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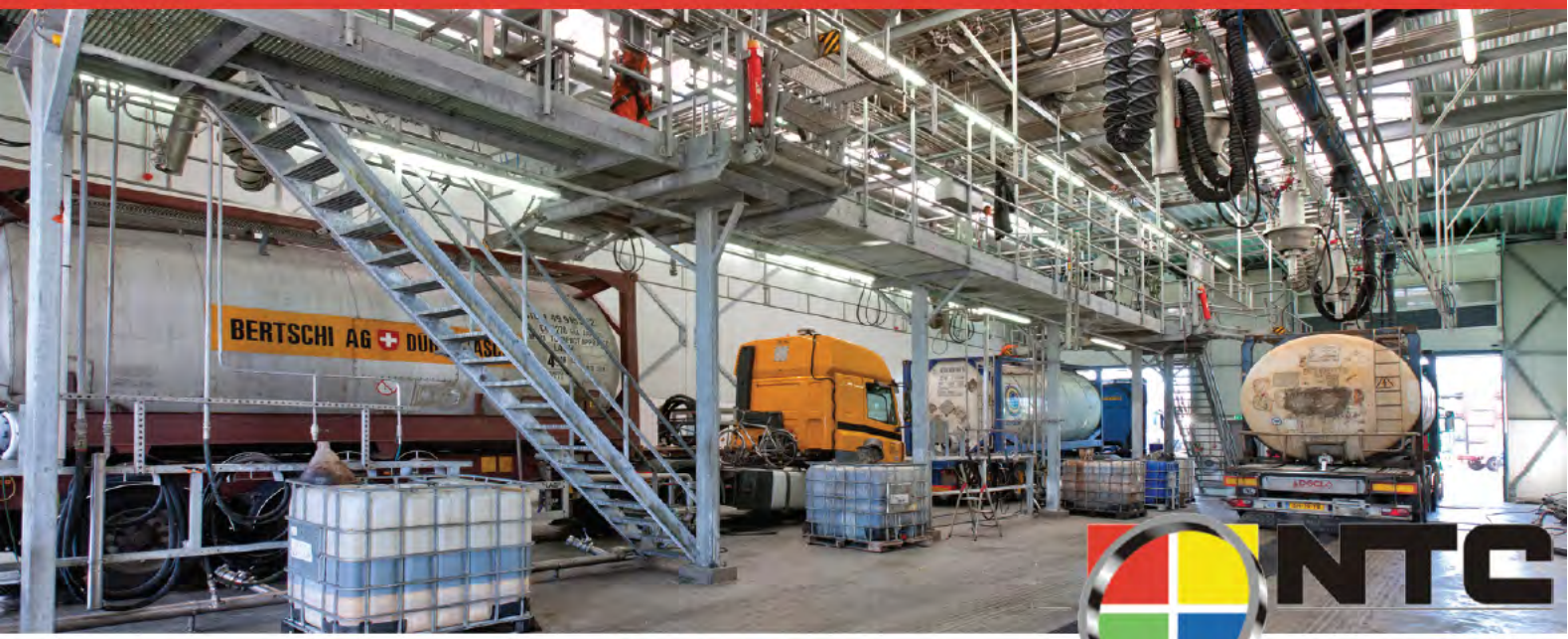

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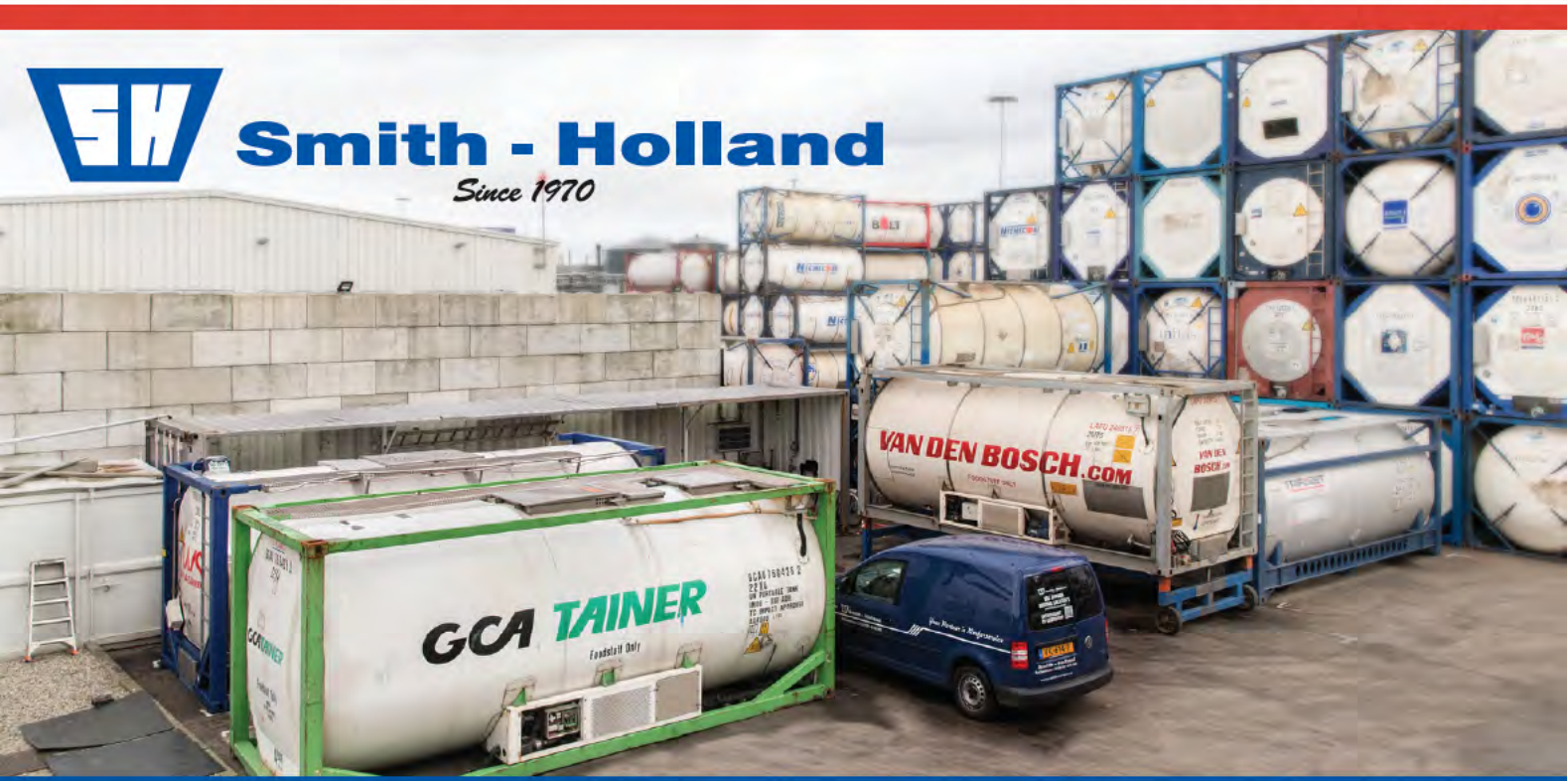

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Grif Carnes, VP and General Manager of US-based Third Coast Terminals, and Martin Staley, (pictured) VP Europe, Middle East and Africa for Third Coast International share the company's global growth story

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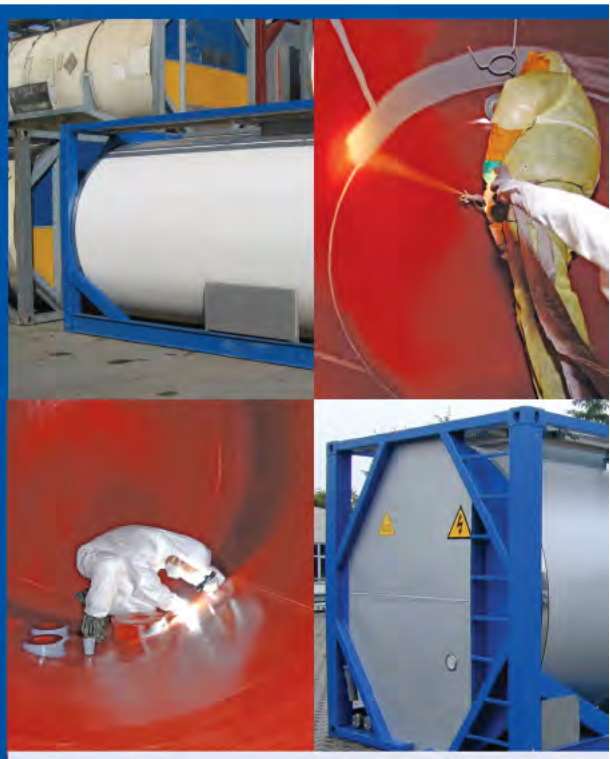
For more information, contact Martin Kilroe, APC Global Tank Container Manager, martin@kilroe.com, or visit our website at www.adv-polymer.com



HÜNI +CO APC works in partnership with HÜNI GmbH + Co. KG, (Germany), a high performance coating applicator for corrosion protection with more than 45 years experience in the transport sector.

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Fracking on the rack?

Charles Darwin and tank containers are rarely mentioned in the same breath. One focuses on the evolution of the chemical industry; the other focused on the evolution of the human species. Same interest - evolution - but slightly different scope.

In his 1859 tome on evolutionary biology, *On the Origin of Species*, the great man never actually said: "It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change". The fake 'adapt-or-die' soundbite was only a paraphrase of his musings on natural selection but it can usefully be applied to the chemical industry.

One of the 'strongest' chemical companies in the world was Hoechst, which had in 1985 the world's third-largest chemical company turnover. Today, the company is but a footnote in the history of the chemical industry.

What of the 'most intelligent' surviving? ICI was for decades the largest UK manufacturer and developed innovative products such as Perspex, Dulux paints and polyethylene. Alas, the company was managed into oblivion by the rigidity of its structure and leaders.

Last year's global chemical sector leaders – in terms of turnover and profitability – were BASF, ExxonMobil Chemical and Dow Chemical. All three are among the world's largest tank container users and have successfully adapted and exploited the many changes in the chemical industry.

US activity remains strong

This issue of *Tankcontainer Magazine* focuses on North America, where a different kind of Darwinian survivalism is under way in one of the major tank container markets - the shale oil and gas sector.

At the macro level, the US economy was more kind than cruel in 2014. Chemical volume growth increased by 3% and the region had record profitability. Unsurprisingly, chemical volume growth exceeded the 2.4% growth in GDP (chemical demand is far more closely correlated to industrial production - which increased at 4.3% - than GDP).

This led to strong tank container activity with imports supported by the strong dollar. Transatlantic tank container traffic was especially active with most trade destined for US North East ports. Unfortunately, out-bound demand did not balance in-bound volumes so many tank containers had to be expensively repositioned - empty - down to the US Gulf Coast.

For the US oil and gas sector, it seems contraction is the order of the day. It would therefore be reasonable to expect a similar drop in tank container demand.

Industry benchmark Brent crude has fallen over 55% to $41 a barrel from its peak of $115 a barrel in June 2014 due to weak Chinese demand and record US and Saudi production (assuming no increase in Saudi Arabia's proven oil reserves, the current production rate of 10.2 million barrels a day would imply that the Kingdom – which depends on oil for 90% of its revenue - runs out of oil in 64 years).

Shale-related tank demand still firm

Record US oil and gas production is, of course, directly related to production from so-called 'unconventional' reserves including, most significantly, shale deposits. But US shale gas isn't new – it was first commercially produced 194 years ago in 1821.

Hydraulic fracturing ('fracking') isn't new either – it was first commercially deployed in Grant County, Kansas in 1948. And neither is horizontal drilling new – the first commercial horizontal well was used in 1980. Shale reserves were unlocked by the combination of horizontal drilling *and* hydraulic fracturing. This was pioneered by drilling expert, Nick Steinsberger, and geologists, Dan Steward and Kent Bowker, while working with George Mitchell at Mitchell Energy, Texas.

Fracking depends on the high pressure injection of sand, chemicals and water into shale rock formations. The liquid fracking chemicals are often moved in tank containers and are proprietary concoctions of gums, potassium chloride, polyacrylamides and concentrated hydrochloric acid. 'Burner grade' hydrochloric acid dissolves the sandstone and is a by-product of MDI and TDI isocyanate production.

Roll forward less than a decade and tank container demand for fracking-related chemicals is now equivalent to approximately 15% of the entire annual global tank container movements of the leading global tank container operator.

Despite weak prices and low rig counts, US gas production of 72 billion cubic feet per day in 2015 will exceed 2014, due to new pipelines connecting isolated wells to metropolitan markets. Low rig counts don't necessarily imply lower tank container demand as new techniques such as pad drilling result in fewer isolated wells being needed to produce the same amount of gas. However, the demand for fracking chemicals remains unchanged.

As always, knowing where to look behind the doom-and-gloom headlines reveals continuing tank container opportunities.

Leslie McCune, Editor

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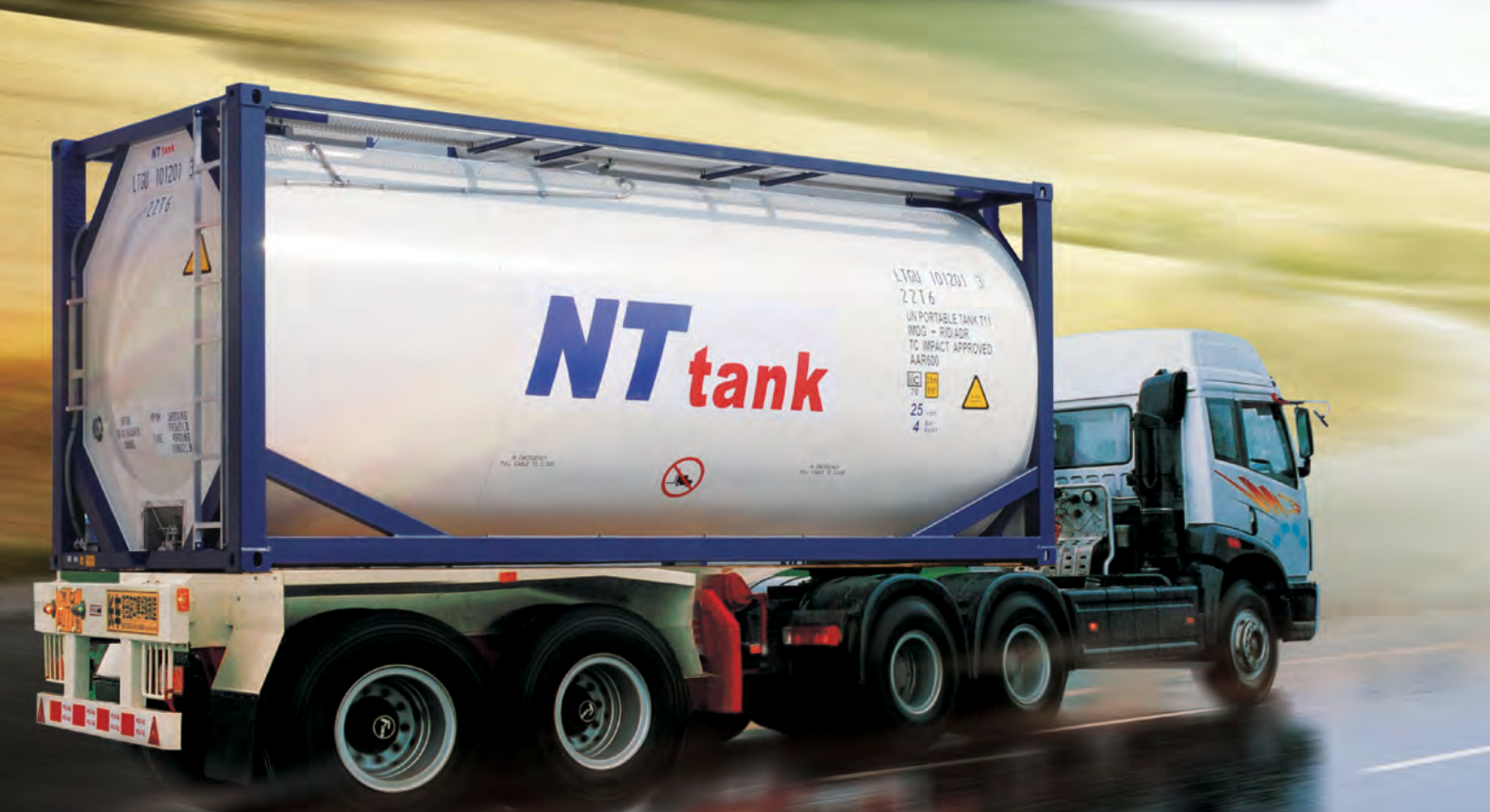

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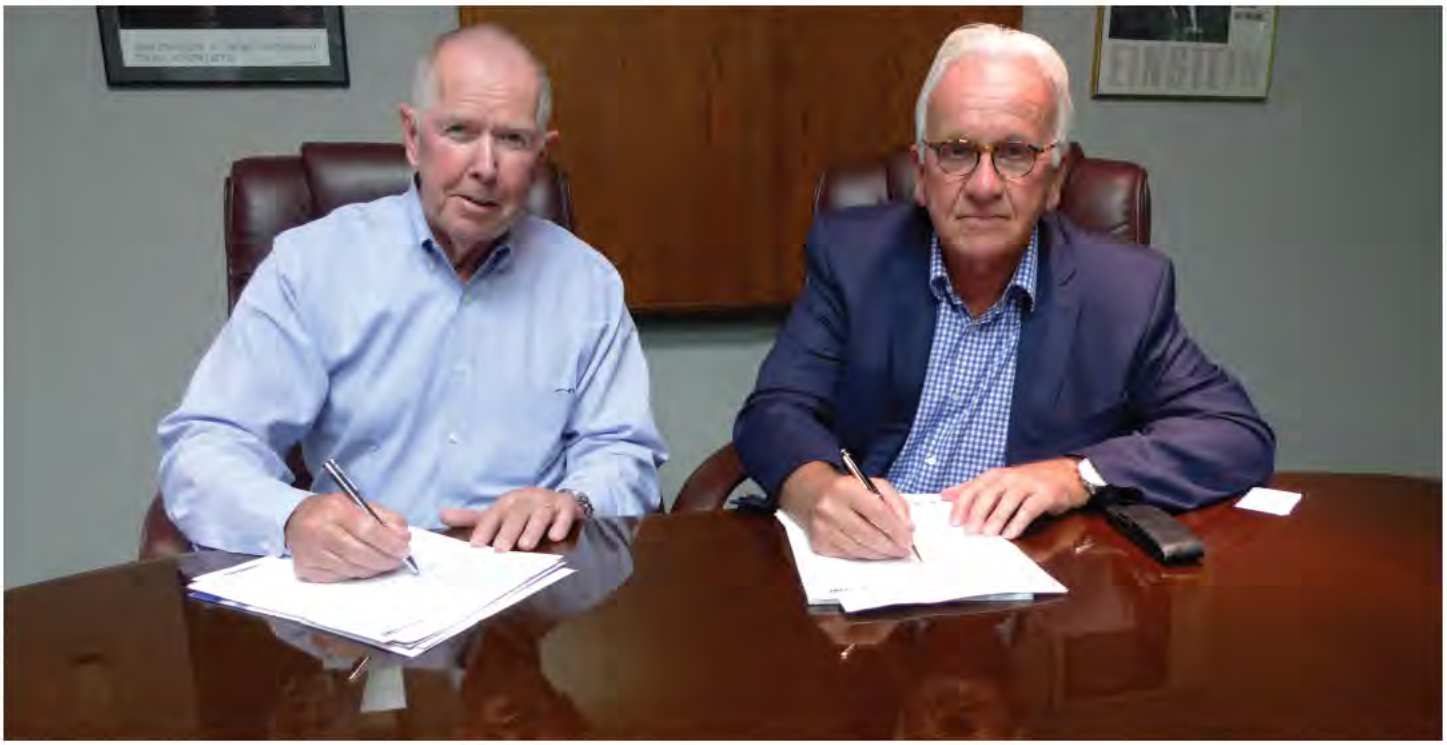
APC opts for Hüni in Europe



Signing the agreement is (left) APC Chairman Donald J. Keehan, and (right) Peter Hüni, President of HÜNI + CO

Advanced Polymer Coatings (APC) has re-appointed industry leader HÜNI + CO, from Friedrichshafen, Germany as its sole ChemLINE® coatings applicator in Europe for tank containers.

The signing of this new contract solidifies a more than 10-year working relationship between the two companies, which began in 2004. Present at the signing were Mr. Donald J. Keehan, Chairman of Advanced Polymer Coatings and Mr. Peter Hüni, President of HÜNI + CO, along with other members of the management and sales teams.

HÜNI + CO's history dates back to its founding in 1859. The company added high performance coating application for corrosion protection to its services in 1959 and has been involved in coating tanks, containers, and various apparatus since then. In January 2016, the next generation in the Hüni family will continue the legacy of the company when Ms. Alexa Hüni, the daughter of Mr. Hüni, will join the company full time, marking this as the sixth generation family member.

Today HÜNI + CO has become Europe's leading tank container applicator working with major chemical manufacturers, other chemical and agri-chem companies, tank operators, lessors and tank manufacturers.

Mr. Hüni notes that the market is now growing for lined product tanks. "There is a need for specialized tank containers with protective linings that can carry high value corrosives and other liquids, thus generating higher revenue."

He points out there are some coatings that may be able to handle carriage of a specific cargo, but only the ChemLINE® coating system can carry the entire range of approved chemicals. "ChemLINE® offers tremendous versatility," Mr. Hüni explains, "by providing the capability to easily carry different cargos when needed. ChemLINE® handles more than 5,000 thousand different chemical cargoes including acids, alkalis, solvents, CPPs, edible oils, agricultural chemicals and many others.

Mr. Keehan, from Advanced Polymer Coatings, states "The APC/HÜNI + CO relationship has been solid since day one. We have great trust in the technical ability and the attention to quality that HÜNI + CO repeatedly delivers. They have an excellent system that produces outstanding tank container lining results and they understand how to apply ChemLINE® coatings and the attention needed for proper heat curing and inspection to bring about the desired performance."

Proper heat curing of ChemLINE® creates a highly cross-linked and tightly knit coating structure that provides unprecedented chemical

resistance, even at elevated temperatures. The coating has a smooth gloss finish that is easily cleaned.

HÜNI + CO has had many successful ChemLINE® applications on a range of transport and processing equipment, including IBC's, product tank containers, bulk chemical storage tanks, process reactors, and scrubber columns. Mr. Hüni says ChemLINE® offers ideal protection for these applications.

Before any tank container is accepted for ChemLINE® coating, HÜNI + CO first inspects the tank condition to ensure the surface is well prepared and the equipment in the tank is in good working order. Once confirmed, a multi-step process starts that includes proper surface preparation and blasting, coating application, inspection, and heat curing. HÜNI + CO coats newbuild tank containers as well as replacing failed or damaged competitive linings in existing tank containers with ChemLINE®.

Step one, surface preparation, ensures a successful coating application by properly cleaning and preparing the quality of the surface. Various type abrasives are selected as needed to achieve the necessary profile. A substrate may be made of stainless steel, hasteloy, titanium, aluminium, or carbon steel.

Step two, application, is typically first done as a red base coat of ChemLINE®. Next, a grey ChemLINE® top coat is applied as the finish coat. Additional finishes can be provided as anti-static or anti-slip. Tanks are then inspected and spark tested to ensure proper coatings coverage.

Step three, covers heat curing. HÜNI + CO utilises indirect firing of insulated and un-insulated tanks in order to heat cure effectively. Bifurcated fans, connected to the tanks via flexi-ducting, work in conjunction with the diffusers to ensure overall uniformity of the substrate temperature. Diffusers are fitted to burner inlet jets for effective heat distribution. For temperature measurement, thermocouples are strategically placed in the tank, transmitting temperature readings to a central recording desk. Sophisticated chart recorders plot the temperature data being returned from each thermocouple. A graphical representation of the recorded data is produced to prove the time – temperature correlation in line with quoted specifications.

Throughout the process, quality is closely monitored and data dossiers are provided for customers requiring evidence of compliance. These include recording of heat curing temperatures and times, visual inspection of the tank container, layer thickness measurements of approximately 400 measuring points per tank container in the final test, certification according to DIN EN ISO 9001:2008, spark testing with high voltage in accordance with DIN 55670–A, testing and recording of the electrical conductivity, and work certificates.

Mr. Hüni states if a tank container lined with ChemLINE® is well maintained, then "Our customers can expect nothing less than 10 years service."

Hoyer takes on more services for Dow

Hamburg specialist forwarder HOYER continues to expand its plant-logistics operations: the company's Supply Chain Solutions (SCS) division has taken over the loading and unloading of chemicals and liquid gases for Dow Olefinverbund GmbH at the latter's Böhlen site in Saxony (Germany). The cooperation is already in progress.

Dow Olefinverbund GmbH is part of the chemicals concern The Dow Chemical Company, one of the world's leading producers of special chemicals, high-performance materials and plastics. In Germany, Dow employs a work force of more than 5,000 at 17 sites. HOYER will be responsible for the handling of up to 1.2 million tonnes of chemicals and liquid gases per year

at the Dow site in Böhlen. The five-year contract covers the filling and emptying of rail tank wagons with Dow products and the cleaning and the manoeuvring of the transport containers.

HOYER is already engaged at the Dow site in Böhlen in the loading of trucks and rail tank wagons for another product group. The two companies are now continuing their successful cooperation with railed goods traffic.

"I am delighted that we have been entrusted with another important task for Dow", says Selcuk Cingi, HOYER's Team Leader at Project Management SCS.

"The successful tender is a significant milestone for us in our bid to further establish ourselves as a full-service provider in the chemicals industry."

BDP Smart service portal gets specific

BDP International (BDP) has added BDPSmart Chemical and BDPSmart Life Sciences to its Smart Suite shipment and order process management / reporting platform.

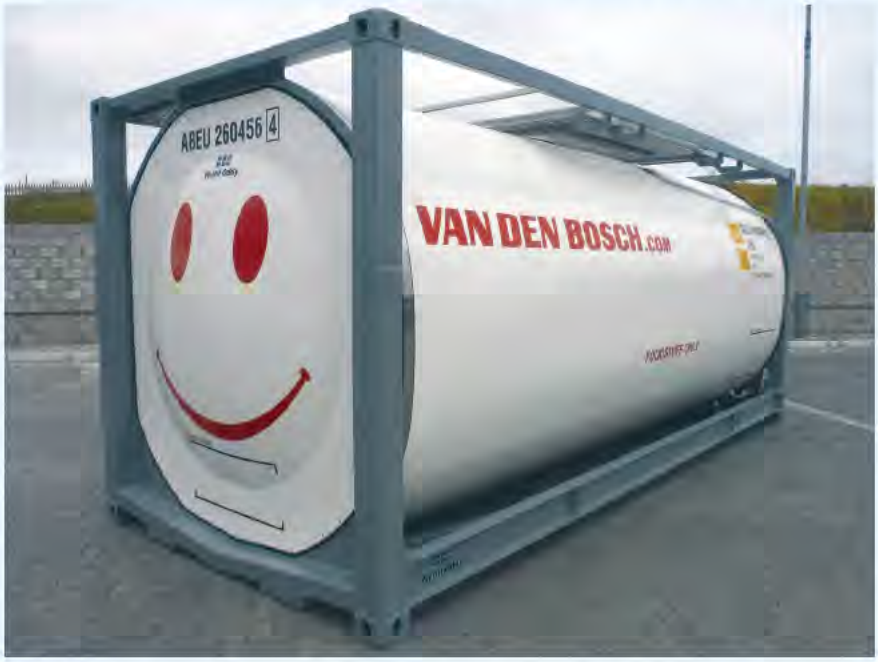
"All users will experience the new look and feel of BDPSmart that includes a streamlined design with updated logos, icons, and reports to maximize appeal and efficiency for a better overall user experience," said BDP Chief Information Officer Angela Yochem. "To utilize the new interface, customers will simply log in to Smart and self-select either the Chemical or Life Sciences view from their profile."

Chemical customers in particular will have instant access to all pertinent shipment information with a new dashboard tailored specifically to the practices of the international chemical industry. Users will have the option to customize widgets that include on-time arrival; on-time departure; containers per month; document distribution timeliness; shipment count by destination region (export); TEUs per month (export); top 10 trade lanes; and top TEUs by carrier.

Smart Chemical and Smart Life Sciences also offer interactive maps to provide users with a global view of top 10 trade lanes, along with any alerts that may require immediate attention. For instance, if additional data is needed about a particular route or trade lane, the user would simply click that location on the map to receive updates.

"This new release is the next

New tank containers for Van Den Bosch



Van den Bosch Transporten has expanded its container fleet with five hundred new 20ft ISO tank containers. The first fifty containers will be taken into use still this month.

The new tank containers will be used for the transport of liquid bulk products between Europe, Africa and the Middle East.

Since September 2015 these activities are coordinated by the new van den Bosch Transporten office in Dubai.

Over de past years the container fleet of Van den Bosch has grown considerably as a result of the growing demand for intermodal transport solutions. In the meantime the logistics service provider disposes of over four thousand bulk containers for the transport of liquid and dry bulk products.

The new 20ft tank containers have a capacity of 26,000 litres. The choice for this type of tank container was made because of the possibility to realize optimized payloads. Further the containers have the right number of heating pipes which make it possible to heat the product if and when required.

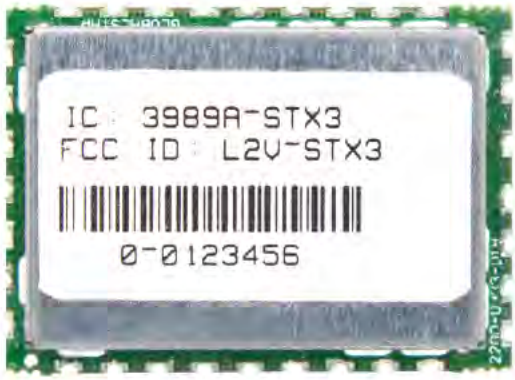
The new tank containers are produced by Welfit Oddy in South Africa. This production location is well-situated for Van den Bosch as the number of transports from South Africa is increasing rapidly. The first fifty containers will be put into use as of this month and the rest will follow in the months to come.

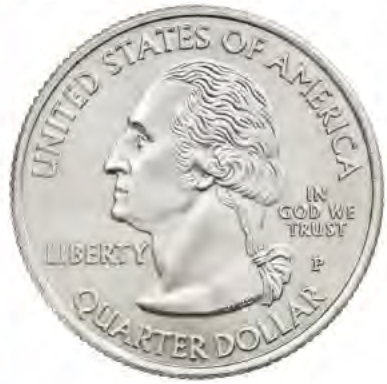
evolution of BDPSmart that gives clients an unprecedented ability to better manage not only their logistics segment, but also to have visibility into their order-to-cash cycle," said BDP Chief Sales Officer Lance Malesh (pictured). "The new dashboards allow for instant access to the data that clients value most, giving them immediate feedback on their most important metrics."

BDP's Smart Chemical provides extra focus on sensitive shipments with the placement of regulated hazardous placards to allow for instant visibility, keeping all relevant information at the user's fingertips. Because chemical logistics involves added risk, tracking hazardous cargo is crucial to managing chemical supply chains.

Originally launched in 2008, BDPSmart provides highly configurable strategic information, as well as tactical, frontline decision-support data through a single-source web portal. It allows shippers to visualize their logistics process and provides performance measurement reports configurable to users' requirements. Among its complementary features are a compliance performance accountability dashboard; BDPSmart Vü® providing procurement and inbound logistics managers unparalleled visibility of milestones in the life cycle of purchase orders; and BDPSmart Tower® for managing chemical, oil and gas companies' fleets of tanks and containers. There are plans to launch additional verticals in the coming months.

Global star customers stay on track





Globalstar Europe Satellite Services Ltd., a wholly owned subsidiary of Globalstar Inc. the leader in satellite messaging and emergency notification technologies, and Ovinto, Globalstar's partner specialising in wireless solutions, has announced that leading global supplier of petrochemicals SABIC is to equip its entire European fleet of 500 rail tank cars with Ovinto Sat M2M satellite-based tracking and monitoring technology.

The company uses its European fleet of rail tank cars to transport chemicals. By selecting the ATEX Ovinto Sat M2M asset tracking solution, SABIC has taken a significant next step in its focus on safety in the production and transport of chemicals. Additionally, the new technology is helping SABIC to optimise its supply chain operations and to enhance partner relationships.

Because Ovinto Sat relies on Globalstar's next generation LEO satellite constellation, SABIC benefits from the network's reliability and reach to obtain timely, accurate information about the status of every asset in its fleet. This helps ensure that SABIC as well as other stakeholders have immediate access to data in order to act more speedily and efficiently.

Meanwhile, SABIC is able to track each vehicle on its journey in real time so it can have an accurate understanding of delivery times. This enables SABIC to immediately know whether a rail tank car has been loaded or unloaded or is ready to be redeployed.

"SABIC is a major provider of petrochemicals with customers which use our chemicals and plastics for many different applications.

"One of the transportation means we use is our fleet of rail tank cars. Keeping track of a large fleet of these cars, dispersed all over Europe, is crucial," said Judith Kleinen, Category Manager Land Transport & Spot Shipping Supply Chain, Chemicals at SABIC.

"Our rail tank cars contain all sorts of materials, it is absolutely critical that we have the ability to track and monitor the status of the rail tank cars and their contents at all times."

The ATEX Ovinto Sat solution provides oil, gas and chemical industry customers with details about cargo being transported and its condition, including pressure and temperature, whether it is in the correct location, or has been impacted due to a crash or derailment. Satellite is the preferred option for such communications due to its availability, reliability and low power consumption compared to GSM.

At the heart of Ovinto Sat is Globalstar's low power, tiny STX3 chipset (pictured). Since it is battery powered, Ovinto Sat enables customers to monitor

hazardous materials in unpowered environments including rail tank cars and tank containers. Because of its very low power consumption, the Ovinto Sat battery can last up to eight years.

Ovinto Sat collates data from various sensors and GPS in each of SABIC's rail tank cars and sends it securely by satellite to the customer headquarters at regular user-defined intervals.

"SABIC's choice to install Ovinto Sat in all if its rail tank car fleet in Europe is a strong endorsement of the solution and its ability to reliably monitor remote assets wherever they may be," said Corry Brennan, Simplex Regional Sales Manager, EMEA, at Globalstar.

"When materials are being transported across Europe it is critical that the location of assets be always known, but also whether those assets and their contents face risks.

"Only satellite can deliver continuous, reliable, power-efficient connectivity with these assets in order to ensure safety but also to help maximise operational efficiencies."

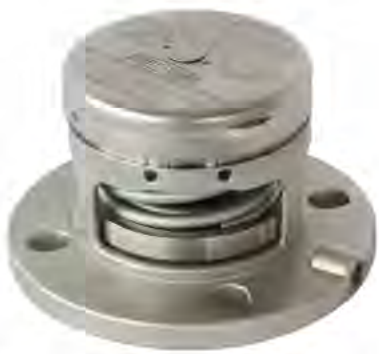
Frederick Ronse, Ovinto CEO, commented: "To ensure efficient and reliable transportation of chemical materials across vast distances, uninterrupted monitoring is critical - relying on GSM alone simply cannot guarantee this connectivity. Now, not only will SABIC be able to know exactly where their assets are, they can help ensure these assets are performing better and being used efficiently."

Fort Vales releases 'our best flanged relief valve yet'

World-leading tank component manufacturer, Fort Vale is launching a brand new range of 80mm flanged relief valves aimed at the intermodal market. The Hyper Maxi valve is the result of extensive research, development and testing and will offer users unparalleled flow performance predictability. It is approved by Lloyds Register and has patents pending on the design of a new integral safety feature.

Historically, valve manufacturers have performed accredited witness flow testing for relief valves at third-party facilities. Testing is a costly process and is usually carried out over the course of a week. The test program is pre-agreed and allows little scope for development changes whilst testing is underway, nor the ability to test every valve with a combination of a gauze, bursting disc or cowl. Furthermore, there are very few facilities around the world able to test at the required flow rates.

For these reasons, Fort Vale made a significant financial investment in a purpose-built Test Laboratory at its U.K. headquarters. Their gas flow rig is designed to BSEN4126 and ASME VIII Div.1 and is approved and certified by Lloyds Register. Devised to test relief valves with a maximum flow rate of 6.1 Nm3/s at 5.28 Bar, it has



allowed the company to accurately and quickly assess any combination of relief valve and ancillary item that may affect flow, within the limitations of the test rig. Fort Vale believes that this is an unrivalled facility that allows them to make a unique contribution to the universal safety of tank containers.

As part of their Continual Development program, Fort Vale conducted a detailed analysis of the operation and flow characteristics of its entire range of relief valves. This is believed to be the most comprehensive study ever undertaken on valves and systems for intermodal tanks and has brought about an enhanced practical understanding of valve operating conditions, particularly with regard to de-ration factors for ancillary parts, such as gauzes and burst discs.

When a tank builder is determining a relief valve flow requirement, the calculation is based upon a valve fitted with a burst disc and gauze to allow for maximum de-ration, even if no ancillary parts will be fitted eventually. Witness testing has proved that the flow rate of an 80mm Hyper Maxi relief valve, both with and without de-ration factors, meets current regulatory requirements and, at the time of going to press, exceeds all current published comparative flow rates of relief valves by other manufacturers.

The Hyper Maxi series of 80mm relief valves will offer a range of pressure settings from 3 PSI up to 204 PSI (0.21 Bar to 14.07 Bar) and vacuum settings from 0.5"Hg to 24"Hg (0.02 Bar to 0.81 Bar). There are 3 body styles; standard, short extended and long extended, each with a slotted flange to facilitate 4 common drilling patterns.

The valve body and port geometry has been optimized and now incorporates a "lift stop", which is subject to a patent application and which enables the valve's pressure plate lift to be precisely controlled. This reduces turbulence and improves the valve's performance which means that the flow rate of the valve remains accurate and consistent – a fact which has been proved by repeated testing.

Trifleet the first lessor to guarantee tank container readiness and condition

Trifleet Leasing, the world's largest owner-managed tank container leasing company, has launched the Trifleet Excellence Guarantee.

The guarantee ensures the readiness of the company's tank containers, as well as full compliance with technical specifications and repair standards. This is the first time that a tank container lessor has offered this kind of service guarantee to customers. The Excellence Guarantee will provide additional assurance about the company's operational reliability in order to enhance customer experience.

The Trifleet Excellence Guarantee covers both the On Time Delivery Target and the Zero Reject Target. With On Time Delivery, Trifleet guarantees that all newly-leased tank containers are available at the agreed date, time and location. With Zero Reject, the company guarantees that tank containers meet the requested technical specifications and the agreed-upon repair criteria. In the case that a tank container does not comply with one or both of the targets, customers will receive a bonus of 30 free rental days per tank container.

"We want our clients to benefit even more from our 25 years of experience and our continuous efforts to keep our fleet in excellent condition. This is why we are now offering a Trifleet Excellence Guarantee to our customers," explains Philip van Rooijen, Managing Director of Trifleet Leasing. "Our clients can rely on us. This guarantee ensures the worry-free pick-up of newly-leased tanks at our highly competitive lease rates."

Founded in 1990, Trifleet Leasing is the largest privately owned and owner-managed global tank container leasing company today. With more than 11,000 tank containers (excluding financial lease), the company is a global Top 5 player, with stable long-term growth. Trifleet acts within a worldwide network of offices, agents, depots and surveyors. Headquartered in Dordrecht (Main Port Rotterdam, the Netherlands), Trifleet has additional offices in Houston (USA), Singapore, Hamburg (Germany), Shanghai (China) and Paris (France). The company also has a dedicated team of exclusive agents located in Italy, Brazil, South Africa and Japan. Furthermore, Trifleet works with a global network of tank container depots.

Trifleet's tank containers are leased by the chemical, food grade and pharmaceutical industries, as well as by tank container operators and shipping lines. Trifleet leases both standard tank containers from 14,500 to 26,000 liters in size, and special tank containers such as cool tanks, swap bodies, over-wide tanks, various types of lined tanks, electrically heated tanks and so on. In addition to leasing tank containers all over the world, Trifleet also offers related services, such as Fleet Service Management.

Van den Bosch expands in Africa and the Middle East

Van den Bosch Transporten is expanding its activities to Africa and the Middle East. Already over the past years the bulk transport company was able to acquire a strong position on the African market.

The logistics services provider is opening a new branch in Dubai and early next year Van den Bosch will start a tank cleaning service in Ghana. Moreover the fleet is again extended with five hundred 20ft ISO-tank containers.

"The expansions are the result of a growing demand for deep sea transport activities", CEO Peter van den Bosch explains.

"We are finding that more and more European companies are focusing on growth markets such as Africa and the Middle East. That has made the demand for deep sea bulk transport rise rapidly."

Van den Bosch Transporten anticipated on globalization and managed to grow considerably. "Our entire company has changed", Van den Bosch emphasises.

"The number of containers has grown over the past years from a few hundred to well over four thousand. Some ninety percent of our activities is concerned with international transport and we use terminals all over the world."

Van den Bosch recently invested again in five hundred new 20ft ISO tank containers. "We plan to further develop our deep sea activities with a focus on Africa and the Middle East."

In the meantime, the bulk transporter acquired a strong position on the African market. "We believe in Africa's potential and want to develop this growth

Joint Tank Services (JTS)

Joint Tank Services (JTS) is a leading tank container depot in the UAE. Located in the Jebel Ali Free Zone, it is a 28,000 square meter dedicated tank cleaning and service facility, catering to key tank operators and leasing companies in the region.

Since 2013, JTS has been using iTankDepo – a specialised software solution for tank depots developed by iInterchange Systems.

Having experienced its significant benefits, Mr. Pasupathy - General Manager, JTS states "We wish to compliment the excellent work done by iInterchange on iTankDepo. We are also getting very good feedback from our customers and they are all very happy with the very informative reports."

Visit http://www.iinterchange.com/ for details.

Note: In the last issue, in the article on iInterchange JTS was unfortunately omitted from the feature

market", says Van den Bosch.

"A few years ago we set up the first transport flows from Europe to Africa together with our business relations and we are now taking care of container transports between both continents on a large scale. Last year, also the first flows in Africa itself were set up and we built a large partner network."

Early 2016, Van den Bosch Transporten will expand its African activities with a tank cleaning station in Tema, Ghana. "Volumes between Europe and Africa are growing because we are able to convince our customers to ship liquids in ISO tanks instead of in small quantities", Van den Bosch explains. "That has advantages in terms of handling, heating and savings in packaging costs. With our own tank cleaning station there, it is easier to link existing transport flows and we help local companies to switch over to bulk transport."

Van den Bosch even takes it one step further. Starting this September, the bulk transport company is opening a new branch in Dubai. "Just like in Africa, we see growing possibilities in the Middle East", Van den Bosch concludes. "From this new branch we want to further develop both markets. Dubai lies at the crossroads of three continents and is the ideal location for us to develop our global transport activities with a focus on Europe, the Middle East and Africa."

Suttons expands its business in the US

International logistics and supply chain specialist Suttons Group is relocating its North American headquarters to Bell Works, a large and unique commercial development in Holmdel, New Jersey.

Suttons provides bulk logistics and supply chain services to the chemicals, food and beverage and gases sectors and is headquartered in the UK.

The company has an office network covering North America, Europe, the Middle East and Asia and has enjoyed consistent growth in North America in recent years after opening its first office in the region in 1982.

Steve Lonsdale, Suttons' Regional Director said: "We were looking for offices that would suit our business and the fast-paced nature of the markets that we operate in.

"Bell Works gives us both the practical space we need together with a modern and sophisticated working environment that will support our continued growth and expansion. The vibrant and unique community created at Bell Works is a fantastic place to bring our customers and colleagues from around the world.

"This move underscores our commitment to our customers and employees and will enable us to continue the growth and success that we have experienced in North America for more than 30 years."

The Bell Works is a new and exciting development that is creating modern and vibrant office space in the former Bell Labs building, which was formerly used as a research and development facility.

Today, the site features modern offices together with a diverse range of retail outlets and other services and amenities to create an urban downtown feel across the centre's main level promenade.

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First class Third Coast

Grif Carnes, VP and General Manager of US-based Third Coast Terminals, and Martin Staley, VP Europe, Middle East and Africa for Third Coast International share the company's global growth story with Editor Leslie McCune

LM: How and why was Third Coast set up?

GC: Houston-headquartered Third Coast International is a global network of affiliated companies providing contract manufacturing and terminal services to customers in the oil and gas sector.

When the company was set up in the mid-1980's it had its origins in the lubricants industry, manufacturing and packaging motor oils, antifreeze and brake fluids. In the 1990's, the company made a strategic move into bulk liquid storage, blending and terminal facilities for chemicals for third parties.

We have developed a solid reputation as a versatile and 'can do' partner within the chemicals industry over the years and are also a regular user of tank containers at our facilities in the US, Qatar and Singapore.

LM: What is the company's focus?

GC: The company focuses on providing multinational chemical producers with supply chain services and assets such as storage, blending, packaging, transloading, contract manufacturing and related activities. In effect, we become an extension of our customers' operations by providing flexible, incremental supply chain capacity or by providing services that are not core to their production of chemicals. This enables Third Coast's customers to mobilise quickly – often with reduced capital outlay – to exploit market opportunities ahead of the competition.

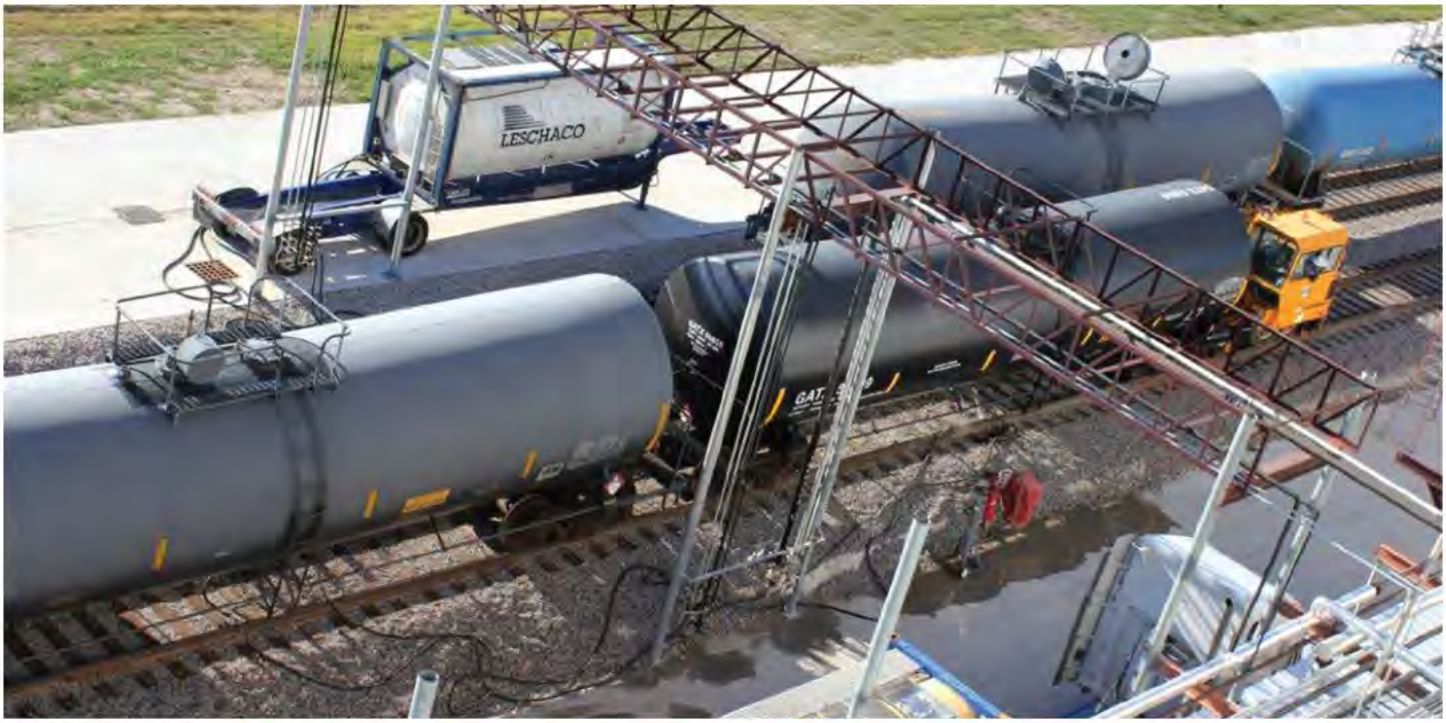
LM: What are Third Coast's global assets?

MS: Third Coast Terminals has two wholly-owned facilities in Texas – Pearland, south of Houston, is the primary site with a satellite facility at Friendswood. A new service as a bonded warehouse and terminal has been added at Pearland, with a Class 4 Bonded Tanker Permit. 150 people are now employed at these two facilities, up from only 45 staff ten years ago.

Third Coast is the second largest employer in the city of Pearland. The site covers 60 acres and has over 10 million gallons (38 million litres) of bulk liquid storage with spaces for 100 rail cars. There are expansion plans for another 170 spaces over the coming years.

Our other company in the US is Third Coast Chemicals, which was established in 2002. The company is one of the world's largest producers of brake fluid and provides sales and marketing services for a variety of chemical products, including heat transfer fluids and inhibited glycols. Many of the products are produced by Third Coast Terminals on behalf of Third Coast Chemicals.

Third Coast International is the international holding company



and has an ownership position in a privately-held joint venture in Singapore, Chemical Specialties (Singapore) Pte Ltd (CSL).

CSL has been operational since 2009 and is now the largest contract manufacturing company in Asia. It offers a variety of chemical processing including distillation, alkoxylation and other reactive chemistries (alkoxylation is the process of creating an alcohol by reacting a product such as phenol or an amine with an epoxide).

Third Coast International is also involved with another Singaporean entity, Strategic Transmission and Transportation (STAT), which provides pipe-rack infrastructure support for the Jurong Island Industrial Complex.

Our latest investment is a new joint venture in Qatar, Third Coast International Qatar W.L.L. The company was formed in 2012 and is in association with Qatar Lubricants Company (QALCO). We offer a chemical terminal operation with a similar business model to our Texas operations. It provides bulk liquid chemical handling solutions in a region that is chronically short of such assets.

This facility has 28 new stainless and carbon steel storage tanks and an associated blending and packaging infrastructure. It is located in the Port of Mesaieed - about 30 miles south of the capital Doha - and is well-located to serve the local and regional oil and chemical industry.

We also have offices in the United Kingdom and Hong Kong.

LM: Why add a bonded warehouse and terminal facility in Pearland, Texas?

GC: Many customers bring product in from overseas and then ship the same product to other countries in smaller volumes so they utilise this option to serve their customers. Pearland is the centre of our operations and we continue to invest in this strategic location. The location is also in the heart of the US Gulf Coast's chemical industry – it's just north of Freeport, minutes from the Houston Ship Channel port area and very close to other major chemical production hubs. This provides a convenient option for most customers.

LM: How are tank containers used by Third Coast?

GC: Third Coast is the largest inland terminal in the Houston area. We therefore serve a large number of chemical companies which deliver product to us by rail, truck and tank container. Overseas customers also import products in tank containers.

The Pearland site has over 3,000 tank container movements in and out of the facility each year.

The customers normally arrange for shipment of their products out of the facility or, if we are producing a product for them, we will coordinate production schedules with them and have material ready for collection at the required time.

We also have a sales and marketing company - Third Coast Chemicals - which has its own truck and tank container requirements for shipments of raw materials into the facility and shipments out of finished products.

We offer tank container storage for customers at our Friendswood facility and both locations have steam racks for heating tank containers, which is needed for high viscosity products.

A good example is a recent enquiry from a customer which required a large volume fill for a major overseas EPC contract. 210 tank containers were needed to be shipped overseas in a narrow delivery window. We worked up different options for the customer with a leading tank container supplier. The logistics were the major challenge and tank containers were the only viable option.

Third Coast Terminals also offers transloading services and therefore transfers material from tank containers into rail cars and product storage tanks (and vice versa). This is normally for Third Coast customers but there may be direct involvement with the tank container providers.

We also operate white rooms for filling food grade and high purity chemicals under the US Food and Drug Administration's Current Good Manufacturing Practice (CGMP) standards. We therefore have to ensure that the tank containers delivering products are fully compliant for this high specification safety-critical business. Likewise, if we load food grade or high purity materials from our bulk storage tanks into tank containers, we need to ensure that they comply with CGMP standards.

LM: Can rail cars be transloaded directly into tank containers?

GC: Yes, typically this takes 1½ hours and includes time for analytical services. As we expand our rail car capacity, we expect this business to increase. We transload various chemicals, including glycols, polyisobutylene, linear alpha olefins and food grade products.

LM: What are the unique challenges of moving and storing hazardous chemicals in the US?

GC: Hazardous chemical legislation continues to develop globally. In the US, we operate under the requirements laid down by OSHA (Occupational and Health Administration) and the EPA (Environmental Protection Agency).

Recently, the US incorporated the GHS system (Globally Harmonized System of Classification and Labeling of Chemicals) and this has involved a large amount of work with our customers to ensure all Safety Data Sheets are up to date and compliant.

Likewise, the European Union's REACH legislation (Registration, Evaluation, Authorisation and Restriction of Chemicals) is another piece of legislation which has had to be managed.

These regulations are not always consistent with each other but we work to the highest standard, including those laid down by our customers.

LM: Chemical tanker arrivals at the Port of Houston increased by 9% in October, compared with a year ago. What more facilities could the Houston chemical logistics hub offer?

GC: Third Coast is increasing its offering to our customers by expanding our contract reaction manufacturing capabilities. This includes investments in reactors for pre-polymers, condensation type reactions and related chemistries. These compliment our blending, storage, packaging, warehousing, transloading and filtration services and have been very much customer-driven.

LM: Which well-known customers do you serve?

MS: We do business with seven of the top ten major global petrochemical companies.

LM: What impact has US shale developments had on the company?

GC: US chemical industry sentiment has changed dramatically over the past six years as shale gas has become a major game changer. The investments which have been announced are dramatic for an industry which most people believed had seen its best years. The economics provided by shale gas give the industry the ability to once again be competitive globally. This is good news for our customers and, in turn, will benefit Third Coast as we serve these customers.

Our business was inevitably affected by customers who served the oil and gas business with raw materials, with their business slowing after the fall in the oil price. There's no doubt production-related activity has softened.

However, our breadth of customers and markets has meant our own business continues to grow and we have just built a new warehouse to support the continued growth in our business.

LM: What impact has $50-a-barrel oil had on the company, in terms of customer requests?

MS: Whilst we have seen some of our oil and gas customers slow down this year this hasn't really impacted us too much as other markets remain strong and we have a diversified portfolio of customers and their products.

Leslie McCune is an independent expert on the global tank container market (lm@ chemicalmanagement.co.uk)

Flexibility the key to success

The North American chemical logistics market has seen major changes in recent years with the advent of fracking and major legislation affecting rail freight operations. Elaine Burridge reports

The North American chemical industry has been transformed in recent years by the development of shale gas which has restored the country's competitiveness on the global stage. The availability of low-cost feedstock has boosted chemical production and spawned a multitude of investments in petrochemical plants.

This boom has also boosted business for chemical logistics suppliers such as ChemLogix. The Blue Bell, Pennsylvania-headquartered company, part of CLX Logistics, says the impact from shale on its business has been enormous as demand from shale wells has consumed any available tank containers and railcars.

Mike Challman, Vice President of ChemLogix' North American operations, says there has been a lot of challenges around transport availability but, since the oil price dropped earlier this year, much of the pressure has faded. "A number of our customers provide various services to the shale industry. Nobody is opening new holes in the ground. Business has slowed and will not pick up until the oil price recovers and makes it worthwhile again," he says, adding that the industry needs to be ready to face the capacity squeeze again once oil prices rebound and demand returns.

Oil prices have more than halved since 2014. The price of West Texas Intermediate (WTI) crude oil has plummeted from around $100/barrel in the first half of 2014 to the low $40s/barrel in early November 2015. In September this year, global bank Goldman Sachs lowered its base case WTI oil price forecast for 2016 to $45/barrel from $57/barrel.

Suppliers to the shale wells believe that until the crude price rises above $60/barrel, the shale sector will struggle financially. If crude remains in the range $40-60/barrel, there is likely to be further industry contraction.

Notwithstanding the current shale situation, the chemical logistics market has performed well this year, although not as good as in 2013 and 2014, according to Challman. Although demand has continued to improve year on year since the economic downturn hit in 2008-2009, there has been a flattening of demand and activity in the second half of this year. The growth is still there, notes Challman, but not at the pace of six to 12 months ago.

Key challenges emerge

The North American logistics industry has faced several challenges this year. Arguably the hardest challenge was the labour dispute at ports along the US West Coast which lasted for nine months until February this year. These created a severe backlog of freight. Challman explains that, because supply chains are so integrated, the impact was felt across all of North America and rumbled on for several months after the dispute had officially ended.

Challman says some of the pressure seen on the market earlier this year relating to tank container and transport capacity, and driver availability, has abated. "Nine months ago there was an enormous amount of upward pressure on rates and we were telling customers to be very careful about how and when they go to market. Now there is an opportunity for people to get access to the capacity they need and not be overly pressured on the rate side.

Current lower fuel prices too are a significant benefit for trucking firms, especially with diesel now at historic lows. However, the downside is that transportation companies that relied on the fuel levy as a revenue source are now struggling financially because they are receiving less money from the surcharge. Some of the strongest pressure is on long-haul rates, Challman notes.

Rail deadline extended

One outstanding issue currently hovering over the industry is legislation relating to Positive Train Control (PTC). Following a major train crash in California in 2008, lawmakers gave railroad operators seven years to complete installation of the safety system which monitors speed and automatically slows the trains if they approach curves too quickly. Another accident occurred in Philadelphia in May 2015.

However, although the rail industry has been working to implement PTC, only half or less of all trains will be equipped with the safety system by the deadline of end 2015.

On 28 October, as the market was getting increasingly nervous, the US Senate approved a bill

that would extend the deadline by three years. The American Chemistry Council (ACC) said the unanimous vote in the Senate was important legislation that would keep critical rail freight shipments flowing, including critical chemistries such as chlorine, and head off a potential shutdown of the nation's rail network.

ChemLogix has been focused on chemical transportation for two decades, concentrating on improving and maximising the efficiency of its customers' logistics and supply chains. The company is 'asset light', but does operate a fleet of tank containers. "In fact, more than half of all US domestic tank container volume in chemicals is touched by CLX," says Challman, who adds that the company does not own any truck assets.

Challman says the company stands out from its industry peers because of its bespoke approach to customers' needs, in the belief that a standard "one-size fits all" solution is not always the answer. "We have made a conscious effort to be experts and that continues to help us. We do not sell just one solution. We have a flexible engagement strategy," Challman says. He explains that ChemLogix offers a tailored solution that can comprise various elements including technology, procurement, back office and operational support. "No two solutions are alike. Choice has helped us to be more responsive to the needs of a specific customer," he says.

Its Transport Management System (TMS), which it has been using for more than 10 years, has been heavily developed to be compatible with the specific requirements and complexities of shipping chemicals. Challman says investments during the past two years have centred on technology support and the company has worked hard to improve its ability to monitor and present information to its customers in a more meaningful and helpful way, for example customised information, access to dashboards and interactive reporting tools.

Although he notes that the chemical industry generally is a slow adopter of innovation, Challman sees a fairly strong appetite among consumers to adopt technological solutions on a faster basis.

Strategy for growth

Regarding growth, the company has a two-pronged approach. The first is to grow organically with customers. Challman explains that ChemLogix has a broad portfolio and offers more than just technology/technical solutions, and transport management systems and support. He says: "We offer full managed services in all areas, trucks in North America, intermodal, and international. We are looking to drive some of our growth through our customers. Once a customer works with us, we can then start to introduce some of our services in areas that maybe they were not focused on before. We can identify areas where they need to improve."

ChemLogix also maintains a strong presence in the chemical industry through events and advocacy groups. "We look for opportunities to introduce ourselves to customers that are not doing business with us. We do that in a flexible way and try to understand what they are looking for, "says Challman.

The company operates in North America and Mexico, but has a global footprint through its TMS technology which customers use all around the world. "We have a NAFTA (North American Free Trade Agreement) focus but that will change in the next two years and we will find opportunities to expand our reach beyond North America," Challman reveals.

He, and ChemLogix, holds a bullish outlook for next year. The company is anticipating that the double-digit growth it has enjoyed for a number of years will continue in 2016. Challman believes the US economy will continue to strengthen, although it may not be as strong as in 2014 or 2015. "At some point in 2016, the oil price will find a floor and recover. Exploration and extraction in North America will return and become economically feasible again. We see a very good outlook ahead," he says optimistically. If the past 20 years are anything to go by, then it looks as though he has every reason to be upbeat about ChemLogix' future.

Success in the rear-view

In the mid-1960s, European engineers developed a multimodal bulk transport concept by grafting tank container designs onto standard 20ft general purpose shipping containers. Jaap Huigen reports

Some 50 years later, tank containers have become the 'packaging of choice' for bulk liquid producers with a global fleet of over 440,000 TEU. The tank container's modular design characteristics have facilitated low cost, assembly line production and tank container-based intermodal activity has successfully penetrated the drum and road tanker market.

What, however, are some of the day-to-day issues in this large, complex and geographically diverse industry?

Some in the industry claim commoditisation of the tank container industry has reduced its earnings potential. Others claim that the enterprising spirit on which the industry was founded has been stifled by ever-tighter margins. However, the operator market leader, Stolt Tank Containers, reported a respectable operating profit of 12% in its latest quarter and an EBITDA of over 9%.

Economic waste

What could be done to reassert industry profitability? Innovation and product development has a role to play but is there too much reliance on tank container manufacturers for this? 'Economic waste' reduction through operational efficiencies is another route to increased margins.

What are current examples of this economic waste? Equipment might be one example – according to estimates, 20,000 newly-built tank containers are sitting in factories and depots around the world.

A value of this inefficiency can be calculated, assuming that the average price of a tank container between 2012 and 2015 was $18,000. Discounting any economic depreciation, given a cost of debt of $577 per tank container and a cost of equity of approximately $305 and typical storage costs for an idle tank container of $365 a year, brings the total annual cost to $1,247 per tank container. This represents $24.9 million for the world's 20,000 idle tank containers.

This acts as an effective drag on the industry's profit potential in several ways. The supply side overhang depresses rates and returns for all supply side players, be they operators, lessors or service companies. One view is that the *quid pro quo* is that customers enjoy margin gains at the expense of the tank container sector.

Economic waste is also created by inefficient tank container designs, which may result in higher maintenance costs than normal and/or low utilisation rates. Is the industry paying too much for spares or spend on needless items due to a lack of expertise?

Cost-driven commoditisation has its limitation. Not all cargoes are created equal and yet the majority of tank containers are created equal, in the form of the 'one suit fits all' T11 tank specification. The T11 shell material is SANS 50028-7 stainless steel, which has chemical and mechanical properties that are consistent with both 316L low carbon (<0.03%) DIN 17441 w1.4401 and the 316 stainless steel specification.

The workhorse T11 tank container carries thousands of different hazardous and non-hazardous cargoes, some of which cause shell corrosion. Included in these are petrochemical cargoes, which are thought to make up approximately 50% of all movements.

But corrosion damage can be reduced by widening the tank container specifications of their fleets to include more corrosion-resistant shell material. In the intensely competitive chemical markets, manufacturers continued to create value by developing new and more complex products. Some are highly reactive when in contact with water or humidity. These reactions can result in hydrogen chloride gas, the precursor of hydrochloric acid. Others products contain trace elements of corrosives like sulphur, sodium or sulphate that are potentially harmful.

Shell corrosion is therefore an industry issue which has an economic cost. How can this cost be estimated? Let us assume that a tank container is depreciated over 20 years and that the average annual repair costs is $1,500 per tank container. The repair costs include all forms of corrosion and associated work (such as buffing, polishing, grinding and welding). Let us further assume that this results in 10 days of non-utilisation a year and that the

mirror, challenges ahead

'lost opportunity' day-rate is $10 a day. The total estimated cost over 20 years would be $32,000 per tank container i.e. twice the current purchase price of a T11 tank container. The need for cost reduction is therefore apparent.

Economic waste also appears in tank depots. In general, tank container manufacturers - with their assembly operations - are highly efficient while tank container depots are not. But could depots be re-engineered to become more efficient?

One industry bugbear is the pickling and passivation procedure. This is proposed by depots, mostly after shell grinding, polishing and buffing. There is, however, no need for it unless the next cargo is corrosive. The chromium oxide layer of stainless steel is, after all, restored at no charge by it simply being in contact with air. Depots could usefully partner with stainless steel makers or surface treatment companies.

The routine disposal of manlid seals can also be eliminated in some cases by selecting the re-usable endless variety of encapsulated seals. These are also said to provide a much better seal and can be used for multiple movements.

Short selling jeopardises profit

The short selling of tank containers is the free, or subsidised, provision of tank containers to shippers. It usually takes place in hubs where there are tank container trade imbalances – too many inbound tank containers chasing too few outbound cargoes.

Operators are often faced with a difficult choice – to collect a contribution to the freight cost, even if the movement is loss-making, or to move the tank container empty at cost.

What scope is there to create value through product innovation and differentiation?

Tank containers are essentially pressure vessels in a frame with a heating system, instrumentation, devices, valves and fittings. And yet innovation is sporadic at best.

From a corrosion resistance perspective, one of the most attractive materials is Duplex 2205. Tank farms and product tanker operators – activities intimately associated with bulk chemical storage – have used Duplex extensively for some time.

Does it make commercial sense to use Duplex? The higher cost of some of some shell alternatives is shown to be more than offset by less workshop time, better utilisation and more attractive disposal values. High-quality shells are also excellent for re-manufacturing.

Preventing and reducing damage

Tracking systems show when and where tank containers are damaged. Cladding damage is frequent , so is there scope to select a stronger material that is less prone to damage, compared with GRP and aluminum?

One possibility is ultra-high molecular weight polyethylene sheet. The material is highly resistant to corrosive chemicals, has low moisture absorption and is 15 times more resistant to abrasion than carbon steel.

Can frame corrosion be reduced? There is an increasing incidence of inside-out frame corrosion that is unnecessary. Treatment of hollow sections by anti-corrosion agents such TECTYL, commonly used in motor vehicles, could be expected to reduce the incidence of the early corrosion that potentially prematurely ages tank containers.

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Do you really know your

Leslie McCune, editor of Tankcontainer Magazine, explores a well-known marketing mantra

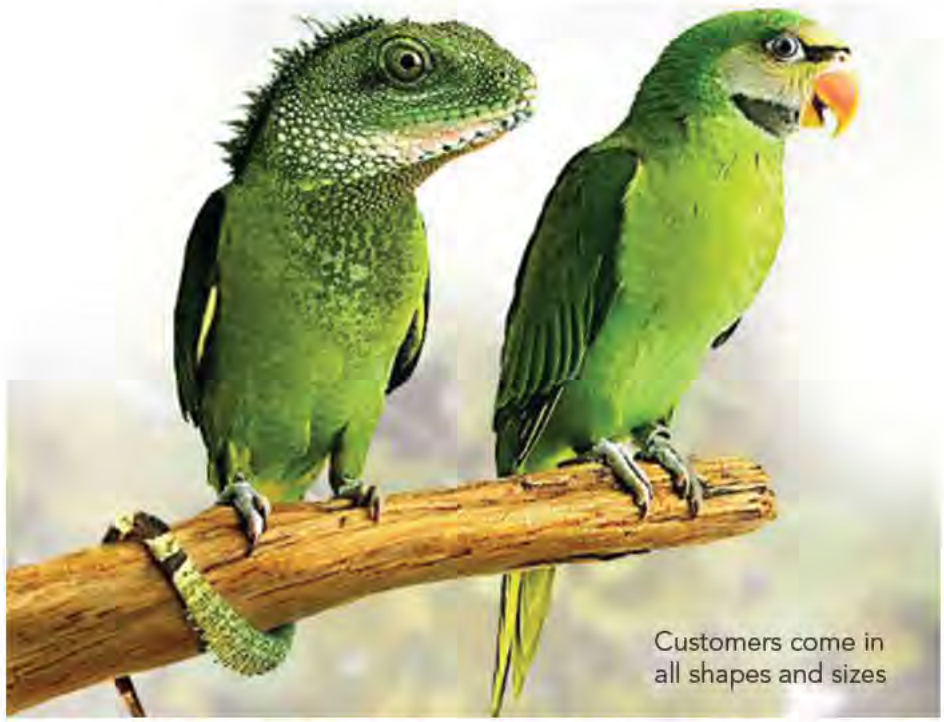
It is a common mantra: "To serve our customers better, we need to understand their industry better". It is also a common failing of many tank container operators, tank container leasing companies and chemical parcel tanker operators.

Some have become so inward-facing, system-orientated and operationally-driven that a corporate myopia seems to take hold, making them blind to the market dynamics that are changing their customers' needs.

The dramatic 60% fall in the price of crude oil - from $104 a barrel in June 2014 to $42 a barrel in August 2015 – had a fundamental impact on many of the chemicals moved in tank containers. The new expectation that crude oil prices will be 'lower, for longer' is changing oil and chemical sector fundamentals.

Oil and energy flows, for instance, are switching direction - increasingly moving from West to East instead of the long-standing East to West direction (funds, incidentally, will therefore increasingly flow from East to West, which will change our understanding of financial risk and asset prices). Tank containers mainly move around the world from West to East – will this change, and to what extent?

Some managements regard requests for a greater understanding of customers as a 'cri-de-coeur' from the sales team (usually, just ahead of news from the sales team that they will not be meeting their targets). Other companies regard it as just a marketing cliché that would need some sort of support from senior management who, staff believe, would never sign up for it. Some claim to follow their customers' industry but only pay lip-service to truly understanding it.



Customers come in all shapes and sizes

Chemical industry awareness delivers benefits

Many of the tank container industry's more successful players are, however, looking beyond today's unsustainably low lease rates and rock-bottom tank container prices to develop in their staff, at all levels, a deeper knowledge and awareness of their customers' industry - the chemical industry.

This inevitably requires an investment of time and money but the benefits, according to those companies that have made the investment, far outweigh the costs.

1-day courses on the chemical sector, which link tank container demand with the chemical industry's changing dynamics, are available from Chemical Management Resources Limited (www.chemicalmanagement.co.uk).

The obvious benefit from this increased knowledge is an improvement in the quality of discussions with customers, who usually respect the new-found ability of their supply chain service provider to talk knowledgeably about their business and its market environment.

New opportunities are revealed

In the process of these mutually-respectful discussions, new business opportunities often come to light and/or better ways of meeting each parties needs are revealed.

customer's industry?

Industry threats can also be identified earlier and actions taken promptly by tank container operator and chemical producer to either neutralise or exploit them.

An increased awareness of the chemical industry by the tank container operators or lessors increases their ability to predict changes in the market, creating opportunities to build competitively-advantaged positions ahead of merely reactive competitors.

One tank container operator is currently preparing to reduce its exposure to the export - in tank containers - of a specialty benzene derivative from the US, which has been a significant product flow for the operator. Due to its much-improved awareness of the market dynamics of the chemical industry, the tank container operator has correctly concluded that the product flow it services is unsustainable.

More positively, the chemical producer recognised the tank container operator's industry knowledge and, as a result, was confident enough to share their alternative plans with the operator (but not with the tank container operator's competitors, who the chemical producer viewed as being only driven by 'responsive opportunism').

The mutually-respectful dialogue between the parties resulted in 530 tank containers being dedicated to the chemical producer for a new product in a new tradelane.

Training helps staff retention

Investing in chemical industry training helps to make the activities of many staff working with tank container players more meaningful.

Last, but by no means least, there is the intangible benefit of the increased commitment that staff have to an employer that invests in them. Ultimately, this helps with staff retention, workplace satisfaction and personal motivation. Importantly, employees respect the senior management that approved the investment.

Leslie McCune is a global expert on the chemical and tank container industries. For training course ideas, contact lm@chemicalmanagement.co.uk (+44 7783 042 664)

How much do you know?

So, as a tank container player, how much do you know at the moment about your customers' industry? *Tankcontainer Magazine* has put together ten chemical industry-related questions that will indicate how well you know your customers' market. The questions will also be posted by Leslie McCune on the 'Tank Container Operating' and 'Tank Container World' groups on LinkedIn. In December, the answers will also be posted on LinkedIn - some of them will surprise.

1. Organic specialty chemicals like MDI, TDI and acrylates come from hydrocarbon oil and/or gas reserves. Which major, industrialised Asian country - which has a strong chemical industry - has no oil and no gas reserves?
2. Organic specialty chemicals are produced by refineries and petrochemical crackers. Which three petrochemicals – which are the building blocks of downstream value chains – are produced by a refinery?
3. Which two gases are mixed to make LPG (Liquefied Petroleum Gas)?
4. Do all 'associated' natural gases go into a petrochemical cracker?
5. Ethylene is often used as a proxy or benchmark for the chemical industry. Polyethylene is ethylene's biggest volume derivative. What is the second biggest ethylene derivative product?
6. Where is the lowest-cost place to produce ethylene today?
7. Petrochemical crackers have a number of feedstocks, each of which yields varying amounts of ethylene, propylene, butadiene, etc. If you only wanted propylene, which feedstock would you crack?
8. Saudi Arabia has the largest proven reserves of crude oil in the world. Based on its current extraction rate of 10.2 million barrels a day - and assuming there is no change to its proven reserves - when does Saudi Arabia run out of oil?
9. China's petrochemical industry is increasingly based on coal, not least because China has the largest proven reserves of coal in the world. Based on its current extraction rate, when does China run out of coal?
10. In real (inflation-adjusted) terms, which was higher: oil at $39 a barrel in 1979, or when it was at its highest-ever numerical peak price of $147.30 a barrel on 11 July 2008?

Struggling to answer? It may be time to consider a training course on the rapidly-changing chemical industry, and what it means for tank container opportunities.

Cutting wear and tare

While much manufacturing is focused on Asia and South Africa, some in Europe are researching how to engineer lighter, stronger and more thermally-efficient tank containers, reports Katerina Kerr

In the Netherlands, Flax Field Trading provides a range of services for the tank transport industry and has announced the development of a tank container which substitutes the stainless steel tank with one manufactured from composite material.

It is the result of a joint effort between Flax Field and Netherlands-based Composite Production Technology (CPT), which is manufacturing the new tank container.

Flax Field is the technical partner of China-based tank container manufacturer Singamas. It provided Singamas with a package of technology services for the establishment of its tank container manufacturing business in 2006.

Flax Field does not offer tank containers to the market under its own brand but markets the tank containers produced by Singamas. It also trades used equipment that is often traded in from clients in exchange for new equipment.

The new tank container being manufactured by CPT has been branded under the name Tankwell and features the substitution of traditional materials by fibre-reinforced plastics.

Such tank containers have not been on the market for very long. "To our knowledge no-one has introduced such a product on a large scale, whilst offering the benefits the Tankwell product achieves," comments Damian Smith, Director of Flax Field Europe.

"Composite road tanks have been operating in the market for some time and others have attempted to use composite materials in intermodal tanks before, but for very specific applications," he explains.

The Tankwell tank is a swapbody tank container that is primarily, used in European intermodal transportation.

"We have been exploring the use of composite materials as a replacement for stainless steel for over six years," explains Smith.

The concept uses patented manufacturing processes and unique production technology to create a one-piece filament wound fibre-reinforced tank container.

It has chosen to use a glass reinforced vinyl ester resin as it offers a large degree of chemical resistance as well as being a non-migratory material, making it suitable for foodstuff transportation.

"All other materials used in the manufacturing of the tank containers are of a conventional type creating benefits in that traditional maintenance techniques can be used and the availability of spare parts is high," explains Smith.

"When the new product is viewed from the outside it cannot be distinguished from a conventional type of swapbody tank container with the exception of the tare weight, which to the trained eye will raise questions as the number is considerably lower than its stainless steel counterpart."

So far, there are two primary benefits. Firstly, there is a tare weight reduction of 30%, and, secondly, a 40% improvement on thermal performance from an energy retention perspective.

The tare weight reduction means the payload of a 31,000 litre unit can increase, where permitted, to over 36,000 kg.

Smith notes that further benefits could become apparent once the product has been used more extensively. These could include cleaning capabilities in comparison to stainless steel tanks.

"Our customers have been searching for methods of increasing payloads for some time to be able to better serve their clients," says Smith. "Logistics service providers will be able to deliver a larger amount of product in a single journey.

"This will offer benefits in terms of the number of journeys, fuel costs, emissions and energy consumption and contribute to reducing congestion on roads."

The 40% improvement in thermal performance is due to the thermal conductivity characteristics of the composite material and the method of tank to frame attachment.

This significant reduction in heat loss in turn lowers external energy input but the time required to alter the temperature of the product in the tank increases. It must be noted that heating hazardous products in a composite

tank container is not allowed under the current regulations.

"The maintenance regime of this type of tank container will be no different to that of a conventional one, simplifying the addition to existing fleets of stainless steel tank containers," explains Smith.

Statutory testing every two and a half years is required for the transportation of the classified products and the valves and fittings are identical to those mounted on stainless steel tank containers.

Due to the regulatory restrictions currently in place the Tankwell tank container was able to obtain full ADR/RID/CSC certifications in January 2015 following a three-year development period.

The regulatory requirements for the use of composite materials as a substitute for metallic materials impose additional testing on the manufacturer. The ADR regulations have included an additional chapter governing the design, testing and use of composite materials.

In order to make the tank useable in a wider range of applications the company also obtained CSC approval.

Flax Field was established in 1999 and became active in its current guise in 2004. In 2006, it became involved in operations in Asia when agreement was reached with Singamas to create its tank container manufacturing capabilities.

It is not yet known whether Singamas will begin manufacturing the Tankwell on a larger scale, as the product is currently primarily suitable for European land-based transport.

The Singamas tank and tank container manufacturing facility is based in the Jiading district, Northwest of the greater Shanghai area. The purpose-built facility is undergoing continuous development and expansion, which is providing more flexibility in its production capabilities.

"We have recently embarked on a degree of automation with robots being installed in certain areas of the plant and additional processes such as de-coiling being introduced," says Smith.

Initially, Flax Field and CPT focused on 31,000 litre capacity composite tank containers. Now it is exploring larger capacities after consultations with existing and potential customers.

"Larger capacities are anticipated to take advantage of the lower tare weight whilst the chemical resistance of the resin would require smaller capacity tanks for products currently transported in lined tanks due to their corrosive nature to stainless steel," explains Smith.

Gaining momentum in a new market is rarely straightforward for new entrants. The tank container manufacturing industry is booming and competition is intense. "There are a number of well-established tank container manufacturers," warns Smith.

"The entry threshold is high due to the technical and financial requirements in establishing a modern production facility and there is more than sufficient production capacity available."

He notes that one of the main challenges is to adapt to and meet fluctuations in demand levels.

"Even though the general trend line shows good growth in the use of tank containers, oversupply for a certain period inevitably creates a subsequent period of reduced demand for manufacturers."

Meanwhile, the pricing levels of new equipment can significantly affect the trading of tanks and tank containers. However, Flax Field sees this as an excellent way of developing new markets as pricing levels allow access to lower cost equipment, enabling it to understand advantages of different types of transport equipment.

The tank container industry is a growth market and new developments, technologies and improvements on the original model offers a large degree of flexibility compared with other means of moving liquids.

"When considering the introduction of the composite tank container we believe it will serve a niche market and will not become a major competitor to the traditional tank container in deepsea applications," notes Smith.

Flax Field is not preparing for any major expansions at this time but expects to see an expansion in manufacturing capacities once the market has accepted the new composite type tank containers.

"The location of such an expansion will be determined largely by the demand from the global market," says Smith, adding that the high degree of automation in the production of the composite tank will make it possible to establish production close to the demand region.

CE ready to test the water

Angelo Scorza profiles Chemical Express, a Naples-based tank container pioneer, set up with a small haulage fleet in 1979 by the now retired Salvatore Romano

Salvatore's sons, Vincenzo and Ciro, understood that haulage had an intermodal future and in 1995 bought the first tank container. In 2013, management repackaged the transport activities within the new Chemical Express Srl (CE).

Current CEO Giuseppe Avallone represents the third generation and has set the new company's mission to be 'the transport of tanked liquid chemicals on behalf of third parties'.

Carried goods range from standard commodities to highly specialised products with high added value. These include dangerous goods, handled under the class labels 3–4.1–5.1–6.1–8–9.

As well as transport, CE offers other services. These include the rental of the company's own tank containers and the transport of cargoes under controlled temperature. The latter is achieved by the use of self-regulating vehicles or by warming the cargo at specialised service stations by means of damp or hot water.

"The added-value marking out our services is the ability to meet their needs by always looking for the best solution even within strict deadlines. This builds up business relations and makes of us true logistics partners for our customers," explains Avallone.

The fleet has 100 road trucks. These are equipped with the most advanced anti-pollution controls, active and passive safety systems and satellite tracing. The fleet

is wire connected to allow real-time communications with drivers and vehicles have a compressor or pump for the self-standing unloading of cargoes. There are 140 chassis variations, including tilting units for very viscous products and ultra-light trailers that are certified for dangerous goods and separate unloading.

The fleet also includes 110 road tanks of varying capacity, with insulated stainless steel and up to three warmed compartments for dangerous goods. The fleet includes 1,200 tank containers (both ISO and swapbodies) - 300 tank containers are leased with the 900 remaining owned.

2014 turnover was €25 million with an increase forecast for 2015. There are now 86 employees in the company.

CE's headquarters are on a 16,000sq metre site close to the commercial port in Naples and its network includes a large warehouse in Novara, Northern Italy and an office in Valencia, Spain.

The company offers its services across all European countries with the main markets being France, Spain, Germany, the Benelux, and, of course, Italy.

"We do not set ourselves specific boundaries as we always have a range of services to offer with varied transport modes in order to reach the destinations our customers ask for" says Francesco Mattozzi, account manager.

In 2014, CE handled 440,000 tons through 22,000 shipments. "Recently intermodal shipments exceeded road ones. According to our general view, we first proposed intermodal shipments to our customers because of intermodal's smaller environmental impact, better safety and reduced overall costs. The safety is improved by reducing the number of vehicles needed".

The customer portfolio is varied. "Alongside chemical giants like BASF, BP, Repsol, Gazprom Neft and Grace, you find smaller companies which we service with the same commitment" Mattozzi says.

A company's growth depends on its ability to invest. "For a transport company, fleet renewal and growth are essential. We are delighted that for a number of years we have been able to pursue an expansion strategy, which was confirmed this year by the acquisition of 15 Euro VI road tractors and 25 lightweight trailers. The latter, by reducing the tare, enabled an increase in carried load which, in turn, allowed sensible cost reduction for customers".

CE buys its tank containers from both European and Chinese

manufacturers such as Van Hool and CIMC. For many years the company has been investing in the fleet renewal, especially as to swapbodies. The long delivery gaps suggest that its competitors are doing the same.

"Swapbodies are the most flexible and versatile element of our fleet for a number of reasons: they can be carried by different transport modes; they have a high volume capacity for very light products (with specific gravities of less than 1); a dangerous goods classification label (L4BH) and compartments allowing partial loading without compromising stability (which is a necessary feature for dangerous goods)" points out Avallone.

"Our company is fully autonomous on the market both domestic and international. This year is an important one as we won new important customers and developed trades, especially with Eastern Europe. We will probably enter international trades with deepsea shipments and food and beverage shipments (the latter with a dedicated fleet)", he discloses.

The need for warehouses and production plants to keep stocks at a low level has increased requests for just-in-time services' Load slots can be allocated just 24 hours in advance through the company's website and deliveries are collated by the minute.

"In Italy, the number of rail operators is increasing, which has enhanced competition on the market" notes Mattozzi.

For a road transport company the drivers' behaviour acts as a visiting card for customers at loading points and terminals.

"Unfortunately, not all drivers are professional and competent

Giuseppe Avallone, CEO of Chemical Express

enough to perform their duty," remarks Avallone, "but CE is very strict and selective and, in order to hire, we mandatorily require the dangerous goods permit with specialisation for tankers, the knowledge of Italian language (for foreigners) and of at least one other language (English, French, German) as this is often essential to access some loading points.

"We set up a training programme encompassing all facets of dangerous goods transport including rests' timing, safe drive, and cargo handling in specific conditions and environments".

Although based in southern Italy - and therefore far from the 'core Europe' tank container trade lanes - CE does not face any competitive disadvantage. "In order to be closer to our customers, we have travelling personnel living in all Italian regions and in several European countries, precisely with the goal of adequately covering the territory and to be personally in touch with our customers," says Avallone.

CE mainly uses rail for its intermodal transport so transit timing is well-defined. "Strikes - which are becomingly worryingly routine in a number of European countries - and climate can seriously affect the transport schedule," says the CEO, who also notes that "the market is getting increasingly competitive as competitors become more commercially aggressive.

"In any case, we are confident that our strong business ties with our customers and a high service quality, together with our flexibility and constant technological update, well help us to keep our market share.

"In such difficult economic conditions, you must pay attention to the credit rating of your customers to guarantee a suitable cash flow."

CE is a member of the European Petrochemical Association (EPCA) and the European Chemical Transport Association (ECTA).

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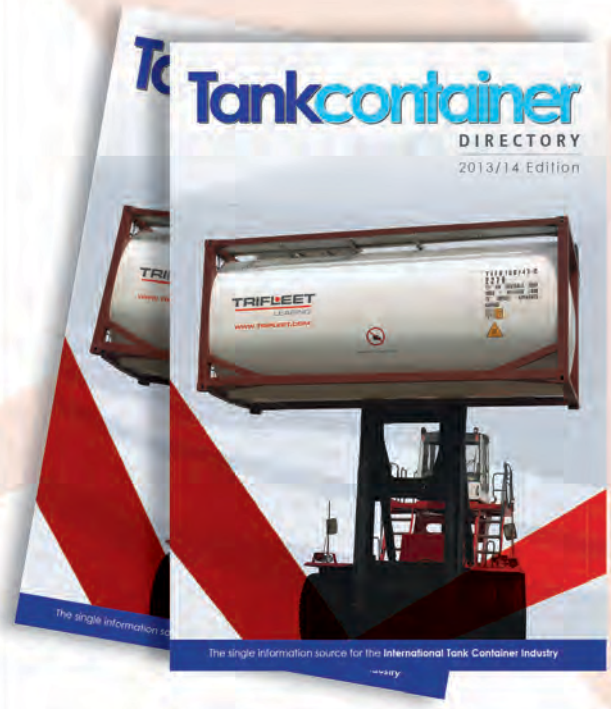

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Smith-Holland and NTC going Dutch

Some describe the tank container business as a difficult environment, but two firms show how their position in it can be strengthened through innovation, collaboration and expansion. Janny Kok reports

NTC Tankcontainer Services and Smith-Holland claim to be unique in that they consider their customers as business partners.

This approach – combined with the complementary services each company offers – is the basis of their collaboration in the reefer tank services and repairs market.

Why have the two Rotterdam-based companies decided to collaborate? Firstly, synergy. NTC is an independent service provider for the tank container market with a large depot and cleaning station for chemicals and food tank containers.

It is located in the Botlek area, within the port of Rotterdam, and handles 140 tank containers a day. It also carries out 1,000-1,200 Pressure Tank Inspections (PTI) a year on tank containers and reefer tanks.

Smith-Holland carries out over 130,000 PTI a year for all deep- and short-sea shipping at 50 European locations.

Most are focused on reefer

Smith-Holland CEO Ed Smith

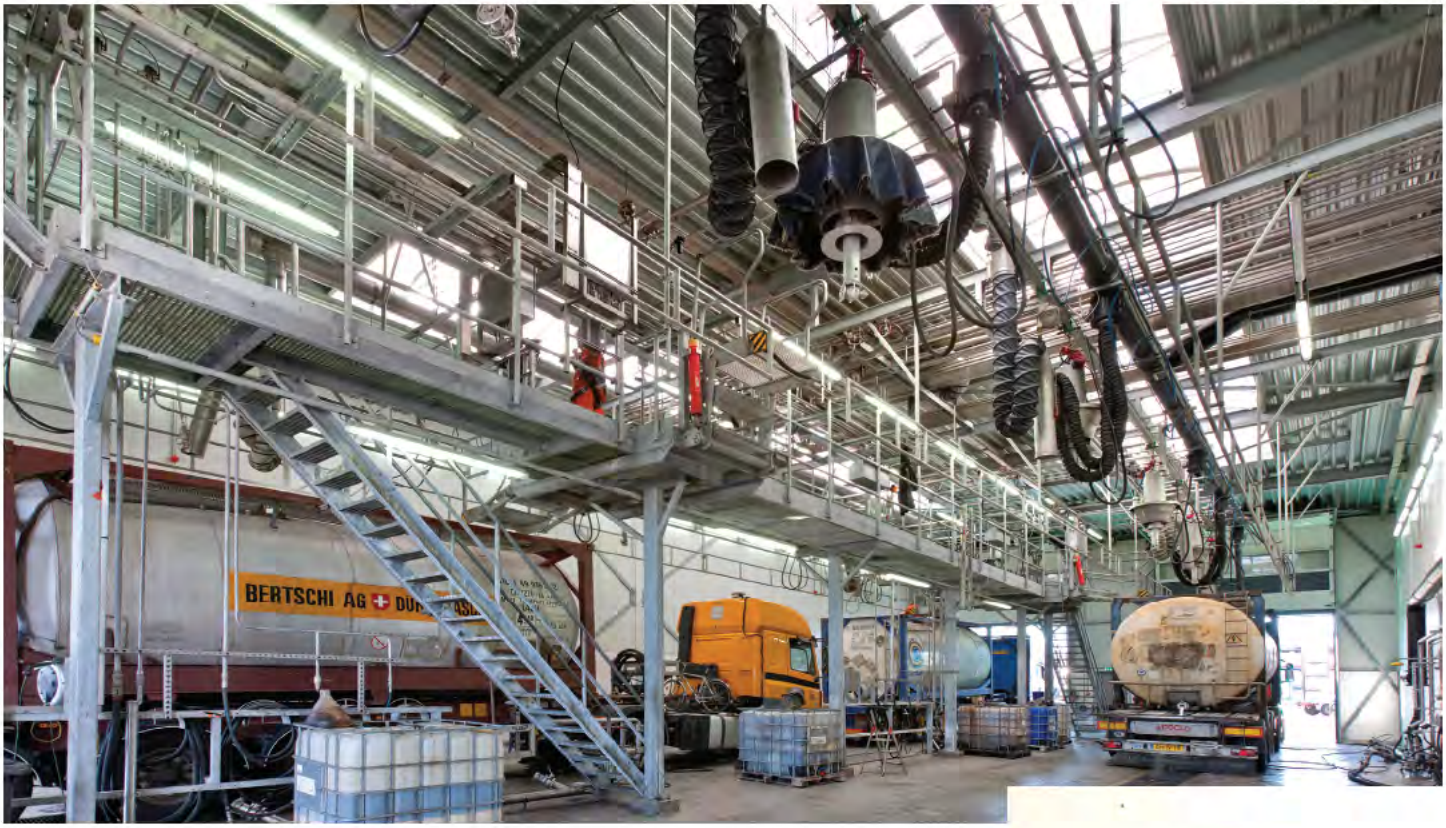
containers but the company has seen a continuing increase in PTI's being requested for reefer tank containers and heated tank.

Collaborative benefits

The combination of NTC with Smith-Holland is useful for both parties - NTC can guarantee a larger coverage in the port of Rotterdam through Smith-Holland's presence on most of the terminals within the port.

NTC also benefits from Smith-Holland's specialism in reefer tank containers and heated tank containers. The partnership enables NTC to keep abreast with the latest developments in this field.

NTC used to repair tank container cooling and heating systems itself in Rotterdam but has decided to involve Smith-Holland for these specialised activities on NTC Botlek premises and at the other port of Rotterdam terminals



where Smith-Holland is present.

Smith-Holland CEO Ed Smith tells *Tankcontainer Magazine* that the win/win situation for both NTC and Smith-Holland is based on combining the PTI services and repairs on NTC's Botlek site.

The concept is not new - Smith-Holland's technicians routinely work outside as the company's services are not tied to specific locations.

Smith-Holland undertakes major damage repairs, retrofitting and refurbishment repairs in its workshop close to its head office in Spijkenisse and has access to most European container depots and container terminals, with a network of branch offices in Belgium, France and Germany.

NTC Tankcontainer Services Managing Director Eric van Halewijn sees other important side effects of the Smith-Holland – NTC collaboration.

"We would have to instruct one of our men to go to a specific terminal for repairs or other jobs when required on our own. We have one technician being expert in his work, but we would miss him and his expertise if he went to another terminal to do the job.

"That problem has been solved, since Smith-Holland technicians do the job here at Botlek. Besides, they are likely to bring home additional customers who recognise the advantages of our collaboration with Smith-Holland."

A chemical focus

Smith and van Halewijn agree that the largest cleaning station in Europe - at the NTC Botlek site – has attracted attention since 2012.

"Together, we can attract new customers by being service-driven. The advantage for customers of NTC is that Smith-Holland does its specialised work at NTC Botlek, but can also offer its services elsewhere."

NTC Tankcontainer Services was formed 26 years ago and is active in both the port of Rotterdam and in Moerdijk, between Rotterdam and Antwerp. These two ports - and the relatively small port of Moerdijk - are one of the European 'homes' of the chemical industry.

Unsurprisingly, van Halewijn asserts that NTC's focus is on chemicals.

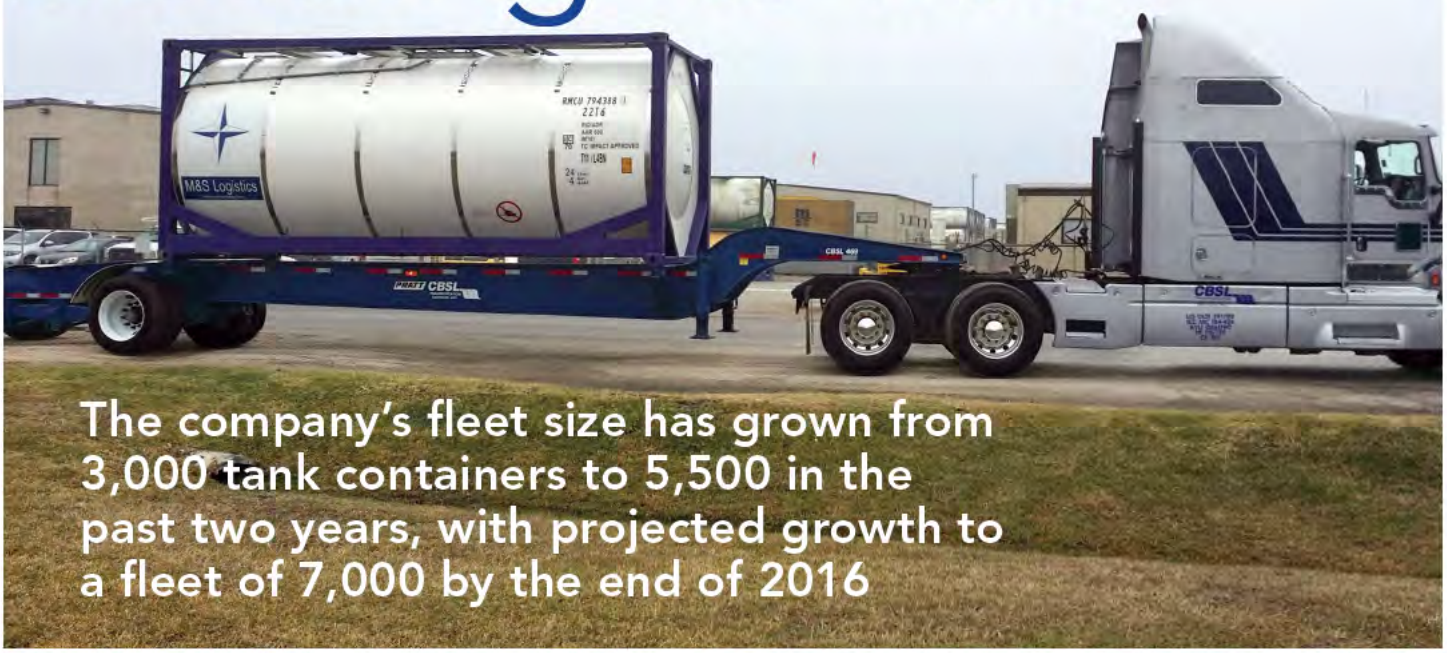
NTC Tankcontainer Services Managing Director Eric van Halewijn

"These are the most important to us. Reefer tanks for food products represent only 10 per cent of our business but there is no distinction between customers in these sectors. We respect all of them as being our partners.

"We think along their lines of requirements and, to us, 'No' is not answer to be given to requirements and being flexible is standard with all of our 70 employees."

He adds: "It's all about short lines in decision making and management creating ever more efficiency."

M&S Logistics is building its fleet



The company's fleet size has grown from 3,000 tank containers to 5,500 in the past two years, with projected growth to a fleet of 7,000 by the end of 2016

Founded in 1996 in South Africa, M&S Logistics is a global tank container operator specialising in the intermodal transport of bulk liquids with a fleet size of over 5,500 tank containers, which range in size from 21,000 to 26,000 litres.

The company's headquarters is in the UK with offices in the Netherlands, Singapore, South Africa and the United States of America. Further offices are planned in China - in the first quarter of 2016 - and, later in the year, in the Middle East.

In addition to the global offices the company has strong connections and intermediaries in the Middle East, India, South East and Far East Asia, Africa, the Mediterranean, Central America and South America.

Wim Roldaan, President Americas at M&S Logistics, says: "In the last two years, the company's fleet size has grown from 3,000 tank containers to 5,500 tank containers with a projected growth to 7,000 tank containers by the end of 2016".

M&S Logistics attribute its success to the continual investment in people, equipment and systems which deliver the high level of customer care and cost effective logistics service.

The global management team operates from local offices, which means the company has a greater understanding of the local markets.

Its commitment to providing safe and environmentally-friendly

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- Identified Middle East partners for world leading tank container operators and leasing companies
- Identified tank container acquisition targets
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The US office - based in Pearland, Houston - opened in 2010 and is responsible for North and South America. Operating from its new office, the staff of 16 handles approximately 600 loads a month.

Despite the current slow market in the US, and increasingly competitive rates, M&S Logistics increased the profitably of the company by 80% in 2014 and 60% in 2015. This was due to improved efficiency and economies of scale.

The US chemical Industry is in a major investment phase. Since 2008, 231 chemical and polymer shale-related projects have been announced in North America, representing a potential investment of $142 billion.

M&S Logistics expects volumes from the US to grow towards the end of 2016, or early 2017 and is targeting 60% growth next year. To prepare for this growth, the company recently acquired a new 6,500sq ft office.

While price competitiveness and quality of service are expected, Roldaan believes that due to the company's customers continually seeking ever-higher levels of safety and environmental responsibility, there will be an increased demand for tanks containers over and above other modes of transport like flexibags and drums.

Roldaan concludes: "We see a bright future for the company. The company's medium term goal is to own and operate a fleet of over 10,000 tanks containers".

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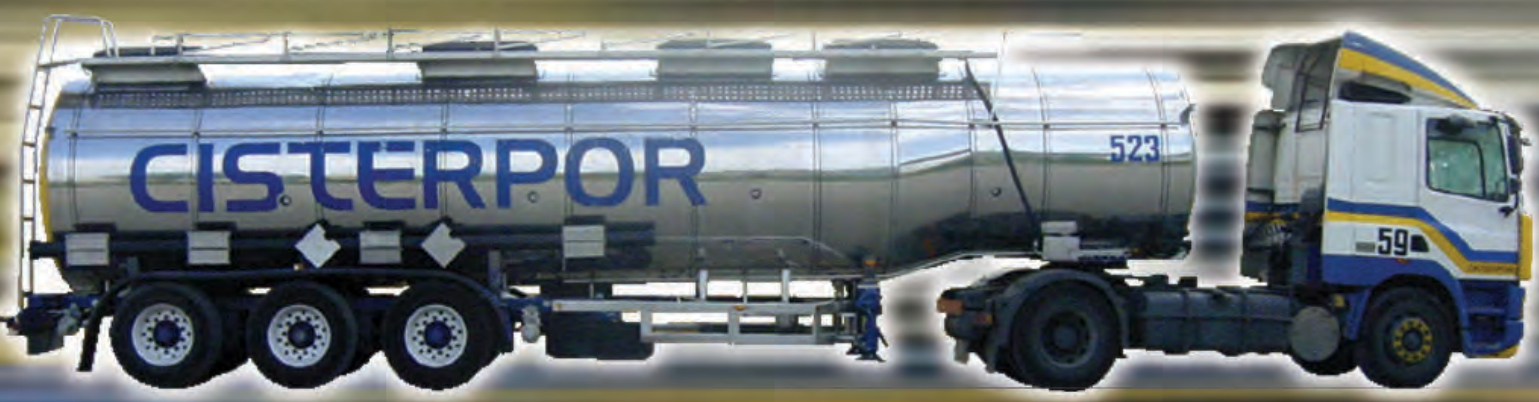

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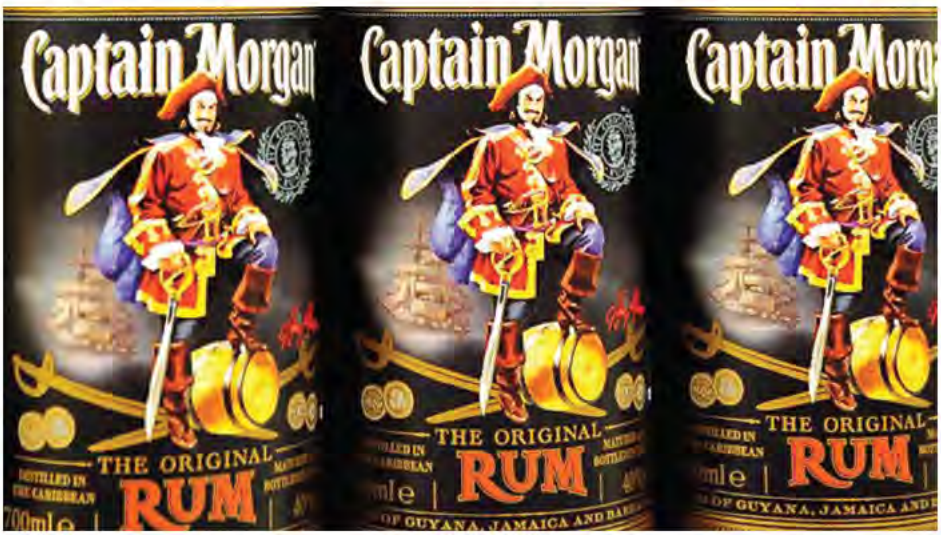
Yo ho ho and a container of rum

Rum has been the drink of choice for mariners since the days of the pirates of the Caribbean. Now it is shipped in ISO containers. James Graham downs a tot



Seafarers and rum go back centuries. The tradition of rum and the sea began in the Caribbean in the decades after European colonisation.

On 21 August 1740, Vice Admiral Edward Vernon of the British Royal Navy introduced the drink that became known as 'grog', a drink made with water or weak beer, lemon or lime juice and rum. Sailors were given a daily tot of this until July 31, 1970, when the last rum ration was served on board *HMS Endymion*.

Rum has also long been a cargo. Formerly shipped in barrels or casks – a method still utilised on eco-friendly sailing ships – now rum is handled in ISO containers, either as a tanked cargo or palletised in boxes.

Shipping lines such as CMA-CGM will move rum on the main shipping lanes out of the Caribbean to major markets worldwide.

That's the spirit

Sugarcane is cultivated around the tropical world, and where it is grown it is often fermented and distilled to make the spirit known as rum. While the obvious and historic links to the West Indies continues, significant rum production occurs in Australia, Guatemala, Guyana, India, Madagascar, Mauritius, New Zealand, Reunion, South Africa, and Surinam.

The French West Indies (Martinique, Guadalupe) and some of the French Pacific Islands make rhum agricole (rum distilled from fermented sugar cane juice).

Rum is a fine spirit, popular with drinkers in many international markets, made from the residues of sugar processing. The liquid is obtained by distillation from sugar cane, sugar cane molasses and other sugar processing by-products.

The main distillate, which is produced in pot stills (distillation boilers), has an alcohol content of 80 – 88% ABV (Alcohol By Volume). It is then stored in oak kegs.

As a product, rum is classified as: Original rum – produced in the exporting countries with no changes made in the importing country; Overseas rum – imported with an alcohol content of 75% ABV and reduced to a drinking strength of 40 – 45% ABV. The main distinctions on the basis of their aroma are between the types of rum: Cuban rum: light, brandy-like aroma; Jamaica rum: intense, full-bodied aroma; and Martinique rum: strong, heavy aroma.

Although rum does not spoil easily due to its high ethyl alcohol content, as a cargo it does require care to prevent quality degradation. The following distinction is drawn on the basis of colour: White (light) rum, with an ethyl alcohol content of 40% ABV; Brown (dark) rum, e.g. Jamaica rum, with an ethyl alcohol content of 45 – 50% ABV.

Distillation of residues from the sugar cane industry takes

place principally on the islands of the Caribbean (Jamaica, Cuba, Martinique, Barbados) and in South America.

Alcoholic beverages, such as rum, are more prone to thermal dilatation than alcohol-free beverages. Temperatures > 25°C or solar radiation cause discolouration, resinification of the essential oils, oxidation phenomena and the breakdown of quality-determining aromatic substances.

Temperatures < 10°C cause separation, and sedimentation of colouring substances occurs. Chill haze does not impair flavour and quality, however, and may be reversed at temperatures > 18°C. Temperatures < 0°C may cause a reduction in the volume of the contents, giving the impression of shortage.

High-proof rum in tanks has a flash point of below 23°C – 54% ABV rum: flash point approximately 22°C – is assigned to Class 3 of the IMDG Code. Leakage results in a fire hazard.

Rum is a relatively valuable cargo, so there is considerable risk of theft

Up to standard

The majority of the world's rum production occurs in the Caribbean and Latin America. Until 2012, Jamaica lacked a tank cleaning depot capable of meeting food grade standards. This was rectified with a joint British-Jamaican project to open a cleaning facility.

ISOCON-JLB is a partnership between Jamaican NVOCC forwarder JLB International and Scottish engineering firm ISOCON Engineering with the objective of being "one of the Caribbean's most efficient ISO tank cleaning and servicing companies".

ISOCON-JLB International is fully equipped for internal and external cleaning of ISO tanks, road tankers, tank containers and all other Intermodal equipment.

Officials in Kingston consider that the USD589,000 facility will be a boon for the entire Caribbean rum export sector.

Getting the taste

With over 146,000,000 9-litre cases now sold annually, rum has emerged as the sixth-largest spirit by volume globally and is enjoying resurgence in popularity. Higher-quality rums are seeing increased local consumption as well as traction in the export markets, creating demand for shipping services.

Consumers in India, North America, the Caribbean, Germany and the UK lead the spirit's growth in consumption.

A taste for cocktails such as Mojitos and Daiquiris and the growth in spiced rum among Millennials is creating demand for producers such as UK-based giant Diageo, a major shipping capacity buyer.

The continued subsidising of the rum-producing US territories of Puerto Rico and the Virgin Islands, where Diageo operates a large rum distillery making Captain Morgan, has created an export vacuum that impairs other Caribbean Community (CARICOM) rums, creating a peculiar insularity that has set the stage for the emergence of stronger, localised brands that target the unyieldingly positive domestic Caribbean market.

Serious concerns

According to CARICOM, rum production and export are critical to the social and economic well-being of the region. The rum industry is a substantial employer and a major contributor to foreign exchange earnings and government revenues.

Therefore, CARICOM continues to have serious concerns about the threat to the competitiveness of Caribbean rum in the US market resulting from the massive subsidies provided by the governments of the United States Virgin Islands and Puerto Rico to multinational rum producers in those territories.

The nature and scale of these subsidies are such that they threaten to distort rum markets.

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- Manufacturing, Operating, Leasing,
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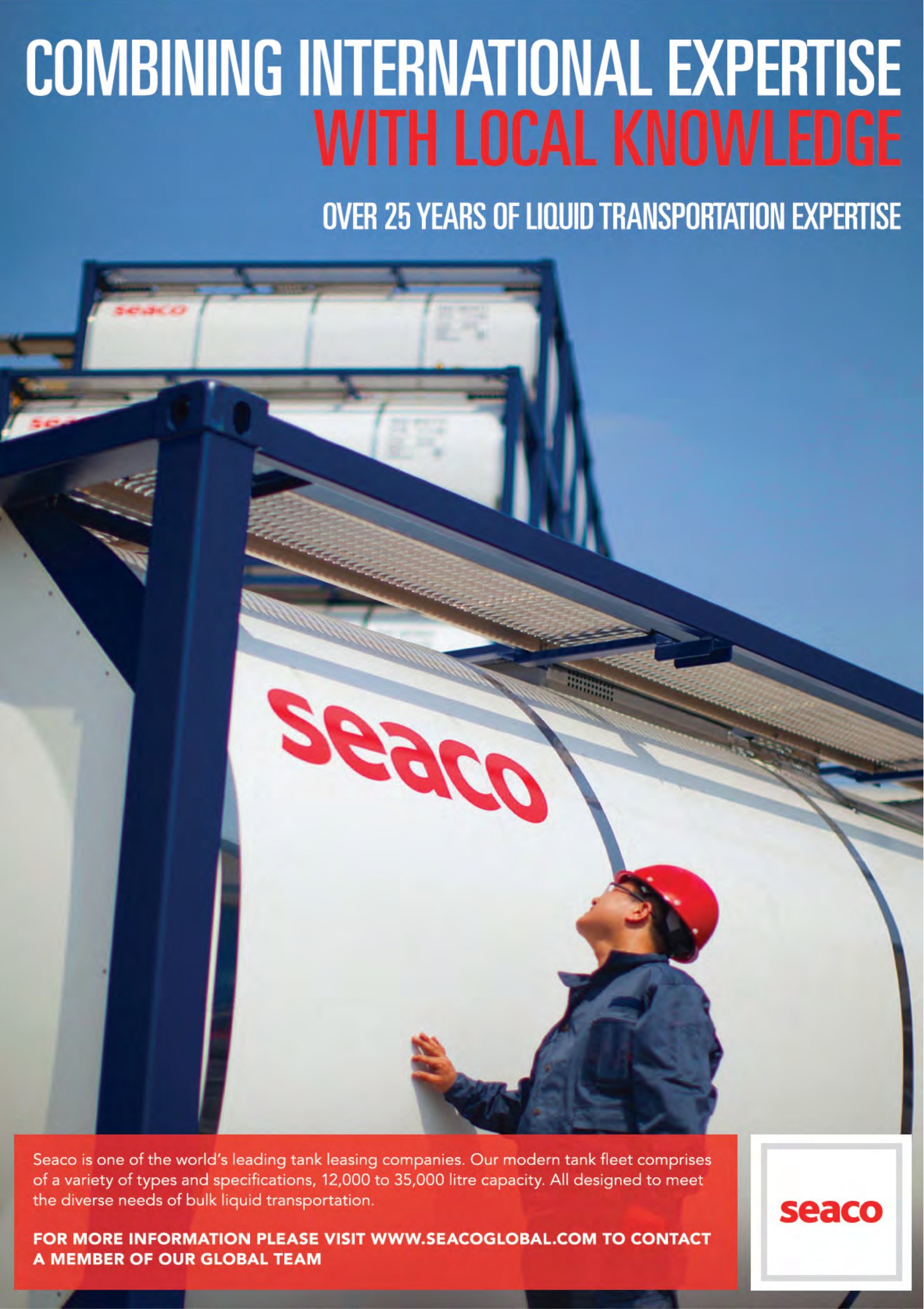

Seaco is one of the world's leading tank leasing companies. Our modern tank fleet comprises of a variety of types and specifications, 12,000 to 35,000 litre capacity. All designed to meet the diverse needs of bulk liquid transportation.

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