

Greening the supply chain

Logistics providers are saving energy and money, by making rail and truck shipments more efficient

GORDON GRAFF/NEW YORK

KEEPING GOODS moving through the supply chain at the least cost is what third-party logistics providers have always striven to do best. But these days they are also helping their customers lower their impact on the environment.

Take ChemLogix Global, headquartered in Blue Bell, Pennsylvania, which orchestrates the movements of a fleet of ISO containers in order to provide door-to-door pick-up and delivery of bulk liquid chemicals. These containers are typically carried on both railcars and trucks, a form of shipping called intermodal transport.

There is nothing new about intermodal transport, which has been around for many years. What has changed is that rising fuel costs and environmental awareness have made intermodal newly attractive to chemical shippers, giving companies like ChemLogix the opportunity to tout its advantages. And railroads, suddenly aware of the business potential of intermodal, have begun to upgrade their infrastructures to accommodate it (see box).

Railroads, in fact, were once the weak link in intermodal transport, notes Stephen Hamilton, managing director at ChemLogix. "People were concerned that their shipments [by rail] might not get there," he recalls. "That has changed," Hamilton says. "In 18 years in this business, I've never seen better rail service than we're getting now."

The ISO containers used by ChemLogix, which it calls BulkTainers, are cylindrical, insulated stainless-steel enclosures, about 8 feet (2.44m) high and 20 feet long. On trucks the tanks fit into special chassis built to hold ISO containers. After transfer to the rails they ride on flatcars.

Hamilton estimates that for chemical shipments of 1,000 miles (1,600km) or more, intermodal transport such as the BulkTainer system generates 65% less greenhouse gas than truck shipments making the same trip. The BulkTainer transport time is faster than rail, but slower than truck, he notes. For example, he estimates that moving bulk liquid chemicals between Chicago and Los Angeles might take around 20 days by rail alone, four days by truck alone, and six days by the BulkTainer method.

Intermodal shipping of chemicals is not for everyone, Hamilton advises. "If your



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GETTING CHEMICALS BACK ON TRACK

For decades, chemical companies have slowly been switching their long-distance shipping within North America from railroad freight and tank cars to over-the-road trucking, which is faster and often more convenient than rail shipping. But the growing popularity of all things “green” – not to mention surging diesel fuel prices and congested highways – have given railroads an opening to recapture some of that lost traffic.

In trying to win back the shipping business of chemical and other industrial customers who have defected to the highways, Tom Williams, vice president for industrial product sales at major US freight hauler BNSF Railway says that he emphasizes three points: the opportunity for shippers to reduce their carbon footprint; the “consistency and reliability” of his company’s transportation services; and the greater capacity that can be shipped by rail.

The environmental benefits of rail are a strong selling point. According to the Association of American Railroads, moving freight by rail instead of truck can reduce greenhouse gas emissions by up to 75%. A typical tank car, notes Williams, has a volume equal to three tank trucks.

To drive home the environmental advantages of rail shipping, BNSF has developed an online carbon calculator that allows prospective shipping customers to gauge how much less carbon dioxide would be emitted by a given type and weight of freight if shipped between two US destinations by rail versus by truck. “Chemicals and plastics” is one of 10 freight categories included in the calculator, which can be accessed at www.bnsf.com.

While the environmental arguments in favor of rail shipping

are compelling, the practical and logistical advantages of rail shipping are less convincing. Aging track beds and outdated terminals have reduced the reliability and convenience of rail shipping in recent years. To deal with these problems, the rail industry is modernizing its infrastructure, which will allow it to accommodate the growing volumes of freight shipped by intermodal transport. (Intermodal systems allow freight to be shipped door-to-door by rail and truck in a single container.)

One of the more ambitious infrastructure projects is the Crescent Corridor Program of the Norfolk Southern railway, a 2,500 mile (4,000km) intermodal rail network that will run from New Jersey to New Orleans. Under the \$2.5bn (€1.8bn) program, slated for completion in 2020, Norfolk Southern will straighten curves along its existing tracks, add signals, build passing lanes and double tracks, construct new terminals and expand existing ones.

More modest, but already in operation, is the Gulf Coast Flyer program, a rail service designed to expedite chemical shipments between the US Gulf Coast region and major markets in the Northeast and Southeast. A partnership between the Union Pacific Railroad and Norfolk Southern, Gulf Coast Flyer invested \$740m in 2006–2008 to upgrade terminals, bridges and sidings along existing tracks.

Launched last year, the Gulf Coast Flyer service has reduced transit times of chemical shipments by 24%, notes Tom Lange, a Union Pacific spokesman. Moreover, he says, those expedited transit times have allowed tank cars – which are owned by the railroad’s customers – to be returned faster. This permits the customers to ship more product, or to own fewer cars.

shipments are going less than a 1,000 miles, it generally doesn’t make sense,” he says. And for large intercity shipments – those that can fill standard rail tank cars – rail is still generally the cheapest way to move the goods. Shippers who could benefit most from switching to intermodal, he says, are those now exclusively using trucks for trips greater than a 1,000 miles.

MONITORING SAVES TRIPS

But suppliers who use trucks for shorter trips, such as delivering liquid chemicals to customers’ storage tanks in a local region, are getting help from other types of third-party logistics providers to cut their costs and energy consumption.

For example, a division of Detroit-based PVS Chemicals, a manufacturer and distributor of industrial and water-treatment chemicals, has found that a tank-monitoring system based on remote telemetry can avoid unnecessary trips by its delivery people.

Remote telemetry employs sensors that continuously monitor fullness, then transmit the data, to a secure web portal. Such

systems are now offered by a handful of logistics companies.

Dan Comp, director of operations at PVS Chemical’s Minibulk division, realized a few years ago that his firm needed some sort of monitoring system to avoid unnecessary delivery trips when the price of diesel fuel soared to \$4–5/gallon (€0.76–0.95/liter).

Last year, he turned to TankLink, a remote telemetry system from Telular, which keeps chemical suppliers apprised of levels in the tanks of their customers,



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and sends out alerts when the tanks need to be refilled.

Those alerts, says Comp, typically occur when the tanks are 32% full. At that point, the system alerts both the supplier and the customer, reminding them to make an appointment for a refill. When the refill takes place, it can be coordinated with refill visits to other customers in the vicinity whose tanks have been flagged as low by the system.

Before the TankLink system was installed, says Comp, “we would make a 75 mile trip to fill a tank that was 7/8 full and bypass other tanks nearby that were nearly empty, which required us to make another trip three or four days later.”

Comp says he cannot yet quantify the energy and cost savings realized by the TankLink system. But an ongoing pilot program, in which the monitoring system is being installed in all the customer tanks in the Philadelphia-to-Baltimore area, should soon provide some answers. If the results look favorable, he hopes to install the monitoring units on all his customers’ tanks across the US