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Chemical Logistics
06.2013

New Challenges and New Opportunities



There's never a dull moment in the chemical supply chain. From peaks and valleys in production and demand to capacity shortages, new security challenges and regulations, new markets, and the increasing use of technology, chemical producers operate every day in a complex and demanding business environment. Experienced third-party supply chain partners help them navigate new challenges and opportunities to build a modern, effective, and efficient chemical supply chain.



Complex Products, Complex Logistics Needs

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.

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.”

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.

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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 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

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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

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

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.

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,



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

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.

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

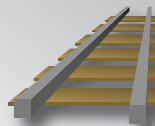


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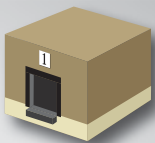
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an Ohio and New Jersey-based chemicals distributor and re-packer, to partner with WSI.

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-con-

suming job, which is another reason many chemical producers turn to outsourced providers for distribution assistance.

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 out-plant specialist, Dow.

Understanding how to handle and store chemical products is another



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

suming 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

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

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,” Sweden 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.”



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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

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.

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

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.

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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

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

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.

“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

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

and order consolidation opportunities to be more sophisticated with transportation across the entire network,” Riggs says.

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

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.

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“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 silicones, 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



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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

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,

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.

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

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

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 custom-

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

“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

ized 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

needed at the well sites.

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.”

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