CONFERENCE

The European Petrochemical Association gets set to hold its 51st annual meeting in Berlin

REGIONAL FOCUS

After a troublesome 2016 for Asia's lessors, some market stability has returned

LOGISTICS

The CIS's United Wagon Co branches out into tank container management

OPERATOR

Valentin Turtia, MD of Baltica-Trans Logistics, on the Russian operator market

Tankcontainer MAGAZINE

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NTtank founder Huang Jie on tank container production, supply and demand

inside Volume 4 | Issue 3

Tankcontainer MAGAZINE

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One Belt, One Road, many opportunities

This issue of *Tankcontainer Magazine* focuses on Asia, home to the world's largest tank container manufacturers and the region with the highest growth potential for tank container usage.

Some in the industry regard China as the root cause of the industry's depressed margins. The rationale is that Chinese tank manufacturers, to maintain high employment levels, have continued to produce at levels far beyond the natural market demand from tank container operators and lessors. This has resulted in a dramatic fall in prices which has, in turn, stimulated industry players to replenish their fleets and stock up ahead of future tank container demand. The low prices for tank containers – well below $15,000 for a standard T11 in some cases – has encouraged new entrants into the industry who, to penetrate the market and increase fleet utilisation, have slashed rates. This inevitably has led to a substantial reduction in the industry's margins.

Two other factors add to this margin compression. Firstly, margins have been traditionally supported by demurrage revenues. But even though the global weighted average cost of capital is at historic lows, there has been a huge reduction in the chemical industry's inventory-related working capital. The supply chain, partly abetted by the tank container sector, has – in terms of its supply chain business models, asset deployment and cash management – 'got smarter'. Demurrage liabilities are therefore more closely managed by customers, resulting in fewer revenue opportunities for the tank container industry.

Secondly, freight rates have fallen dramatically and show no signs of firming significantly. This has led to less margin opportunity for tank container operators.

One of the inevitable consequences of these combined forces is industry consolidation. Among lessors, this has been led by China-based HNA acquiring Seaco and Cronos while, among the tank container operators, Bertschi and Den Hartogh have been particularly active. Others have preferred to forge partnerships to create global network depth.

The collapse in rates has, of course, stimulated demand for tank containers so the current market saturation may, in time, come more into balance if – and it is a big if – production more closely matches demand.

Further demand will come from China's 'One Belt One Road' initiative, which will push the Middle Kingdom deeper into existing and emerging markets. The Belt and Road Initiative (BRI) is a large-scale strategy designed to drive bigger and faster trade and capital flows between the east and the west. It will boost the flow of trade, capital and services between China and more than 65 other countries along the land and sea routes from Malaysia to Eastern Europe. Investment of more than $900 billion is already committed to build infrastructure networks such as ports, roads, railways and airports as well as power plants and telecommunications.

Among tank container operators, Bertschi has been the most committed and pioneering in responding to the BRI. In May, a train loaded with 82 tank containers left Korla in Western China on an 8,000 km trip to Europe. The 800-metre train took 18 days to follow in the rail tracks of the first block train to make the journey two years ago. The economic viability of the new route is supported by the eastern seaboard of China being 4,000 km west of Korla.

This issue of *Tankcontainer Magazine* features an interview with the President of NTtank, which last year had revenues of over $70 million and manufactured more than 5,500 tank containers.

But China is not just about tank container manufacturers – the 15,380 tank container fleet of China Rail Logistics ranks seventh in the world and has the most experience of managing the unique challenges of China's tank container infrastructure. In many areas, for example, 40' tank containers are better suited than 20' units. Tank containers also have to deal with notoriously heavy handing on China's railways and consignees occasionally can only get trade credit if the tank containers are shipped by the major recognised tank operators.

On the depot side, Reg Lee's @tco has been instrumental in raising awareness and standards in the region. The 17th facility was audited in Q2, but the organisation, now being absorbed into ITCO, has also been effective at promoting the benefits of tank containers in Asia together with the professional management of them.

As tank container volumes along the One Belt One Road move gradually from novelty to the norm, remember the Chinese proverb: "Be not afraid of growing slowly. Be afraid only of standing still".

Leslie McCune, Editor

BASF optimises logistics at Ludwigshafen site

A new integrated storage and logistics concept will help BASF significantly reduce logistics costs.

The transport volume at the Ludwigshafen site is around 20 million metric tons per year. Since the transport links at the Ludwigshafen site account for a considerable share of costs, this is the focus of the concept.

The most important components will be automated guided vehicles (AGVs), new optimized-for-rail tank containers instead of railway tank cars, and a new tank container depot.

This combination will lead to a considerable improvement in terms of competitiveness.

"We are launching this innovative leap in logistics at the site and we are a pioneer for the entire industry," said Site Manager Dr. Uwe Liebelt.

Driverless vehicles

The AGV is a worldwide first. Together with the VDL Group, BASF developed this autonomous vehicle which is 16.5 meters long and has a payload of 78 metric tons. With its 32 wheels and eight steerable axles, it is maneuverable and does not cause any damage to roads even though it can weigh as much as 100 metric tons.

The AGV is steered via transponders embedded in the road surface. It currently takes around 22 hours for a railway tank car to be delivered from BASF's train station to one of the more than 150 loading stations at the site.

With the AGV, this time will be cut to just one hour.

During the current test phase, which runs until July, the prototype only operates within a limited area, where it carries empty containers or containers filled with water and is monitored by a control center. Until now, similar vehicles have only been used in international ports, where they use routes exclusively reserved for them.

More efficient

The new 45 and 52-foot tank containers were developed by BASF and the Belgian tank container manufacturer van Hool based on the technology of 20 and 30-foot containers, which are already being used in combined transport.

The BASF class tank containers (B-TC) can be transported with container railway wagons, so they offer greater flexibility than traditional railway tank cars.

The B-TC has a maximum volume of 73,000 litres and a payload of 66 metric tonnes, meaning its load capacity is double that of today's typical tank containers and similar to that of a chemical rail tank car.

The B-TC can be transported on any kind of railway tracks and can be stored efficiently – up to six can be stacked atop each other. From July, 90 of them will be in use in Ludwigshafen and another 550 will be delivered in 2018.

Depot links transport routes

Another part of the logistics concept is the fully automated tank container depot, which is currently under construction at Ludwigshafen. It is designed to have a capacity of 2,000 standard (20-foot) container equivalents and has two automatic staking cranes, each with a loading capacity of 75 metric tons.

It is trimodal, meaning that goods can be handled via AGVs, trucks and rail. The container is scheduled to begin operations in mid-2018.

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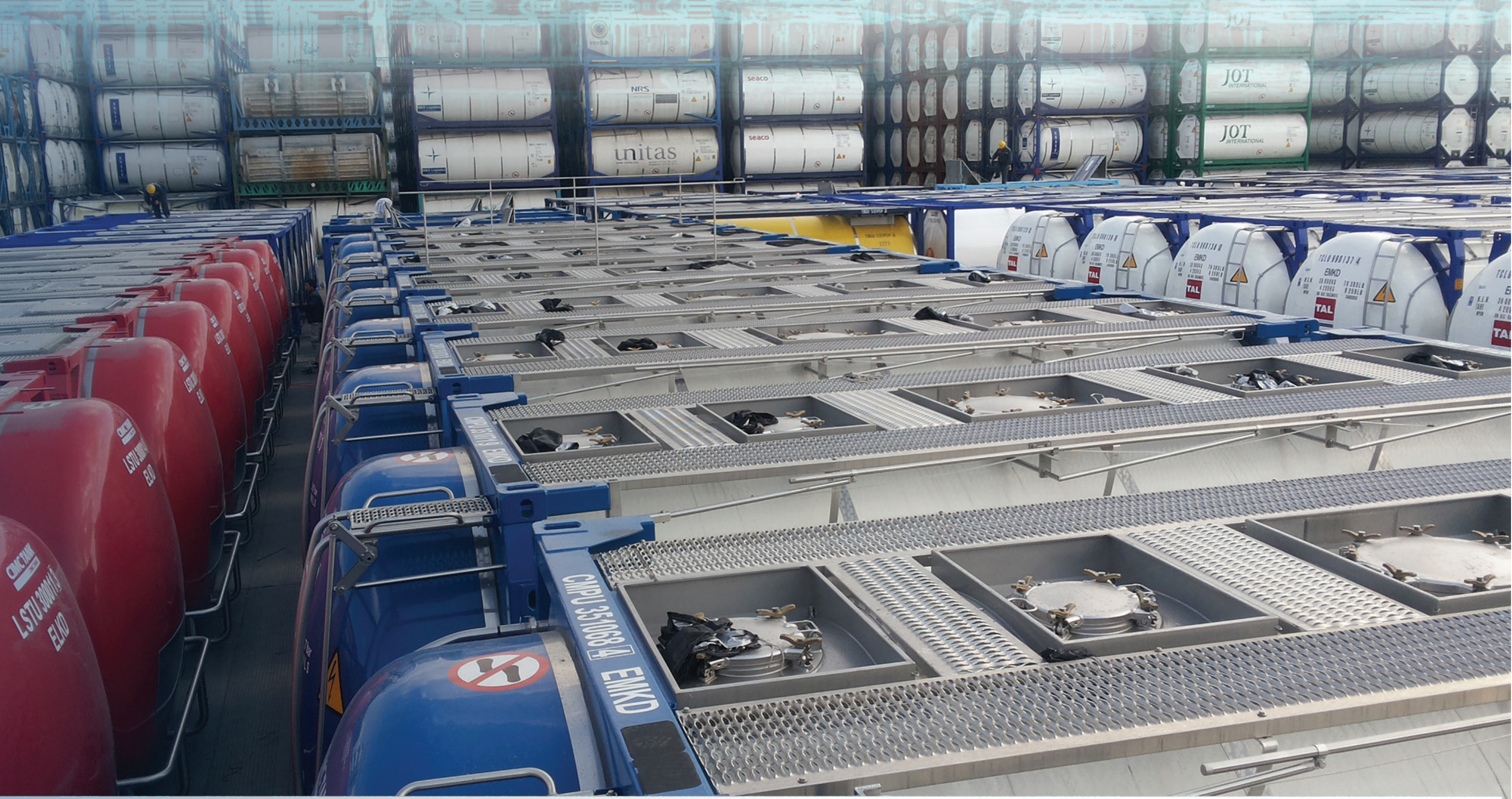

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Quala reaches agreement with Alpha Technical Services

Quala, North America'sleader in industrial container cleaning announced today its acquisition of Alpha Technical Services (ATS).

Operating from a strategically located 23-acre facility in Pasadena, Texas, ATS offers container cleaning solutions for both hazardous and non-hazardous bulk containers, specializing in difficult to clean products in railcars, tank trailers and ISO containers. ATS complements its cleaning capabilities with full-service railcar maintenance and environmental service divisions.

Mike Bauer, Quala CEO said: "By adding ATS and its experienced management team we have expanded our position in the railcar and specialty cleaning platforms. This acquisition will allow Quala to utilize and expand upon the current ATS tank trailer cleaning capabilities."

Bauer continued by saying, "ATS is the perfect catalyst to support Quala in expanding our railcar service model, as we further our vision to become a more diversified container cleaning company, serving the Petrochemical industry."

Alpha Technical Services, President Mike Howerton, said "It was important for us at ATS to partner with a group that shared our core values for their employees and customers. We knew from the beginning that the Quala management team was the right fit." Howerton added, "We are very excited about the growth opportunities this move will provide for the ATS team as we strive to enhance our employee and customer experiences."

Howerton continued by saying, "With Quala's resources, ATS plans to expand and improve its facilities, processes and capabilities to better serve our customers. The ATS mission will remain unchanged as part of the Quala family of companies."

Quala will operate the bulk tank trailer cleaning division formerly known as ATS Express Services under its nationally recognized Quala Sustainable Container Solutions brand. Under the Quala umbrella, ATS will continue to operate the Railcar Cleaning and Repair Divisions, Field Services and Specialty Container Services.

Bertschi sends its 30,000th container unit on its way

This week Bertschi added the 30’000th container unit to its fleet, coming just out of production. This milestone stands for the continuing success story of containerization and shows the impressive growth of the company, starting with its first container in 1970.

It is a 20ft ISO tank container used in global deep sea transport which is honored to be the 30’000th container of the Bertschi Group. The choice is not totally by coincidence, as especially the numbers of containers for global transports of liquid products have seen strong growth over the last 5 years.

Additionally, Bertschi’s fleet consists of tank and dry bulk containers used for trans-European transports, helping the customers in the chemical industry to optimize their supply chain.

Already in 1970 Bertschi introduced the first containers for their dry bulk business. They were followed in 1971 by tank containers used for transporting liquid products. Those were the first tank containers of a Swiss company and therefore Bertschi a pioneer in this sector. Since then the container became a success story for the company and Bertschi expanded its fleet continuously.

The container offers many advantages when compared to other transport equipment. It may be moved using various means of transport and therefore allows to use intermodal transport efficiently. Additionally it serves as flexible storage tank, enables a precise steering of product flows and is known to be very safe.

The first journey will take the 30’000th container unit from China to Europe. With the following destinations not yet planned, it surely will cover more than a

million kilometers and therefore make its contribution to the success story of the container and the Bertschi Group.

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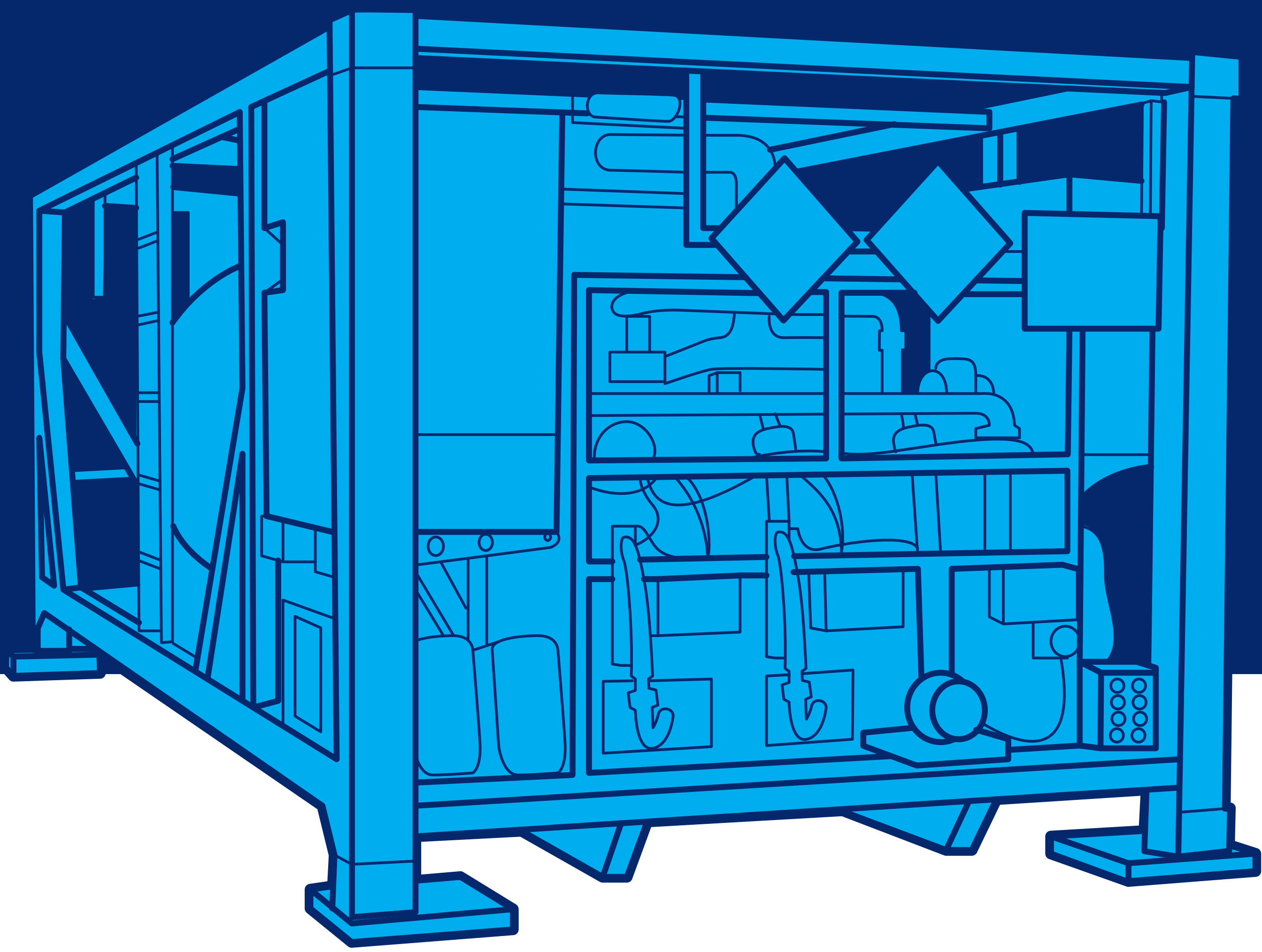

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CS Leasing opens up new markets with ISG

CS Leasing has appointed Intermodal Solutions Group (ISG) as its leasing agent in Argentina, Chile, Paraguay and Uruguay.

As a global provider of container rotation systems for the mining and grain industries, ISG has helped develop the containerised movement of bulk cargoes throughout the region, creating deep connections with a wide variety of customers and markets. By leveraging ISG's local expertise and CS Leasing's access to capital as well as offering a diverse range of containers and leasing solutions, CS Leasing looks forward to further supporting both new and existing customers as it opens up new markets in the region.

Additionally, CS Leasing will collaborate with ISG by working with any of their global customers who require a leasing option with ISG's innovative containerised bulk handling solutions. CS Leasing will use its expertise to match the desired container solution to the best leasing product, delivering the right containers ready for use at the customer's site. CS Leasing and ISG have already collaborated on projects in South America and Northern Europe

ISG provides Pit-to-Ship solutions and specialises in containerised mining equipment and containerised bulk handling solutions. Established in 2005 and based in New South Wales, Australia, the company services customers in Australia, the Asia-Pacific region and Latin America.

As mines become located in increasingly inaccessible areas, the Pit-to-Ship supply chain is becoming the main cost factor that determines whether or not a project is financially viable. Containerised bulk handling (CBH) can offer a cost effective and environmentally friendly solution that can be scaled up as production increases.

The containerised solution, which is suitable for both road and rail, prevents waste and spillage during the transport and loading process. The system also removes the need for conveyers, shiploaders and storage sheds and can turn standard container ports into bulk handling ports,

creating new revenue and traffic. CBH is particularly well suited to environmentally sensitive cargoes and suits a diverse range of commodities across different regions of the world.

The CS Leasing team has established a close working relationship with the team at ISG, led by its founder Garry Pinder. Rick Reid, VP Americas, said: "CS Leasing saw strong growth throughout last year and, with this new collaboration in place, 2017 is already looking very promising.".

Mr Pinder added: "CS Leasing's expertise in managing the leasing of non-commoditised containers will be invaluable for us as we grow our offering.

"The CS Leasing team shares the same objective of providing the excellent level of flexible, customer-focused service that we pride ourselves on offering at ISG".


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Tank container sector growing nicely, says ITCO

Figures published in ITCO's latest Tank Container Fleet Survey show that the global tank container industry grew by 8.5% in 2016 and the overall fleet figure has now passed the half million mark – having reached approximately 508,000 units.

This steady growth took place across the board with 44,450 tank container units manufactured last year, compared with 43,780 in 2015 (though still down on 2014, when 48,200 were made).

In the list of the top ten operators, Eagletainer Logistics replaced Interflow in 10th place, but apart from that the list remained the same as last year. The top ten operators represent about 51% of the global operators fleet, down slightly on 54% the previous year.

Among lessors, the largest companies are even more dominant. The Top Ten stayed the same this year and account for 86% of the total leasing fleet with the top three (EXSIF Worldwide, Seaco Global and Eurotainer SA) accounting for 59% on their own.

In tank container production, the top five remains the same – CIMC, NT Tank, Welfit Oddy, Singamas and CXIC, with the main development this year being NT Tank moving from number four to number two on the list. These five account for 91% of the market, though CIMC remains way in front with a 49% share of production, having made 2,000 more tank containers last year compared with 2015. The report refers to a "very active and growing specialised tank sector" which hints at the innovation taking place in the industry and which, as times get tougher, we need to see more of.

That growth in specialised leasing is shown by the rapid increase in the fleet size of new player Caru Specialised Leasing, whose fleet has increased from 100 in 2016 to 2,400 in the 2017 survey. Another new player, Gem Containers, went up from 150 in 2016 to 1,000 this year. Other leasing companies showing impressive growth include Raffles Lease (up from 7,000 to 8,400), TWS Tankcontainer (up from 5,890 to 7,500) and Eurotainer, which increased its market share from 15% to 19%.

For operators, the headline figure went up from 329,080 to 342,500. That came on the back of some of the key players across the world consolidating their fleets. Businesses such as M&S Logistics, and Suttons International in the UK, Newport in the Netherlands, Hoyer Group in Germany, VTG Tanktainer in Germany, the USA's Intermodal Tank Transport and China Railway all kept their fleets at the same level – no mean feat in the current global climate.

Overall the growth figure of 8.5% is up on 2016 (7.16%) but down on the era or rapid growth of 2014 and 2015, which saw growth rates or 14% and 11% respectively.

This year the survey was produced by the Shanghai Maritime University and overseen by Professor Song Bingliang. The survey is designed to stays consistent from year to year, with the balance of on lease tanks estimated to be leased to operators (65%) and the rest to shippers and other tank users (35%). However, this year due to the economic conditions the figure for idle tanks has been estimated to be 12-15% of the leased fleet, up from 10% the previous year.

Despite these minor changes, the methodology has remained consistent. Tanks below 20ft in length are not included. Where firm data is not provided the survey gives estimates using internet research and consultation with experienced industry representatives. Estimating the number of shipper-owned tank containers is particularly difficult. The survey authors stress that the figures are not accurate to an exact number. The survey is designed to provide a snapshot and reveal trends, which it does very effectively, and credit should go to the authors and to ITCO, the survey sponsor.

"Torture numbers, and they'll confess to anything," as the great American writer Gregg Easterbrook once wrote. What do this year's numbers reveal beyond the headline growth figure? Overall, the growth in the industry is still being driven out of Asia, despite pockets of growth elsewhere. That trend is now well-established and is likely to continue. Elsewhere, we are seeing a steady rise in more innovative and specialised leasing companies and manufacturers. That is only just starting to show through in the figures. We can expect to see more in subsequent years. We hope that commitment to innovation will ensure that the tank container industry keeps on going, like that children's toy that refuses to quit.

CS Leasing announces new shareholder

CS Leasing, a leading specialised container leasing company, announced today that Maas Capital had acquired a significant minority shareholding in the company.

It reported that Maas Capital had acquired all of the shares that were previously held in the company by CARU Containers and also made an additional capital investment to support the future growth of the company.

CS Leasing management and founding shareholders have successfully established the company as a key

supplier in the specialised container leasing market.

Maas Capital has now joined the partnership of TCG (Transportation Capital Group) and the Company management team, providing CS Leasing with a strengthened long-term platform for future growth

ITCO's fourth edition of Guidelines

The International Tank Container Organisation (ITCO) has published a fourth edition of its Acceptable Container Condition (ACC) Inspection Guidelines.

The revision, the first since 2010, does not include any amendments to the acceptable damage requirements but does include additional requirements, notes and explanations in the inspection guidelines.

The document can be freely downloaded from the ITCO website.

Research into benefits of digitisation

EPCA has embarked on a research project with Vlerick Business School to "identify how digitisation can create extra value in the supply chain" in the petrochemicals sector.

Stakeholders should look out for invitations to participate in the survey, the results of which will be presented during EPCA's Annual Meeting in Berlin on 3 October.

Odyssey recognised as a top 3PL again

Odyssey Logistics & Technology Corporation (Odyssey) has been named as a top third-party provider by *Inbound Logistics* magazine in its Top 100 Third Party Logistics (3PL) Provider list. This is the 13th consecutive year Odyssey has achieved this recognition.

Odyssey's EO, Bob Shellman said: "This confirms Odyssey's commitment to investing in the resources and technologies that solve the complex logistics needs of our clients. We have diversified our portfolio to focus on services that offer innovative solutions to challenging problems across a wide range of industries."

Each year, *Inbound Logistics* editors evaluate submitted information, conduct personal interviews and online research, and compare that data to their readers' global supply chain and logistics challenges.

Liquid CONcept celebrates

Liquid CONcept is celebrating its tenth anniversary. The Hamburg-based liquid logistics company has grown continuously ever since it was founded – and now boasts more than 4,000 transportation units.

The success of Liquid CONcept is driven by the intermediate bulk container (IBC) business. These small containers for liquid foodstuffs enable the company to offer speedy and flexible logistics solutions to its customers, who include national and international producers, manufacturers and distributors in the food industry.

The signs point toward further growth, with Liquid CONcept able to boost its revenue by 20 percent in the previous year alone.

The company began developing its own IBC fleet back in 2007, thus laying the foundation for its rental and logistics business. Since then, the company has continuously added new services and, for example, now offers transportation with tank containers and tank trucks, as well as liner solutions for stainless steel IBCs.

Ulrich Schnoor, founder of Liquid CONcept: "We recognized at an early stage that customers want individual solutions, especially when it comes to liquid logistics for the food industry. We responded quickly with holistic approaches to solving problems."

Schnoor also highlights the fact that Liquid CONcept offers integrated logistics concepts.

"Integrated logistics solutions that incorporate tank containers and tank trucks have played a key role in our success.

"In light of rising demands, Eycke-Christian Dörre was also appointed to the Management Board in 2013.

Dörre: "We always have our sights set on the future so that we can keep pace with developments. This is what makes our industry so exciting."

Liquid CONcept plans to successively tap into international markets in the future.

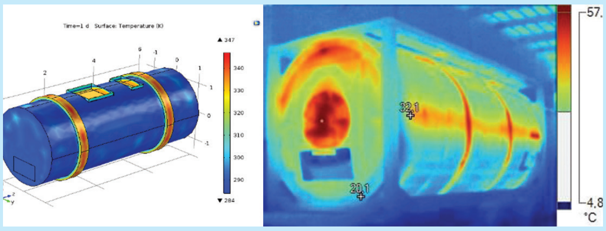
The science behind tank containers and customer needs

ISO tank leasing group Peacock Container has completed a three-month analysis of the cooling profile of tank containers in cooperation with a researcher from Delft University of Technology.

Temperature sensors were placed at various points inside a heated stainless steel tank to form a comprehensive profile of the heat-retaining capacity and cooling behavior of the container in various situations.

Chemical Engineering Masters' student Julia de Geus comments "A tank container on a moving truck shows a temperature reduction per day 3 to 4 times higher than the daily temperature decrease of a stationary tank".

Our research also looked at the impact of ambient temperature in various locations: among other results, a container stored at an unsheltered outdoor location registered a significant temperature drop in the first 24 hours.



The modelling of the temperature bridges in a tank container is experimentally checked with an infrared camera

"With these models and findings, we can provide customers more tailor-made information about the temperature of their product in our tank containers. We value this co-operation with a researcher from Delft University of Technology, and aim to continue this research", concludes Technical Manager ir. Dirkjan Journee.

Top marks for Liquid CONcept

Liquid CONcept has been awarded the International Featured Standards Logistics certificate (IFS Logistics 2.1) once again by the vehicle inspection company DEKRA.

This year, Liquid CONcept met 97.42% of the criteria required for the certificate, thereby achieving the top result. The quality standards applicable to the shipping of liquid foodstuffs have therefore been further increased.

The IFS guarantees transparency all along the supply chain on the basis of a globally standardised evaluation system.

Omni tank container makes its debut

Sydney-based tanker specialist Omni Tanker launched its new ISO tank container at the NBTA Bulk Tanker Day on 31 August.

Omni Tanker MD Daniel Rodgers says the Omni ISO tank is the world's first carbon fibre composite ISO tank, and is produced using Omni Tanker's patented materials technology, developed in Australia and now exporting to the world.

The product will be commercially available by December 2017.

Albatross launches new swap body tank

Albatross Tank-Leasing is extending the portfolio for its European customers with a new range of swapbody tank containers.

A range of 30 and 35 cbm will soon become available in Europe.

The specification with baffles, optional operation and connection of the airline at ground level or from the top, collapsible handrail to be opened remotely from the ladder, spill box covers and full walkway coverage grant high security during transport and handling of the containers.

Kerry and Seashore team up in Singapore

Kerry-ITS Terminal has signed a strategic partnership with Sea-Shore Transportation, a leading integrated logistics and freight service provider established since 1972, for regional supply chain management in Singapore.

Kerry-ITS and Sea-Shore will operate two warehouses at Benoi Sector (DG Laden Bonded Yard) and Pioneer Sector (Expanded Storage Yard). Located within a Free Trade Zone (bonded area), transhipment containers can be organised for subsequent distribution at minimal cost for the customer.

The strategic intent is to provide customers with total integrated logistics solutions, such as trucking (empty/loaded/DG), steam heating, break bulking, container freight station, DG laden tank container storage,drumming and port to CY including permit clearance and etc.

These jointly developed solutions can bring integrated solutions to customers for improved speed efficiency and cost-effective tank container management.

JOPM and Flaxfield tank container cooperation is welcomed

Mid 2016 Dutch Flaxfield Tank Container Solutions (FFTCS) and Chinese Jiangxi Oxygen Plant Co. (JOPM) began a cooperation, with FFTCS providing their European Engineering, Sales and Marketing expertise, (after) sales service and JOPM providing their Chinese manufacturing capability in the field of carbon steel and cryogenic gas tank containers.

"From Flaxfields perspective our clients have welcomed the expansion of the product portfolio", comments Flaxfield. "With JOPM as our partner we can offer a wider range of tank containers: T1-T23 stainless steel, light weight composite tank container and carbon steel gas tank containers with JOPM.

Clients appreciate the lines of communication have been simplified with an enquiry for 3 different products being possible through the same point of contact. Flaxfields wealth of experience in the International tank container business enables a bespoke solution with the further advantage of being located in the European time zone.

Close interaction and regular factory visits have helped further develop the modern manufacturing site which incorporates a large degree of automation and the latest production techniques.

Our focus is primarily on T50 and T75 gas tank containers, however JOPM offers a very wide range of additional products such as tank trucks, storage tanks, air separation equipment and LNG filling and storage stations, etc. (? Zie foto brochure).

The T50 and T75 tanks are available in both 20 ft. and 40 ft configurations with a whole host of options for customization being possible.

With the expiry of the patent on the use of alternative materials for the production of lighter weight T50 type tanks JOPM offer an alternative source for customers wishing to procure this type of tank.

Both companies communicated the cooperation for the first time publicly by exhibiting together during the Transport and Logistics exhibition in Munich earlier this year."

It has been a good kick off and positive reactions have been received. In the meantime, the first tanks have been produced and the quantities have exceeded our expectations" concludes Flaxfield.

SAVVY and CIMC launch Tankmiles

SAVVY Telematics and CIMC have joined forced to launch CIMC Tankmiles solution – a tank container monitoring system which aims to make tank containers intelligent and supply chain transparent.

The system integrates German-designed and produced software, long-life batteries, multiple industrial sensors and advanced management & monitoring functions. It makes the time-consuming fleet management process transparent and effective.

The system allows tank owners to answer many of the questions they face daily including: Where is my tank? Is my tank available for use now? How do I know if my tanks are treated well during transport? How do I know if the cargo has arrived safely? and a range of other vital issues affecting tank container owners and operators.

Den Hartogh training day for customers

Staff from one of Den Hartogh Logistics' main customers attended a Logistics Training Day at the company's Rozenburg location.

The customer asked Den Hartogh Logistics to organise the training session as it consider it important for all parties involved in the supply chain to learn about the equipment in which Den Hartogh Logistics transports its products.

Getting to know the people who they work with at Den Hartogh Logistics was an additional benefit for the participants.

The group attended a presentation showing Den Hartogh Logistics's general business operation and the route orders take from when they are received to when they are completed.

It's a matter of trust

Editor Leslie McCune discusses tank container production, supply and demand with NTtank founder Huang Jie

LM: When was NTtank established?

HJ: NTtank was established in 2007, making this year the company's 10th anniversary.

LM: In fiscal 2014, NTtank manufactured over 5,000 tank containers, had over 1,000 employees and sales of over $80 million. What are today's figures?

HJ: In 2016, NTtank manufactured 5,500 tanks, had over 1,000 employees and had sales of over $70 million. The reduction in sales revenue was attributable to tank container prices being significantly lower than those in 2013 and 2014.

LM: When did NTtank start manufacturing ISO tank containers and why did it start producing them?

HJ: NTtank have been manufacturing ISO tank containers since 2008. The company was founded, and is owned, by Mr Huang Jie, who is also the President of Nantong Square Cold Chain Equipment Co., Ltd (NTSC).

NTSC is therefore the parent company of NTtank and is the world's largest freezing equipment manufacturer. It was founded in 1986 and its main products are a variety of different types of freezers and services for food industries.

NTtank was founded as a result of NTSC's extensive experience and expertise in the manufacturing of stainless steel and aluminium equipment, not least in its welding skills capabilities. NTSC also provided the capital investment to build an advanced production line for the manufacture of the most technically-advanced tank containers.

LM: How many ISO tank containers can NTtank manufacture each year?

HJ: Our current capacity is 6,000 tanks per year, including 5,000 standard types and 1,000 customised special tank containers. We are constructing a new production line, which would increase the annual capacity to 10,000 tank containers, including 8,000 standard types and 2,000 customised tanks. The new production line is being built because the current annual capacity is not sufficient to meet the increase in our customer orders.

LM: What is the range of ISO tank containers manufactured by NTtank?

HJ: We manufacture standard types with a capacity from 10.9 cbm to 26 cbm. We also manufacture specific types such as reefer tank containers, electrically-heated tank containers, swap tank containers, lined tank containers, gas tank containers, offshore tank containers, SBC/IBC tanks and other customised tanks that are designed and built according to specific cargo features.

LM: How is the manufacture of specialised units different to that of standard tank containers?

HJ: The specialised units would be manufactured on a separate production line due to their special dimensions or different welding requirements. These, and other specialist manufacturing procedures, may affect the speed of the standard production line and so are dedicated to the 'special products' production line.

LM: What is the range of customers that NTtank manufactures tank containers for?

HJ: As for most tank container manufacturers, NTtank's major customers are tank lessors, tank operators, logistic companies, chemical companies and other end users.

LM: How do the requirements of Chinese customers differ from those of other customers?

HJ: ISO tank containers were very popular in European countries longer before they became popular in China. However, their market penetration in China in recent years has increased due to the Chinese government paying stricter attention to the safe transportation and environment protection of products.

Nowadays we have more and more domestic business, more and more Chinese people recognising the advantage of ISO tank container compared with the road tankers they traditionally used and far more chemical factories looking to invest in brand new ISO tank containers to replace their road tankers.

Most Chinese customers are end users i.e. producers of chemicals. They tend to have more customised design requirements compared to tank container lessors and operators.

LM: As customers, how are tank container operators different to leasing companies?

HJ: Tank container operators provide a systematic service - they purchase or lease tank

containers, perform their logistics responsibilities and service their tank containers. In general, they have more customised requirements for their tank containers.

Leasing companies, on the other hand, provide leasing services only - they purchase tank containers according to market demand and choose to purchase the most popular designs. Tank operators are, of course, one of their major customers.

In recent years the number of our tank containers purchased by lessors has been similar to the number purchased by tank container operators.

LM: Is the low price for new units leading to less refurbishment and remanufacturing work?

HJ: Yes, of course. It is very difficult to give a precise figure for this. Before doing any remanufacturing work, we give the customer an estimate of the work that would need to be done on their old tank container. From this, our clients decide whether or not it is worth going through the remanufacturing process, or buying a new tank container.

LM: Are most of your main raw materials, such as stainless steel, sourced from China?

HJ: Yes, most of our stainless steel plates are purchased in China. Some stainless steel plates are also purchased from Europe, and most valves and fittings are also purchased from Europe.

LM: Would NTtank consider manufacturing tank containers outside China?

HJ: Current no, but we are not sure what may happen in the future.

LM: How have raw material prices changed?

HJ: The greatest proportion of our raw material cost base for building ISO tank containers is the purchase of 316L stainless steel.

This, in turn, is the main driver of the price of the tank container. The cost of the stainless steel is, of course, mainly driven by the global price of nickel.

LM: Why do customers buy from NTtank, instead of CIMC, Welfit Oddy and Singamas?

HJ: Every company has its own advantages and customers must therefore weigh up the advantages and disadvantages between all the different suppliers.

The customers which purchase from NTtank do so because NTtank not only satisfies their technical requirements but also satisfies their trust in NTtank. The company always thinks from customers' point of view, has very well qualified products and good service - these are the major advantages of NTtank.

LM: How seasonal is demand for new ISO tank containers?

HJ: The greatest demand for new ISO tank containers is normally from March to June and from September to early December.

LM: What are the drivers of demand for new ISO tank containers?

HJ: A major factor affecting market demand is the safety and convenience of ISO tank containers. They have become increasingly popular all over the world and the advantages of ISO tank containers instead of road tankers are increasingly sought - they are very safe and have good environmental credentials. These have helped to promote the demand of new ISO tank containers.

Their price has also fallen quite a lot in the past three years, which has stimulated new demand.

LM: How are customer preferences changing?

HJ: Customer preferences continually change and new tank container technology is developed and new types of demand develop. Nowadays, the global ISO tank container industry is very slow because of oversupply - there are many idle tanks sitting in depots all over the world. This is also a reason for the low cost and low margin of ISO tank containers and the competition is fierce.

However, this situation is less the case for more specialised tanks, which are normally tailor-made and more complex – they are higher priced and have higher margins. I think these are the major changes of customer preferences, which is because of market demand and technology developments.

LM: What are the future growth opportunities for tank container manufacturers?

HJ: As a tank container manufacturer, the opportunities come, on the one hand, from increased market demand market demand.

On the other hand, there are opportunities to develop increasingly customised products to suit market demand. These include customised tank containers such as lined tanks, gas tanks, swap tanks, offshore tanks, electrical heating tanks, reefer tanks, etc.

Customised tank containers account for around 20% of our manufactured units.

LM: What have been the major innovations at NTtank?

HJ: NTtank was listed on the stock market last year. Since then, the whole management system has been improved and we have a highly qualified staff, production line and products. New products are developed every year, with many patented designs and manufacturing innovations.

LM: What plans has NTtank for the future?

HJ: To make sure we have enough capacity for standard tank container manufacturing and we will continuously develop competitive new products that are suitable for our evolving requirements.

Huang Jie C.V.

Mr. Huang Jie, senior engineer and senior economist - and the founder of NTSC and NTtank - has spent over 40 years in the mechanical industry. He has extensive experience in production engineering, stainless steel and aluminium welding.

In 1986, he founded the NTSC with only 7 employees, turning it into the world's largest freezing equipment manufacturer with 1,100 employees.

In 2007, he founded NTtank, a subsidiary of NTSC, and grew the company into one of the major tank manufacturers in China. He listed it on the Shanghai stock exchange in May 2016 and has more than 100 patents.

Keeping tank containers safe – from the inside

Family-owned HÜNI + CO is a specialised tanker coatings applicator. But it did not start that way, discovers James Graham

For more than 50 years, HÜNI + CO has supplied high-quality functional coatings in the field of anti-corrosion, non-stick and sliding coatings. It has also carved out a leading position in the ISO tank container coating market. This is far removed from the roots of the 160-year old company.

HÜNI + CO was created as a leather tanning factory in Friedrichshafen, on the shores of Lake Constance in southern Germany, by Hans Heinrich Hüni. It has remained a family business: Peter Hüni, the fifth generation, took control in 1986 and his daughter, Alexa, joined the board in January 2016.

Abandoning the leather business in the 1960s, the company entered the coating business. Alexa says: "HÜNI + CO is a highly specialised coating company, not a paint manufacturer. We source our materials from partner companies."

Coating business

In 2002, the company entered the tank container logistics sector, when it met Jean-Claude Filhol from Prorely, in Lyon, France. Filhol's grandfather had invented the highly chemical resistant coating material 'Isolemail', but the company had ceased operations. This allowed HÜNI + CO to acquire the exclusive global licence for the coating material, rebrand it 'Proco-EMAIL, black' and start lining ISO tank containers.

Alexa says: "This was the beginning of this niche business and we have continuously developed it. Approximately five years later, we started to collaborate with Martin Kilroe and the well-known coating material 'ChemLine 784/32', for which we now hold the exclusive coating licence in Europe."

Peter Hüni and his daughter, Alexa

After application, careful and controlled heat curing takes place. In order to monitor the curing process, strategically placed thermocouples are placed in the tank. These transmit temperatures to a recorder. A graphical representation of the recorded data is then produced to verify that the time/temperature correlation meets quoted specifications. This curing process creates the semi-gloss finish from the ChemLine 784 coating, which offers high chemical resistance, even at elevated temperatures.

Following application of a red base coat, key areas within the tank container are stripe-coated before the application of a top coat. High voltage spark testing is then undertaken in accordance with DIN 55670–A.

HÜNI + CO closely monitors quality throughout the process and data dossiers are created for customers requiring compliance evidence. This can include recording curing temperatures and times, visual inspection of the tank container, layer thickness measurements at approximately 100 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.

A number of the company's clients, which include many of Europe's major tank container operators, manufacturers and leasing companies specify ChemLine as their preferred tank lining for equipment to handle aggressive chemicals, clean petroleum products, edible oils and other cargo.

The company, which employs around 50 staff, has a product range of six tank container coatings available: Proco–EMAIL, BLACK; PLASITE 3070; PROCO–L (F14E); PROCO–A (F17E); PROCO-E-CTFE (HALAR); CHEMLINE 784.

Proco–EMAIL is black and is suitable for use in chemical transport as it has high resistance against acids, chlorinated products and solvents. PLASITE 3070 is a lining suitable for solvents, acids, hot water and food

products. PROCO–L (F14E) is resistant to organic and inorganic acids, and is suitable for storage and transport tanks, tank containers and general chemical movements. PROCO–A (F17E) is resistant to most organic solvents. PROCO-E-CTFE (HALAR) has extreme resistance to most chemicals, acids, alkalis and organic solvents.

CHEMLINE 784 provides a smooth, semi-gloss finish that is easily cleaned and decontaminated. Its unique cross-linked density creates a material that provides strong resistance, even at elevated temperatures.

Since 2013, the company has increased its coating capacities for tank container customers with new facilities. Production and warehouse space of 1,000 m^2 is now available for three teams of coating engineers. Services include ten firing and sintering furnaces up to 500o^C. Maximum dimensions for components to be coated are 3.10 x 3.10 x 10 metres. Units to be coated can weigh up to eight tonnes. Factory certification is available in accordance with DIN EN 14879-2 with approval by TÜV and other testing companies.

Export traffic

HÜNI + CO currently exports around 35% of its products, with its markets recently expanding into Asia. Alexa says: "Our main customers are located in Germany and we export to Switzerland, Austria, France, the UK and Benelux countries. Recently we gained a new customer from India."

According to IHS Markit, a world leader in critical information, analytics and solutions, the coatings industry is "one of the most heavily regulated in the world, so producers have been forced to adopt low-solvent and solvent-less technologies in the past 40 years, and will continue to do so."

The major change that has taken place in the coatings industry during the last 40 years has been the adoption of new coating technologies. These include waterborne coatings (thermosetting emulsions, colloidal dispersions and water-soluble), high-solids coatings, two-component systems, powder coatings, and radiation-curable coatings.

Coatings are needed for three reasons: protection, decoration or special purpose. HÜNI + CO works in the 'special purpose' category as it creates high-performance coatings for industrial plants and equipment, and protection of marine tank containers and vessels.

The coatings industry is one of the larger consumers of solvents, which are mostly derived from petrochemical feedstocks and refinery operations. The coatings industry also uses a considerable quantity of non-petrochemical feedstocks, such as pigments and additives, which are not very dependent on crude oil and gas prices. The non-petrochemical portion of the feedstocks is approximately one-third, on a volume basis.

One new area of interest is nanotechnology, notes IHS Markit, with tens of thousands of patents issued already for the coatings industry.

Very small ceramic or metallic particles can be added to paint formulations to modify specific properties (for example, scratch, mar, wear, corrosion and UV resistance) in highly specialised applications. The average size of nanoparticles is 10–70 nanometres, consisting of less than 6.5 million atoms. At these sizes, the ratio of surface area to mass becomes significant, giving the particles unique properties.

HÜNI + CO is keeping a watch on market developments, adds Alexa. She says: "We cannot give a precise figure on the value for this niche market but what we do recognise is that there will be a growing demand for coated ISO tank containers worldwide.

"We are constantly expanding our capacities for lining ISO tank containers. This summer, for instance, we have hired a Tank Container Project Manager and new sprayers. We are also looking for further depots to collaborate with for tank container coating repairs, for example in the Middle East."

Alexa also says the company is collaborating with suppliers to increase its product offering in this market.

She says: "We are constantly seeking and developing new coating materials. We also work closely together with our customers in order to understand their specific needs and demands which then flow into our product development together with our suppliers."

German engineering

German engineering and manufacturing has a worldwide reputation for high standards and quality. Like thousands of German companies, HÜNI + CO maintains an apprenticeship scheme and has not 'off-shored' production, either to other parts of the European Union or to Asia.

Alexa says: "Sending our production out of Germany is not an option for us, but we have partner companies abroad that assist us with smaller coating repairs."

The company trains apprentices, she adds, for a wider social purpose. She says: "We do train and develop apprentices. We consider this part of our responsibility towards society and also as a very good source of well-educated future employees."

The payoff from working in such a specialist industry is that barriers to entry are high and competition is often from just a few companies.

Given its long experience in the specialist coating market, and its latest expansion into the ISO tank container market niche, it comes as no surprise that HÜNI + CO feels it has a pre-eminence in the market. This translates into few direct competitors, notes Alexa.

She says: "Within the field of tank container coating, we virtually do not have a national competitor. Of course, companies that supply other technologies for protecting ISO tank containers from aggressive media – like rubber linings – can be considered as competitors."

The tools of a system integrator

Dutch transport equipment specialist Wiegel finds US-French solutions, writes Janny Kok

Wiegel Transport Equipment Sales Manager Joris Adelaar is in no doubt: "loading liquid bulk into tanker trucks or tank containers is easy but it is quite an interesting job to get the stuff out again." That is why the company invited representatives of the tank container sector to French Auxerre to demonstrate how screw compressors and lobe pumps can assist the unloading process.

The company imports the latest compressors and pumps and in early Spring expanded its product range by importing pumps form Unibloc Pump. This US and Swedish-based manufacturer introduced its latest model lobe pump design (Type 551M) as part of its range of 3A-certified stainless steel lobe pumps. Unibloc Pump claims that this production is a 'world-class breakthrough' and that the pump's unique feature is that the motor gear unit is fully integrated into the housing.

System integrator Wiegel considers Unibloc Pump's feature as highly valuable. Together with Auxerre-based Mouvex SA and Blackmer, it is a trusted business partner of Wiegel Transport Equipment. The enterprise also provides a 'total solution' for silos.

However, Adelaar says the company does more than import the products of its business partners: "We make the difference by rendering services on the route, in case a tanker truck driver needs immediate help. This may happen when a pump or compressor malfunctions."

That can happen when the replacement of equipment is postponed for cost reasons or a lack of awareness of the need for replacement.

Wiegel's fast response to solving unloading problems on location can be done by deploying two service lorries below 3.5 tonnes Class from two transport equipment locations - Moerdijk, located between the major ports of Rotterdam and Antwerp, and Netterthal in Germany. "The advantage is that the drivers of these lorries carry spare parts with them – these can be hard to get in Southern Europe. Another advantage is that they themselves provide their expertise and know-how on the spot when assistance is required. As a rule, local garage owners cannot provide these dedicated services."

The 'system integrator' market stretches throughout the Benelux countries and the German-speaking countries in Europe. Adelaar acknowledges that the tank container business is no more that some 5% of the total relevant transportation market, whose major players include Gardner Denver. "They don't consider the liquid gas market as part of their core business. Our strength is in this market."

An important difference is made by starting to make a contingency plan for the most suitable solution together with the manufacturer, the tanker truck road haulier and Wiegel Transport Equipment itself. This results in the development of tailor-made equipment for the tanker truck or tank container, dependent on what bulk liquid it is carrying.

Customers of Wiegel's appear to appreciate the equipment and additional service on offer. Among them are Den Hartogh, Hoyer and Frans de Wit International. They are well informed about the specialist equipment coming from Unibloc Pumps and Mouvex SA.

Unibloc Pumps can pump food products, chemicals for the pharmaceutical industry and personal care liquids out of tanker trucks or containers with peak pressures of 20 bar.

As the regular operating pressure ranges from 5 to 10 bar, the pumps have an extremely long lifespan. They are manufactured from a solid piece of stainless steel. The pump's rotor housing interior and exterior are produced on CNC machines and fully machined on all surfaces. Consequently, the pump with its powder-coated bearing housing, has smooth and therefore easy to clean surfaces.

The Unibloc PD lobe pump is available in three sizes (501, 551 and 576 models). The pump's weight ranges from 117 to 127 kilograms and are considered to be the lightest ever tanker pumps.

Frans de Wit International director Lars de Wit praises the distinctive features of the Mouvex B200 screw compressor. Customers note that the screw compressor can be fully integrated into the vehicle and can be directly connected to the Power Take Off (PTO).

He added: "With the available on-board CAN system on our vehicles, we are able to read out crucial system data, such as PTO hours. This provides our planners with a better insight into the hours of operation of compressors or Hydrives, the working hours of our drivers and the stationary hours of our vehicles. Moreover, fuel consumption can be read-out while the vehicle is unloaded. The data can be analysed to further optimise these processes. Thanks to the fact that the B200 compressor is installed under the vehicle, there is space available on the side of the frame to install a fuel tank or a box with a connection within easy reach of the driver."

When asked whether the road haulier has worked for a long time with on-board CAN technology, De Wit responded: "For 7 years now, our vehicles have been equipped with the on-board CAN bus. All of the available electrical components on the vehicles are connected to the CAN bus, so data may be remotely monitored. The technology, combined with 'board computers', allows our drivers to perform their duties without interruptions. If our planners receive a customer question, they can directly find where their colleague is, and how long it will take before the driver will be at his destination. Even new orders may be easily communicated to our drivers in this way. "

Another satisfied investor in a Mouvex B200 screw compressor is B. Joosten Spedition u. Truck-Service GmbH. The specialised road haulier had four trucks of its vehicle fleet equipped with this specific type of compressor.

It used the compressors in an effort to contribute to meeting global climate objectives and will continue to do so. This is one reason why the German family-owned company has opted for the compact Mouvex B200 screw compressor of Wiegel Transport Equipment GmbH, which can be directly connected to the vehicles' PTO. The founder and owner of the road haulier company noticed that the system stands out because it does not require a drive shaft and mounting brackets. Compared to a conventional system, it is 30 to 35% lighter, thereby contributing to more efficient fuel consumption and lower emission values.

Its contribution to reducing emissions can be substantial. Annually, some 6,000 to 7,000 (ADR) transports are handled by B. Joosten, which specialises in the haulage of oils, fats and temperature-sensitive liquids and ADR-liquids. Container transports are done from Emmerich to destinations in the Benelux or Germany. When required, transportation is also done to Austria, France, Spain, Italy and Denmark.

Demands on customers to be more environmentally-friendly from legislators are increasing, playing into the key strengths of tank containers. Manufacturers, multimodal transportation providers and others in the supply chain are meeting the strict demands out of self-interest.

Sales manager Adelaar mentions other market developments that may prompt the tank container sector to anticipate change and seize viable opportunities: "Between 2000 and 2010, we observed a decline in demand for electro-technical components for passenger cars, such as starter motors and generators. That urged us to shift onto heavy transportation, starting with commercial vehicles. The business model was further developed to include the supply of cranes, winches, rear view cameras, dedicated vehicle mounting and such like."

Adelaar concluded by observing that the combined tank container experience of all staff in the Voorhout head office and the operational departments in Moerdijk and Netterthal comes to over 80 years. Based on his own experience of over ten years in the tank and silo appendages business, he says: "a word to the wise in our sector is enough."

Aiming for good chemistry

The European Petrochemical Association will hold its 51st annual meeting in Berlin from 30th September to 3rd October

"The Chemical Industry and the 4th Industrial Revolution: People, Planet, Profit, in the Digital Age," is the topic for this year's meeting at the Hotel Intercontinental and at the Hotel Pullman Schweizerhof.

According to Klaus Schwab, founder and executive chairman of the World Economic Forum, in comparison to the previous industrial revolutions, the 4th Industrial Revolution is different: "It is evolving at an exponential pace".

And Mr Schwab warns that the 4th Industrial Revolution "is disrupting almost every industry in every country".

In order to assist its members to tackle the challenges, and take maximum benefit from the 4th Industrial Revolution, the Brussels-based EPCA has assembled a list of expert conference speakers to discuss the issues.

The high-level and thought-provoking speakers will include: Martin Wolf, Chief Economics Commentator of the *Financial Times*; James Fitterling, Chief Operating Officer for The Dow Chemical Company; Dr. Hariolf Kottmann, CEO Clariant; Ester Baiget, Business President of Industrial Solutions at Dow Europe; April Rinne, Head, Sharing Economy Working Group and Member of the Urbanization Advisory Board, World Economic Forum; Mark Wolsenholme, Executive Director, EY; Professor Ann Vereecke, Professor and Partner Faculty Dean, Vlerick Business School; Luq Niazi, Global Managing Director, Chemicals and Petroleum Industries, IBM; Klaus Rud Sejling, CEO Damco; Dr. Frithjof Netzer, Senior Vice President & Chief Digital Officer, BASF 4.0. The EPCA will be especially honoured by a speech from Ban Ki-moon, United Nations Secretary General 2007–2016.

Ban Ki-moon's closing lunch session speech on Tuesday 3rd October will be entitled: "Can the Current International Governance Embrace the 4th Industrial Revolution?"

Nadine Dereza, award winning journalist, presenter and conference host, will again moderate the business sessions.

Notwithstanding the main theme of the conference, members will no doubt debate what threat is posed to the chemical industry by the increase in the number of cyberattacks on businesses.

Underlining its topicality, a malware virus virtually paralysed Maersk Line, the world's biggest shipping company, for two weeks this summer resulting in a substantial loss of business for the transport group and estimated costs of $300m.

Moreover, the chemical industry must be even more vigilant in its security following the spate of terrorist atrocities in Europe in the past year, not least the potential that chemical materials could be used as a weapon in an attack.

A review of the best practice for the transport of hazardous chemicals in tank containers across Europe, where in many countries the terror threat level remains 'severe', is a case in point.

The 3rd Industrial Revolution was characterised by the use of electronics and the introduction of information technology to automate production.

The 4th Industrial Revolution builds on advancements made in the 3rd, in particular the unstoppable digital revolution, but it is characterised by major developments in technology when compared with previous industrial revolutions.

It is argued that the changes brought by the advent of the 4th Industrial Revolution are "inevitable" rather than "optional", and the EPCA has therefore decided to focus its activities this year on digitisation in the petrochemical supply chain.

The EPCA has engaged in a research project in cooperation with the Vlerick Business School to identify how digitisation can create extra value in the supply chain. The results will presented at the annual meeting by Professor Vereecke.

At EPCA conferences this year in Germany, Spain, Italy and Poland, the role of petrochemical products in our daily lives was debated, and in particular their end use through computers, sportswear, modern medicine and renewable energy.

The side effects of consumerism and, in particular, the need to re-use and recycle products have also stimulated interesting debate.

Encouraging the next generation of chemical scientists is high on the action list of the EPCA and in this regard the education required to be successful in the new digital age of petrochemicals is a priority.

The EPCA encourages delegates and conference attendees to maximise their time at the event by downloading its mobile app, available from the Apple App Store and Google Play Store, search "EPCA 2017".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Lease rates strengthen following a dire year

After a troublesome 2016 for Asia's tank container lessors, some market stability has returned, reports Sam Whelan

According to Jesse Vermeijden, managing director of Singapore-based Peacock Container, the large-scale purchasing of cheap tanks came to a head last year with overcapacity and plunging lease rates.

"The market is up compared to last year, but that's not so difficult because 2016 was really not a good year for tank leasing," said Vermeijden.

"People were trying to benefit hugely from low prices and just bought a huge amount of equipment without any idea what to do with it. When it was idle for some months people panicked a bit and that resulted in lease rates dropping significantly, dragging along renewal rates for contracts and lease deals for used equipment."

He said it took 6-7 months for the overcapacity to be absorbed, as manufacturers wound down production and operators completed a slew of fleet renewal programmes, having taken advantage of the low prices of new equipment.

"Slowly operators are getting more interested again in leasing because the prices are still low, so they see this as an opportunity just like they saw the opportunity last year to clean up their own balance sheets."

Although Peacock is one of the smaller leasing companies, with a fleet of just over 3,000 tanks, it is also one of the most long-established and is now 30-years old. Vermeijden said the company tends to focus on niche markets like "gas tanks, tanks for bitumen, and small bodies."

In 2015, Peacock reorganised and moved its headquarters from Rotterdam to Singapore in order to reap the benefits of a more advantageous financial structure.

"Unfortunately in these days of very tight margins your structure as a leasing company is very important. Cash flow is always important but if your structure is not properly arranged you'll face a lot of difficulties," Vermeijden explained.

Indeed, Singapore is home to many of the top tank container lessors operating in Asia. The city-state makes perfect sense for company domicile for an industry necessarily dependent on flexible, low-tax corporate entities.

Seaco Global, for example, has its head office in Singapore. John Bannister, VP Tanks and Reefers, confirmed Vermeijden's analysis of the 2016 market turmoil.

"A combination of overbuilding by operators and lessors, and a slowdown in the market, resulted in a pretty large surplus," said Bannister. "It's taken the last two years to absorb the overbuilding so I think people have been buying tanks to perhaps maintain their fleet as they phase out old equipment, rather than expanding."

According to the 2017 ITCO Global Tank Container Fleet Survey, Seaco controls around 24% of the leasing market with a fleet of 44,000 tanks. Bannister said Seaco, like its competitors, is currently building to cover the phasing out of old equipment.

With 25% of the market and 46,400 tanks, New York-headquartered Exsif Worldwide narrowly pipped Seaco to the title of largest lessor in 2017. According to Clive Francis, Exsif's Asia Pacific vice president, the level of new build activity this year is likely to be more measured than 2016 when buyers took advantage of manufacturers lowering prices to stimulate orders. "We anticipate production and overall buying still be ahead of demand," he added.

On rates, Francis observed that recently the supply/demand balance began to stabilise, resulting in more market consistency. Rates in Asia are similar to other markets, he noted, since most Exsif customers in the region are global operators.

"The customer base is similar, with the main difference being the Asia Pacific customers work in some of the more underdeveloped markets that are more operationally challenging. Due to these operational challenges, some of the larger chemical producers tend to outsource a greater proportion of their activities to tank operators when compared to other parts of the world," he explained.

Francis said the Asia tank market was growing, with chemical, energy and mining companies seeking to optimise their supply chains from both a cost and safety perspective.

"Macro factors such as the growth in the construction and infrastructure sectors, strong GDP growth in Asian economies, and the expanding middle class will all underpin the continued growth in the region."

Improving depot tank infrastructure in Asia's emerging markets is also aiding expansion. Francis said this is "allowing customers to now consider switching to tank containers as a safe and environmentally friendly way of transporting chemicals," and that this offers customers added flexibility when choosing an alternative to drums, flexi-bags or

Clive Francis, Exsif's Asia Pacific vice president

intermediate bulk containers.

For example, he said China, Thailand, and Indonesia have made tremendous progress in the last few years in terms of depot quality, services and sustainability. "The ongoing long-term growth of the tank business is critically dependent on the development of high quality, technically competent and environmentally aware depot network."

Seaco's Bannister also highlighted Southeast Asia as a key growth market. "From a leasing point of view, I see Southeast Asia as developing quite quickly in terms of the bulk shipments market. We're seeing growth in Thailand and Indonesia and obviously the biggest driver is China with chemical companies expanding and setting up new plants there."

China has been under pressure to improve depot health and safety following the Tianjin disaster in 2015. As a result, depots have slowed down their processes to comply with government safety regulations, and this has created some bottlenecks for repairs, according to Bannister.

Operators make up around 80% of Seaco's customer profile in Asia, with all the big global players present in the market. Bannister said niche players in the region were playing an important role in developing the Asian market. Furthermore, the globalised tank sector is more transparent than ever, he said, meaning rates and lease lengths tend to be in line with other regions. On the other hand, there is a general trend towards more flexibility.

"The contracts the operators get tend to be renegotiated more frequently. In the past they used to negotiate for 2-3 years or longer, but now the tenders seem to be happening every year almost and the commitment is less as people drive for more cost benefits. The knock-on effect is operators wanting more flexibility to either

on-hire or off-hire tanks depending on whether they win certain tenders or contracts," said Bannister.

According to Vermeijden, one key difference in the Asia market is that more standard equipment is used. "Whereas Europe is a lot more diversified in small bodies, gas tanks and more specialised liquid tanks with additional features on them. It is slowly coming here in Asia with the higher spec requirements, but it's still fairly limited compared with the US and Europe."

There are specific domestic tank variations in China and Australia, according to Exsif's Francis.

Meanwhile, industry consolidation is a hot topic among lessors following a spate of merger and acquisition (M&A) activity in recent years.

Francis predicted the consolidation will continue since customers are demanding higher service levels, including greater global availability; a full range of tank types; technical and operational support; and high quality and safety standards.

"Competitive pricing is also of course essential, and the scale and reach of lessors such as Exsif means we are better placed to meet these increasing demands."

Seaco has been at the centre of industry consolidation, having itself been acquired in 2011 by Chinese conglomerate HNA Group for $1.05 billion. Seaco Global was formed in 2011 when HNA purchased GE Seaco.

More recent deals include the merger of Triton and TAL in July 2016 and the acquisition of GEM Containers by RCOG Tank Leasing in January.

Bannister said that although further consolidation between the major players would be beneficial for market stability, M&A activity among the smaller companies was the more likely scenario.

This was a view shared by Vermeijden, who said consolidation

was currently the "million dollar question" for the industry.

"For the established lessors at the moment I think selling is not an option. Book values are still too high from old units and no one is willing to pay the premium - if new tanks are at the current prices then no one is going to pay more for a tank which is ten years old, and that reflects into M&A activities as well."

Furthermore, he said while the Seaco-Cronos deal made the biggest impact on the industry from a consolidation perspective, any benefits from having fewer competitors in the market was short lived.

"Initially it was nice because it definitely took out a big player and it made sure some people were busy rearranging their own structures internally. But it also created a new player because those CSL [CS Leasing] guys are all former Cronos - they started all over again with a very aggressive business model.

"So initially it was nice but what we got back was not a lot better actually."

For Vermeijden, a key challenge is the "dangerous development" of an abundance of cash and investors circling the industry looking for returns, thus disrupting the natural balance of tank supply and demand.

"Global chemical markets are still where our main exposure is. If those markets grow at an average rate of 5-7% per annum on a global level and the industry is building 12-14% growth on tanks, it's just a matter of time before prices collapse."

UNICON 1520 secures its first customer

The largest manufacturer of freight rolling stock in the CIS has branched out into tank container management and operation, writes James Graham

Moscow-based rail car builder United Wagon Company (UWC) is expanding its business into the arrangement of transport services for ISO tank containers in the Russian 1520 mm broad gauge rail area. Five years after its founding, UWC has established UNICON 1520 as a freight operator to provide tank container and ISO ocean container shipments.

Freight operator UNICON 1520 will specialise in the arrangement of transport services and multimodal logistics of bulk traffic, including hazardous cargoes, in ocean containers. Tank containers for chemical, petrochemicals and liquefied hydrocarbonic gases will be handled, said Victor Ivanov, UNICON 1520 executive director. UNICON 1520 will utilise container flat cars with increased load capacity, including those manufactured by railway holding RPC UWC, to form the core of the new company's fleet. The company will also provide 20ft tank containers for customers.

The tank container fleet of UNICON 1520 is suited to the transport of a wide range of chemicals, food products and LPG, as well as providing transport in specialised and intermodal containers. The fleet has been assembled with equipment from US tank container leasing company EXSIF and French container leasing company Eurotainer, leaders on the leasing market for volume-carrying rolling stock.

UNICON 1520 provides shipping services both inside and outside Russia, in the CIS countries, South East Asia and the Middle East. Dmitry Bovykin, first deputy CEO for general management at United Wagon Company, said: "We see a high potential of growth in container shipment, including the transportation of bulk cargoes in tank containers. The creation of a specialised operator will only further promote flat cars with increased load capacity."

Saint Petersburg-based UNICON 1520 has a team of around 25 expert transport professionals, who manage a fleet of around 450 tank containers. The size of the fleet will be increased to 850-1,000 tank containers of different types by the end of the year, according to Ivanov.

He says: "If a freight shipper chooses container shipment, they are offered a customised logistics solution and can fully benefit from additional competitive advantages by saving the transhipment costs, which are zero, while having their cargoes reliably protected from contamination and the delivery terms respected."

Ivanov is aware that market experts are forecasting a stable and long-term trend away from tank rail cars to tank containers with high write-off rates for rail tank cars over the next five years. Unlike a freight car, a tank container is more practical and convenient in terms of the range of cargoes that can be shipped. Tank containers could be used to carry much of the 4.5 million tonnes per annum of petrochemical freight that is currently transported in rail tank cars and road tankers.

He says: "We are negotiating with a wide range of partners. Container

transportation in Russia is gaining momentum and has various prospects of growth."

Early success

UNICON 1520 has already notched up a first success as it has signed a contract to provide services for the transportation of liquid cargos in tanks to Uralchem-Trans, the transport subsidiary of JSC United Chemical Company (Uralchem).

UNICON 1520 will provide services to Uralchem-Trans for the transport of chemical cargoes to customers throughout Russia and Eastern Europe using tanks containers with carrying capacities of up to 72 tonnes.

Ivanov said: "We offer customers more than freight transportation - we can now provide tailor-made complex logistics solutions. We are proud to have Uralchem-Trans as our first customer. I am confident that we will be able to meet the exacting requirements which are in place for the transportation of hazardous freights in tank containers."

Alexey Koloshyan, deputy director for transport operations at Uralchem-Trans, commented: "United Wagon Company sets standards on the rail transport market and we expect that co-operation with its transportation subsidiary will improve the quality of our carrying operations, optimising cost and delivery times for our goods."

On the road

While UNICON 1520 is basing its services on rail transport, the company understands that it will have to look to road movements for collection and 'last mile' movements.

Ivanov said: "Not all of our clients have their own railroad sidings or special infrastructure to handle tank containers. In these cases, we will use road trucks to deliver the products. In the mid-term, we are planning to develop further this transportation option for our clients."

Another of UWC's subsidiaries,

Victor Ivanov

Tikhvin Freight Car Building Plant, has been given the green light by Russian railway authorities to produce a new generation flat car for the shipment of large-capacity containers and tank containers with a loading length of 80 feet. These will be suitable to transport UNICON 1520 ISO tank containers in integrated intermodal shipments.

Ivanov said: "Unicon 1520's strategy is to operate a fleet of 40/60-feet container flat cars with a carrying capacity of 80 tonnes or higher."

The long-wheelbase Model 13-6903 container flat car with an increased payload capacity to 74.5 tonnes is designed to carry large-capacity universal, specialised and refrigerator containers of 20, 30 or 40 feet length with a gross weight of up to 36 tonnes.

Much has been made of Beijing's plan to link China and Europe through its 'One Belt, One Road' policy. UNICON 1520's ambition to serve CIS countries, south east Asia and the Middle East can only lead to business opportunities that Ivanov can exploit.

He said: "China's 'One Belt, One Road' is a global investment project. Given the transit and export potential of the country, we are negotiating with Chinese freight owners about the possibility of establishing a strategic partnership within this framework."

Parent company

UNICON 1520's parent company, United Wagon Company, the leader in innovative rail car building in the 1520 mm track gauge zone, saw revenue growth of more than 30 per cent in 2016. UWC's revenue grew 32 percent to RUB 48.5 billion (US$807 million). The growth was brought on by increased production capacity and railcar sales, as well as by the larger average size of the company's own fleet. Higher railcar prices and lease rates also boosted revenues. The revenues in production and distribution grew by 35 per cent and 22 per cent to RUB 43.4 billion (US$723 million) and RUB 5.2 billion (US$87 million), respectively.

United Wagon Company has been taking an active part in the renewal of rolling stock in the 1520 mm gauge area. The railway holding produces various types of new generation freight rolling stock with unique technical and economic characteristics, high reliability and security indicators for the CIS and Eastern European markets. The strategy of the company is the constant evolution of the product line in accordance with the requirements of the Russian freight traffic market. At 86,000 km Russia has the world's third-largest network behind the United States and China.

The name UNICON 1520 neatly draws attention to one of the Achilles' heels of land intermodal cargo movements i.e. the difference in rail gauges. It is just 85 mm, just over three-and-a-third inches that separates rail lines in Western and Eastern Europe. The Russian broad gauge 1,520 mm (4ft 11 27⁄32 in) rail gauge area is the main CIS area with a few outposts in Eastern Europe. With a few exceptions, Western Europe uses 'standard' railroad gauge of 4ft 8½ in (1,435 mm). Most areas in Russia or the USSR have railroads laid to the Russian gauge.

It is when a railroad car reaches a change of gauge that issues arise. Cargo can be removed from a vehicle on one gauge and reloaded onto a vehicle on the other gauge or the wheels on the wagon can be re-gauged to accommodate the difference. This rarely happens with freight wagons.

Tank containers are not affected by the wider gauge in Russia. They simply have a greater side clearance on the container cars.

From Russia with love

Valentin Turtia, MD of Baltica-Trans Logistics discusses the Russian operator market with Editor Leslie McCune

Where are the main flows of tank containers involving Russia?

This business has been ongoing for the past 15 years and all the major global and European tank container operators are involved.

There are three main tank container flows in which Russia is involved:

1. International. Monthly volumes are approximately 3,000 loads and mainly come from northern Europe countries via the Rotterdam-St. Petersburg ports route. These are unloaded in the European part of Russia with backhauls along the same route.

Cargoes are mostly chemicals but there are also food grade movements. Some volumes go via Novorossiysk port in the Black Sea - these are mostly imports into Russia of food grade products from southern European countries. Exports of Russian chemicals tend to go to Asia via the port of Vostochny, which is open to the Japan Sea.

Part of the import volumes move directly by rail from Europe to Russia. This business has been ongoing for the past 15 years and all the major global and European tank container operators are involved. Active players include Hoyer, Stolt, Den Hartogh, Bertschi, NewPort and local players such as Baltica-Trans, Qbex, Kricon. Most have their own Russian offices and facilities, which include trucks, steaming/cleaning stations etc).

2. Domestic. Monthly volumes are 15,000 loads. These are mostly by rail, replacing the old rail cisterns which have been taken out of operation. The cargo is only chemicals. Destinations are throughout Russia, meaning that delivery distances can be up to 9,000 km. Rail is used extensively, unlike Europe where inland deliveries are done mostly by trucks due to short distances.

This business has developed over the past 10 years and all major Russian rail-based liquid transport companies are involved. These include Baltica-Trans, Spectransgarant, Infotech Baltika M and Himinvesttrans.

3. Eastern. Monthly volumes are 1,000 loads and these are cabotage deliveries of gasoline products via Vostochny port to Magadan, Sakhalin and Kamchatka, in the far east of Russia. This business has been ongoing for 5 years and Baltica-Trans is the only tank container operator involved in it. Small, local forwarding and transport companies are also active.

What types of tank containers are used in Russia?

For the carriage of liquids for domestic and eastern Russian business the ISO tank container used are mainly 25-26 cbm T11s. For international shipments, up to 30% of movements are swaps, especially via St. Petersburg port. This is because this route has a lot of light cargoes with densities of less than 900 kg/m^3.

Swap bodies will probably start to be used for domestic shipments in Russia in the near future, as soon as they are accepted by Russian Rail Roads. For domestic business, 5,000 gas tank containers are used, mostly 24 cbm T50s.

Major leasing companies like Exsif, Eurotainer and Seaco are represented in Russia by their own offices and have for many years leased their tank containers to domestic operators.

What are the fundamental blocks to accelerated tank container growth in Russia?

Different factors influence different types of businesses. For international shipments, the main block for development over the past three years has been the weak Russian ruble. This has made imported chemicals expensive for Russian buyers and has resulted in a slight decrease of these flows. This, in turn, has held back the development of export flows from Russia, which rely on discharged imported tank containers.

Domestic shipments are held back by two factors - the outdated Russian Rail Roads infrastructure and absence of tank containers depots. Fortunately, this has changed in recent years and the number of tank containers involved in domestic Russian business is growing by 1,000 units annually.

How has the tank container market developed in Russia in the last few years?

For domestic shipments, tank containers have finally started to replace old rail cars. This was anticipated a few years ago but the initiative was put on hold by Russian Rail Roads.

For the couple of years, customer preferences are clearly moving towards tank containers. This has lead to a degree of market saturation and the development of a number of tank container depots at key flow crossing points. Tank-Container Service has already built three depots in St.Petersburg, Moscow and Tolyatti, Betta has built a depot in the Perm area and Roconord has built a depot in St.Petersburg.

New players, such as Baltica-Trans, historically made international shipments in tank containers. After analysing the market trends three years ago, we started to invest in the domestic market development which is now yielding rewards.

In addition to the growth in domestic market shipments, exports started to grow last year due to the weakness of ruble and the consequent greater affordability of Russian chemicals. The main market is Asia, opening up opportunities for the all- important triangulation of tank containers - the first load moves from Europe to Russia, the second from Russia to Asia and the third from Asia to Europe.

What makes the tank container market in Russia different or challenging?

Tank containers appeared in Russia more than 15 years ago but the market only started developing a few years ago. The main challenge remains the lack of infrastructure – tank container depots, chassis, rail cars and staff. There are very few specialists in Russia who have been involved in the tank container business for more than five years.

Up until 2017, only Fort Vale spare parts were officially represented in the Russian market. Today, Pelican and Perolo have stated their Russian expansion. As in many spheres of the Russian economy, there is a huge mis-balance between the Russian tank container business on the one hand and the undoubted potential on the other.

What are the main opportunities for tank containers in Russia?

There are four main opportunities for tank containers in Russia – the continuous growth of domestic shipments and shipments from Russia to Asia; the booming growth in the tank container infrastructure in Russia; the development of new domestic tank container production in Russia and the leasing and selling of used tank containers to Russian clients.

How easy is it for tank containers to cross the Russian borders?

There are no restrictions and no specific documents needed for a tank to cross Russian borders if it arrives with cargo, as when tanks come to Turkey or India. For imported empty tank containers, the only requirement is a letter to customs explaining that the tank container is being repositioned into Russia for loading for export.

Any tank container being imported into Russia which is not customs cleared should leave the country either empty or laden, but not later than 180 days after it is imported. To make domestic shipments, tanks need to be customs cleared as everywhere.

How will the Russian tank container market benefit from the rail link up between China and Europe?

For the past 15 years many cargoes have gone by rail directly from China to Europe via Russia, mainly in dry containers or wagons. Last year, Bertschi started innovative use of block-trains of tank containers.

This will not however influence the Russian tank container market because Russia is merely a transit country for such shipments but the concept of delivering tank containers from China to Russia directly by rail is also very interesting. The main factors blocking the development of this routing are the prohibition of railing dangerous cargoes in tank containers in China - which halves the potential volumes - and the geography of production and distribution areas.

Chemicals are mainly produced in China near ports in the south of the country and Russian buyers are mainly concentrated in the European part of the country. This makes sea delivery more attractive than direct railing at the moment, given the current low sea freight rates compared with rail tariffs.

What is the forecast for the Russian tank container market?

In the coming years, the trend away from old rail cisterns to tank containers will develop further, leading to growth in the domestic and eastern tank container market of 1,000-2,000 tank containers monthly. The potential growth is up to 25,000 units.

International flows will grow in the trade lanes between Russia and Asia, and flows between Europe and Russia will continue to be relatively stable. Domestic companies like Baltica-Trans will continue to develop by leveraging their competences in all three main tank businesses in which Russia is involved. Many tank container infrastructure companies will quickly develop depot, spare parts and leasing businesses. Competition in international flows will intensify, potentially leading to the closing of the Russian offices of European tank operators because the volumes between Russia and Europe are sub-scale and therefore insufficiently profitable to cover costs.

Does the Russian market for tank containers have any unique technical requirements?

For international and eastern business, 25-26 cbm T11s are normally used. This type of tank container is also used for domestic shipments but there is also a niche domestic market for the railing of acids, oleums and other cargoes. These typically have densities between 1.5-1.8, for which tank containers with 17-21 cbm shell capacity are used. Some of these may have special rubberized linings. At the moment, there is no universal tank container lining that can be used for all acids, nor any licensed domestic companies that can produce and apply one with the necessary factory guarantees. These types of shipments have therefore not really developed.

How will Russia influence global tank container flows?

The development of shipments from Russia to Asia is attracting the attention of global tank container operators such as Hoyer, Stolt and NewPort. These operators often have a surplus of equipment in Europe but a lack of equipment in Asia - they consider Russia as a transit country through which tank containers can be delivered from Europe to Asia.

The market development of domestic and eastern shipments is attracting the attention of tank container lessors, spare part companies and depot operators.

PTFE creates a silver lining

A new modified PTFE lining for tank containers is a significant opportunity for Germany's SGL Group, reports Felicity Landon

Innovative? Unique? The beginnings of an important new strand of business? It is 'Yes' to all three from Hermann Nonnen, Managing Director at SGL Group, Limburg, who doesn't hold back when singing the praises of Polyfluron E, a modified PTFE grade suitable for lining tank containers to carry hazardous and corrosive products.

This is SGL Group's first venture into the tank container segment, and it is an important signal from a group that has been through a significant strategic realignment in recent months. Having sold one business unit - 'Performance Products' with its 'Graphite Electrodes' and 'Cathodes, Furnace Linings and Carbon Electrodes' segments - SGL Group will now focus on two global business units which are delivering growth and future promise, 'Graphite Materials & Systems' and 'Composites - Fibres & Materials'.

SGL Group's strategy is focused on becoming a growth company, says Nonnen. "This innovation aimed at the tank container sector is a great example of how we want to use our knowledge and expertise in new markets and new applications. In short, SGL Group is looking to step out of the ordinary thinking and look at neighbouring markets and options where we can apply our knowhow."

The first seeds for this success story were sown in 2015, when SGL Group was approached by the container rental company TWS, together with a producer of tank containers.

"It was a cooperation between three different companies, including ourselves, in response to the market's need for such a tank container," says Nonnen. "We are a market

leader in PTFE fine powder and have knowhow going back more than 50 years. Therefore, we were asked to line a container with this special application. Initially, it will be for the transportation of hydrofluoric acid with concentrations up to 70%, but it is also suitable for other chemical products."

The project has been a departure from the norm for SGL Group, he explains: "The difference is that the design and geometry of these containers is different from what we have done before. Therefore, we developed a special treatment or process to line the containers, in parallel with the development of the product. We are already established as the leading company in extrusion PTFE, with our standard products used for lining pipes, expansion joints, vessels and columns. The container's requirements are similar to vessels and columns but required a different approach."

Polyfluron, a PTFE fluoropolymer, continues to offer safety when other plastics have long reached their limits, says SGL Group. The material is produced at the company's Limburg site, in Germany; lining, assembly and services are provided at local SGL Group sites worldwide.

Polyfluron E-lining can be supplied in thicknesses of 2mm to 8mm for tank containers, to meet the requirements of the specific product or customer. Key to the customer, says Nonnen, is the lifetime of the container once lined.

"The acids being moved by the chemical industry are so aggressive. Containers with other liners, such as rubber, have a very short lifetime and every two months or so the lining has to be repaired or replaced. That is why TWS came to us – they wanted a more stable material which would increase the lifetime of such containers as well as their design performance.

"Polyfluron E can be repaired if there is a crack or damage from cleaning and it can be replaced completely. We can do this on the customer's site, depending on how big the damage; we would have to analyse if there is any chemical material flow behind the liner. Alternatively, if it is more cost-efficient to return the container to our site, then we would repair it here, where we would have more flexibility."

SGL Group has trained people able to carry out repairs at its strategically placed sites, including in Shanghai, France, India and the US.

This business is clearly in its infancy; at present SGL Group has the capacity to produce only one Polyfluron E lined 20-ft tank container a month.

However, SGL Group is confident that it has stolen a march on the competition. "There is no competition using PTFE in this way," says Nonnen. "There are other lining materials such as PFA, but they are three times more expensive than our solution, and not as stable as PTFE. Therefore, we offer lower cost and more stability. We are also further ahead in our experience than others, so we believe we have some advantages in this market.

"Not only are other plastics or materials less stable but PTFE also delivers on the thermal requirements for such transport. Other materials cannot withstand the 200 up to 260 degrees C temperatures that Polyfluron E can withstand."

The lining itself can be customised and used to line containers in various dimensions, he points out. "There are some hurdles for our competitors because they are not able to produce such material in the same diameters."

SGL Group's newly developed welding technology used inside the tank provides a Polyfluron E lining for all areas, including dip pipes, manhole and spill boxes. The technology can be used for other applications of tanks, vessels or columns, where flat heads and bottoms with costly flange connections are used today or where flanges below fluid level are not allowed, says SGL Group. The liner is bonded to the tank walls in order to fix precisely the sheets for the welding process.

The bonding has no low-pressure support function; the tank is only

Hermann Nonnen, Managing Director at SGL Group

intended to use at atmospheric and over-pressure. Vacuum protection measures avoid liner deformations.

Where next with this innovation? Nonnen says the sales focus will be in Europe initially but, having said that, it has already received enquiries from China.

"We are globally-based with 34 sites and 100 agents and distributors – this global network will be used in this business. Polyfluron E will be aimed at high-purity products in the chemicals, pharmaceuticals and electronics industries because companies in these sectors need high purity around the container.

"We will discuss with customers (the container rental companies) and end customers (users) about the thickness of the lining and walls required."

Based in Wiesbaden, SGL Group is one of the world's leading manufacturers of carbon-based products. Its portfolio ranges from carbon and graphite products to carbon fibres and composites. About 70% of its staff are employed in Europe; its global research and development activities are concentrated at its Technology and Innovation Centre at Meitingen, Germany, its biggest site worldwide. Overall, SGL Group has 34 production sites, including 19 in Europe and the rest split between North America and Asia.

The group reported good first-half results in August, with sales from continuing operations up almost 15% to Euros 435 million. After the sale of the two segments of the business unit Performance Products to Showa Denko and Triton respectively, SGL Group's process of strategic realignment is now "close to the finishing line", said its results statement.

Nonnen says: "The sale of these two business units means we can concentrate on our growth businesses. We will continue to focus on creating innovative solutions and value for our customers, and the development of Polyfluron E is a perfect fit. Three years ago we invested in some equipment to improve our processes in this field, so there was no special investment necessary to realise this new business.

"Moving into tank container linings was a further development of what we are able to do. Therefore, it is a really good opportunity to grow our business with this new market and business segment. We are further ahead in our experience than others, so we have some real advantages in this market."

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