether it's NAFTA trucking reciprocity or Customs and security concerns — a more telling story is unfolding farther south.

One of the challenges companies have often encountered operating in Mexico is the noticeable deterioration of infrastructure, services, and expectations as they move away from the border. That reality, however, is fast fading.

Miami-based Ryder Supply Chain Solutions has a firsthand perspective. The service provider maintains a cross-border presence at the three main U.S.-Mexico gateways — Nuevo Laredo and Laredo, Tijuana and San Diego, Ciudad Juárez and El Paso — as well as an inter-Mexico footprint in Mexico City, Monterrey, and Guadalajara, where more than 75 percent of the country's economic activity is concentrated.

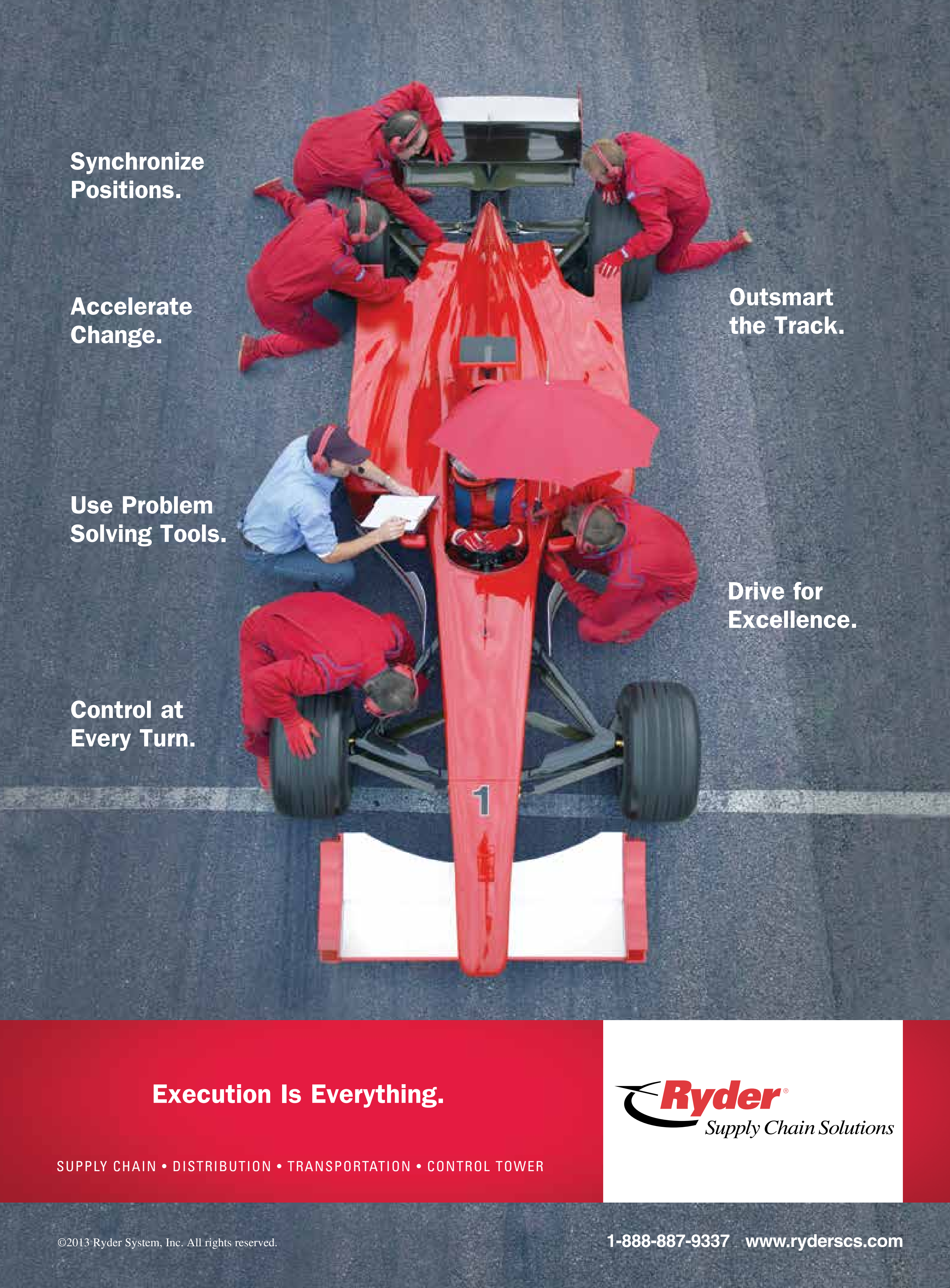
Ryder operates a mix of mostly multi-client facilities and campuses that are all certified by the Customs-Trade Partnership Against Terrorism, and feature state-of-the-art security infrastructure — a requisite given recurring theft and violence. Because freight volumes are considerably lighter than in the United States, the 3PL is less inclined to invest in and develop dedicated facilities unless customer demand can support that investment, explains Ryder Director of Business Development Ricardo Alvarez, who is based in Nuevo Leon, Mexico.

But the multi-client DC model offers a telling indication of how Mexico's fortunes are changing.

"Over the past decade, we have tried to drive the multi-client environment by establishing standards in terms of processes, technology, and security," Alvarez says. "Facilities are generally centered on like customers, whether they are consumer packaged goods (CPG), high-tech, automotive, or industrial companies. This helps reduce costs."

Volume is the key factor. It is hard to find a customer that

Ryder Supply Chain Solutions operates a mix of mostly multi-client Latin American warehouse facilities and campuses that are all certified by the Customs-Trade Partnership Against Terrorism, and feature state-of-the-art security infrastructure.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requires a 250,000-square-foot facility — the average size of a state-of-the-art DC in Mexico. Most dedicated facilities are much smaller because of the costs involved in setting them up. Investments are generally targeted at facilities where fixed costs are more easily absorbed by multiple tenants. That's where customers find the most value.

AUTOMOTIVE ACUMEN

Ryder initially gained traction in Mexico by operating a dedicated facility for the world's largest automotive original equipment manufacturer (OEM). The automotive industry is a gateway to economic development, given the tendency of Tier 1 and Tier 2 suppliers to locate near production plants.

This type of complex supply chain also provides 3PLs such as Ryder with more opportunities to cross-sell capabilities and develop deeper partnerships. While much of its automotive work in Mexico deals with supporting the aftermarket — delivering service parts to dealers across the country through a dedicated transportation network — that dynamic is changing, too.

"We want to go deeper," says Alvarez. "But it's complicated. Under Mexico's rules regarding common carriers, a foreign investment company can't directly operate a dedicated fleet."

Instead, Ryder relies on partnerships with local trucking companies to deliver product. As part of its full-service lease program, the 3PL provides the equipment, and helps recruit and train drivers. In turn, local carriers take care of hiring labor and purchasing fuel.

GATEWAY TO GROWTH

For a logistics provider cutting its teeth in a new market, automotive sets a high standard from the start because of the complexity and sophistication OEMs require. This makes trying to attract other types of industries and customers an easier sell.

Ryder has found similar success in the high-tech and CPG sectors, but emerging opportunities in the retail space portend a far greater transformation: an expanding middle-class population.

This revolution began when U.S. retailers followed department stores into Mexico — a means of penetrating the market without incurring too much risk. Now they are coming to set up their own operations.

Whether it's Hugo Boss, Best Buy, The Home Depot, or Forever 21, retailers recognize the growth potential that a relatively un-tapped market such as Mexico offers — and it feeds the multi-client DC network that Ryder has built and continues to expand.

And more retailers are coming. Home improvement chain Lowe's has begun executing a strategy to grow its presence in northern Mexico, specifically targeting consumers that would travel to its U.S. stores once or twice a year to buy product. Attracting like-minded retailers creates competition, which reduces the cost to consumers. It creates a cascading effect that carries over to other retailers.

"Companies are managing costs, which allows them to deliver the same prices you might find north of the border," says Alvarez. "In the past, consumers would go to the United States to buy goods that cost twice as much in Mexico. Now they are getting the same products at the same prices without having to travel."

Shifting Trade Balance

Thirty miles north of Miami, ideally situated in the middle of the six-million-strong South Florida market, is one of the state's best-kept secrets: Port Everglades. Well-known as a top U.S. cruise thoroughfare, the Broward County-operated facility is also the 12th-largest container port in the country — and tops in the state.

The promise of increasing trade growth with Latin America has the port on high alert as it ramps up development to meet future demand. Port Everglades is currently in the process of executing three capital investment projects to help grow capacity and expedite freight flows on and off port:

- The Intermodal Container Transfer Facility, which broke ground in January 2013 and is set to open in mid-2014, is a port intermodal yard with both domestic and international gates that connects directly with Southport.
- The Southport Turning Notch extension will grow an existing 900-foot berth to 2,400 feet, adding capacity for five additional cargo ships; it is expected to be complete by 2017.
- Widening and deepening the channel to 50 feet is expected to coincide with the Southport Turning Notch project.

These developments are cast against the backdrop of the Panama Canal expansion, which is set to be complete in 2015. Given Port Everglades' reputation as a Latin American gateway, officials expect to siphon some of this anticipated growth.

"We are largely a north-south port; 75 percent of total volume is with Latin America," says Michael Vanderbeek, director of business development, Port Everglades. "Central America is our largest trade partner — especially Honduras and

Guatemala — followed by the Caribbean and South America."

The port already holds a dominant position in Central America and the Caribbean, so the real potential is with South America, given the size of its population and diversity of economies on both the East and West Coasts.

"There will be healthy trade growth in Colombia because of the U.S. Free Trade Agreement," Vanderbeek says. "Port Everglades has strong connectivity to its north coast via Cartagena and Barranquilla. Colombia has overcome the security and safety stigma that used to exist, and is a more stable and productive economy.

"Peru is another viable future customer," he continues. "It's a leader in South American GDP growth, expanding year to year, with diverse production and consumption. And Chile has a very mature trade industry. We do a healthy export trade, but there is room to grow the import side in South Florida with perishables, wine and spirits, and wood products."

What makes Port Everglades unique is that it is a net export port. Its $4-billion export surplus is notable in the context of its business with key markets such as Chile, Colombia, Peru, and Brazil. The port moves a lot of manufactured high-end goods from the United States to those countries now, and expects even more robust returns on the import side.

"The more balance we have in trade with any given market, the better it is for our customers, because they want to be carrying as many full boxes in both directions as possible," says Vanderbeek. "Carriers want cargo that pays both ways."

UNIQUE EXPORTS

Much of what the port exports to Latin America is unique to individual countries. In Honduras and Guatemala, for example, it sends a variety of materials for apparel that come back as finished goods. In Peru and Chile, the port moves a lot of high-end machinery to support the region's mining industry.

There are commonalities across the region as well. On the export side, automobiles and electronics have mainstream demand. Seasonal fruits and vegetables dominate U.S. imports.

The one notable exception to the rule is Brazil, which Vanderbeek believes could be more robust given the country's large consumer population and vast amount of resources. As a result, Brazil is still an area where the port sees opportunities to gain greater export traction.

Located 30 miles north of Miami, Port Everglades, the 12th-largest container port in the country, plans three capital investment projects to help grow capacity and expedite freight flows. Seventy-five percent of the port's total volume is with Latin America.

Port Everglades' capital investment projects put it in good stead to capitalize on future trade prospects throughout Latin America. Notably, the Panama Canal expansion will add bandwidth to the north-south trade lane.

FUTURE TRAJECTORIES AND PROJECTIONS

Vanderbeek expects the port's sweet spot to remain on the import/export side, with product moving between the United States and Latin America. While there has been much speculation about transshipment possibilities, ongoing developments in Caribbean ports such as Freeport, Bahamas, and Kingston, Jamaica, as well as Panama and Cartagena, Colombia, are increasing competition for that business. Ultimately, it will come down to cost.

From a macro perspective, the port has everything to gain from more near-shoring activity that brings production closer to demand. "We're well-positioned to benefit from manufacturing activity coming back from Asia, because we already have connectivity to those markets in terms of service frequency and existing market share," Vanderbeek notes. "As manufactured goods for U.S. consumption ramp up, we fully expect to benefit from those opportunities."

Continent on the Brink

As a global 3PL with strength in ocean and airfreight forwarding and contract logistics, Latin America is a hot prospect for UTi and its customers. The Long Beach, Calif.-based company maintains a presence throughout the region, with offices and facilities in Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Uruguay, and agents on the ground elsewhere.

UTi operates largely as a non-asset-based service provider, but manages its own warehouse facilities in select markets such as Brazil and Mexico. In other countries, it works with local transportation and logistics partners to provide customers with supply chain solutions tailored to their needs. Throughout Latin America, UTi helps shippers overcome trade barriers and reduce the complexity of doing business in the region to take advantage of its GDP growth and rapid development.

The 3PL's capabilities include a cross-border brokerage network in Mexico, where it also operates sub-assembly plants for the automotive industry; line feeding to manufacturing plants in Brazil; and control towers to coordinate operations spanning multiple geographies.

"The logistics world is so big in Latin America that it is often difficult to have only one company provide all the necessary services," says Miriam Gagna, regional vice president, Latin America, at UTi Worldwide, based in Buenos Aires, Argentina. "A company such as UTi helps shippers find the right partners wherever needed to provide an end-to-end supply chain solution."

This complexity is a pivotal challenge for U.S. businesses when they begin to look at the continent as an area to grow their business — whether sourcing, manufacturing, or as a place to establish retail or brand presence. Other variables come into play as well: inflation is out of sync with GDP growth; transportation infrastructure is fractured; and customs regulations are tedious, prohibitive, and unique from country to country.

THE CUSTOMS CHALLENGE

The latter constraint is a sticking point for many companies. Trade restrictions make importing into countries such as Brazil and Argentina difficult. By contrast, Chile and Peru are much more accommodating and easier to do business with.

But the regulation environment is changing. And as global companies re-evaluate their sourcing options and consider near-shoring opportunities, Latin America presents a compelling proposition. Not only is it attractive from a low-cost manufacturing perspective, it is also a relatively untapped consumer market of nearly 400 million strong.

"Consumption is increasing as the lower class rises," says Gagna. "Just a few years ago, a laptop was considered a luxury item in Brazil. That has changed. Now people have access to cars, computers, and mobile phones. There are a lot more consumer goods imports into Latin America."

The continent's strength has always been on the export side — particularly agriculture commodities. So much of the infrastructure, services, regulations, and expectations that exist today are tailored to this type of trade. The shift from commodity exports to finished goods imports and exports is forcing change throughout much of the region. And 3PLs such as UTi are helping to facilitate this transformation.

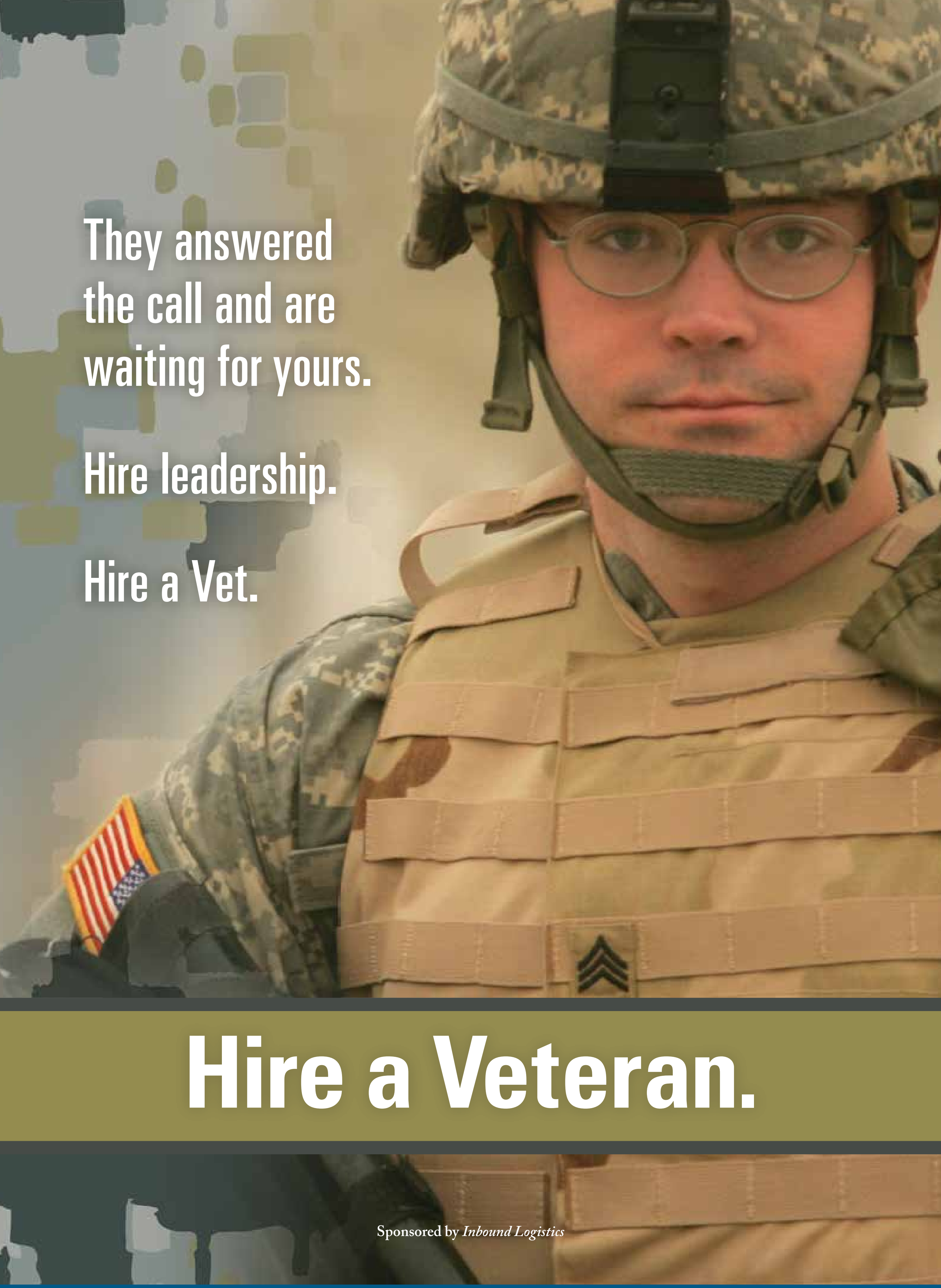
RAISING EXPECTATIONS

Companies often require counsel to meet the needs and expectations of a more sophisticated supply chain. For example, UTi has an established presence in the automotive industry — a vertical with stringent demands.

When automotive manufacturers move, suppliers follow. The cost of stopping a production line because a part can't be sourced is prohibitive. OEMs expect as much from their logistics service providers. UTi works closely with automotive clients and their vendors to drive efficacies in the supply chain.

Gagna cites one example where UTi helped a customer in Brazil reduce export shipment time from five days to two. "Getting more involved in their supply chain and understanding their pain points provides a platform for change," she says.

The challenges that exist for businesses tapping different Latin American markets are manifold. But there are also opportunities for companies to work with logistics services providers that can help orchestrate solutions, and provide support and leverage in a region that is primed for growth. ■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By their very nature, chemicals make for complicated logistics. Transporting, storing, and distributing flammable, corrosive, highly reactive and carcinogenic materials is not an easy task.

And when things go wrong, it's not just a late or missing shipment at hand – there are economic, environmental, and emotional consequences. The deadly fertilizer plant explosion that occurred in April 2013 in Texas, for example, highlights the many dangers this industry faces.

As a result, chemical producers – and the third-party logistics partners that serve them – face enormous complexities and challenges in conducting everyday business operations.

While supply chain and logistics management is complex in any industry, those challenges are magnified for chemical manufacturers and distributors. To start, chemical products are more complex and difficult to transport than products in many other industries.

"Consumer packaged goods, for instance, are packaged in square boxes on a pallet, and the pallet can easily be loaded into a trailer," says Mike Challman, vice president, North American operations for ChemLogix, a transportation management and technology provider based in Blue Bell, Pa. "By contrast, chemicals must be shipped in a tank truck, or in an ISO container via intermodal, or as bulk product in a railcar.

"Transporting chemicals requires more safety awareness, and a higher level of experience, preparation, and training on the part of the handlers," he adds. "It is easy for them to hurt themselves, or someone else, if they mishandle the chemicals."

Chemical companies also need to utilize the full gamut of possible transport options to meet their varied and specialized shipping needs.

"Meeting the global transportation needs of the chemical industry means having access to all modes and equipment – rail, tank truck, hopper truck, open market less-than-truckload, van, truckload, flatbed, ocean container, barge, and parcel tanker – in each region of the world," explains Glenn Riggs, senior vice president of North American logistics for Odyssey Logistics & Technology (OL&T) in Danbury, Conn.

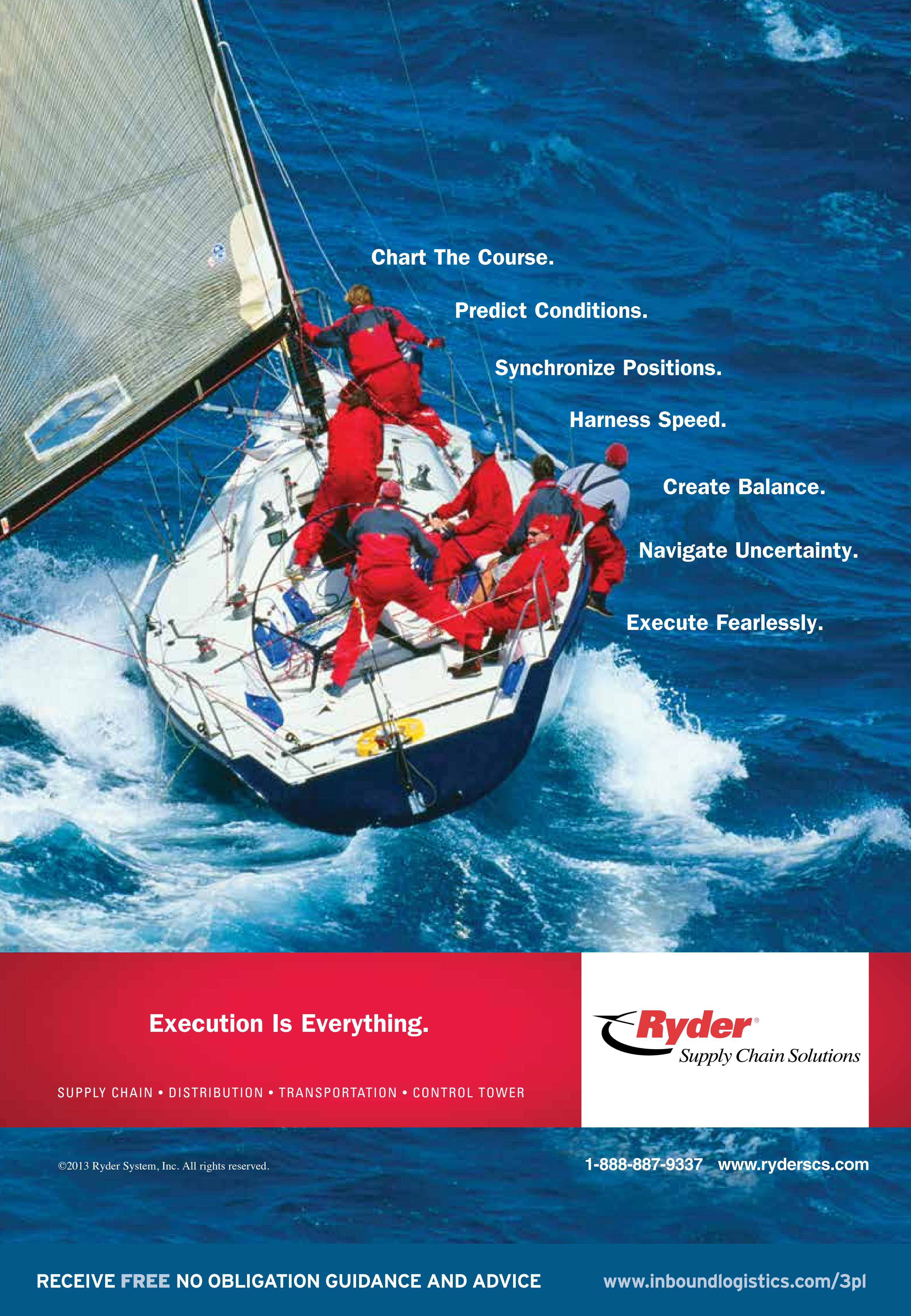
In addition, the chemical vertical is quite diverse. Chemical companies are involved in generating a wide span of products, ranging from industrial chemicals to petrochemicals such as oil, natural gas, and shale; herbicides and pesticides; plastic additives; solvents; fragrances and flavors; synthetic dyes and pigments, and many others.

"Servicing the chemical industry requires flexibility and adaptability to be able to meet the needs of the many different customer bases that chemical producers work with," Challman observes.

Safe, Secure Transport

And while other verticals often approach logistics and supply chain operations from a cost perspective first, the focus on safe and secure transportation in the chemicals supply chain takes precedence over all other aspects.

"Everyone wants to control or reduce supply chain costs, but chemical companies have to put that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second to safety," Challman explains. "The first thing they look for in a transportation partner is the ability to provide the level of expertise to execute transportation safely and effectively."

"In this industry, you can never compromise safety – it is not an option," adds Earnie Seibert, vice president of sales and marketing for Dupré Logistics in Lafayette, La. "The stakes are higher for chemical shippers because of the hazardous materials they transport, and we do everything we can to protect our drivers and all others on the road."

Because of the key importance of safety and the specialized nature of their products, chemical producers need to be much more stringent than shippers in other verticals when selecting transportation partners.

Weber Logistics is fully compliant with the government's CFATS rule, which establishes risk-based performance standards for chemicals handling and storage.

Indeed, screening potential carrier partners is a more rigorous process for chemical shippers and/or the logistics providers servicing them.

"When we partner with transportation providers, we consider how often carriers have maintenance defects and accidents on the road, and their drivers' log errors," Riggs says. "You have to probe into these sub-categories for chemicals – it is quite different from packaged goods, for example, where you just need to ensure the carriers carry enough insurance and are in good standing with the Federal Motor Carrier Safety Administration."

Chemical shippers must also look closely at carriers' operations and safety procedures out on the roads.

"Because chemical loads pose safety and security risks, drivers must ensure a truck loaded with drums, or a tank truck full of bulk liquids, is always parked in a lighted, secure area, and attended to at all times," Riggs notes. "Many protocols must be watched and enforced to ensure the shipments are safe all the way to the final delivery point."

And the complexity of the chemical supply chain doesn't rest only with transportation – warehousing and storing chemicals is quite intricate, too. Chemical storage facilities must be outfitted with a wide variety of safety specifics such as hazard equipment, retention areas, and temperature-controlled zones, explains Jim Emmerling, vice president of operations for Weber Logistics, a West Coast-based provider of warehousing, freight, and logistics services.

CFATS Compliance

Some chemical facilities, such as Weber's DC in Santa Fe Springs, Calif. – which specializes in handling, storing, and distributing flammable liquids, corrosives, oxidizers, and poisons – take the added step of complying with the U.S. Department of Homeland Security's Chemical Facility Anti-Terrorism Standards (CFATS).

The rule, which establishes risk-based performance standards for the security of chemical facilities, requires facilities to assess their security vulnerabilities, and to develop and implement Site Security Plans, which include measures that satisfy the identified risk-based performance standards.

"In order to meet our own safety standards, and to stay compliant with CFATS, we implemented stringent and thorough internal auditing processes," says Jim Rogers, distribution center manager for Weber's Santa Fe Springs facility.

The materials handling equipment used in the Santa Fe Springs facility is also specific to chemical storage. "We use explosion-proof forklifts," Rogers says. "All the electronics and the electrical wiring within the forklift are guarded and protected more than in a normal forklift."

Weber works with local fire departments and first responders to ensure they are familiar with the facility in case of a safety or security breach. Knowing the facility's footprint, and where corrosive and flammable substances are stored, helps responders do their jobs more effectively should an accident occur. CL

No Shortage of Challenges

Lack of capacity is one of the biggest challenges chemical shippers are currently grappling with. The culprits? The ongoing truck driver shortage, and changes to the Hours of Service rules, which take effect in July 2013 and will limit drivers' time on the roads.

While capacity issues are impacting all shippers, chemical companies feel the shortage more acutely, says Michael Rohrbaugh, manager, integrated supply chain, for Pilot Chemical Company, a global specialty chemical producer that provides products and services to the household and industrial detergent, personal care, lubricant, oilfield, emulsion polymerization, textile, and agriculture industries.

"Because we ship liquid bulk chemicals, we need access to special equipment, and the drivers need specific certifications – we can't hand over our shipments to just any carrier," Rohrbaugh says.

To help combat these capacity challenges, Pilot has been working closely with ChemLogix to develop and maintain a core carrier program, as well as to contract some dedicated fleets to service Pilot's ongoing needs.

"We continue to work within the core carrier program to add new carriers that are doing a good job, and make sure we are moving in the right direction," Rohrbaugh explains.

Finding Room on the Rails

It's not only trucks that are tied up – rail capacity also has been hard to come by. Chemical shippers are all competing for the same number of limited railcars – and because the lead time to manufacture new railcars is so long, the crunch isn't expected to ease up until sometime in 2014. The boom in natural gas and shale exploration and extraction in North America also has eaten up a lot of available rail capacity.

So what are chemical shippers – and their providers – doing to get around this issue? "We work to develop a complete picture of our chemical customers' supply chain so we can see their customers' ordering patterns and try to better understand demand," says ChemLogix's Mike Challman. "This way, we can get ahead of the capacity curve.

"We also optimize networks to help chemical producers understand how they can move, store, and deploy their products more efficiently," he adds. "It may require network changes, or alterations to customer expectations, but they have to look at their business in new ways. The industry can't operate the way it used to given the current capacity situation."

In some cases, providers themselves are developing innovative solutions that can help ease capacity concerns. Illinois-based A&R Logistics, a leading provider of bulk plastic and dry flowable transportation, uses "eliminators" to eliminate railcar dwell time and, in turn, help ease some capacity woes.

The eliminators – 40-foot ocean containers imbedded with 1,500 cubic feet of aluminum cylinder – hold one truckload (48,000 pounds) of plastic resin, and essentially function as a mobile inventory storage location.

"When a railcar comes into one of our facilities, the customer may have sold three of the four compartments, which means one compartment could sit for 30 days, or longer, until they've sold enough product to use it," says Paul Sweeden, executive vice president of sales for A&R Logistics. "By storing product in the eliminator, that car can be released back into the customer's control so they can get it back to their facility and reload it with more product. It provides better railcar utilization." CL

Chemical shippers facing capacity shortages seek to find the right balance between rail and road.

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Outsourcing for Optimum Supply Chain Effectiveness

The chemical industry's complex logistics needs, safety and security concerns, and regulatory issues make outsourced logistics, transportation, distribution, and warehouse services an important part of its supply chain.

Third-party logistics (3PL) providers working with the chemical industry offer a wide range of services in different levels of integration, from providing a single service to functioning as a virtual logistics department. Chemical companies using 3PLs can reap the benefits of that supply chain expertise while focusing their time and energy on manufacturing and selling chemicals.

The benefits of a good outsourced partnership can be numerous and far-reaching in scope, notes Taylor Nicks, manager of global 3PL C.H. Robinson's ChemSolutions division. The company invests in people, processes, and technology to help shippers achieve optimal supply chain functionality.

"Chemical companies need to focus their efforts and time on research and development, new markets, and building key relationships with customers. We focus our time and energy on driving the best-in-class performance of their supply chains," Nicks explains. "We provide chemical shippers with increased control; better cost and service visibility; improved efficiency; improved risk management; and the ability to leverage industry and supply chain best practices.

"By offering those services, our chemical customers can focus their working capital and valuable resources on their business instead of on building overhead to manage risk, developing IT systems that aren't their core business, or hiring people who aren't focused on driving R&D, new markets, and core relationships," he adds.

For chemical logistics providers such as WSI, safety on the truck and in the warehouse is of paramount importance.

Turning to 3PLs

The market's uncertainties may also drive some chemical companies to seek outsourced partners. The need for flexibility and scalability in the industry is great. Depending on a company's size and demand patterns, it does not always make sense to expend capital on assets such as trucks and distribution facilities that may go underutilized at times – or may fall short at peak times.

"The chemical industry tends to be cyclical, and we can handle those peaks and valleys for our customers," says Rob Kriewaldt, director of marketing for WSI, an Appleton, Wisc.-based 3PL that operates 14 million square feet of industrial real estate across the United States. "One company may be in a valley, while another customer in a different part of the industry may be in a peak – so it levels off for us.

"Rather than a company tying up money in infrastructure that isn't being fully utilized, we can help them cut that capital expenditure," adds Kriewaldt, who also cites the ability to get product closer to customers, and increased speed to delivery, as added assets of working with a 3PL.

Avoiding underused investments is one factor that drew R.E. Carroll,

an Ohio and New Jersey-based chemicals distributor and re-packager, to partner with WSI.

As a 27-employee company serving the chemical process industry, R.E. Carroll didn't want to invest in hiring and safety-training employees when it expanded to the southern United States several years ago. Instead, the company – which provides raw materials, fillers, extenders, and petroleum products – decided to utilize WSI's existing Dallas facility for logistics purposes.

"WSI acts as the 'boots on the ground' for R.E. Carroll, handling all the logistics aspects of our re-packaging," explains Brett Bixenmann, western sales manager for R.E. Carroll. WSI receives product from bulk trucks, then re-packages it into smaller drums and totes, and readies them for pickup on behalf of R.E. Carroll.

Safety a Top Concern

Safety is of paramount importance to R.E. Carroll and WSI (and all chemical manufacturers and their providers) – and the companies' similar approach to safety compliance has helped the partnership thrive.

"WSI has excellent safety processes in place, and so do we," Bixenmann notes. "We made sure those processes overlapped completely before even starting this partnership.

"Safety is the top concern when selecting outsourced providers, and the first question we ask – before cost – has to be, 'Are you operating in the safest way possible, and are you meeting all the government standards?'" he says.

While most chemical producers are intimately familiar with federal chemical regulations, the nuances of state and local standards in different regions may not be as familiar. This is another safety area where outsourced providers can be key partners.

"Most states have significant regulations that impact chemical shipments," says Kriewaldt. "Multinational companies with locations all over the globe have a hard time keeping track of this information, and we can help supplement their knowledge at a local level."

Training DC employees on safety procedures and compliance needs can be an expensive and time-consuming job, which is another reason many chemical producers turn to outsourced providers for distribution assistance.

"For smaller chemical manufacturers to ensure their DC employees are properly trained, certified, and in compliance can be costly," says Weber Logistics' Jim Emmerling. "With a facility such as ours, which meets the distribution needs of more than 40 other chemical companies, customers get the value of compliance. Their risk management team can walk through the facility, and know they will be compliant."

That compliance and safety value is also important to large companies such as The Dow Chemical Company, for whom Weber provides warehouse services, product storage, and shipping and inventory control at its Santa Fe Springs facility.

"We visit the Weber warehouse quarterly to ensure our product is being safely stored, and verify the uncompromising quality of storage, inventory, and other services provided to Dow businesses and customers," says Joe Tovar, zone outplant specialist, Dow.

Understanding how to handle and store chemical products is another aspect of the safety equation – and chemical manufacturers such as Dow must ensure their warehouse providers have that knowledge.

"Some of our products are temperature-sensitive, so they need to be kept in a cold or warm room, and some products are kept at room temperature," Tovar says. "Understanding the requirements of each product, and placing it in proper storage as soon as it is received, is very important – each must be handled correctly to ensure product integrity."

Knowing their products will be transported safely and securely is another benefit chemical producers obtain from outsourcing their transportation function. Again, the idea is

Dupré Logistics maintains a culture of safety, which includes retaining trained drivers and measuring their CSA scores daily.

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www.kaglogistics.com • SPGSales@kaglogistics.com • 877-203-3283 • 4366 Mt. Pleasant St., NW • North Canton, Ohio 44720 that companies specializing in chemicals transportation can offer greater safety, assets, infrastructure, expertise, and capacity availability than chemical companies could achieve by handling transportation in-house.

Transportation providers serving the chemical industry know that finding – and retaining – safe and qualified drivers is of key importance to their customers. Drivers who understand the safety and compliance mandates involved in transporting chemicals are valuable assets.

"If you have to keep hiring new drivers, you can't offer the safety, reliability, and deep knowledge base that is so important for chemical shippers," says Earnie Seibert of Dupré Logistics, noting that the company maintains one of the industry's lowest turnover rates. "Our ability to retain trained drivers is also critical in being able to provide capacity for our customers."

Dupré Logistics received numerous safety awards from the American Trucking Associations (ATA), and its safety director, Al LaCombe, was recognized as ATA's 2011 National Safety Director of the Year.

"Our organization has a culture of safety," Seibert says. That culture means measuring drivers' CSA scores daily and taking violations seriously.

Check, Check, and Re-check

Making sure drivers comply with Hours of Service rules and obey speed limits is also a key safety benefit provided by A&R Logistics. "'Check, check, and re-check' is our safety mantra – everything we do is safety first," says Kenneth Pate, A&R's vice president of safety.

The 3PL operates its own non-conformance initiative, self-reporting to customers any issues such as driver violations, late pickups, incorrect shipments, accidents, and spills. "We meet with our customers quarterly to discuss non-conforming issues," Pate says.

A&R is also diligent about equipment safety in order to offer its chemical shippers peace of mind that their goods are being transported optimally. Before a shipment goes out, the company verifies hose connections are correct, and equipment has been thoroughly cleaned so contamination cannot occur.

After hauling a load of clear polypropylene, for instance, they must make sure the trailer and hoses are entirely free of clear pellets before loading up the next shipment of, say, colored polypropylene.

"Contamination is expensive for our customers and for us, so we make sure to do the right thing the first time," Sweeden explains. "Chemical shippers know we set industry standards for service, cleanliness, and safety. If they come to us, they don't have to worry about any of those transportation aspects." CL

An Industry in Flux

In addition to the complexity inherent in chemical products, the nearly $3-trillion global industry is cyclical in nature, and closely tied to the ups and downs of the global economy. It is also highly evolving and heavily regulated.

The industry is an important one, too: In the United States, the chemical industry employs nearly 800,000 people and constitutes roughly 12 percent of the nation's exports, aggregating $187 billion annually.

Because the industry is heavily linked to the economy, the past few years have kept its players on uneven terrain.

Global chemical production (excluding pharmaceuticals) grew by 2.6 percent in 2012 – significantly slower than the previous year's 3.8 percent, according to chemical company BASF's 2012 annual trend analysis. And an upswing in demand expected for the second half of 2012 failed to appear.

The report attributes this slack in demand to "weak economic development in the industrialized countries, and restrained growth in many emerging markets.

"Also, in anticipation of decreasing prices, many chemical products consumers showed caution in restocking their inventories," says the report.

Industry growth has generally been slower in the United States and Europe, so many chemical producers are looking to expand in other high-growth markets, notes Taylor Nicks of C.H. Robinson's ChemSolutions division, which offers chemical shipping expertise, bulk equipment, and a global technology platform.

"Chemical shippers are working to rationalize their current portfolios; looking to tap into new feed stocks; and starting to look beyond their product portfolios for value-added services to create deeper relationships with key customers," Nicks explains.

And while demand seems to be retuning in 2013, capacity has remained scarce, causing a new set of headaches.

"We see encouraging signs from shippers that volumes are returning, but capacity is not returning at the same pace," explains Mike Challman of ChemLogix. "Capacity is tight, so carriers are getting selective about which companies they choose to work with. A lot of loads are out there, giving carriers many options."

Supply Chain Technology Taps into Efficiencies

Access to technology is an important driver for logistics and transportation outsourcing in the chemical market. The industry has lagged behind some other verticals in adopting logistics and supply chain technologies, partly because of the business' unique nature.

Many small, specialized transportation providers serving the industry haven't had the resources to offer electronic transaction services, Web status updates, or e-bills – meaning chemical shippers have operated in more of a manual environment than is common in other industries.

As a result, logistics partners that can offer the technological missing link provide a great benefit to chemical manufacturers. In many cases, transportation management systems (TMS) are the crucial first step in bringing chemical shippers the visibility, granular data, efficient execution, and actionable business intelligence they need to thrive.

Chemical shippers working with C.H. Robinson, for instance, can access the company's proprietary TMS, called Navisphere, which provides end-to-end visibility, consistent business processes, and strategy-driven business intelligence around the world. C.H. Robinson employees, customers, and service providers use the Navisphere platform to manage transportation and sourcing activities on a global scale.

Navisphere also helps C.H. Robinson assist its chemical shippers in the all-important search for capacity. Its business intelligence tools give chemical customers a better understanding of their shipping patterns and the seasonal variations within their portfolio mix.

"Then, they can communicate that demand information more effectively, through us, to their transportation providers to ensure they have capacity when and where they will need it," says C.H. Robinson's Taylor Nicks.

Chemical companies also benefit from the fact that Navisphere allows them access to a centralized network of more than 100,000 supply chain partners, without the need to integrate with each provider individually.

That partner integration is also a key factor of the IBM TMS that ChemLogix offers its chemical customers. "We maintain relationships with many carriers, and we help even the smaller ones interface with us via a Web portal or other simple approach," explains Mike Challman of ChemLogix. "This way, chemical shippers don't have to invest IT capital in connecting with carriers. They connect with us, and we bring along all those other connections."

Having access to a TMS also brings chemical companies a granular level of data they likely weren't achieving on their own. "We like to get down to the SKU level in the data we capture and maintain for our customers," Challman says. "If they need SKU- or batch-level data – such as where a shipment went or how many deliveries were made from a certain location – we can access that easily."

Many chemical companies tap into their 3PLs' warehouse management solutions to increase efficiency, manage costs, and boost safety and compliance.

Reducing the number of manual processes within the supply chain is another important benefit technology reaps for chemical producers. At Odyssey Logistics & Technology (OL&T), cutting out manual steps is one of its main technology goals.

"To move the bar on the supply chain in the chemical industry,

producers must try to achieve as much automation as they can," says OL&T's Glenn Riggs. "That's where we come in."

Organizations that don't have access to technology tend to "throw bodies" at their problems, which ultimately increases costs.

OL&T's patent-pending proprietary technology solution provides deep integration for its chemical customers, linking directly to their ERP systems, and automating decision-making, planning, and execution processes for shipments all across the globe. The solution also offers track-and-trace capabilities, and provides management of back-end tasks such as freight payment.

"All this data can be integrated into our customers' ERP systems, so at the time of shipment, we can provide instantaneous accruals back into their general ledger," Riggs says.

The technology also helps chemical companies manage costs. Many chemical companies simply track freight costs as one lump sum – they may know how many pounds they ship and their dollars-per-pound costs, but if those numbers move up or down, they don't know why.

"Our system captures granular freight data, so we can see whether higher costs are due to a base freight charge increase, diesel fuel surcharge change, transport mode switch, or new lane use," Riggs explains.

Having access to that type of data allows chemical companies to know why their costs are changing, and to make shifts accordingly.

Using a deeply integrated technology solution also allows chemical companies to perform higher-level optimization functions that are hard to replicate in a manual environment. If one employee at a specific plant is a whiz at load building, it may help that one location, but that skill can't be duplicated across a global or even regional network.

"Our technology uses sophisticated algorithms that look at order streams, and present aggregation and order consolidation opportunities to be more sophisticated with transportation across the entire network," Riggs says.

> *"We know exactly where product is from the moment it hits our dock, and we can ensure it gets to the right customer every time."*
>
> – **Rob Kriewaldt,** *director of marketing, WSI*

Warehouse management solutions (WMS) are another key technology chemical companies expect from their providers. The benefits include increased automation, product and service efficiency gains, cost management prowess, and safety/compliance boosts.

"Our WMS offers all the warehouse floor functionality a chemical manufacturer needs," explains Jim Emmerling of Weber Logistics. "We can select product according to first-in/first out, last-in/first-out specifications, or even a specific code date. And, if a customer wants to ensure all of a particular lot number goes to a specific consignee, we can place the order with that kind of methodology."

Weber also uses technology to zone its warehouse facilities to achieve maximum labor efficiency. Its system directs warehouse workers to slot products in spots that require the least amount of travel to the areas where trailers are pulling in and out to load and unload product. The result is labor savings for Weber, and greater efficiency for its chemical customers.

The 3PL also uses technology to give chemical manufacturers access to key data about the products they have stored in Weber's facilities. Customers can go online to view status information on inbound and outbound orders, inventory levels, and, soon, even get product temperature readings from Weber's temperature-controlled storage rooms.

"Access to this type of real-time data is a real benefit for chemical firms," Emmerling says.

You're the ONE

For its chemical warehouse customers, third-party logistics provider WSI runs the Enterprise ONE solution from JD Edwards/Oracle. The solution gives WSI the ability to track lots and product history for its chemical producers.

Combining the solution with the RF technology WSI uses to scan products as they move throughout its facilities allows the 3PL to "know exactly where product is from the moment it hits our dock," says WSI's Rob Kriewaldt. "And we can ensure it gets to the right customer every time.

"In addition, many of our customers require specialized packing lists or bills of lading," he notes. "Our WMS allows us to customize those by customer and product type to ensure we meet all the regulations."

Business intelligence tools are another important part of today's technologically driven chemical supply chain.

"Business intelligence is a key component of removing waste from the supply chain," says Mike Forbes, vice president of logistics solutions and engineering, KAG Logistics. "It's also crucial for driving superior levels of efficiency and continuous improvement."

KAG Logistics is a division of the Kenan Advantage Group, North America's largest bulk transporter and logistics provider for the petroleum, chemical, food, and merchant gas industries. The Canton, Ohio-based company offers a variety of asset-based trucking services, rail transloading, and value-added logistics capabilities such as transportation management, carrier management, inventory management and forecasting, and special projects logistics.

KAG offers a suite of technology tools and business processes that help drive that business intelligence component for its chemical customers, which include companies in the silicons, resins, construction adhesives, energy, and fuels additives markets.

"We use a combination of solutions related to specific business processes, including inventory management and scheduling tools, dispatch, real-time information transfer, on-board computers in our trucks, and a 24/7 logistics control center," Forbes notes.

Technology that Delivers

KAG's customers also benefit from the way the company applies its technology from a safety and regulations perspective. Monitoring driver behavior and the way drivers handle equipment ensures that customers' loads are delivered safely, securely, and efficiently.

Its technology offering also contributes to transportation efficiency by ensuring trucks follow optimal routes throughout their entire trip – even down to where drivers should refuel and which wash bays they should visit.

"This helps eliminate the delays and demurrage that can occur in the chemical supply chain," says Forbes.

But technology alone cannot optimize the chemical supply chain. Logistics providers must be able to offer top-notch talent, resources, and assets. KAG Logistics' approach gives customers an execution advantage.

"By combining our asset and non-asset capabilities under one roof, we offer a diversified range of transportation and logistics services that result in a more reliable, secure, and efficient solution that is aligned with each customer's business objectives," Forbes explains. CL

The Natural Gas Factor: New Market for Providers, New Competition for Capacity

The boom in natural gas and shale exploration in North America holds both good news and bad news for chemical companies.

The natural gas being extracted from shale plays across the United States and in Canada has emerged as a low-cost alternative source for powering industrial facilities. As a result, some chemical manufacturers are reshoring or onshoring production facilities to the United States, lured by energy costs that are now cheaper than in many global locations.

"Chemical companies – especially those producing plastics precursors – have been drawn back to the United States because the price of energy in their base stock is much less expensive than it is in most parts of the world," says WSI's Rob Kriewaldt. "It's changing the face of the U.S. chemical industry."

That change is a good one, according to the American Chemistry Council.

"Abundant supplies of shale gas have transformed America's chemical industry from the world's high-cost producer five years ago to among the world's lowest-cost producers today," notes the industry group's recent report, *Shale Gas, Competitiveness, and New U.S. Chemical Industry Investment*.

The United States also has become a magnet for chemical industry investment, the report adds.

The natural gas boom has opened up a new export market as well, with chemical producers gaining the ability to increase global sales.

"U.S. chemical and specialty product producers are starting to see opportunities to be more competitive in the global arena via exporting opportunities," says Mike Forbes of KAG Logistics. "These producers also benefit from the lower raw materials

and feedstock costs natural gas is bringing."

KAG currently provides services including truck transportation and transloading for the shale plays, and is working to help set up distribution networks for liquid natural gas (LNG) producers.

"The challenge is that transport and logistics services will have to keep pace with increased production in order to provide supply chain capabilities," Forbes adds.

And that is the bad news. All the activity surrounding the natural gas boom has placed additional strain on logistics capacity for the chemical industry. Capacity for chemical transportation – already scarce because of a driver shortage and the impact of Hours of Service rule changes – has become even tighter thanks to competition from the shale plays.

"The natural gas boom is straining capacity for chemical producers," says Forbes. "There are railcar, truck, driver, and equipment shortages. This energy boom means producers are competing for resources that are part of the chemical supply chain."

Resources for natural gas producers may be in tight supply as well, notes Dan Gayford, vice president of A&R Logistics. "Natural gas discoveries will result in a lot of new capacity production in the Gulf of Mexico and other U.S. locations, and the transportation infrastructure can't handle that volume," he explains.

Because much of this new natural gas production will be slated for export, these companies need logistics partners that can help with transportation scenarios.

"These firms are coming to us for help moving their products out of the Gulf region to get closer to customers in the country's interior, or to the ports for safe, cost-effective export," Gayford explains.

A&R is also offering its global expertise to help these firms plan and develop their supply chains in advance of the production boom expected over the next few years.

These North American shale plays present a variety of interesting new business opportunities for logistics and transportation providers. But providing logistics support to the shale plays is no easy task.

"For the upstream portion of the shale plays – where the exploration, fracking, and drilling occurs – a lot of logistics work is required to get materials to and from the well sites: pipe, machinery such as compressors and pumps, as well as sand and water, all have to be trucked in," says Dan McHugh, group director for Ryder Dedicated, one of the leading supply chain and logistics providers involved in servicing U.S. natural gas exploration.

The well sites are also often located in remote areas that lack sophisticated infrastructure, making transportation a challenge. And specific products are required to set up and run the drilling sites, which means transportation must be specialized as well – for example, water-hauling and sand-hauling

Expected growth in new natural gas production presents opportunities for 3PLs such as Ryder Dedicated to offer supply chain and transportation expertise.

trucks, as well as pump trucks and flatbeds for pipes, are all common.

"We use fleets that are custom-fit in nature, we run special equipment, and our drivers follow specific handling requirements to make these deliveries," McHugh notes.

In addition, the timing of these logistics services is crucial. LNG companies involved in the shale plays are heavily invested in these sites, and until the wells are producing product – and revenue – they are not recouping their investments. So a well site that sits idle because of a missed or late delivery does not go over well.

"The timing is key. These companies are bringing in thousands of trucks of sand or water to be able to frack a well to produce natural gas," McHugh explains. "If a delay occurs at one drilling site, and trucks start to pile up waiting to be unloaded, it causes a ripple effect."

Ryder Knows the Drill

Ryder's unique service offering for the shale plays is helping a variety of major oil and gas producers run their drilling operations efficiently and cost-effectively. The company provides a trio of important services to these firms.

First, Ryder supplies leased vehicles and dedicated fleets to these companies; its fleet contains more than 200 natural-gas-powered vehicles. Using natural-gas-powered vehicles allows these producers (and companies in all verticals that utilize Ryder's truck assets) to reduce costs and boost sustainability initiatives – the second benefit.

Third, Ryder's logistics expertise and technology round out its service offering to the shale plays.

"We provide these companies the IT systems they need to better execute their operations, as well as logistics engineering expertise to manage all the activity and coordinate with their carriers," McHugh notes. "We also manage their carrier bids, contract with carriers on their behalf, pay their freight bills, and manage insurance and safety requirements."

Ryder's Control Tower service offering ensures that these producers have better visibility to the activity occurring throughout their entire drilling operations.

With Control Tower, producers' orders flow to Ryder's Transportation Management Center (TMC) in Fort Worth, Texas, where a combination of proprietary software and customized off-the-shelf solutions optimize those orders by customer-specified requirements such as time and costs. The solution runs a variety of models to determine the best transportation scenario, and sends orders to the appropriate carriers.

"Then we use Control Tower to manage the orders in real time, provide updates, communicate exceptions, and provide visibility throughout the process," McHugh explains. After the shipments have been delivered, Ryder also bills carriers and performs reconciliation.

The Control Tower also provides standardization to an industry that has developed in "cowboy style," according to McHugh.

"Because the industry is still in its infancy, producers are looking to partners that can help them standardize and collect data," he explains. "They have been so focused on the drilling aspect that everything else has been ancillary. We help them standardize terms and conditions, and build databases. Then we can start to engineer and gain control over the network, cut costs, improve speed and reaction time, and give visibility to issues before they become expensive ones."

Other logistics providers are similarly supporting the shale plays. Dupré Logistics, for example, is hauling the product being extracted from the ground, as well as supporting the industry as a whole with inbound chemicals and other raw materials needed at the well sites.

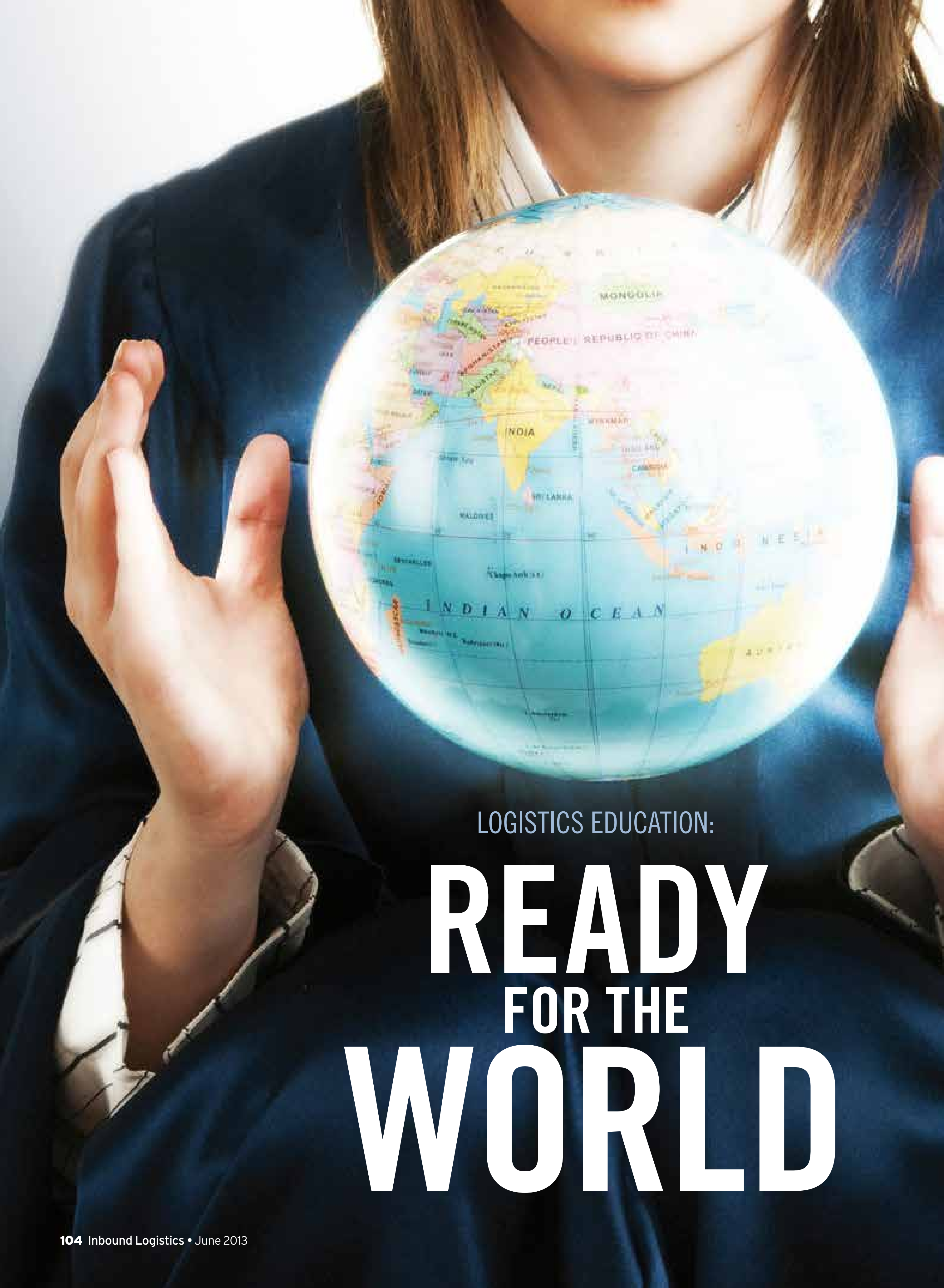
"We provide oil and gas producers the IT systems and logistics engineering expertise they need to better execute their operations."

*– **Dan McHugh,** group director, Ryder Dedicated*

The 3PL has also seen an increase in deliveries to the well areas for ancillary building and development projects. "Producers often develop barren land, so the area becomes busy with development for housing, restaurants, and other residential projects," explains Earnie Seibert of Dupré Logistics.

The shale-related boom has been so strong that Dupré now counts the shale plays, and the chemical industry overall, as its two largest growth areas.

"We are excited about this growing market," Seibert says. "With Dupré's deep history of hauling refined products such as gas, diesel, and additives, we know it takes safety leadership and a strong reputation to be trusted with these loads." CL



LOGISTICS EDUCATION:

READY FOR THE WORLD

With a focus on international operations, logistics students and professionals prepare to manage complex global supply chains.

by Tamara Chapman

ACCORDING TO CONVENTIONAL WISDOM, EVER-SMARTER TECHNOLOGY AND THE RAPID PACE of innovation are creating a smaller world. For supply chain managers, that smaller world means a larger reach – a global supply chain characterized by what John Fowler, chairman of the supply chain management department at the W.P. Carey School of Business at Arizona State University (ASU), calls "lots of tentacles."

As Fowler sees it, the supply chain's many tentacles introduce a host of new and emerging logistics and operational challenges, not to mention perplexing ethical quandaries and cultural conundrums. "If you are doing business internationally, you need a broader knowledge base," he says.

And even if you're not doing business internationally, you might as well prepare for it. Chances are, it's in your future.

Paul Dittman, executive director of the Global Supply Chain Institute at the University of Tennessee at Knoxville, agrees. "It's rare to find a supply chain that isn't global," he notes.

The global supply chain is increasingly a catalyst for career opportunity, thanks to developments such as the Panama Canal expansion and pending free trade agreements. The U.S. Bureau of Labor Statistics projects a 20-percent increase in supply chain jobs in coming years, so now is a great time for aspiring and established logistics professionals to enhance their global supply chain skills.

Attuned to the Global Marketplace

The knowledge and skill base required of anyone working within a global supply chain includes everything from business analytics, risk analysis, and transportation security to trans-national regulations and cross-cultural negotiations.

If you source parts in China, it pays to understand its regulatory environment, banking system, and labor laws. If you contract with a supplier in Brazil or Chile, it's essential to appreciate business and cultural mores—even if you're negotiating by email, but especially if you're talking business over a meal.

"In any successful global supply chain, professionals should be able to work in a process-oriented team environment, possess a basic understanding of different market segments and their supply chain requirements, and understand current import and export compliance rules and regulations," says Ken Black, general manager of logistics at Crowley Maritime Corp., a marine transportation and logistics company headquartered in Jacksonville, Fla.

No mere mortal is likely to master all the complexities associated with the global supply chain. But, "supply chain managers should periodically sharpen the basic tools in their toolbox, including forecasting, operations research, and logistics management," says James Haug, director of the Logistics Center at Virginia-based Longwood University. They should also add new tools as time permits.

Which tools will depend on specific business challenges and individual career goals.

"If you have been out of school for 10 years, search out specific areas your company's leadership wants you to focus on," says Haug. "A multinational beverage purveyor, for example, might want its supply chain professionals to focus on sustainability issues, while a machine manufacturer might need expertise translating newly mined data into useful information."

In keeping with his company's emphasis on professional growth, Robert McIntosh conducted an extensive review of available programs before settling on a final choice. As executive director of global logistics and fulfillment for Texas-based computer technology company Dell Inc., McIntosh handles fulfillment and logistics for the Americas, including North America, Argentina, and Chile. Business in the Americas accounts for half of Dell's deliveries, so his responsibilities are pressing. Dell asks that he respond to those responsibilities by acquiring new skills and knowledge. "The company expects that employees will learn and grow," he says.

"Employers want a logistics team that can ensure raw materials from different parts of the globe arrive at a factory just when they're needed."

John Fowler,
Chairman, Supply Chain Management Department, W.P. Carey School of Business at Arizona State University

McIntosh believed he needed formal training in finance and economics, as well as advanced understanding of supply chain dynamics. He was less interested in programs that emphasized the supply chain's engineering challenges. His superiors, meanwhile, encouraged him to find an education option that enhanced his executive skill set and would "ramp very quickly." With these priorities in mind, he chose an executive MBA program with a supply chain emphasis.

One Size Doesn't Fit All

Once individual and company priorities are determined, Haug advises supply chain managers to look for programs that not only address the specified areas of interest, but also complement work schedules and learning styles. Many mid-career professionals don't want to return to the classroom; others prize experiential opportunities over textbook learning.

The best programs draw on industry to shape curriculum. And as challenges mount, industry is increasingly interested in influencing supply chain education. After all, companies are looking to the global supply chain—and its talent pool—for cost-cutting and revenue-generating opportunities.

ASU asks high-level corporate representatives what they think the curriculum should cover. Several years ago, business advisers were recommending additional training in business analytics. They wanted people capable of data-driven decision-making—mining data and deploying it. "The key challenge is turning data into information," he adds.

Today, companies are also seeking employees with the skills and knowledge to help seamlessly integrate supply chain functions and logistics priorities into overall business operations. They want a logistics team that can ensure raw materials from different parts of the globe arrive at a factory just when they're needed—not a moment too soon or too late.

Longwood University's Logistics Center also draws on business collaboration to develop programs for students. It serves as an academic research partner to the Commonwealth Center for Advanced Logistics Systems (CCALS), an organization founded to "transform industry by improving the complex system of technological, mechanical, and human factors that enable logistics."

"The center is an environment where industry and academics can work together," says Haug.

In addition to acquiring specialized knowledge, today's supply chain managers are expected to play an expanded role within the company. "They not only have to excel in supply chain disciplines, but also operate on a higher plane," Dittman explains. "They have to speak the CEO's language."

That means supply chain managers must be prepared to think of their operations in terms of shareholder value and market share. They must be able to educate everyone from their financial team to marketing managers about the global supply chain's challenges and opportunities. And they must be able to make a case for their seat at the table when the company formulates strategic plans.

That's especially true when new products are under design and development. Supply chain managers can alert engineers to resource and supply options from across the globe. Because they understand what is happening on the factory floor, they can ward off problems related to untimely product releases or unrealistic production schedules. But they can only do so if they are at the right meetings, and regarded as professionals within the big picture.

Executive Orders

The demand for executive-level training that prepares supply chain professionals for these roles is driving curriculum content and program development at a host of universities. The University of Tennessee at Knoxville, for example, introduced an executive MBA (EMBA) with a global supply chain emphasis. It's the program that captured McIntosh's interest, and best suited his company's vision.

The first cohort of EMBA students—who come from an array of companies in Africa, Asia, Europe, the Middle East, and North America—began classes in January 2013 and will complete them by year's end. Along the way, the 17 students will experience a curriculum that is about 60 percent business foundation and 40 percent supply chain management. Core competencies in global supply chain management include global business acumen and leadership; transformational capabilities; integrated business planning and risk management; and mastery of the integrated value chain.

Although the program includes 24 online sessions throughout the year, its distinguishing component is a set of two two-week domestic residencies in Knoxville that kick off and conclude the program, as well as four international residencies that take students to Paris and Budapest in late spring, and Singapore and Shanghai in late summer. There, they take classes from international faculty, experience another country's supply chain infrastructure firsthand, and immerse themselves in different cultures.

The international residencies offer students the chance to see how supply chain principles are applied in different markets. They also learn about challenges specific to these markets—information that could inform decision-making back home.

The time spent in Knoxville and overseas offers other advantages as well. McIntosh says he benefits from getting to know other students. The cohort provides the perfect forum for exchanging experiences with people from non-competing companies. Outside of class, he contacts peers from Fortune 50 companies to share information about best practices.

"Before I started the program, I didn't have this kind of professional network," says McIntosh.

Another key component of the EMBA offers a benefit to the students' employers. "Each student has to complete a company project—known as the Organizational Action Project (OAP)—under the guidance of a faculty adviser," says David Ecklund, the EMBA's director. At minimum, the OAP must result in a $1-million benefit to the firm.

> "Global supply chain managers should periodically sharpen the basic tools in their toolbox, including forecasting, operations research, and logistics management."

James Haug, Director, Logistics Center, Longwood University

McIntosh's OAP complements his responsibilities related to Dell's global reverse supply chain, which supports remanufacturing computers returned by customers.

To optimize Dell's reverse chain, he will examine the procurement processes associated with this endeavor. He'll also subject the reverse chain to some fundamental questions: Is the company repairing some systems it should retire and scrap? Can repair parts be sourced differently? Can upstream costs be cut?

The idea for this project came from class lessons and discussions. "The University of Tennessee really pushes an end-to-end supply chain view," McIntosh notes. "It's not just supply chain planning and design."

Still other institutions are acting on the assumption that everyone in global business—accountants, marketing managers, and human resources professionals —needs some understanding of the supply chain. With that in mind, they're blending supply chain basics and international perspectives into regular MBA and certificate programs. And students are appreciative—even those who may never visit a warehouse or DC.

Take Lauren Gabor, junior list services coordinator at Virginia-based Nexus Direct. Gabor wants a career in international business. To that end, she pursued an MBA from Longwood University. During a 10-day university-affiliated trip to China, she made a stop in Ningbo to tour a flag factory that supplies Evergreen Enterprises, a Virginia company that designs, manufactures, and markets decorative items.

The experience opened her eyes to everything from the turnaround time associated with producing and delivering seasonal items to the cultural sophistication required all along the global supply chain. For example, when meeting factory officials, she realized that casual American behaviors could be regarded as offensive. To take a proffered business card and stuff it in a pocket was tantamount to an insult. "Respect was a big issue," she says, noting that disrespect could taint a valued relationship.

> "Dell asked me to respond to global responsibilities by acquiring new skills and knowledge. The company expects its employees to learn and grow."

Robert McIntosh, Executive Director of Global Logistics & Fulfillment, Dell Inc.

Supply chain professionals who want to acquire new skills or refresh old ones have an array of options. At universities and colleges across the country, they can choose from degree or certificate programs, from online or classroom options, and from programs that focus heavily on the supply chain or integrate it into other coursework. Mid-career managers can also choose to enroll in programs that mix Web and classroom experiences with team projects and travel.

Even within one institution, the choices can be daunting. For example, Arizona State University offers a mix of options, including an MBA with a supply chain management focus, a master of science in business analytics, and a graduate supply chain management certificate. The school is also developing a master of science in supply chain management and engineering.

Like their counterparts at other institutions, ASU's certificate programs offer a mix of foundational and advanced knowledge. And, in keeping with many other certificate programs, they allow students to work at their own pace. Highly motivated students can polish off the coursework in one year. Students with demanding schedules can take as long as six years to complete the certificate.

Master's programs tend to be more structured. Students enroll with a cohort of other professionals, with whom they advance through the curriculum. Many of these programs are structured to make team projects and student interaction a big part of the experience. "You'll learn a lot from the faculty," Fowler says, "but you'll also learn from the other students."

At ASU, the MBA with a supply chain management focus, delivered online, is targeted largely at students with three to five years of management experience. Core courses focus on supply chain management, operations, and logistics, while electives address everything from supply chain design and organization to strategic procurement and the purchasing management process on a global basis.

Professors provide learning frameworks that help professionals contend with their specific challenges. For example, they learn how to quantify the risks associated with working in different markets. Just as important, they learn how other countries regulate their businesses and conduct trade.

ASU's master of science in business analytics teaches students how to derive value from data and lead data-driven analyses—skills essential to creating a business advantage in a global marketplace. Meanwhile, the master of science in supply chain management and engineering, also offered online, familiarizes students with state-of-the-art tools for analyzing, controlling, and optimizing today's supply chains.

Right Tools for the Job

Like ASU, Longwood University aims to offer programs that provide working and would-be logistics executives with tools they can adapt to individual job sites. For example, Longwood's new four-course certificate program and its forthcoming MBA with a supply chain endorsement draw upon case studies, modeling, and simulation to help in risk analysis—an essential component of any supply chain, but particularly the global chain.

"We emphasize these factors in our case studies," he says, noting that thorough risk analysis can help companies avoid everything from lawsuits to product recalls to embarrassments.

In both its certificate and MBA programs, Longwood aims to emphasize more than skills acquisition and knowledge development. The program also cultivates personal and interpersonal habits—listening, for example—that help supply chain managers negotiate the information overload associated with their jobs. The global supply chain doesn't just span oceans and continents—it also spans time zones, meaning the day may start with a 3 a.m. email demanding an immediate solution to a problem.

Given the pace of the global supply chain and its ever-unfolding challenges, Haug urges professionals to regard continuing education as "a time for solitude and reflection."

Think of it as a way to forestall burnout and recharge batteries. After all, he says, "In some ways, managing the global supply chain is about stamina." ■

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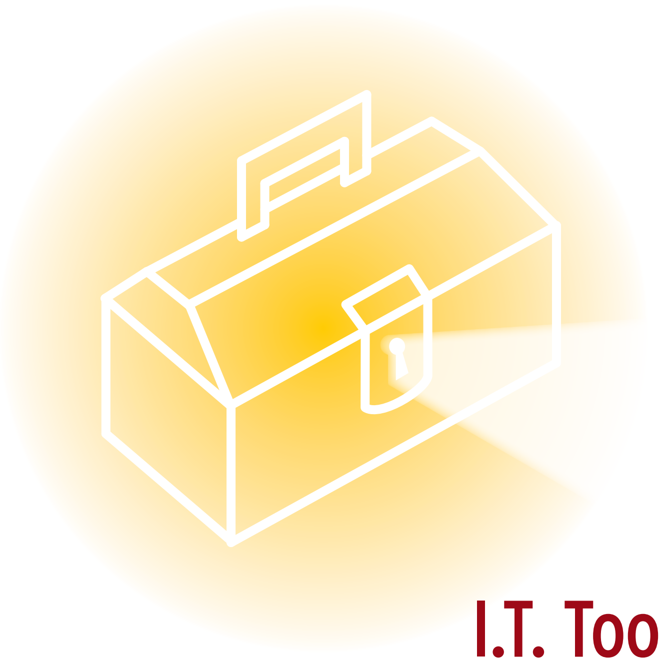


I.T. Toolkit | by Cindy Dubin

Delivery Scheduling Relieves Loading Dock Bottlenecks

An online appointment scheduling system gave beer distributor Crescent Crown control over trucks pouring into its distribution center.

Any company would raise its glass to earning accolades and achieving substantial growth. Privately held beer distributor Crescent Crown Distributing LLC—nationally recognized among both suppliers and peers for its best practices and industry standards—has doubled in size over the past nine years, making it one of the United States' five largest beer distributors.

But as the company grew, delivery scheduling became a daily headache because trucks arrived without appointments. Scott Trotter, warehouse manager at Crescent Crown's Phoenix location, knew he needed an improved and more effective delivery management process. An online appointment scheduling tool would prove to be the answer.

Losing Control

Founded in 2004, Crescent Crown distributes for MillerCoors, Crown Imports LLC, Heineken USA, New Belgium Brewery, Pabst Brewing Company, Mike's Hard Lemonade, Alaskan Brewing, and other beer suppliers. It's also a distributor for such non-alcoholic beverages as Welch's, Sunny Delight, Activate, and Jana Water.

Crescent Crown sells and delivers more than 26 million cases annually throughout its distribution territories in Arizona and Louisiana. With more than 500,000 square feet of combined space, the company's two Arizona facilities, located 45 miles apart, handle 16.5 million of those cases.

When the company was smaller, Crescent Crown controlled when deliveries arrived. But as the company grew, that task was handed over to suppliers and manufacturers, who often sent trucks to the distribution centers without scheduled delivery times. Delays frequently resulted, and long lines stretched outside the facility and down the street as up to 45 trucks attempted to make deliveries at once to each facility's 35 docks. And because the facility did not offer weekend delivery windows, enough trucks typically arrived on Monday morning to fill the yard.

"We lost control because we didn't have direct contact with delivery drivers," admits Trotter.

Crescent Crown accepted inbound trucks using a first-come, first-serve policy. When the distributor maintained control over deliveries, it typically scheduled 35 to 40 trucks daily. But when suppliers took over the scheduling process, as many as 65 to 75 trucks could arrive on a given day—up to 20 in one hour—and each spent about 45 minutes unloading.

As a result of the bottleneck, it was common for drivers to sit in their trucks for up to four hours waiting for their turn at the dock.

"We were exceeding our capabilities for unloading inbound product," says Trotter. "Even though we were unloading multiple trucks at once, just moving the vehicles in and out of the property created gridlock, because they were showing up all at once, blocking local businesses and major roadways."

Tapping Into a Solution

Some of Crescent Crown's suppliers suggested extending receiving hours, working weekends, or adding manpower to get a handle on the delivery schedule—all of which would represent extra costs for the distributor. Requesting that the suppliers do more to alleviate the congestion wasn't an option.

An online appointment scheduling tool transformed beer distributor Crescent Crown Distributing's bottlenecked loading dock, creating a steady stream of deliveries.

"Once the trailer leaves the supplier location, managing it becomes Crescent Crown's responsibility," says Trotter.

Taking steps to manage the problem led Trotter to Scottsdale, Ariz.-based Appointment-Plus (AP). He had heard about the company's Software-as-a-Service (SaaS) online scheduling software from a beer distributor at a tradeshow.

"I decided to go with AP during our first phone call, when I heard the price for one month of usage," he recalls. "The cost was so reasonable, it was worth paying upfront without first seeing the solution."

Depending on a business' support and scalability needs, Appointment-Plus offers several pricing options. For companies that operate a single facility or just a few docks, it offers a three-tiered monthly payment system: $39, $49, and $79. For larger operations with dozens or even hundreds of locations that need a highly scalable solution, AP offers an enterprise-level services suite that enables businesses to standardize scheduling processes across all inbound delivery sites.

Crescent Crown pays $49 monthly, with a discount for paying one year in advance. AP tacks on additional charges if a company makes more than 500 appointments in one month. Crescent Crown usually has to pay this nominal fee.

Getting to Know You

Crescent Crown worked with AP for one month to learn how the system works, the notifications it can create, and how to customize it. Meanwhile, Trotter sent letters to the distributor's suppliers and known carrier contacts, alerting them that they had 30 days to create an account with Appointment-Plus; at the end of the 30 days, no deliveries would be accepted without an appointment.

"During the transition period, if trucks arrived without an appointment, their dispatchers had to schedule appointments that day within the AP system, or Crescent Crown refused the delivery," says Trotter. "And if they couldn't make an appointment that day, they had to wait for the next available appointment. After three months, trucks that arrived without a scheduled appointment were refused completely."

Trotter admits some suppliers were not pleased with the new scheduling system, finding it restrictive. But the majority were receptive because they were familiar with similar programs at other distribution sites.

"Drivers are given a specific timeframe to have their trucks unloaded, so everyone at the dock gets to plan their day more efficiently," says John Schminke, enterprise manager for Appointment-Plus. "That is very important for carriers when you consider detention times. They want to drop off their load and move on. If they're not on the road, they're not making money."

Improving Carrier Relationships

Using Appointment-Plus, Crescent Crown creates schedules that are specific to either the supplier or the type of delivery. Different appointment options are available to suppliers based on the delivery type they select.

"For instance, if they are delivering Crown beer, they choose the Crown beer delivery option," explains Trotter. "This limits the appointment times they can view, which lets me control how many trucks per day deliver that product.

"We control the movement across our 35 docks and create a flow, so we don't have 10 trucks trying to enter the first five docks, all delivering the same product," he adds. "Controlling dock traffic allows us to control the work inside the facility."

Each truck gets 30 minutes to unload. Because the system manages appointments in real time, Trotter has the flexibility to make adjustments quickly. For instance, if a piece of dock equipment breaks, he can shut down that dock, and the system won't allow anyone else to book time on it.

Before AP, the Crescent Crown purchasing department handled all communication with brokers and truckers.

"Implementing AP relieved the purchasing department of scheduling duties," says Trotter. "As a result, our purchasers gained back the two hours they lost daily dealing with carriers; now they can use that time to focus on purchasing."

Communicating directly with carriers using AP has also increased efficiencies.

"We now have easy access to every carrier's phone number and email, and can contact them directly if a problem occurs," Trotter says.

If necessary, Trotter can send a mass email to all the accounts, and create automated emails for individual carriers letting them know the arrival and departure status of their trucks.

Carriers receive automatic reminders via email about their scheduled appointments, and can log into the system to view Crescent Crown's hours of operation, contact information, and travel directions.

"Providing this information inside AP means our staff handles fewer calls and emails," says Trotter.

Despite a few deficiencies in reporting and record maintenance capabilities, Trotter believes implementing Appointment-Plus was a smart business decision.

"All parties in the supply chain want to optimize their time and maximize their efficiencies," Trotter says. "This appointment scheduling system lets us do exactly that for Crescent Crown, our suppliers, and the brokers and carriers we work with." ■

3PLs

Lynden • www.lynden.com

Over land, on the water, in the air – or in any combination – Lynden has been helping customers solve transportation problems for almost a century. Operating in such challenging areas as Alaska, Western Canada and Russia, as well as other areas around the globe, Lynden has built a reputation of superior service to diverse industries.

MIQ Logistics • www.miq.com

Started in 2002, MIQ Logistics has locations in Asia, Europe, North America, and Latin America. Along with its global network partners, MIQ Logistics operates in and between all international trade lanes supported by more than 5,000 in-country logistics professionals. Its broad portfolio of global, transportation, and distribution services makes it possible to offer global end-to-end supply chain solutions supported by the visibility of Web-native technology. If your business is seeking supply chain improvements, let MIQ Logistics add value to your business.

Performance Team • www.ptgt.net

Performance Team is the only thing that should come between your products and your customers. For nearly 25 years, Performance Team has been offering its expertise to the retail and manufacturing industries with a broad range of supply chain services including: trucking, distribution, logistics, and fulfillment. Through 11 domestic hubs, over 5.1 million square feet of warehouse space, and a fleet of more than 400 trucks, Performance Team's skilled team of employees processes approximately $100 billion in wholesale goods. See why Performance Team continuously earns a reputation as the premiere trucking, consolidation, and distribution company in the United States; log on to www.ptgt.net.

Trinity Logistics Inc. • www.trinitylogistics.com

Trinity Logistics is a leading privately-owned 3PL offering truckload, LTL, intermodal, international, and specialty freight arrangement, as well as logistics consulting, technology, and freight management services. Our devotion to service, commitment to continuous improvement, and dedication to honesty and ethics set us apart in the logistics industry. With so many 3PLs to choose from, you can count on our 35 years of experience and our relationship-driven team. It would be our honor to serve you.

IN THIS SECTION:

3PLs – Chemical Logistics

UTI Worldwide • www.go2uti.com

UTi Worldwide is an international, non-asset-based, global integrated logistics company providing air and ocean freight forwarding, distribution, contract logistics, customs brokerage, and supply chain management services and design, including enhanced warehousing, transportation, order management, and manufacturing support. With over 21,000 employees in 313 locations and 245 logistics centers around the world, we offer complete logistics solutions that maximize value along the supply chain from end-to-end.

AIR/EXPEDITED

Geodis Wilson • www.geodiswilson.com

With 5,500 people and a global network, Geodis Wilson is one of the world's largest freight management companies, serving customers with integrated supply chain solutions that deliver cargo by sea and air. The company's expertise, value-added services, and e-services enable you to streamline the flow of goods. We also make your supply chain more transparent and easier to manage. A self-reliant network of offices, and air and ocean hubs in more than 50 countries, ensure that your cargo flows efficiently and consistently across the world.

CHEMICAL LOGISTICS

A&R Logistics • www.artransport.com

A&R Logistics specializes in bulk transportation, packaging, distribution, and logistics. A&R provides dependable, quality services to meet your distribution and logistics needs. Through analytical reviews, A&R customizes timely, cost-effective solutions for your company. Put A&R's experienced staff and extensive affiliate network to work for you, and realize global solutions in a changing worldwide market.

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.

IN THIS SECTION:

Chemical Logistics

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.

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. Dupré works to understand your business and measure how our system meets your expectations.

KAG Logistics • www.kaglogistics.com

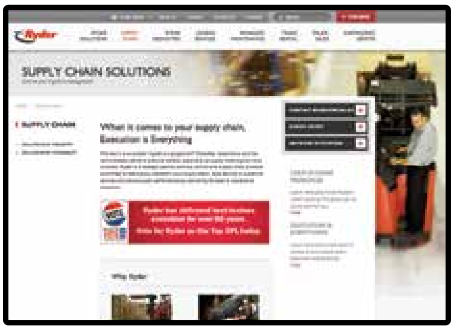
As North America's largest provider of liquid bulk transportation and logistics services to the petroleum, chemical, merchant gas, and food industries, KAG Logistics works closely with organizations of all sizes to develop effective logistics solutions. KAG has experienced people, proven processes, technology, and assets to take your business where you want to go.

Odyssey Logistics & Technology • www.odysseylogistics.com

Odyssey Logistics & Technology combines deeply skilled industry professionals with a leading technology solution to provide multimodal 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.

IN THIS SECTION:

Chemicals • Compliance/Drawback



Ryder Supply Chain Solutions • www.ryderscs.com

Ryder Supply Chain Solutions is an end-to-end supply chain partner with nearly 80 years of experience helping customers in North America, the UK, and Asia transform their supply chains by delivering the best in operational execution. Ryder provides a full range of services, from optimizing day-to-day logistics operations to synchronizing the supply of parts and finished goods with customer demand. At Ryder, we understand that when it comes to logistics, Execution is Everything.

Weber Logistics • www.weberlogistics.com

Chemical logistics has been a strategic focus at Weber Logistics since 1970. Dozens of chemical companies rely on Weber for safe, compliant hazardous materials storage and the distribution of flammables, corrosives, oxidizers, gases, and other materials such as powder coatings and non-regulated material. Weber operates a 300,000-square-foot warehouse with 13 different storage rooms to meet precise requirements for temperature range, fire prevention, and security. Storage capabilities include drums, totes, pallets, bags, cylinders, pails, and cases.

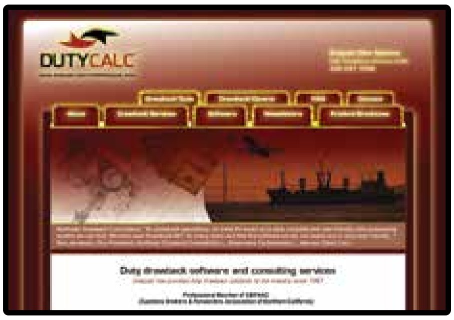
WSI (Warehouse Specialists, Inc.) • www.wsinc.com

Condition, Count & Time™: Three simple words. A powerful promise. WSI, one of the largest privately held 3PL providers in the U.S., helps customers succeed through tailored, integrated logistics and supply chain solutions. We deliver consistently reliable, end-to-end logistics solutions designed to help customers operate their supply chains more efficiently, shorten lead times, and minimize costs. From warehousing to distribution, contract services to chemical logistics, import/export to customer support, WSI partners with customers to tailor solutions to their unique needs. If there are opportunities for improvement in your supply chain, give WSI a call.

CUSTOMS COMPLIANCE/DUTY DRAWBACK

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).



WEB_CITE CITY

www.inboundlogistics.com/web_cite

IN THIS SECTION:

Education • Ports

EDUCATION

Central Michigan University • global.cmich.edu/onlineMBA

The online MBA in Logistics Management from Central Michigan University's (CMU) Global Campus is a rigorous and comprehensive AACSB-accredited MBA program for upper-level careers in managing materials flow. Students gain a solid foundation in the principles of administration, plus valuable skills in lean logistics, integrated logistics strategy, and risk-based logistics networks. CMU's online graduate business programs are rated as among the top in the nation by *U.S. News and World Report*'s Best Online Programs survey.

Vincennes University • www.VULogistics.com

The Vincennes University Logistics Training and Education Center features 30,000 square feet of classrooms, cutting edge training equipment and material handling/flexible lab space. Programs at the facility offer industry-developed curriculum, state-of-the-art classrooms and labs, and career pathways leading toward industry-recognized credentials. Working directly with employers, VU creates tailored training and educational opportunities to meet workforce demands. Contact us today about our certificates and degree programs. James Dolan, Director of Logistics, 317-381-6028, www.VULogistics.com

FULFILLMENT

Saddle Creek Logistics Services • www.sclogistics.com/fulfillment

Saddle Creek delivers multi-channel order fulfillment, including e-fulfillment, in support of our customers' business objectives. Through our extensive network of facilities, broad range of services and advanced technology, we develop comprehensive solutions our customers can rely on to satisfy their customers and enhance their brands.

PORTS

Port Everglades • www.porteverglades.net

Nobody moves cargo in and out faster than Port Everglades. The port is part of a thriving global transportation network that counts among its attributes a favorable location less than one mile from the Atlantic Shipping Lane, direct access to multi-modal inland links through Florida's interstate and highway systems, an FEC rail hub within two miles, and across the street, Fort Lauderdale Airport, one of the fastest-growing airports in the nation. Visit the Web site for more details.

IN THIS SECTION:
TMS • WMS

TMS

Trinity Logistics Inc. • www.trinitylogistics.com

Trinity Logistics is a leading privately-owned 3PL offering truckload, LTL, intermodal, international, and specialty freight arrangement, as well as logistics consulting, technology, and freight management services. Our devotion to service, commitment to continuous improvement, and dedication to honesty and ethics set us apart in the logistics industry. With so many 3PLs to choose from, you can count on our 35 years of experience and our relationship-driven team. It would be our honor to serve you.

TRANSPORTATION/FREIGHT MANAGEMENT

Penske Logistics • www.penskelogistics.com

Penske Logistics is an award-winning logistics services provider with operations in North America, South America, Europe, and Asia. Our products and services range from dedicated contract carriage and distribution center management to transportation management and fully customized solutions. No matter what your needs or industry, Penske Logistics engineers supply chain solutions that deliver business results like boosting productivity, improving service, and shrinking carbon footprints. Call us today at 1-800-529-6531 to learn more.

WAREHOUSING

Trinity Logistics Inc. • www.trinitylogistics.com

Trinity Logistics is a leading privately-owned 3PL offering truckload, LTL, intermodal, international, and specialty freight arrangement, as well as logistics consulting, technology, and freight management services. Our devotion to service, commitment to continuous improvement, and dedication to honesty and ethics set us apart in the logistics industry. With so many 3PLs to choose from, you can count on our 35 years of experience and our relationship-driven team. It would be our honor to serve you.

WMS

MAVES International Software Corp. • www.maves.com

MAVES builds advanced 3PL software for logistics companies who handle the warehousing and transportation requirements of multiple clients. Our flagship offering, ViewPoint Logistics™, enables the 3PL service provider to manage their operations in real time using simple, powerful tools that will improve the agility and profitability of their business.

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.

Saddle Creek

TITLE: ***Incorporating Quality Management in a Logistics Environment***
DOWNLOAD: *http://bit.ly/10XUBuo*
SUMMARY: The concepts of total quality management (TQM) and continuous improvement have been around for decades, but only recently have been successfully applied in logistics environments. Today, many companies are finding that they can strengthen their businesses by making total quality management part of their logistics operations. Learn how a commitment to TQM can provide value for companies and their customers.

Amber Road

TITLE: ***Key Strategies for Automating the Import Supply Chain***
DOWNLOAD: *http://bit.ly/19CjDmC*
SUMMARY: U.S. corporations import nearly $2 trillion worth of products from more than 150 countries, and that number is expected to triple by 2015. Companies involved in imports need to consider how they will automate global operations and manage complex government regulations. Download Amber Road's whitepaper, *Key Strategies for Automating the Import Supply Chain*, to find out how your company can implement a global trade management framework to automate your import operations.

Kronos

TITLE: ***Navigating the New Normal***
DOWNLOAD: *http://bit.ly/13gmduS*
SUMMARY: The stats don't lie. Increasing labor challenges are affecting your supply chain. So what is your strategy? In the interactive PDF *Navigating the New Normal*, you'll find the strategic answers to help you uncover additional labor capacity, drive down operational costs, and be more responsive to increased customer demands on service levels and profit margins. No matter where your organization fits along the supply chain, gaining more visibility into your workforce is the ideal place to start. Download this eBook so you'll be prepared for whatever obstacles this "new normal" throws your way.

CTSI-Global

TITLE: ***Trust & Verify - Best Practices: Financial Due Diligence and the Outsourcing of Freight Bill Audit and Payment***

DOWNLOAD: *http://www.ctsi-global.com/whitepapers*

SUMMARY: Billions of dollars circulate globally for the movement of goods. Transportation costs can be higher than any other expense. It is critical that companies carefully choose their freight payment provider. Performing due diligence on the vendor's financials not only protects the company's funds, but also reassures they'll not lose money and be indebted to any carrier. This whitepaper highlights a number of steps to ensuring a successful relationship, and protecting and minimizing the financial risk to the outsourcer.

Crown Equipment Corporation

TITLE: ***The State of Forklift Automation: Are We There Yet?***

DOWNLOAD: *http://bit.ly/1amwlmY*

SUMMARY: Despite the success of automatic guided vehicles in manufacturing, automated vehicles have not been widely adopted in warehousing. This whitepaper attempts to address this issue by helping materials handling executives understand if the technology is right for their organization and/or application. The paper outlines the key challenges associated with automated forklifts today, and provides four attributes that can serve as the basis for evaluating a warehouse automation system: reliability, flexibility, scalability, and safety. The paper concludes with six key questions every organization should address when determining whether to move forward with the current generation of forklift automation technology or wait for the technology to evolve.

C3 Solutions

TITLE: ***The Underestimated Value of Dock Scheduling***

DOWNLOAD: *http://info.c3solutions.com/dock-scheduling-white-paper*

SUMMARY: There are underestimated benefits to implementing a dock scheduling solution, primarily because they are overshadowed by the application's planning, scheduling, and communication features. These benefits, derived from the reports and dashboards that capture the key performance metrics related to your dock activities, provide management the right data to make the right decisions at the right time. This whitepaper addresses the following questions:

- How can you measure your scheduler's efficiency?
- How can you audit chargebacks and demurrage fees?
- What is measurable and how is it useful?
- Who in your organization could benefit from reports and dashboards?

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**

//Transportation//

A new **National Shipping of America (NSA)** service connects Puerto Rico with Houston. Ocean freight transit time in each direction takes about seven days. NSA serves the route with *MV National Glory,* a 570-TEU container vessel with 96 plugs for refrigerated containers. The vessel is configured for both containers and out-of-gauge cargo, and uses low-sulfur diesel oil to minimize air-quality impact.

The Caribbean logistics group of **Crowley Maritime Corp.** began weekly less-than-containerload service between San Juan, Puerto Rico, and select countries within Central America. The route calls San Jose, Costa Rica; San Salvador, El Salvador; Guatemala City; San Pedro Sula and Tegucigalpa, Honduras; Managua, Nicaragua, Panama City, and Colon, Panama; then returns to San Juan.

Union Pacific now offers intermodal service between the Port of Houston's Barbours Cut Container Terminal and Dallas. The service runs twice weekly between the two destinations, providing dedicated train transport for goods entering the Port of Houston from Europe, Latin America, and South America.

American Airlines Cargo now offers capacity on a new non-stop service between Dallas/Fort Worth and Seoul, South Korea. Operated with a Boeing 777-200 aircraft, the flight departs daily from Dallas/Fort Worth and Seoul, and offers both expedited and temperature-controlled expedited services.

Global logistics and supply chain services provider **Yusen Logistics** opened a 229,000-square-foot warehouse in Chicago, Ill., with 185,000 square feet dedicated to distribution and container freight station services, and 15,000 square feet dedicated to temperature-controlled warehousing. Located close to the area's major highway system and the cargo entrance of O'Hare International Airport, the facility also acts as Yusen Logistics' gateway to the Midwest.

Communications provider Motorola Solutions released three new mobile computing tools designed specifically for operation in freezers, food production, pharmaceutical facilities, refrigerated warehouses, the grocery market, and ports and railyards in cold and humid climates. The handheld Omnii XT115f, and the vehicle-mounted Psion VH10 and VH10f, automatically defog their scan windows, enabling bar-code scanning while moving in and out of cold environments.

//Services//

Con-way Freight, the less-than-truckload subsidiary of Con-way Inc., opened a 65-door service center in Lumberton, N.C. The new facility allows Con-way to consolidate three smaller facilities in the area, enabling the company to improve service and lane density.

CEVA Logistics added two services to its U.S.-Mexico cross-border portfolio. The first, Mexico Direct, offers faster Customs clearance for importers in Mexico by using in-bond trucks loaded at CEVA's Los Angeles or Dallas/Fort Worth consolidation hubs to avoid border delays. The second service provides intermodal rail service between the two countries.

Third-party logistics provider **RR Donnelley** opened an international services facility in Lyndhurst, N.J., to establish a physical presence on the East Coast. The company's global logistics service offering provides international mailing and parcel delivery services to e-commerce, pharmaceutical, financial services, information technology, catalog, and direct mail businesses.

Supply chain solutions provider **A. Duie Pyle** acquired a 60-door service center in Elkridge, Md. The site is scheduled to undergo a multi-million-dollar renovation, after which it will be used to support Baltimore area shippers.

Gateway logistics service provider **Port Logistics Group** added more than 1.1 million square feet of warehouse space to its City of Industry, Calif., retail distribution campus. Two new facilities extend the campus to 2.5 million square feet, and increase the company's ability to provide warehousing, distribution, drayage, transloading, and crossdocking services.

Norfolk Southern opened its Thoroughbred Bulk Transfer terminal in Knoxville, Tenn., to manage dry and liquid bulk commodities such as flour, corn starch, and corn syrup, as well as aggregates including sand and cement. The terminal is equipped with 48 railcar spots and a specialized truck scale.

Leicht, Checker Logistics, and **RGL Specialty Services** have rebranded, and all three companies now operate as **RGL**. The Green Bay, Wisc.-based company offers transportation, distribution, and handling services.

wnDirect, a UK-based international logistics provider specializing in e-commerce solutions, expanded its services to the United States to take advantage of the growing

U.S. e-commerce delivery market. The company currently serves 24 countries.

Diana Shipping, a global ocean carrier based in Greece, acquired the *MV Tamou*, a Cape-size dry bulk carrier. The purchase of the vessel, which has been renamed the *Baltimore*, extends Diana's fleet to 33 dry bulk carriers.

Yourway Transport, a specialty courier company for the pharmaceutical, biological, and aerospace industries, began renovating its 120,000-square-foot facility in Upper Macungie Township, Penn. The facility is being expanded to provide services to the clinical trial supply chain.

Florence, Ky.-based 3PL **Legion Logistics** expanded its existing facility by 2,500 feet. The company worked closely on the expansion with the Kentucky Cabinet for Economic Development.

// Products //

Hyundai's 13BOP-7 forklift features a travel speed control system that limits acceleration as determined by the platform height. As an operator raises the platform, speed becomes increasingly restricted to ensure safety. A self-diagnostic LCD monitor provides a view of the system's operation in all environments, displaying alerts and levels of important machine functions. The forklift also features an overhead guard that meets EEC and ANSI regulations for operator protection in hazardous working conditions.

Voice-enabled solutions provider **Vocollect** released the Talkman A700, which facilitates hands-free scanning for process steps such as inducting totes at the beginning of assignments, picking, and product traceability. The A700 can be fitted with an optional bar-code scanner.

The Hyster LO2.5 lift truck aids in second-level order picking through a raising operator platform, fully adjustable electronic power steering, automatic speed reduction in cornering, and a suspended platform with an operator-sensing floor mat. The truck also features coasting and lift/lower function buttons on both sides of the truck, allowing the operator to lift or lower the forks without being onboard.

// Technology //

The SmartPOD app from **DHL** provides tracking information and proof of delivery, improving shipment visibility and leading to faster payment cycles. The app is available on the Android platform, and integrates with most transportation management systems.

Associated Global Systems (AGS) introduced its Virtual Appointment Calendar for white-glove shippers. AGS provides shippers with a link to give to customers, directing them to a Web site to schedule deliveries. The user chooses from transit schedules and appointment time windows designed by the shipper.

Apriso released *Packaging Solution for Global Manufacturers* to help manage packaging operations and conversion processes. The software provides users with visibility into and control over plant floor systems, processes, and performance to enable more informed decisions and faster response to changes.

Extra Logistics, an international logistics provider and freight forwarder, launched Web-based ocean and airfreight booking services for its network of 22 cargo receiving terminals in the United States and affiliate offices in 97 countries. Customers can now submit air and ocean freight shipment details online, and receive instant pricing quotes.

Roadnet Technologies launched *Roadnet Transportation Suite 3.6.2*, the latest version of its vehicle routing, scheduling, tracking, mobile workforce, and fleet management software. The update improves the software's route profitability calculations, and incorporates processes to determine optimal route distances, allowing fleet managers to analyze delivery routes in real time, adjust schedules, and track driver and fleet performance.

Shipmentdocs.com launched a cloud-based document-sharing platform designed for the logistics sector. Shippers, carriers, and customs brokers can upload and view international customs clearance documents.

Enhancements to **Kardex Remstar's** *Power Pick Global* WMS improve material flow by directing operators to the next pick within a work zone, reducing operator down time. In addition, workers can scan bar codes to process orders through multiple zones.

Packaging manufacturer **Sealed Air** released the PakNatural biodegradable cushion bag, a protective packaging solution for cushioning and void-fill shipping applications. It is designed to protect products such as electronics, books, glass items, and collectibles, and is completely biodegradable to reduce waste in the supply chain.

August 11-13, 2013, SCOPE Fall, Phoenix, Ariz. 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 executives from Brinker International, Aberdeen Group, Neovia, IBM, MIT Center for Transportation and Logistics, and NVIDIA.

502-261-7204
www.scopefall.com

August 25-28, 2013, ASCE PORTS '13, Ports Success Through Diversification, Seattle, Wash. At this American Society of Civil Engineers conference, port, harbor, waterway, and marine professionals share their knowledge and learn from the experiences of others. The papers and presentations cover a broad spectrum of issues facing the ports and harbors community.

800-548-2723
bit.ly/PORTS2013

September 17-19, 2013, LogiPharma 2013, Princeton, N.J. LogiPharma 2013 is a supply chain management conference for the biotech, pharmaceutical, and medical device sectors. The sessions will focus on supply chain integrity, visibility and risk management, supply chain segmentation, emerging markets, global network design, and the future of the supply chain.

888-482-6012
www.logipharma.com

September 24-26, 2013, Transportation and Distribution Planning and Management, Savannah, Ga. This course, sponsored by Georgia Tech, is for executives and managers who want to learn about designing and operating transportation and distribution solutions for their supply chains. The course develops the principles, practices, and tools required to address major issues and tradeoffs in domestic and international transportation, including key financial and performance indicators for designing supply chains that minimize transportation and distribution costs.

855-812-5309
bit.ly/GATechTDPM

September 29-October 1, 2013, APICS Annual Conference, Orlando, Fla. 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 will face in the years to come. The educational paths offered focus on business analytics, collaboration, innovation, operational efficiency, professional development, responsiveness, risk and resiliency, and sustainability.

800-444-2724
www.apics.org

October 7-9, 2013, PARCEL Forum '13, Chicago, Ill. This conference provides parcel shipping, logistics, distribution, and warehousing professionals with the information they need to ship more packages, more frequently, and more cost-effectively. With six tracks and more than 50 individual sessions, workshops, panel discussions, and all-day tutorials, attendees will find content geared to their specific job requirements.

203-378-4991
www.parcelforum.com

October 19-22, 2013, ATA Management Conference and Exhibition, Orlando, Fla. The American Trucking Associations (ATA) annual conference features keynote speakers including ATA President Bill Graves, former Governor Jeb Bush, and FOX News' Stuart Varney. General sessions focus on the economy, the state of the trucking sector, logistics, driver issues, and transportation infrastructure funding. The conference also features an exhibition of the latest trucking equipment and related products.

703-838-1755
mce.trucking.org

October 20-23, 2013, CSCMP Annual Global Conference, Denver, Colo. The Council for Supply Chain Management Professionals' (CSCMP) Annual Global Conference offers supply chain management practitioners the opportunity to learn ways to cut supply chain costs, improve the bottom line, discover new and innovative ideas to keep supply chains competitive, and find solutions to improve supply chain efficiency.

630-574-0985
www.cscmpconference.org

November 4-6, 2013, SCMChem 2013, Phoenix, Ariz. Addressing the supply chain concerns of chemical manufacturers, this Worldwide Business Research conference 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.scmchemical.com

November 17-19, 2013, IANA Intermodal Expo, Houston, Texas. The Intermodal Association of North America's 31st annual trade show highlights the latest products and services for freight transportation and distribution operations. Attendees include senior executives from all sectors of the intermodal industry.

301-982-3400
www.intermodal.org

February 23-26, 2014, Retail Supply Chain Conference – Logistics 2014, San Diego, Calif. Retail is becoming more and more multi-channel. It is imperative that supply chains provide seamless transitions, whether customers purchase online, in the store, or over the phone. This RILA conference addresses the most current and relevant issues facing the retail industry.

703-600-2040
www.retailsupplychain.org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Low in cost per square foot.
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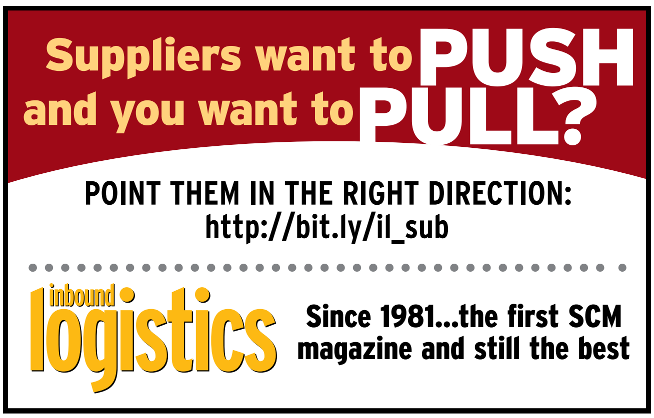
Easy to relocate.
Expandable.
Little or no property taxes.
Call one of our ClearSpan specialists at 1.866.643.1010
or visit us at www.ClearSpan.com/ADIL.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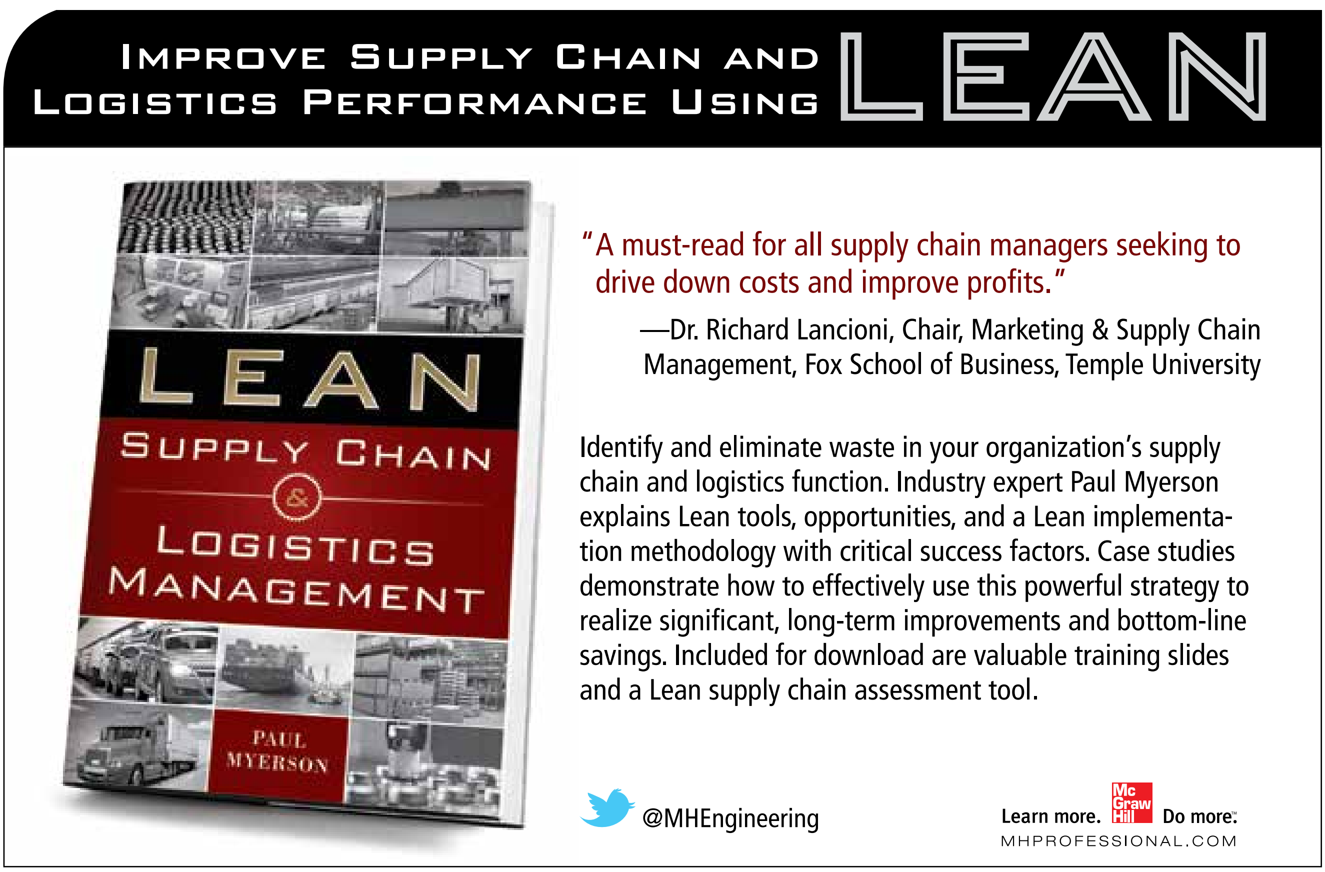
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Paul Myerson
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How Do Shippers Love Sustainability? Let Us Count the Ways...

Maybe it's not easy being green, but shippers responding to a recent NASSTRAC survey believe it's worth the effort to sow supply chain sustainability.

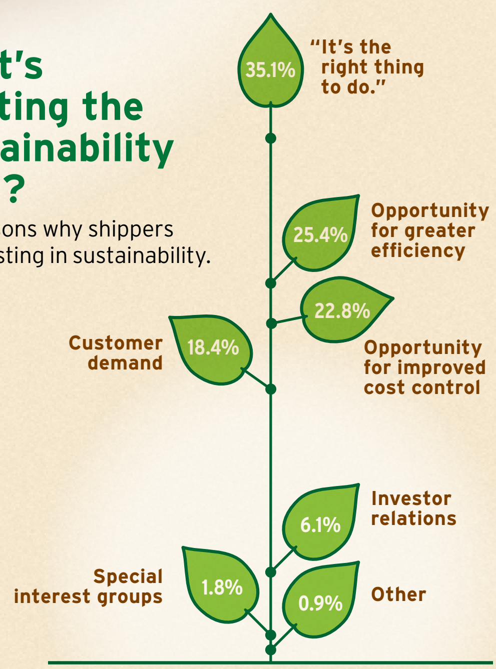
Source: Freight Transportation 2013 Report, National Shippers Strategic Transportation Council

Who's putting their green into green?

Percentages of surveyed shippers (in total and by business type) who report making specific green investments in their business.

What's planting the sustainability seed?

Top reasons why shippers are investing in sustainability.

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