



Reinventing the box

Vehicle shippers are by now all too familiar with the fact of shrinking volumes. But while it is a sombre reality for ro-ro carriers, especially those that have ordered larger vessels in recent years, it has created a small boon for container operators moving vehicles. Once thought of as mainly for luxury vehicles or niche markets, containerising vehicles is gaining broader appeal as it gives OEMs flexibility when it comes to volume levels, intermodal movements and storage solutions in ports.

Although OEMs are shipping by container more now than in the past, many shippers remain sceptical about the benefits.

At Kar-Tainer International, based in Georgia, USA, Richard Cox says that educating the marketplace about containers as a viable and safe alternative to ro-ro vessels remains its biggest hurdle. “It is a matter of getting this word into the marketplace and educating vehicle manufacturers that the safety of a container can also be an economical solution to their shipping requirements,” he says.

With vehicle volumes sinking and the future uncertain, the flexibility of containerising finished vehicles is becoming a more attractive logistics solution, writes **Anthony Coia**

“Cars are the last product to be containerised,” admits Paul Donaldson, of Trans-Rak International, based in the UK.

Benefits across the whole chain

But while containers are unable to match car carriers for efficiency and cost for large flows, their cost benefits are better understood when accounting for the whole chain, according to Tim Leighton, at ocean carrier CMA CGM, which has used a Trans-Rak system since August 2007. Although loading and unloading the containers with cars – or ‘vaning’ and ‘devanning’, as it is called – requires a lot of handling, container shipments have less handling of the vehicles than ro-ro for the storage, movement on and off ships, road or rail transport, since the containers can be easily stacked, or put on

trailers or rolling stock.

Containers also offer flexibility for return legs, as it can be filled with general cargo. Trans-Rak, for example, uses a fixed frame system that secures cars within the container with the use of a handheld power drill once the car is driven into the container. Once the container has been unloaded, the rack folds into the ceiling area so that the container may be used for other cargo, albeit with a slightly lower fill rate. Leighton

“ At present vehicle production plants want to ship their products on a regular basis; hence the use of the container. With the economic downturn, manufacturers are competing for storage space for vehicles that are feeding both domestic and export markets
 – Richard Cox, Kar-Tainer International ”

says that an advantage of Trans-Rak over competitors is that it does not need to return used cartridges once the container has been unloaded. Another advantage is that the equipment is adjustable to different container sizes, whereas others use a single, 40ft long rack that is not flexible.

Donaldson says that for larger volumes, containers could be economical when considering the port storage space required for ro-ro shipments. With ro-ro, at the loading port, one would need 20 acres (8.1 hectares) to hold 1,000 vehicles. However, one can stack containers six high, allowing the storage of 250 cars per acre with ro-ro but 1,500 cars in containers. The higher frequencies of container service can also bring down the cost of storing cars at ports.

But while the figures can be toyed with to support ro-ro over lo-lo, or vice versa, the real benefit to carmakers comes with combining both methods, according to Donaldson.

If a ro-ro vessel transports vehicles from the Far East to Europe, then they could be loaded into a container for inland transport. The key is to use the container for its intermodal ability, he says.

Different container options

In one of the leading emerging markets, Trans-Rak has just introduced a new 53ft intermodal container for use on China’s rail system. It holds six vehicles, with three on each level. The 3PL is CMT, which uses Trans-Rak to transport FAW-Volkswagen vehicles from the Changchun plant to Shanghai. Donaldson says that it released the first units in December and CMT has begun regular shipments of cars in one direction and general cargo in the other. Thus far, ten units are in operation.

Trans-Rak also provides a 40ft high cube container solution to BYD Auto, Shenzhen, China for which CMA CGM is the ocean carrier. Recently the first major shipment occurred from Shanghai to Eastern Europe. Leighton says that Trans-Rak can carry the maximum sized sedans by optimising the available space within the container.

Last September, Trans-Rak began providing a 20ft high-cube container solution to Boxtrans Logistics, New Delhi, which is a dedicated rail service provider in India that handles vehicles for Maruti Suzuki. Trans-Rak has built 400 such

Who we spoke to:

- Richard Cox**, President and CEO, **Kar-Tainer International**
- Paul Donaldson**, Managing Director, **Trans-Rak International**
- Tim Leighton**, Global Account Manager, Cars in Containers at ocean carrier, **CMA CGM**
- Jan Koolen**, Managing Director, **Unit 45**
- Le Tien Nam**, Financial Director, **Standard Rail Container**
- Umesh Bhanot**, Vice President, **Adani Logistics**
- Jonas Svensson**, Quality Assurance Coordinator, **Volvo Logistics**
- Jan Hellström**, Director, **Gronos**
- Tom Groom**, Managing Director, **Load Easy International**
- Chuck Chute**, General Manager Strategic Accounts, **Damco**

containers to ship these vehicles by rail from northern India to southern India. The containers, which hold two vehicles, are unloaded at a railhead in southern India and return with other cargo. Later it will start to consider using it for exports. This system avoids using typical Indian railcars that are open at the sides and roof, which would expose vehicles to damage.



Containers for cars can be divided between those loaded inside the container and those pre-loaded on cassettes outside

Polar Express International, based in the Netherlands is using 45ft containers from Unit 45, Rotterdam and Trans-Rak between Western Europe and Finland and Western Europe and Russia. Istanbul-based Reysas Logistics, is using the same system from Turkey to Western Europe. Jan Koolen, of Unit 45, says that it is developing a solution would that make it easier to lash vehicles into the container and to open car doors for the driver to exit.

“Those were the problems with the previous unit. Some customers have reported damage with the Trans-Rak unit,” he says. Like its previous units, the new one would also



CMA CGM has used a Trans-Rak system to move cars in containers since 2007, including within mainland China

use the Trans-Rak device and would be a 45ft intermodal container, which is the maximum allowable length in Europe. The carrier would pick up cars in Europe and deliver them by short sea to importers or dealers.

Unit 45 is currently testing its new container system on routes from Turkey to Western Europe and from Western Europe to Finland. Vehicles could also move from Spain and France to Poland and the Czech Republic by rail and road. “We have completed the prototype and are now testing the container with the Trans-Rak unit, which should be by the end of March,” says Koolen.

“ We wanted to get away from the idea of loading the vehicle and then climbing out of the container – Jonas Svensson, Volvo Logistics ”

Russian resistance

Besides its standard-height containers that are in use, last year Trans-Rak International introduced its racking system into a new 40ft container for the Russian market. The new container’s height is 10ft 6 inches (3.2 metres) whereas the standard container is 9ft 6 inches (2.9 metres) high. Donaldson says that the purpose was to be able to move two sedans and two four-wheel drive vehicles in the same container. Approximately 1,000 of these containers are currently in operation.

Russian rail operator Standard Rail Container (SRC) uses these company-owned containers to ship finished vehicles from Vladivostok to Moscow. At present, SRC is a small player on this route since it handles less than 1% of the market for this route, according to Le Tien Nam. SRC currently handles Japanese and Korean second-hand cars.

An advantage of Trans-Rak is that it avoids ro-ro vessel congestion at Finnish ports. Nam says that compared to using ro-ro vessels that discharge at a Finnish port, the container method also provides more safety to cars. The damage rate from this method is 3-5%, whereas the ro-ro/trailer method from Moscow to Irkutsk, for example, reported 20% damage, according to Nam.

Nam says that some of the disadvantages of Trans-Rak are that it requires more loading and unloading time and more accuracy. He admits that carmakers are still sceptical and uninformed about Trans-Rak. There are also problems with the Russian Railways (RZD). “In December RZD prohibited us from using Trans-Rak to carry cars in the Russian rail network,” Nam says. “RZD is concerned about competition with its subsidiary RailTransAuto, which also uses specialised railcars. But Russian railcars cost at least twice as much as Trans-Rak containers. If we proceed, then China would supply more of these containers,” he says.

RZD also required SRC to pass a shunting test last August with containers that collide with one another at 12kph. Later it did a test run from Vladivostok to Moscow. Nam says that although SRC passed all tests successfully, RZD recommended that it should load a maximum of two cars per container because it has tested that number more thoroughly than four cars. SRC is still anticipating approval from RZD. Eventually, he hopes these vehicles will load at the plant in the SRC container, sail to Vladivostok and then move by rail to Moscow.

Loading outside the box

Other than in-container systems, the main method for containerising vehicles is to do all or most of the securing outside of the container. One such equipment provider is Kar-Tainer, which in mid-2007 introduced a new four-car exterior-loading single cassette system that enables easier handling than its previous version. For the newer version, each vehicle can be loaded onto an individual cassette with a standard forklift.

Kar-Tainer’s previous system used two-car cassettes, which could not be handled with a standard forklift. Kar-Tainer also offers cassette-based equipment to load oversized vehicles in configurations of either two or three per 40ft container. Cox says that since its introduction of the four-car, single cassette system, it has found the medium point for medium-sized vehicles, so that the cassette does not need adjustments.

Kar-Tainer’s Cox believes that since smaller quantity shipments are moving in more directions, the most feasible solution is the standard shipping container. He says that its customers’ main requirement is vehicle protection during the loading process, which is why they favour a system with an external loading capability. The vehicle tie-down device is located outside of the container. This keeps personnel out of the confines of the container during the loading and discharge process, making the loading process a safer procedure.

Shipping small volumes

Using the container, only four vehicles need to be ready to ship, as opposed to the much higher volumes needed to fill large ro-ro vessels. This leans even more to the economics of single platform manufacturers worldwide. “At present vehicle production plants want to ship their products on a regular basis; hence the use of the container. With the economic downturn, manufacturers are competing for storage space for vehicles that are feeding both domestic and export markets,” says Cox.

STILL A FEW DIAMONDS IN THE BOX

Damco's containerised vehicle transport system combines the benefits of other systems with extra attention to detail.

Although it may seem incongruous with persistent economic downturn, Copenhagen-based Damco's logistics solution for handling the highest end vehicles is thriving. General manager Chuck Chute says that for premium vehicles, including test and prototype vehicles, Damco's customers require secure door-to-door service, essentially eliminating typical risks of damage, theft, or general access.

Chute says that in its Premium Vehicle Transport Program, customised containers provide access to the vehicles without the risk of damage. Damco's containers have six standard secure ocean container doors on a 40ft and four doors on a 20ft. The extra doors avoid the problem of someone climbing out of the vehicle. Damco's 20ft containers hold one vehicle and the 40-ft holds two.

Vehicles originate in Germany and the UK and are destined mainly for Baltimore, Jacksonville, and Los Angeles. Chute says that some vehicles also go to Canada, Dubai, Hong Kong and Shanghai. Damco's finished vehicle services also include airfreight. "If a Maybach is required in Dallas, we could ship it by air, using 20ft containers with lower height than ocean containers," says Chute.

Damco ships about 200 vehicles annually for one OEM and 500 worldwide. It currently has 200 customised containers in circulation. Chute points out that Damco is experiencing growth in the demand for this service to and from Europe as well as in the Middle East and Asia. This year, it expects to increase its volume from 200 to 400 in the US and from 500 to 1,000 worldwide.

The primary challenges are in coordinating Damco's fleet of containers at origin and ensuring the timely return of equipment to provide a readily available supply that meets the production needs of its clients. Chute says that although this service does not lend itself to general transport, it could be of interest in the reverse logistics for new and used premium vehicles moving to Europe.

Kar-Tainer is experiencing the most demand from developing-country producers such as South Africa, India, China, and Thailand, among others. These markets are branching out in the world markets and often the volumes do not yet warrant the commitment of ro-ro services.

In India, Adani Logistics is currently testing a cassette-based system for Maruti Suzuki and will probably be using them around midyear, according to Cox. Umesh Bhanot of Adani Logistics, says that in the meantime, it is using Kar-Tainer's international portable ramp system to load two cars on the



In developing markets such as India and China, where damage rates remain high, containers can provide extra security for vehicles

container floor.

It transports Maruti vehicles by road from the plant to its nearby railway terminal. There it loads the cars into the containers and transports them on railway flat cars to the Port of Mundra. The containers are then loaded onto a coastal container vessel bound for the southern Port of Cochin. Upon arrival, Adani Logistics unloads the containers at an off-site location, transfers the cars to road trailers, and delivers them to the dealer's stockyard in the area.

"The Kar-Tainer system will enable us to load four or five cars per container, which means that we can offer competitive rates," says Bhanot.

The container system is especially pertinent to the more remote markets, but according to Cox, the high volume manufacturing plants make many of the shipping decisions and their solutions do not always apply to manufacturing that is more remote. "Furthermore, the global trend toward smaller, more economic vehicles and away from the SUV is playing into the hands of the container since it is easier to ship four-car configurations of smaller vehicles than it was when the SUV and pick-up vehicles were popular," Cox says.

Volvo gets interested in racks

Another exterior loading container system, from Cronos Container Scandinavia, has some similarities to Kar-Tainer. Jonas Svensson, Quality Assurance Coordinator, at Volvo Logistics. He says that its new container system from Cronos, which been operational since the fall 2008, favours smaller volumes.

Cronos' product is named the Car Rack 3.7, which stands for three loaded cars on the forward move and seven empty racks in one container for the return trip. "We roll the vehicle onto the rack. Then we use handlebars to tilt the vehicle at an 18-degree angle," says Svensson. "This falls within Volvo's regulations of maximum 25-degree tilt. We push the rack into the container, so there is no damage to the vehicles."

Cronos officially introduced its equipment in the spring 2008. Jan Hellström says that it is currently testing its products in Russia, India, Singapore, and Korea. In Russia it is using MPK Transport, a rail service provider, to transport vehicles from Moscow to other cities in Russia. He says that 21

CARS IN CONTAINERS

racking units are in a test phase, including seven in India which BMW and others use at the Port of Mumbai.

Volvo Logistics uses the Cronos rack for test cars and show cars. It ships test cars from Sweden to the proving ground in Arizona via Port Hueneme, California. It also ships to small markets such as the Philippines. Svensson says that the advantage of containers is that Volvo Logistics can use more ports than with ro-ro vessels.

Although Volvo Logistics ships full volumes to Russia, it also uses Cronos containers to serve this market as a supplement to



Volvo Logistics sends cars by container to the Port of Kotka, where they are devanned and sent by truck to Russia

ro-ro vessels. The containers load at the ports of Gothenburg or at Zeebrugge where different models from Sweden and Belgium are mixed. Volvo Logistics ships three cars per container – both small and large models in the same container. “We wanted to get away from the idea of loading the vehicle and then climbing out of the container,” says Svensson. The containers sail on con-ro vessels via Stora Enso Line to the Port of Kotka, where they are devanned, and the cars move to the final destination in Russia by car carrier.

Svensson says that devanning the container at port makes it easier to handle the Cronos racks. Although in its current system the container remains at port, he admits that the best way would be to load the cars into containers at the plant, rather than at Gothenburg or Zeebrugge. If it were a door-to-door move, Volvo Logistics would unload the containers without devanning them at Kotka and reload the containers onto rail for Russia.

The infrastructure in place for retuning the racks is a disadvantage of the Cronos system. “We can fit seven racks into a high-cube container but the cost is high if you do not have a return load. In fact, we looked at using it for China, but the cost of rack return was too high,” says Svensson.

In the works

A unique loading system that is currently under development comes from Load Easy International, based in Merrimac, Australia. Tom Crook, Managing Director, says that its Combi

Car-Can system, which is currently in the prototype stage, is a decking system that would use Load Easy’s pull-down, logistics track design. The system would be installed within a container and would include sidewall rails that can move up and down in increments. The system relies on the wall of the container to carry the weight, which is different from the Trans-Rak system, points out Crook.

A difference between the Load Easy system and some others is that it does not use conventional tie-downs. All of the tie-downs are at the back of the vehicle or are external to the container. “No one is required to drive the vehicle into or out of the container, nor exit the vehicle through the vehicle windows. The user can roll the cars into the container and could use a scissor lift to load four cars within ten minutes,” he says.



Damco's 20ft containers have four doors as standard, to give access to the vehicles loaded inside without running the risk of damaging them

Such innovations suggest that the container is more than a box – and could be worth more to finished vehicle logistics, especially as the economic crisis has left volumes decimated at worse and unpredictable at best. With carports filled to the brim with cars, and some ro-ro vessels being scrapped or used as floating parking decks. Containers offer an alternative that does not solve the problem, but offers some carmakers a more simple way to move. In still developing markets, where transport damage is more of an issue, the container has the added bonus of being something of a safety box. In all scenarios, its flexibility is what gives it some chance for growth today in an otherwise shrinking market. ◊