

DEPOTS

PART 2 of our assessment of the storage capacity constraints among global depots..

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The tank container industry's key metrics are heading south this year. We explain why.

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DEPOTS

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Freight insurance specialist TT Club warns of the risks of confined spaces.

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Tankcontainer MAGAZINE



Keeping your cool

Tankcontainer Magazine discusses Klinge's role in the tank container market with third-generation CEO Allan Klinge and Marketing Lead, Elina Klinge.



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Keeping your cool

Tankcontainer Magazine discusses Klinge's role in the tank container market with third-generation CEO **Allan Klinge** and Marketing Lead, **Elina Klinge**.

Tank container metrics head south in 2023

How is this year likely to turn out for the tank container sector? Weak, definitely, especially compared to the record revenue and profitability of the last two years - and possibly poor for those more exposed to Europe.



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NEWS



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DEPOTS



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Infrastructure support not keeping pace with growth in global fleet.

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MARKET



ITCO welcomes new President
ITCO held its 2023 Members Meeting in Amsterdam Schiphol last month.

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DEPOTS



Complete tank care everywhere
cotac raises the bar in quality, safety and service regardless of location.

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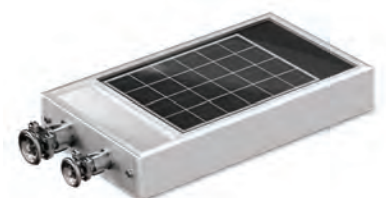
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Obscured risks are prevalent in tank container operations
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Russian market under serious pressure
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Tank container metrics head south in 2023

How is this year likely to turn out for the tank container sector? Weak, definitely, especially compared to the record revenue and profitability of the last two years - and possibly poor for those more exposed to Europe. **Turnover** for the sector will be 10-20% down from last year, sapped by lower revenues from demurrage and logistics transport as supply chains normalise.

Although this year's **operating costs** will have been reduced by the continued decrease in ocean and logistics transport rates - many of which are simply passed through, with margin added, to customers - the net impact on operating margins for the sector will be negative, not least due to competitors trying to boost fleet utilisation by competing more aggressively on price for the volumes available.

The sector's operating **profitability** will likely be 20-30% down on 2022 and **utilisation** has fallen.

Demand from the largest tank container market - chemicals - has **fallen** significantly in the past year, most notably in Europe where its unique exposure to high energy prices has made much of its production globally uncompetitive. Production at the end of last year was 20% down, year-on-year, with capacity utilisation matching its 2020 Covid level of only 75% (compared to its long term average of 82%).

However, despite being persistently disadvantaged in terms of feedstock, capital and labour, Europe remains the world's second-largest chemicals producer (although still only a third of the size of China, which accounted for 43% of worldwide chemical sales in 2021). Europe's share of the global chemicals market, and its share of global chemicals investment, has dropped from 27% to 15% and 12% respectively in the past two decades with Germany and France accounting for nearly half of the region's chemical sales.

Specialty chemicals are the chemical type most dependent on tank containers for distribution and have the **largest share** (28%) of European chemical production, larger even than petrochemicals.

Higher costs have combined with low demand and overcapacity over the past year to eat into Europe's industrial resilience. As its chemical sector addresses what CEFIC calls the biggest transformation in its history - going climate neutral, circular and digital while transitioning to safe and sustainable chemicals - there is no certainty that Europe will be an attractive location for chemical investment. Chemical logistics companies should take note.

However, Europe's misery makes many lower-cost producers in Asia, the US and the Middle East merry with these tank container markets being either quieter (Middle East, US) or relatively busy

(China, Inter-Asia). Significant differences in the cost of chemical production between the major regions - as is the case now - opens up **more opportunities for deep sea tank container operators**.

Like some other operators, market leader Stolt Tank Containers is clearly chasing market share to boost the margin erosion caused by demurrage revenues shrinking back to more normal levels. Year-on-year shipments have increased by an average of over 8% in each of the past three quarters. However, one of the commercial conundrums of weak markets is that attempts to strengthen margins by gaining market share may be offset by the price reductions that are often necessary to win new business.

New build tank container demand is down this year but fleet updating continues, although some capital expenditure has been delayed to exploit falling equipment prices.

More positively, despite the prospect of a weaker Q4 for tank containers, the market is **normalising** to its long-term average. With smoother and more reliable post-Covid supply chains, fewer tank containers are required and operators have been returning tank containers to lessors with gusto over the past 12 months, filling up depots.

There are concerns among leading stakeholders in the tank container industry that the current lack of depot availability is structural, rather than transitory. If so, this may constrain tank container growth and raise operating costs for lessors and operators, for whom depot costs are a significant cost component. Ultimately, this may make tank containers a less attractive transport option.

In this issue, we publish PART 2 of the **first publicly-available** qualitative **assessment** of the current global tank container **depot** market. PART 1, in September's issue, analysed the causes of the storage problem, identified where its impact is most acute and reported the consensus on whether or not the problem is structural or just a short-lived characteristic of the normalising market.

PART 2 considers the consequences of today's tank container storage tightness, asks whether the **investment returns** support new depots and discusses how tank container storage capacity can be increased. We also explore the impact on the depot/cleaning sector of the recent M&A activity by global investment giant KKR - which backed Boasso's merger with Quala (and their subsequent acquisition of MTC in the Netherlands) - and assess which operators and lessors might invest more in depot and cleaning station facilities. ■

Leslie McCune, Editor

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Cleaning heavily contaminated latex tanks – Den Hartogh Gothenburg (SWE)

The existing tank cleaning facility at Hedenskogs Tankeri AB in Gothenburg, Sweden has been recently equipped with a latex cleaning unit. Den Hartogh, who acquired the Swedish company at the beginning of 2022, performs cleaning and heating activities at the site in addition to transport.

Cleaning hardened latex remnants is difficult with a standard high pressure cleaning system. Gröninger developed a fully automatic latex circulation unit dedicated to this purpose, which is continuously modernised. By using a heated batch with a chemical cleaning agent, the latex is dissolved in the tank, eliminating the need for manual work. Together with the customer, Gröninger analysed how the operations could be carried out as energy efficiently as possible, and selected an electric-powered return

pump to reduce compressed air consumption.

The unit is placed in a 20ft technical container with a work platform on top, allowing tanks to be cleaned on a separate bay without disturbing regular tank cleaning activities. ■

For more information visit www.groninger.eu/en



Van den Bosch opens branch in Milan

Van den Bosch continues to develop its activities in the Italian market with the opening of a branch in Agrate Brianza, Milan.

Van den Bosch has been active in the Italian market for many years with the intermodal transport of dry and liquid bulk goods for the food and chemical industry. Paul van de Vorle was closely involved in the developments: "We have grown rapidly in the transport of dry bulk goods in recent years – mainly the transport of powders with silo pressure containers. We are now the European market leader. By opening a branch in Italy, we are providing local representation that brings us closer to our customers and enables us to respond better to market developments."

Growth in dry and liquid bulk

Van den Bosch sees future opportunities in this region for both dry and liquid bulk logistics. Paul van de Vorle: "Not only between Northern Europe and Italy, but also in connecting Southern and Eastern European markets with Italy through rail and short sea solutions. Italy is also an important corridor to North Africa. This will strengthen our deep-sea network and our leading position as a tank operator on the African continent."

Closer to customers and partners

Manuela Musoni takes on the role of General Manager of the Italian branch. Manuela Musoni has been working in intermodal logistics for over 30 years and has many years of experience in bulk transport. "Personal contact is very important in this market; with the new location we are offering a direct point of contact. Being physically present in Italy brings us closer to our customers and partners and will enable us to intensify our cooperation. In doing so, we are taking our activities to the next level and contributing to Van den Bosch's strategic ambition. I look forward to helping to realise this." ■



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FORT VALE

Fort Vale play major part in World's first digitalised shipment



The footvalve left Fort Vale Engineering's Headquarters on Thursday, 21st September.

The first ever fully digitalised goods shipment landed in Singapore from Burnley yesterday (24th September).

UK replaces old fashioned paper customs documents with digital ones to make it faster, cheaper and easier for businesses to trade

Move expected to reduce processing times by up to 75% and could save British businesses over £1 billion

Innovation will enable more businesses to take advantage of our post-Brexit trade deals, including the UK-Singapore digital trade deal

The first ever fully digitalised goods shipment landed in Singapore from Burnley yesterday (24 September) after the UK introduced world-leading legislation to make trading cheaper and easier for businesses.

A highlift footvalve produced by Burnley-based manufacturer Fort Vale, set off from Manchester Airport on Thursday, facilitated by UK and Singapore based tech company LogChain. For the first time ever, the shipment will be processed entirely digitally, rather than via physical customs documents.

The news comes following the UK's digital trade agreement with Singapore, which facilitated electronic trade, as well as the introduction of the UK's ground-breaking Electronic Trade Documents Act (ETDA) which came into force on Wednesday.

The Act made the UK the first G7 country to place electronic trade

documents on the same legal footing as paper documents. It is estimated the move could generate £1.14 billion for the UK economy over the next decade, supporting the Prime Minister's priority of growing the economy.

Global Sales and Marketing Director of Fort Vale Graham Blanchard said: 'Fort Vale are extremely enthusiastic and excited by the prospect of successful digital trade transactions. As an organisation Fort Vale exports around 90% of its products worldwide. A significant number of our key accounts are based in Singapore and as such, the opportunity to be part of this historic moment was something not to miss.

Fort Vale see the benefits of security, efficiency, cost savings and reduced risk of delays as real positives not only for our organisation, but as a contribution to frictionless trade between the UK and Singapore as a whole.'

Minister for International Trade Nigel Huddleston said: 'This is a landmark moment for the future of international trade and I am delighted the UK is leading the way in using technology to make things easier for our companies.'

The UK's Electronic Trade Documents Act marks a pioneering step in the realm of trade documentation. By positioning electronic trade documents on equal legal standing as their paper equivalents, the Act fosters flexibility without enforcing an obligatory switch. Designed as permissive legislation, its primary objective is to eliminate hindrances as opposed to introducing new constraints.

Such a transformative approach offers the potential to revolutionize global trade in several impactful ways:

Efficiency: Transitioning to electronic documents, supported by the ETD Bill, slashes time overheads associated with the manual handling of paper documents. This augments operational efficiency for logistics stakeholders.

Cost Savings: Traditional methods of managing, archiving, and dispatching paper documents rack up expenses. Embracing electronic document practices presents substantial fiscal advantages.

Reduced Risk of Delays: Bottlenecks in logistics, often paper document-linked, can escalate costs due to demurrage and detention. E-documents diminish these delays, thus curtailing related expenditures.

Enhanced Security: With a digital approach, there's a marked reduction in vulnerabilities such as loss, theft, or forgery that are associated with paper documents, fortifying transactional security and curbing fraud chances.

Environmental Benefits: The move towards electronic documentation lessens the dependence on paper, advancing the cause of environmental sustainability. ■

The footvalve arrived in Singapore on the 25th September.



Annual Production
12000 TK



01

Product

- ✓ Standard tank
- ✓ Lined tank
- ✓ Gas tank,
- ✓ Food grade tank
- ✓ Electrical tank
- ✓ Reefer tank
- ✓ Baffle tank
- ✓ AHF tank
- ✓ Hydrogen peroxide tank
- ✓ Metallic Sodium tanks
- ✓ IBC/SBC tank
- ✓ T20/T22 tank

02

Service

- ✓ Global service network

03

R&D

- ✓ ASME U&U2, C3, LR, BV, CCS, RMRS, DNV certifications
- ✓ 300+ patents
- ✓ 350+ engineers

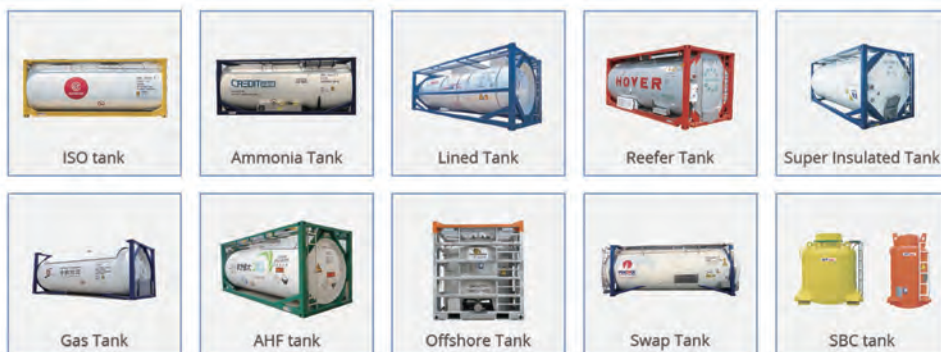


Nantong Tank Container Co., Ltd

Established in May, 2007, NANTONG TANK CONTAINER CO., LTD (NTtank) is a professional ISO tank container manufacturer located in Nantong, Jiangsu, China, close to Shanghai.

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Over 80 Students attend successful 2nd ITCO Tank Container Awareness Day in Rotterdam



Over 80 Students from Rotterdam's Scheepvaart & Transport College (Shipping & Transport College) attended the 2nd ITCO "Tank Container Awareness Day" on 7 September 2023.

The aim of the meeting was to give students who are beginning their 4th year at the STC a chance both to learn about the opportunities for working in the tank container industry, and to discuss possible internships – which they will need to arrange for early next year.

The day began with a welcome by ITCO president Reg Lee, who gave the background to the way that the industry started and grew.

ITCO Reg Lee explained the history and development of the tank container business to the students.

Following the introduction by Reg Lee, ITCO secretary Patrick Hicks gave details about the tank container industry and the activities of the organisation.

ITCO secretary Patrick Hicks reported on the structure and growth of the tank container industry and explained the work of the Organisation.

Students then divided into five groups, and attended four different classroom sessions during the course of the day, while also having the opportunity to inspect the Demonstration Tank, generously provided by Den Hartogh.

The STC Students inspected the Den Hartogh demonstration tank, in the STC's training yard.

Bob Kloppenburg, Den Hartogh's recruitment & employer branding specialist, showed the students both the inside and exterior features of the tank.

Hoyer's Jasper van Oosten and Roderick Bergwerf explained to the students the work of the tank container operator – and introduced an interactive quiz into their presentation, to check how much the students were learning.

Opportunities in the tank operating

sector were explained by Anouk van Strien, operations and account management, Den Hartogh.

The role of tank depot procedures, job possibilities and safety in depots was presented by Dennis Verduyn global depots director, Stolt Tank Containers.

Barry Mol, general manager Bertschi B.V. details of the company's intermodal network – and explained how the rail transportation business operated.

In addition to the Tank Container Awareness day, the students will also be taking the ITCO E-learning course, as part of their 4th year programme.

Concluding the event, ITCO took the opportunity to thank the speakers from Den Hartogh, Bertschi, Hoyer and Stolt, together with Tamara Sebus-Smits from STC, who arranged the course – and Paul Pigmans and Jarno Weps (Exsif) who co-ordinated arrangements on behalf of ITCO. Plans are already in place to continue this programme next year. ■



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- ✓ Shedule monitoring
- ✓ Load detection

Peacock Container Expands to Houston, USA and appoints Scott Gonzalez

Peacock Container, a prominent global ISO tank container lessor, have opened an office in Houston, USA. Scott Gonzalez has been as announced as Commercial Director Americas. This strategic expansion underscores their commitment to offer comprehensive support to global clientele and enhance their service to clients in the region. It marks the establishment of Peacock's third office worldwide, as part of international growth plans.

This expansion is another important milestone in Peacock Container's journey to strengthen its position as a global leader in the tank container leasing industry. We are looking forward to the opportunity to serve our clients active in the Americas from this base.

Jesse Vermeijden, Peacock's Group CEO, stated, "With the appointment of Scott Gonzalez we add over two decades of invaluable experience in ISO tank leasing, rendering him a valuable addition to the Peacock Container team. The decision to expand our presence in Houston was prompted by our ambition to expand coverage of clients in this key area, our commitment to existing customers in the region, and the opportunities in the greater Americas market. Houston's strategic location and thriving business environment provide an ideal platform from which to connect with and support our current and prospective clients in both North and South Americas.

Scott Gonzalez previously excelled at Hoyer Global, where he successfully

developed their Americas lease portfolio. Prior to that, Scott played a pivotal role in establishing the leasing business for TML, a specialized tank leasing company. In his new capacity, Scott will spearhead Peacock's leasing operations in the Americas."

Scott Gonzalez added, "I am thrilled to be part of the Peacock Container team and to contribute my expertise to the company's success, while supporting our valued customers. I look forward to developing our service to clients in the Americas."

Peacock's achievements are a testament to its commitment to innovation and customer satisfaction. The group currently offers a fleet of over 23,000 tank containers, and is confident that this strategic expansion will support its continued growth and success.

About the Peacock Container group

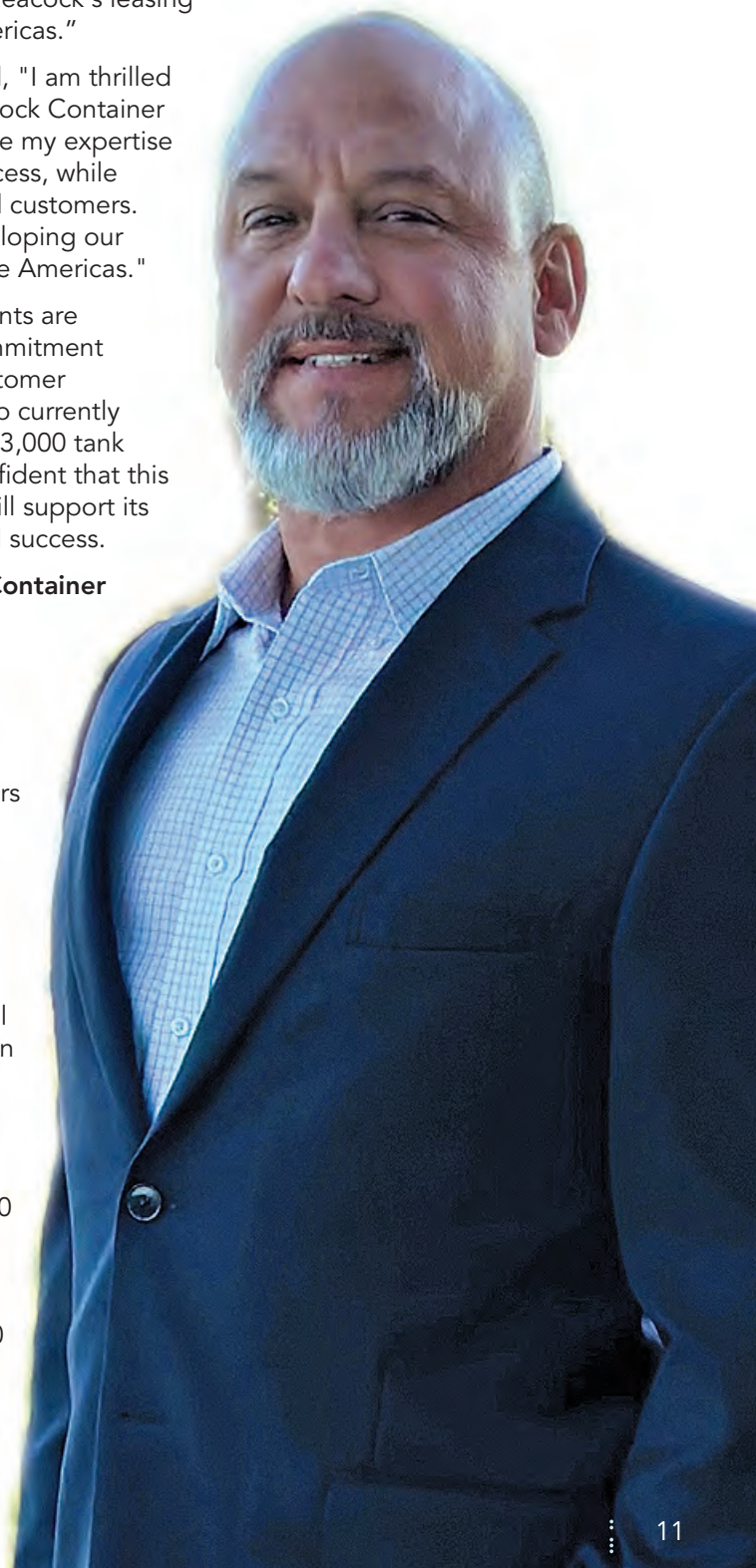
Founded in 1986, the Peacock Container group specializes in the leasing of tank containers to producers and transportation companies active in the international energy, chemical, gas and food processing industries. Peacock Container has a global focus and has offices in Singapore, Rotterdam and Houston and a sales representative in Shanghai. Its fleet consists of over 23,000 ISO tank and other shipping containers varying in capacity from 13,000 to 35,000 litres.

For more information about this announcement, contact:

Jesse Vermeijden, CEO

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HOYER Group updates tank container fleet: Around 3,000 tanks planned by the end of 2023.

The HOYER Group, operating globally and specialising in liquid goods, plans to renew its fleet of tank containers used worldwide with around 3,000 tanks by the end of 2023. This step is being taken as part of a fleet update to meet the demand for specialist equipment for chemical products and liquid foodstuffs in European road and intermodal transport as well as in overseas logistics in particular.



Björn Schniederkötter, Chief Executive Officer of the HOYER Group, says, "Our investment in around 3,000 new tank containers underlines our commitment to our customers and our obligation to put forward innovative solutions for the ever-changing marketplace. We look forward to modernising our fleet and strengthening our presence in various markets to continue offering first-class logistics services along the whole of the supply chain." The HOYER Group has one of the most modern fleets in the world, and continuously invests in its equipment.

HOYER sets its own high standards for sustainable transport solutions. When selecting production partners, the HOYER Group also attaches great importance to quality and to complying with all international safety and environmental regulations. Accordingly, the new tank containers are being produced by renowned manufacturers in South Africa and China to meet these highest quality standards. The delivery includes special tanks for chemicals as well as tanks with specifications for foodstuff products. The new tanks can be used in versatile ways, and enable the safe and efficient transport of a wide range of liquid

goods. This step will enable the HOYER Group to increase its flexibility in global availability and to better fulfil new product and customer requirements. The HOYER Group remains true to its strategy of shaping the logistics of the future through innovative, customised solutions with a strong customer focus. With its expertise and a global network offering uniform quality and safety standards, the HOYER Group is a flexible, reliable and safe partner even in a dynamically-developing market environment. The HOYER Group is proud of its commitment to sustainability, safety and customer satisfaction. ■

TeamGröninger wishes you happy holidays and a successful 2024!



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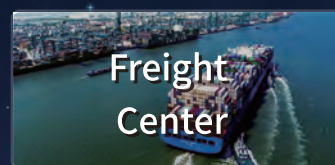
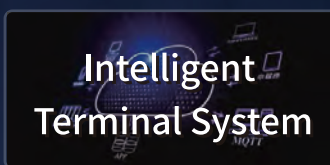
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FEATURES



YiShiXin Supply Chain Cloud Platform

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Dinges Logistics carries out first roadshow with new training container

In the past weeks and months, the workshop team of Dinges Logistics has been busy with a somewhat special project in addition to the day-to-day business. A tank container that had been taken out of service was converted into a walk-in training container. This is to be used specifically to provide a comprehensive insight into tank container logistics and to make complex aspects more tangible through a strong practical orientation.



The training container is a 30,000-liter swap body tank container. Among other things, it is equipped with a stack pipe, three baffles, a gas pendulum connection, and a 2-inch and a 3-inch flange in the dome cover area. Previously, the tank container was used for the transport of liquid goods. In order to convert it into a training container, various measures were implemented. First, it was cut open at the side to make it accessible on the inside.

Furthermore, a piece of the container was cut out to reveal the insulation and the container construction. The last steps for completion were the installation of a railing on top of the container, the incorporation of the floor and the positioning of the stairs. Thus, the training container is not only accessible from the inside, but also from the top.

The container is used in combination with a wide range of fittings, couplings, seals, bottom valves, additional cross-sections of the superstructure and other accessories, covering a large spectrum of information. This is a great opportunity not only for our own employees from all areas of the company, but also for external interested parties to gain exciting impressions and thus refresh, deepen and expand knowledge in this area.

Ingo Dinges, Owner and Managing Director of Dinges Logistics, considers a basic background knowledge of all employees to be critical to success. Insightful, practical training can help to ensure that interrelationships are better understood and operational processes are thus optimized, which is why he initiated the tank container conversion. He is also convinced that raising awareness of the complexity

of tank container logistics is crucial. With regard to the conversion of the container, he is particularly proud of the fact that the entire project was realized by his own team.

Just in time for the completion of the training container, a roadshow was recently carried out in which the container was used for the first time. In addition to the training container in combination with the tank container equipment, other aspects of tank container logistics were addressed at the event as well - for this purpose, a tractor unit was provided with a ground-operated standard ISO tank container connected to a heating or cooling block, as well as a tractor unit with a chemical tank semitrailer including special equipment such as a hydraulic pump, on-the-road heating as well as a limit value transmitter and ANA system. A vacuum test device was also provided. Based on that, several stations with different focal points were created. The total of almost 40 people attending were guided through the individual stations in groups. To complete the event, the storage and retrieval process of a tank container in the container terminal was simulated for each group using a reachstacker.

Both the participants as well as Dinges Logistics drew a very positive conclusion with regard to the roadshow. The main topics were very interesting and, above all, fundamental for all participants - as a result, a number of aha experiences were achieved. Due to the positive feedback of all participants, this concept will be realized again in this form at Dinges Logistics in the future. ■

Van den Bosch opens branch in Milan

Van den Bosch continues to develop its activities in the Italian market with the opening of a branch in Agrate Brianza, Milan. "In recent years we have achieved considerable growth in the Italian market, partly due to the acquisition of fellow transporter, Gé Simons. Now we are taking the next step by realising our further growth ambition with local representation," says Paul van de Vorle, Director of Business Development.

Van den Bosch has been active in the Italian market for many years with the intermodal transport of dry and liquid bulk goods for the food and chemical industry. Paul van de Vorle was closely involved in the developments: "We have grown rapidly in the transport of dry bulk goods in recent years – mainly the transport of powders with silo pressure containers. We are now the European market leader. By opening a branch in Italy, we are providing local representation that brings us closer to our customers and enables us to respond better to market developments."

Growth in dry and liquid bulk

Van den Bosch sees future opportunities in this region for both dry and liquid bulk logistics. Paul van de Vorle: "Not only between Northern Europe and Italy, but also in connecting Southern and Eastern European markets with Italy through rail and short sea solutions. Italy is also an important corridor to North Africa. This will strengthen our deep-sea network and our leading position as a tank operator on the African continent."

Closer to customers and partners

Manuela Musoni takes on the role of General Manager of the Italian branch. Manuela Musoni has been working in intermodal logistics for over 30 years and has many years of experience in bulk transport. "Personal contact is very important in this market; with the new location we are offering a direct point of contact. Being physically present in Italy brings us closer to our customers and partners and will enable us to intensify our cooperation. In doing so, we are taking our activities to the next level and contributing to Van den Bosch's strategic ambition. I look forward to helping to realise this." ■

About Van den Bosch

Van den Bosch is an international logistics service provider specialised in the transport of liquid and dry bulk goods for the food and chemical industry. The company serves the global market with both road and intermodal transport. Van den Bosch operates from thirteen branches in Europe, Africa and the Middle East. The head office is located in Erp, the Netherlands.
www.vandenbosch.com

More information

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Bertschi Secures Prestigious Prix SVC Nordschweiz 2023 for Outstanding Entrepreneurship

Bertschi Group, a global leader in chemical logistics, is thrilled to announce that it has been awarded the prestigious Prix SVC Nordschweiz 2023, a testament to the company's pioneering efforts in sustainability and safety within the logistics industry.

Headquartered in Dürrenäsch, in the Canton of Aargau, Switzerland, Bertschi Group secured the top position among the highly competitive field of nominees from all sectors of the economy, demonstrating its commitment to excellence in innovation and environmental responsibility in chemical logistics. As a market leader in the logistics industry, Bertschi specializes in providing intermodal services tailored for the chemical industry. With a workforce of 3,200 employees operating across 74 locations in 38 countries, and boasting 30 proprietary intermodal terminals, 1,000 trucks, and 44,000 containers, Bertschi stands as a powerhouse in the global logistics landscape.

Commitment to Sustainability

Bertschi has long been at the forefront of sustainability initiatives, particularly in its dedication to reducing carbon emissions. Through the environmentally friendly transportation of goods by rail, the company annually saves over 200,000 tons of CO₂e emissions compared to conventional road transport. This significant achievement is equivalent to a car traveling 1.2 billion kilometers or circumnavigating the Earth 30,000 times.

Robin Wasser, Jury and Organizing Committee member, praised Bertschi's accomplishments in his commendation: "The Bertschi Group



has distinguished itself over the last 60 years through tremendous pioneering achievements. What impressed the jury particularly is that despite its successes, Bertschi has always remained true to itself and has never forgotten its roots."

A Legacy of Innovation

Bertschi's legacy of innovation includes being the first company, in collaboration with the Swiss Federal Railways (SBB), to load trucks onto trains, laying the foundation for combined freight transport in Europe. A great current highlight is the inauguration of the Zhangjiagang Chemical Hub in the Yangtze River Delta in China earlier this year, a comprehensive hub for chemical logistics.

A Word from Bertschi

At the award ceremony, Bertschi employees representing various departments were present, emphasizing the collective effort that has contributed to the company's success.

Upon receiving the prestigious award, Hans-Jörg Bertschi, Chairman of the

Board of Directors of the Bertschi Group, expressed gratitude: "We are honored to receive the Prix SVC Nordschweiz 2023. We remain committed to pushing the boundaries of innovation, sustainability, safety and digital transformation in the chemical logistics industry." He continues, "This achievement would not have been possible without the exceptional effort and hard work of the employees at Bertschi. They are the driving force behind our success, and we share this award with each and every one of them." ■



Hans-Jörg Bertschi,

Chairman of the Board of Directors, Bertschi Group

Keeping your cool

Tankcontainer Magazine discusses Klinge's role in the tank container market with third-generation CEO Allan Klinge and Marketing Lead, Elina Klinge.

TCM: What are Klinge Corporation's founding roots?

AK/EK: Klinge Corporation's original parent company was a Danish company founded following the Second World War and acted as agents for US companies such as Continental, Union Carbide and York International/York Borg Warner, delivering the first reefer containers to Maersk Lines.

In 1984, Klinge Corporation in York, Pennsylvania was formed out of the transport division of York Borg Warner and the production of equipment continued for some time in both Denmark for standard box reefer equipment and in the US, and other locations in Denmark, for more specialised transport equipment.

Eventually, the business was transformed to focus solely on the special equipment production in the United States, including the focus on tank container heating and cooling equipment.

TCM: What is the company's main business activity now?

AK/EK: The company continues to focus on manufacturing high quality and robust transport refrigeration solutions with a focus on the service and support of that equipment worldwide. The company also offers integrated power generation equipment, telematics for remote monitoring and support, and specially designed products for custom applications.

TCM: Which market segments does Klinge serve?

AK/EK: Klinge's primary market segments currently centre around four different areas: equipment for pharmaceutical supply chain (mostly Ultra-Low -70°C dual-redundant temperature equipment); tank container temperature control equipment for cooling and heating of bulk chemical and food products; the provision of special dual-redundant and explosion-proof systems for dangerous goods transport; and quick thawing equipment for the meat processing industry.

Other specialty applications - such as cooling systems for MRI magnets, military equipment, stationary tank cooling/heating units, and even systems designed specifically for Antarctica - are also provided by Klinge.

TCM: How much of the business is focused on tank containers as opposed to, say, reefers and other units?

AK/EK: The tank container market represent approximately 30-35% of Klinge's total business. Klinge's fiscal year ending April 2023 was a record year in terms of the amount of equipment produced for the tank container market. Even though there has been a general reduction of production in the tank container market over the latter part of 2023, Klinge's sales remain strong for the specialty markets we serve and the timing has also proven good to be able to undertake some projects for upgrades of existing tank containers for Klinge's customers, as well as customers looking to improve and extend their existing fleets.

TCM: How does Klinge truly differentiate itself from its competitors?

AK/EK: Klinge's products are intended to be ultra-reliable and easy to service around the world, no matter where they will travel. We focus on simple, yet elegant, design and are constantly modulating our designs to incorporate customer feedback and demand.

Klinge is the sole provider worldwide of such products as dual redundant reefer/heating tank equipment, where one system will be a back-up for another in case of an alarm condition - the units constantly switch to even out the component run-time and check that both systems are fully functional. Klinge has also spent years developing independently certified explosion-proof reefer equipment for flammable gas usage and recently started to offer these systems with a heating option.

Our ability to quickly provide service and support around the world through our network of experienced service partners is also paramount to the success of our customers and, ultimately, of Klinge.

TCM: How many tank containers have been fitted with Klinge equipment?

AK/EK: Currently, approximately 3,000 Klinge tank container systems are fitted.

TCM: Which mediums are usually used in Klinger cooling systems? ➔



AK/EK: Klinge typically uses R-452A refrigerant gas or R-404A refrigerant gas in markets where R-452A is not yet readily available. [R-452A has a Global Warming Potential (GWP) of 45% less than R-404A]. Newer systems are also being developed with R-134A with drop-in replacement for lower GWP options. Ultimately, the industry appears ready to shift to R-1234yf, but we will need to see what is practically supportable in the marketplace over the next few years.

TCM: Can Klinge equipment be fully synchronised with 'smart' telematics?

AK/EK: Yes, Klinge can integrate with any number of providers and also makes its MODBus protocol available for easy integration with any provider.

Information which can be provided include set point (including remote set point changing), cargo temperature, alarm condition, and - in the case of dual-redundant systems - whether the primary or secondary system is active. We have also recently developed with one vendor an optimised tank container telematics system that, in addition to GSM, has a satellite fallback for visibility in areas with no cellular coverage as well as also providing visibility onboard vessel. This system also includes solar power cells for charging when not directly under power.

TCM: Have labour shortages and raw material increases affected the business?

AK/EK: Though labour shortages did have an impact from time to

time, Klinge was less affected than most due to the great team we have here at our facility which help to ensure a pleasant and productive work environment with interactive engagement between all employee groups.

The move to a 4-day work week for our production team, and 4½-day working week for the rest of our team, also provided a great incentive for team members to join Klinge and for those already here to stay. It has been incredibly well-received and provides our team with the necessary time to recharge and spend time with family and friends on the weekends.

TCM: What are the company's most important R&D themes?

AK/EK: The most important trends continue to be sustainability with a focus on lower GWP refrigerants and overall system efficiency, reliability, and reduction of the size and weight of the systems in order to allow larger cargo loads to be shipped in tank containers. Klinge is proud to provide some of the lightest units in the industry, resulting in increased product loads per shipment and overall reduced carbon dioxide footprint per litre of product transported per kilometre.

Klinge is also working on a new design for 26,000 litre tank containers to allow for even more cargo to be transported per tank container. The expected release date of this design is Q2 2024.

TCM: Where are Klinge systems manufactured?





AK/EK: In our York, Pennsylvania facility in the United States, conveniently located just a few hours from the major ports of Baltimore, Philadelphia, New York and Norfolk.

And while we do manufacture the units in the US, it is important to note our European roots and note that about 50% of our business is still exported outside from the US. For our tank container business, in particular, exports are usually on the level of approximately 85% for this market. Excellent global service support is therefore critical.

TCM: What are the key trends in temperature controlled tank containers?

AK/EK: The key trends in the market continue to be the overall focus on sustainability, as mentioned above, as well as visibility for the end customer in terms of telematics. There is a continued focus on serviceability and weight reduction of the temperature control systems. There has also been an increasing demand for explosion-proof systems as dangerous goods safety regulations tighten around the world.

TCM: What key trends in the tank container market impact Klinge heating/cooling systems?

AK/EK: The key trends currently for Klinge have been the large growth and development of the lithium electrolyte and semi-conductor/microprocessor supply chains over the past few years, new requirements for explosion-proof systems for flammable liquids, and Klinge's continued move into other existing supply chains, such as the transport of juice concentrate. ■

Biographies

Allan Klinge is the CEO at Klinge Corporation and plans, develops, implements and evaluates the organisation's administration function and performance. Allan is also responsible for directing, managing and coordinating all sales and marketing activities for Klinge Corporation. He coordinates efforts between the sales and engineering departments; leads the development and implementation of marketing initiatives and helps to identify, design and implement new market opportunities, products and plans. Allan joined Klinge Corporation in 2007. He previously worked at a research firm in Washington, DC.

Elina Klinge moved from Germany to the United States in 2021, ultimately joining Klinge Corporation in 2022 as the Marketing Lead for Klinge where she executes marketing initiatives. Elina is responsible for the development of new markets for Klinge equipment - including tank container systems - through online outreach, social media and Klinge's ongoing online optimisation efforts. She previously worked for more than 15 years in the public sector in Germany.



Is tank container growth outpacing its essential infrastructure? (PART 2)



Many tank container players see the infrastructure support on which they depend - including depot storage and cleaning stations - not keeping pace with the rapid growth in the global fleet. Could this potentially limit the growth of tank container usage, questions Leslie McCune, a tank container market expert?

Introduction

PART 1 of this analysis featured in September's *Tankcontainer Magazine*. It addressed the following questions:

- Is tank container storage availability in depots becoming limited?
- Why is there a problem?
- Where are depot capacity shortages most acute?
- Why has there not been more investment in tank container depots?
- Is the tank container storage shortage temporary or structural?

We now continue the analysis by posing the following questions:

What are the consequences of the storage tightness?

Several consequences are already evident - higher charges, slower cleaning rates, potentially more corrosion problems, and the use of alternative tank container storage sites, which will probably be less convenient and therefore involve additional transport costs.

Tank container depots with persistent capacity constraints are becoming **selective**, favouring certain tank operators and more straightforward product cleanings. This selectiveness could potentially result in increased costs, notes tank container operator Suttons.

Similarly, the effects of limited storage have already been seen in the US, where equipment turnover problems have emerged, causing issues with cleaning and **corrosion**.

Many operators and lessors are concerned that the storage constraints are structural and will not fade away as the market normalises. They are concerned that, longer term, insufficient tank container **storage space may restrict the growth of tank container usage**.

However EFTCO, the European Federation of Tank Cleaning Organisations, does not believe that European tank container growth will be constrained as a result of storage capacity concerns although European fees, it says, are increasing due to increases in employee and energy costs. Handling charges are also up as high depot occupancy requires a lot of equipment handling, which generates lower revenues than cleaning and Maintenance & Repair (M&R) work.

Higher depot fees impact operators more than lessors and are a significant operational cost for operators, although some of these costs are passed on to customers. Although higher depot costs may act as a disincentive for investors, the prospect of increased revenues at depots will **attract investors** with KKR (Boasso/Quala) and, to a lesser degree, Apollo (ITT, the largest US-based operator with eight depots) identifying and acting early to capitalise the opportunity.

Do the investment returns support new depots?

Cotac, a subsidiary and full service depot group supporting Hoyer, believes that, in some countries, full service depots offer storage at a low price to encourage cleaning and M&R activities, both of which have higher returns. This might need to change as storage constraints - and the slower cleaning rates that this causes - become operational bottlenecks affecting a depot's handling capability.

With storage space now tight in many locations, fees will increase, supporting further investments in additional depot space. However, the high land cost in countries like **Singapore** and **Japan** make investments in depots increasingly unlikely. Expansions in these countries have questionable viability unless a depot combines its basic storage service with the full suite of higher added value activities such as cleaning, M&R, drumming and blending.

In **China**, tank container depot operations are viewed by some local authorities as occupying an undesirably large land area, generating pollution, and yielding low tax revenues. This makes them less favourable to local governments, particularly in developed areas.

Permit permissions are increasingly difficult and rising land prices and labour costs create a long-term, higher risk investment outlook. These concerns encourage those tank container operators with sufficient throughput to invest in their own depots, if possible.

One industry source observes that in China, investment in - and operation of - cleaning depots is becoming limited solely to state-owned companies such as COSCO, CIMC and Gangcheng Logistics (which has a new depot under construction in Shanghai).

Even well-connected and dominant privately owned but publicly quoted companies such as Milkyway have had planning applications for new depots rejected recently. Foreign investors will not get approvals.

The key issue is nervousness among approving authorities of waste treatments, which plays to the general public's hostility towards China's chemical industry following numerous accidents. Official licenses to operate can be



Eng Kong, a major tank container depot in Singapore

arbitrarily withdrawn by other local officials if they view it as non-compliant. Only state-owned companies can accept such an investment risk.

Singapore, one of the key global tank container hubs, has limited space and land lease rates are very expensive. Both these factors discourage investment in tank container depots, where a minimum scale is essential for economic viability.

The management complexity required by tank container depots drives some depot owners to focus instead on dry containers. Eng Kong, a major tank container depot in Singapore, has recently closed due to new government regulations, which oblige most of the current depots to shrink their storage capacity. Local operators claim there is no sign of new depots being approved, apart from LHN.

In **Europe**, further investments in full service depots are expected although an acceptable return on investment for a standalone, 'pure' tank container depot (i.e. with no cleaning and no M&R work) is doubtful in several regions due to the lack of availability - and high cost - of land. In today's weak market, the large amount of non-productive handling in depots further undermines their financial performance.

New independent depots are only feasible where they are underpinned by a high volume of work and compete on the same regulatory basis as other local depots. Those with higher environmental standards may, of course, attract premium customers but having a guaranteed in-house demand makes depot investments more compelling for tank container operators.

Newer depots, like some in over-served Kaohsiung in South Korea, need to be confident they can be competitive against longer-established incumbents, who exploit their often fully depreciated facilities to keep rates low. ➔

What are the possible solutions?

New investments in depot storage capacity will be mainly **driven by operators and lessors**, not private entrepreneurs. In Asia, for example, Singapore-based operator Legend has recently opened new depots in Kandla and Nhava Sheva, India while operator **Bertschi's** huge, newly-opened logistics hub in Zhangjiagang, China has a dangerous goods storage facility for up to 1,000 tank containers, alleviating congestion and adding tank storage capacity to meet regional demand. Its 80,000m² rail terminal in Antwerp will include long term tank container storage when it opens next year.

Among lessors, **Raffles** Leasing's new depot in Houston will be opening soon with depot capital investment being on the boardroom agenda at several other lessors. Hoyer's cotac recently expanded its laden tank storage capacity in Houston to 800 units.

In 2020, top lessor **Eurotainer**/Stream acquired Netherlands-based DEMI Container Services - which focused on M&R and storage for specialised tank containers - to support its fleet. DEMI is now expanding its operations outside Europe, opening a new depot in Houston in Q1 2024 to serve US Gulf Coast customers. The facility will help it compete against Exsif, its major US competitor.

However, in the key hubs in Germany and Benelux, the acute shortage of tank container storage space at depots will not be easily eased. Land is scarce, especially in the Antwerp-Rotterdam region and approvals from local authorities for cleaning and dangerous goods storage are slow and extremely difficult to get.

At cotac, Director Harry Pepels notes: "Flexibility is key, with depot capacities fluctuating in line with the stronger fluctuating economies. This starts with continuously optimising depot layout and handling procedures. Once depot usage has been optimised and used to its full extent, capacity extension will be sought outside the already loaded logistical hubs".



DEMI opening a new depot in Houston.



Reg Lee, outgoing President, ITCO

However, some say the gains from better depot utilisation are marginal due to the limited physical space. More tank containers will lead to greater demand for depots so investments will probably follow.

In the US, several players are looking for greater investment in the depot network. Existing facilities often need upgrading to improve efficiencies and capacity while new depots are required in strategic locations to better manage tank container storage.

Having common industry-wide **digital** platforms and **certifications** is widely seen as a route to boost capacity through increased efficiencies. An excellent example of a common industry standard in Europe is the electronic EFTCO Cleaning Document (eECD 2.0), which enhances transparency by showcasing which companies are actively contributing digitally through a compliancy score - a company which is not yet prepared to work digitally can no longer hinder others who embrace digitalisation and automation.

Across the tank container depot industry, **staffing** is a critical issue. Attracting younger talent - and retaining skilled professionals - is one of the key factors limiting the development of the sector. Salaries, development and working conditions need improvement at many facilities.

Many of the larger depots are having to work their staff unsustainably hard to increase the currently very slow turnaround times and meet demand. Some are considering a 24-hour working day but are faced with staffing recruitment difficulties.

Raising standards to a minimum level should give quicker turnaround times, better trained and motivated staff, better customer service and more complete customer satisfaction.

However, investing in depots and cleaning stations that conform to minimum standards of operation, staff welfare and environmental performance comes at a cost, which must be reflected in the fees. Given the vital role of tank container cleaning stations perform, Reg Lee, outgoing

President of ITCO, says: "Their customers are simply **not paying the right price** for the value of the essential services the cleaning stations and depots deliver. And unless an efficient cleaning network is developed in Asia, tank container growth will be stunted in the region".

Would **standardised global or regionally-approved procedures** help depot operations? Some doubt it, seeing greater benefits for the cleaning station sector. Regional operational differences have evolved for good reasons so could these be harmonised into global standard procedures with regional variations?

Cotac, for example, offers globally uniform standards for tank cleaning, M&R and depot services and is regularly audited in accordance with DIN EN-ISO 9001 and SQAS.

Procedures and techniques vary - chemical washing with MEA is commonly used in the US but not allowed in Europe where, for example, ultra-high pressure 800 bar washing at 80 litres/minute is used for MDI/TDI isocyanates (among the top products carried in tank containers).

Automation offers the potential for increased efficiencies in depot operations. COSCO and BASF are already introducing fully automated cleaning systems in their facilities in China - cleaning throughput is higher and better quality, and depot utilisation is improved, says Gröninger Managing Director Henk Klein. Milkyway, the leading Chinese operator, expects to own ten cleaning station storage yards in China by the end of this year. Its new Dingming full service depot in the Pudong New Area of Shanghai is planned to be Milkyway's first 'intelligent unmanned' base.

A range of commercial initiatives are being considered by depots to increase tank storage capacity. **Demurrage rates** are being reduced by some to encourage customers to hold onto tank containers for longer, thereby reducing the need for depot storage.

Storage fees - typically €1/day in Europe for the first 100 days - are being increased to encourage customers to move tank containers on more quickly through depots. **Surcharges** are also being introduced for long residence equipment (space being more valuable than static tank container storage).

Some depots have not increased fees for eight years so, while the increased fees will improve the business performance of depots, operators - or at least those that do not own depots - will be squeezed as depot charges are a significant cost component in a tank container's economic life cycle.

Limited European tank container storage is encouraging operators to pay to reposition empty clean tanks to China, where storage charges are lower and cargo opportunities

greater. Elsewhere, it can be more cost competitive to send empty dirty equipment from Japan to South Korea for cleaning and reposition the empty clean tank containers back to Japan.

To alleviate the pressure on major tank container storage facilities at the main ports, equipment is being stored and/or having M&R work done at outside locations. This, of course, inevitably adds shuttle transport costs.

What will be the impact on the depot/cleaning sector of global investment companies?

Global private equity giants KKR and Apollo are investing in the tank container depot sector, although Apollo - who are also acquiring Univar, the world's third largest chemical distributor - might have more interest in US-based ITT as an operator than its eight depots.

KKR has funded Boasso Global's merger with Quala in the US, and the acquisition programme continues with the purchase of Botlek-based full service provider MTC by Boasso/Quala in August. But some doubt that the advent of private equity-backed consolidation will create new tank container storage availability where it is needed.

Will KKR want Boasso/Quala to create value by being a consolidator - seeking economies of scale while eliminating competition - or will it combine its acquisitions to create a common-standard, harmonised, global 'MacDonald's' depot brand? Some industry sources say the potential synergies between Boasso/Quala's merged network of depots are small.

One source notes that the very strong local control and management of the depot owner-managers that have been acquired by Boasso will weaken within the new global corporate structure.

Most private equity acquisitions are underpinned by closed funds with a proscribed lifetime of, typically, 5-7 years. Sceptics expect Boasso and ITT to be flipped by KKR and Apollo within five years and, as expected, Quala and Boasso have been rebranded (as Depot Connect International) but if their ownership catalyses increase efficiencies, raised standards and more tank container storage capacity in the rest of industry, their ownership will have been positive.

Several in the industry comment on these recent depot investments being almost exclusively directed towards M&A projects and therefore not adding to industry capacity (except by improved internal efficiencies). Pepels at cotac believes that the key to success will be to align the operational processes over the different depots. The quicker this is done, the sooner the operational efficiencies will be achieved. ➔

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There is scepticism about the potential impact of these investments. For instance, Boasso's limited facility improvements so far, and KKR's focus on profitability rather than operational enhancements, might hinder transformative changes among its low margin depot businesses.

EFTCO, with its European perspective, does not see additional capacities coming from the global investment companies and sees no increase in efficiencies, believing that the new private-equity owners will allow their acquisitions to operate as they have in the past. However, it notes that the larger, consolidated network of depots and cleaning facilities that Boasso/Quala now have can be an advantage for their customers, whose increased total spend with the group may justify larger rebates.

Will more operators and lessors invest in depots/cleaning station facilities?

Depots and cleaning stations usually **favour** tank container **operators** over lessors. Lessors bring end-of-contract storage, M&R and statutory testing fees to depots but these activities generate lower revenues than the range of services needed by operators, which include the regular cleaning needed after the discharge of most - but not all - chemical products.

The major tank container operators have varying **ownership strategies** for depot and cleaning stations. **Stolt** Tank Containers, the leading tank container operator, has a global network of 9 wholly-owned depots and 13 joint venture depots supporting its fleet. Some only service Stolt equipment but it enables the others to prioritise Stolt's own fleet.

Hoyer, the second largest operator, supports its fleet of 39,900 tank container through its cotac subsidiary, which through its twelve locations in Europe, the US and Asia, is an integral part of the full-service portfolio of Hoyer. It also supports TWS, the lessor owned by the twelve fourth-generation members of the Hoyer family.

Pepels of cotac notes: "Securing needed depot space in key locations, as a larger tank container operator, is certainly a lot easier if you are able to invest in your own facilities, especially given the increasing consolidation of depot operators and the resulting reduction in the availability of independent alternatives".

Den Hartogh, the fifth largest deep sea tank container operator, sold its four European depot and cleaning service businesses to Boasso Global in 2017. The acquisition expanded Boasso's activities into continental Europe, building on its acquisition of UK-based Isotank Group UK in 2016. The disposal provided a cash injection for Den Hartogh, following its 2016 acquisition of InterBulk for €57 million plus the assumption of €72 million of net debt.

Now 20% part-owned by MOL Chemical Tankers, Den Hartogh agreed in July a strategic alliance with Daelim, Korea's top tank container operator (which does not have its own depot storage or cleaning stations). Den Hartogh's fleet size, depot experience and new partners may point to more depot investment, following on from its acquisition of Gothenburg-based Hedenskogs last year.

Jan Arnet, CEO of **Bertschi** Group, says the company is also investing in more capacity in Europe, Asia and other key markets, noting that the essential infrastructure for chemical supply chains will remain key for efficient, sustainable door-to-door logistics.

Meanwhile in China, fast-growing operator **Milkyway** operates depots in Shanghai, Zhangjiagang and Yingkou on Liaodong Bay and expected to own ten cleaning and tank container storage yards by the end of the year.

However, some tank container operators prefer to concentrate on their core business and have moved away from cleaning, depot storage and M&R activities. They either do not have the expertise or no longer want to accept the liability of stricter environmental and safety regulations.

Other operators - especially those with high throughput volumes - see added value in having their own global network of full-service, one-stop-shop tank container depots providing access, flexibility and quality guarantees. The best depots tend to be owned by the top operators.

Conclusion

Depot capacities have not kept pace with the growth in the global tank container fleet which, when combined with today's weak market conditions and low utilisation, is putting severe pressure on tank container storage capacities in certain key locations. It may get worse before it gets better.

Many believe the problem is structural and will continue when the market normalises.

For operators and lessors with large fleets, full service depot investments add value, guarantee quality, increase flexibility, strengthen business resilience and make local market opportunities more visible and convertible.

Depot fees will increase and consolidation will continue, helping to spread best practice within and between regions. The need for a global digital platform and common global standards, with local variations, is said by many to be an important way to raise quality and efficiency. Independent third-party audit inspections could verify progress under the umbrella of a new worldwide tank container depot/cleaning station organisation. ■

More info: lm@chemicalmanagement.co.uk

ITCO welcomes new President

The International Tank Container Organisation (ITCO) held its 2023 Members Meeting at the Hilton Hotel, Amsterdam Schiphol last month with a record 260 participants, including *Tankcontainer Magazine*.

Paul Gooch, new President,
The International Tank Container
Organisation (ITCO)



The record numbers at ITCO's annual Members Meeting in Amsterdam underlined the fundamental growth of the tank container industry despite the currently soft market conditions. Sustainability was the theme of the three keynote presentations with digitalisation viewed as playing an instrumental role as a key enabler.

Solid logistics credentials

Outgoing President Reg Lee introduced the new President, Paul Gooch, who will take over the role from January 2024. Gooch, founder and director of The Logical Group, was unanimously elected President by the ITCO Board for the next 2-year period.

Gooch set up The Logical Group, a supply chain consultancy, leveraging a near 30-year career with Dow Chemical during which he held regional leadership roles in the UK and the Benelux before going on to become European logistics director with responsibility for a \$500 million (€470 million) spend.

He was a logistics work process owner and global director for Dow's international trade and marine container activities and has been a major contributor to various European Petrochemical Association reports on supply chain sustainability and collaboration. ITCO has used his consultancy knowledge and skills on a number of projects in the past.

How will ITCO develop?

ITCO is at a natural cusp point in its development and there are a range of possible directions open to it, on behalf of its members. The organisation's mission is: "To promote and represent tank containers as safe, cost-efficient and flexible means of transport. In doing so, we have a strong focus on enhancing technological and business developments for the sake of quality, health, safety, environment, and Corporate Responsibility in the tank container industry.

"We design the framework and platform for the strengthening and future growth of our global business. With this we contribute to the competitiveness and success of the tank container industry. We strive for this by offering: network platforms across all tank container divisions, for customers, and partners; information, education and advice on technical, regulatory and market developments on a global and regional level; representation of the tank container industry on a global level at regulatory bodies; and transparent and open communication within the framework of competition law, in particular to member companies, the tank container industry as a whole, the chemical and food grade industry, young professionals, investors, regulatory bodies and the media".

Dow: 10,000 tank container movements/month

The first keynote presentation was given by Lennart Heip, Dow's Global Modal & Technology Leader in the company's International Trade Organisation. The company has approximately 10,000 tank container movements a month but only owns 'a handful'. It therefore has no need to negotiate with ocean carriers, leaving this instead to its partners among the tank container operators. Road/intermodal tank container movements account for approximately 7,500 a month while 2,500 tank containers a month are moved by sea.



Heip's presentation on "Tank containers: a key component of Dow's sustainable logistics strategy" explored how tank containers fitted into Dow's sustainable logistics strategy and solutions, revealed what Dow sees as the biggest opportunities and challenges for tank containers, gave examples of how they can be used to improve Dow's safety and productivity, and discussed how ITCO can provide tank container support for Dow operations employees.

Dow is an intensely energy-dependent chemical producer with plans to be carbon-neutral by 2050. It will spend \$2-3 billion a year through to 2050 to support and fund its strong company-wide sustainability agenda. The company had a turnover of \$57 billion in 2022 including \$17 billion in its Industrial Intermediates & Infrastructure division. The products from this division are mainly bulk liquids so this division is therefore of most interest to the tank container industry.

Dow's \$11 billion Performance Materials & Coatings division contains the siloxanes and acrylic monomers from the former Rohm & Haas and Dow Corning product ranges. Coatings, especially silicones, are growing very strongly due to demand from the rapidly expanding electric vehicle sector.

The company's financial goal is to have a 15% Return On Invested Capital across the cycle.

Dow seeks flexibility, expertise, safety from operators

Heip described how Dow uses tank containers for a number of purposes: direct production into tank containers, off-spec storage, temporary storage at customers and the transport of hazardous and non-hazardous products.

Like all customers, it seeks flexibility, expertise and safety from its logistics partners. The operational challenges it faces can be partly mitigated by creating more flexibility within Dow and in collaboration with its essential logistics partners. A rigorous assessment of previous cargo restrictions might, for example, create more options for both parties. He observed that the prohibited last cargo list keeps on growing, which builds in potentially costly constraints such as a reduced availability for tank containers.

Expertise - from both parties - is essential to navigate the complex supply chain logistics while safety is naturally paramount given the often hazardous characteristics of the products being moved or handled. ➔

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Dow switching from parcel tanker to tank container

As part of its efforts to meet its sustainability and economic goals, Heip confirmed that Dow was switching away from marine bulk to tank containers. This was driven by the increasing scarcity of suitable bulk marine offerings for smaller bulk parcels - the smallest tanks in deep sea chemical parcel tankers are typically 250-300 m³ and, for some Dow movements, these might be 75% empty. Smaller parcels, moved more regularly by tank container instead of chemical parcel tanker, reduce carbon dioxide emissions, improve cash flow and offer door-to-door delivery rather than the pier-to-pier terms associated with chemical parcel tankers.

Intermodal road, rail and inland waterway are being prioritised as part of Dow's continuing efforts to avoid road transport.

Dow also sees flexitanks as a viable alternative to tank containers in some situations - not least because of their lower weight – with Heip concluding that they are “not going to disappear”.

Digital ID for each tank container?

The panel session focused on the drive for efficiency and sustainability. William Leigh-Pemberton, Chairman of ITCO's Operators Division and Bertschi's Strategic Development Director, assessed progress on ITCO's Digital Twin Project.

The concept of each tank container having a digital ID would open the way to a global central data repository. The non-profit BoxTech Global Container Database, for example, is a neutral, centralised data repository providing dry freight container owners and uses a platform to easily exchange container fleet technical details. It allows shippers, forwarders and other stakeholders to access a single database, eliminating the need to either visit multiple websites to obtain tare weight data or having to obtain this information from the weight indicated on the door of each container.

Improved efficiency would be created by the use of digital message files in a standard universal format, rather than a reliance on emails. ITCO's 'Overseas Transport Visibility For Bulk Liquids' guidance document describes current best practice guidelines.

LogChain: Digitisation offers greater efficiency, sustainability

Andrew Baird, LogChain's Chief Operating Officer, presented on the topic of “Achieving efficiency and sustainability utilising digitalisation and logistics processes”. 80% of trade activities depend on English law and the Electronic Trade Document Bill was enshrined in English law in September 2023, putting electronic trade documents on an equal legal footing to physical trade documents.

This opens the way for increased transparency and visibility via LogChain's independent, secure, subscription-based digital platform through which accurate, trustworthy and continuously updated information on the status of assets can be easily exchanged and made universally available. The benefits of the increased coordination and transparency that the platform offers includes reduced carbon dioxide emissions and fewer incidents. Manual intervention is also reduced, processes are streamlined and compliance more easily secured.

By eliminating the need for hard copies, the platform reduces one of the barriers to digitalisation and addresses others (e.g. the fragmentation of data sources, lack of standards in digital systems, complexity of supply chains, security and data privacy, and resistance to change).

Stolt Tank Containers deploys Double Materiality

Ilja Siebert, Head of Sustainability and SHEQ at Stolt Tank Containers (STC), describes the operator's use of the Double Materiality concept (Double Materiality reporting requires companies to disclose information on significant ➔

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sustainability matters from a financial perspective, an impact perspective, or both perspectives).

As part of its efforts to become carbon neutral by 2050, STC is using biofuels at its depots, solar panels and green resources to reduce emissions while the carbon footprint of movements is being tracked to optimise routing.

CIMC switch from solvent to powder coatings

Ji GuoXiang, President of CIMC Safeway Technologies and Chairman of ITCO's Manufacturing Division, talked of CIMC's move to powder coatings from the traditional solvent-borne paints that have been used for tank container frames since they were first developed. Government pressure in China has come from President Xi's "Green water, green mountain" slogan on environmental policy, making CIMC's 1,000 tonnes a year of Volatile Organic Compound (VOC) emissions unsustainable (the manufacture of a tank container generates 20 kg of VOCs). Powder coatings have a 100-year history and CIMC has proven experience of the use of them on the chassis it builds.

The process is almost fully automated with robotic spraying reducing the number of staff in the paint shop from 80 to 10 per shift. The company uses PPG Powder Coatings products and repairs can be made using a range of powder coatings suppliers, including PPG, Hempel, Jotun and AkzoNobel. As well as being less labour-intensive, the process produces a higher quality finish with more impact resistance, better gloss and three times the cohesion of solvent-borne paints.

The switch from solvent-borne paints to powder coatings has led to environmental benefits, better product protection, manufacturing automation and a better working environment.

Bertschi invests in intermodal to reduce emissions

The keynote presentation by Jan Arnet, Chief Executive Officer of the Bertschi Group, focused on intermodal challenges and the role played by tank containers in meeting those challenges. Tank container operator Bertschi is the leader in European intermodal logistics and calculates that intermodal transport emits 68% less carbon dioxide than road transport.

Arnet shared his thoughts on which trends support or hinder modal shift and presented Bertschi's views on the evidence of increased cooperation and collaboration between shippers and operators to build balanced flows (e.g. round trips, triangular traffic) in support of improved capacity utilisation and net zero objectives. He discussed how Bertschi assesses the availability of funds, and the readiness to invest in infrastructure to support growth and modal shift to reflect the recent rapid growth in the global tank container fleet.

The future is intermodal, said Arnet, sharing a common view. The EU's Green Deal has seen the rail system in Europe, little of which is in private ownership, improving its capabilities and enabling a 50% growth in intermodal transport over the past 10 years.

The company is 90% intermodal and 10% road, saving 238,000 tonnes of carbon dioxide a year. Although challenges remain - including a lack of interoperability, nationalised networks, rigid capacity management and language barriers - the move to intermodal rail/road continues in Europe with political support and digital collaboration, as always, a key to enabling change.



Safety, quality and cost at risk without depot development

Mark Warner is Royal Den Hartogh's Business Unit Director Global Logistics and a Board member, as well as being the Vice-Chairman of ITCO's Operators Division. He addressed the worldwide constraints affecting the growth of safe tank container usage, noting both the limited volume growth in tank container depot capacity and the limited growth in the quality of depots. This compares to the rapid growth (9% a year over the past 10 years) in the global tank container fleet. This differential rate of growth between the fleet and its essential support infrastructure is a key issue for the tank container industry and is the subject of an extensive qualitative analysis by tank container market expert Leslie McCune in September's *Tankcontainer Magazine*, PART 2 of which is in this issue.

The under-provision of quality depots will, Warner said, inevitably affect the safety, quality and cost of tank containers. Efforts to mitigate this risk to the industry were through regulations, control and enforcement but, in an impassioned plea, he said that it was the responsibility of the tank container industry itself to take responsibility for the actions necessary to improve the quality of the industry. ITCO may have a role to play but, as participants, he said, "we are all part of the solution".

In the update on ITCO Work Group projects, Colin Rubery, ITCO's technical secretary, updated members on regulatory changes, progress in the seals and gaskets Work Group and the safe and sustainable disposal of tank containers.

PFAS: ITCO technically engaged

ITCO has been engaged for some time with the European Chemicals Agency (ECHA) regarding the environmental restrictions on Per- and Polyfluorinated Substances (PFAS). There are more than 9,000 PFAS substances, including PTFE, which is used for sealing elements inside tank container valves, manlids and the tank container itself.

The final presentation was given by Lee and Warno Weps, Exsif's European Maintenance & Repair Manager. They reported on the successful training day at the Shipping and Transport College in Rotterdam and the start of tank container training at Shanghai's Shanghai Maritime University, home to 40,000 students. ■

Complete tank care everywhere

From tank container heating and cooling to maintenance and repair, cotac continues to raise the bar in terms of quality, safety and service regardless of location.

In addition to being a key component of the HOYER Group's service network, cotac also offers external customers a raft of essential services, from cleaning, heating and cooling to maintenance, repairs and modifications across a network of 12 sites in Europe, Asia and the Americas. The company, which emerged from HOYER's ancillary operations in 2005 before being spun off as an independent entity two years later, is about to open a major new facility in Ludwigshafen, Germany.

A joint venture with Contargo under the name Mutac, the new site will offer a full service package once it comes onstream by the end of this year. There is, though, more to it than just that. "The new cotac site in Ludwigshafen is close to the port terminals and offers direct access to rail and barge transports. In future, our customers will be able to deliver their containers trimodally: by truck, rail or even, brand new, by ship," explains cotac director Harry Pepels.

"As a one-stop shop, we are moving even closer to our customers' supply chains because tank containers are cleaned and repaired directly at the transshipment site," he continues. And as there "are no additional transports" required, customers will be able to reduce both their logistics costs and environmental impact. "The expansion of our cotac network with an entirely newly built site is a very conscious decision as we know that this is needed," he says.

Houston expansion

But it's not just in Germany where the company has been keeping itself busy of late. Across the pond in Texas, cotac has also now expanded its well-established Houston site, upping its capabilities and capacities for tank containers, road tankers and intermediate bulk containers (IBCs). "After 30 years of offering

cleaning, repair and depot services, cotac USA has broken ground on significant enhancements to their operations and service offerings," Pepels reports. "This refurbishment project will ensure that the facility meets the needs of our customers for the next 30 years and beyond and we will meet the growing demand in Houston with the best possible equipment."

As well as modernising the sites' cleaning facilities to "offer superior cleans while minimising environmental impact", the expansion project also means that cotac can now undertake the storage of fully loaded tank containers. In addition to upping the site's total storage capacity to roughly 2,000 tank container spots, this particular aspect of the expansion also means cotac customers now have the option to safely store deliveries within close proximity to both the Port of Houston and their end customers.

"Through the installation of almost nine acres of concrete, automated inspection lanes and a refitment of most systems and structures on site, cotac will be able to provide increased productivity and quality," Pepels reports, revealing that, among other things, the expanded Houston site can also now handle gas containers as well. "We are excited about the possibilities this project will bring to our business and our customers' business," he says. "We are committed to delivering a depot facility that will enhance our services and increase our efficiency. By investing in this project, we are reaffirming our commitment to providing our customers with the best possible service."

Global standards

When it comes to service, cotac, whose name is a contraction of 'complete tank care', is committed to providing customers with the highest levels attainable regardless of geography. "We



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The expansion of our cotac network with an entirely newly built site is a very conscious decision as we know that this is needed

Harry Pepels, Director, cotac

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understand that our customers all around the world can only be as good and as reliable as their service partner. This is why we make sure that our services meet the highest standards. Our cleaning, workshop and depot processes follow the carefully defined global standards. With our global network of cotac stations, we are right there where our customers need us - close to the major logistical streams."

"At our cotac sites you will find a unique combination of services for road tankers, tank containers and IBCs," he continues. For instance, in addition to standard cleaning process, cotac's expertise enables it to also provide customer-specific pre- and post-treatment cleaning, including hydrogen peroxide rinsing, with every cotac site also able to safely handle any resultant chemical, petrochemical, pharmaceutical or food industry residues.

Likewise, each cotac site can also undertake the heating of tank containers using steam, water or electricity. "Heating can be applied to maintain the required temperature of loaded tanks, to heat or reheat tanks in order to re-liquify cargo for discharge or to pre-heat tanks for specific loading operations, cargoes and/or sites," Pepels explains. On top of this, all cotac sites can also offer the electrical cooling of units as well as 24-hour monitoring and, if required, the full reporting of achieved and/or maintained temperatures.

Checks and repairs

Customers also have the option of having their equipment checked and repaired at every station in the cotac network, with the company's extensive list of workshop services including all necessary safety and periodic checks. "Our cotac team is qualified in repairs in cases of corrosion as well as work on insulation, frames and coatings," he states. This includes fully automatic interior grinding and polishing via a highly precise process known as Robogrind. ➔

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"Apart from regular maintenance and repair activities for tank containers and IBCs, cotac is also able to provide complete refurbishments and modifications of all types of tank containers and IBCs," he continues. Consequently, each site can readily perform such key operations as the installation and reinstallation of electrical, liquid-based or hybrid heating and cooling systems; the complete stripping, re-assembly and repair of units, including frame, insulation, cladding, shell and component work; and the repair and modification of loading and discharge systems.

"We provide the same level of services to external customers as we do to HOYER," Pepels states. "Our broad portfolio enables us to cater to almost all customer needs and demands. And the economy of scale generated by our open customer base has resulted in competitive pricing, broad offering and high quality and service. In recent months, we have witnessed an increased demand in our services, mainly depot activities. We believe the growing global container fleet and decrease in demand in the chemicals industry play a role here."

Safety first

"For us, care means comprehensive solutions, quality and safety. Our global network lives up to the highest industrial standards in all major industrial centres," he says. As such, and with safety enshrined as cotac's top priority, all company facilities are SQAS assessed while also subject to a host of other global and country-specific audits, such as those pertaining to DIN EN-ISO 9001 among others. Meanwhile, when it comes to issuing European Cleaning Documents (ECDs), whether physically or electronically, full compliance with the guidelines is something that "can be taken for granted" at all cotac locations.

"Additionally, our cleaning sites in Mannheim and Schkopau are some of the first in Europe to be officially listed in Operation

Clean Sweep®. Generally speaking, we are talking about top service at the highest standards of safety and quality: this is what customers can expect everywhere at cotac. The services we offer require qualified, safe handling each and every day from each member of the team," Pepels says.

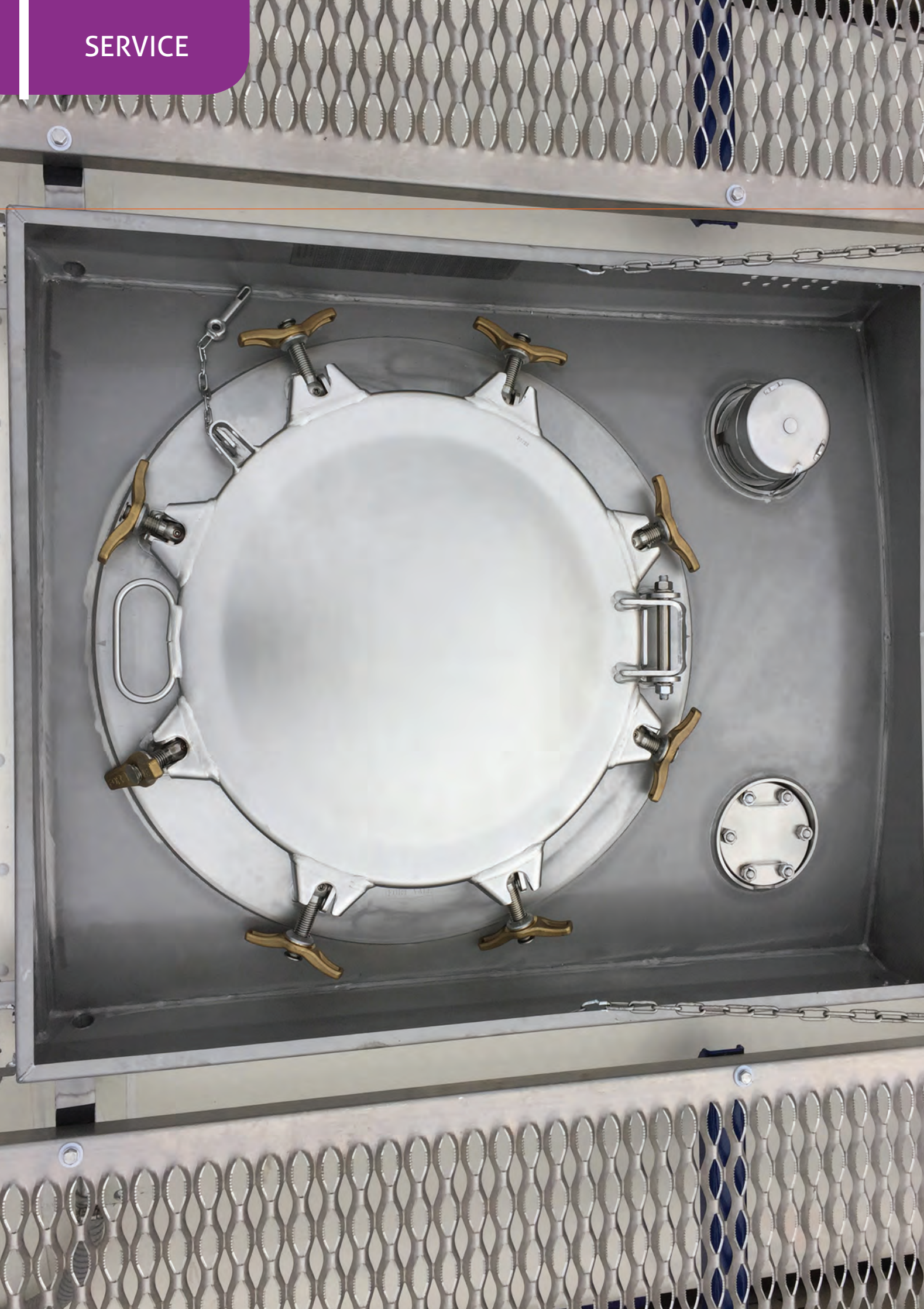
"All safety-relevant regulations and services, both human and technical, are continuously being improved. This also includes advanced staff training with state-of-the-art technology which takes place at regular intervals and is an integral part of the job at cotac. In addition, we run regular safety inspections and implement occupational safety measures that go beyond legally mandated guidelines."

Trust and confidence

"Each of our 12 locations in Europe, Asia and the US has been carefully chosen to offer the best service right where our customers need us," he states. "When a customer chooses cotac, they choose reliability and high quality tank container services with global and certified standards, no matter where they are on the globe. This creates trust and confidence with our customers, values that are of high importance in the fast-changing market dynamics of today."

When it comes to the future, cotac looks set to continue making investments as and where its customers' needs require. As such, 2024 will see cotac tripling storage capacity at its Dormagen depot while also doubling the site's repair capacities. The company will also expand its depot in Vietnam and lay the groundwork for a similar expansion project in Thailand. Meanwhile, cotac's Antwerp facility is already ramping up its capacities for the provision of Chemline tank linings for the handling of highly corrosive liquids in order to offer this service to cotac's wider customer base next year. "There are only four stations available worldwide and we will be one of them," Pepels states. ■





Obscured risks are prevalent in tank container operations

Mike Yarwood, Managing Director, Loss Prevention at freight insurance specialist

TT Club warns of tragedies that may result from obscured risks that occur in confined and enclosed spaces across the container supply chain.

The carriage of dangerous chemicals with associated toxic gases naturally heightens these risks.

There are innumerable spaces found through the global supply chain that should be considered enclosed or confined, some more obvious than others. Such spaces can be characterised by; limited openings for entry and exit to/from a confined area; a space with inadequate ventilation and one which is not specifically designed for continuous worker occupancy. Unfortunately, these spaces claim many lives each year when ill-prepared workers enter them, often for reasons never to be fully understood.



Mike Yarwood,
Managing Director,
Loss Prevention, TT Club

Tank container risk

The key risk is that workers may not readily recognise spaces that could present danger. In the context of hazardous chemical transportation, unitised cargo equipment, and in particular tank containers, form the main focus of these risks. Although there might well be a heightened awareness of danger by those involved in transporting these units as opposed to regular dry containers, incidents do unfortunately occur.

There are a variety of tanks used to transport cargoes globally, including road tank trailers, tank railcars and (ISO) tank containers. Such cargo transport units (CTUs) comprise a prime example of a confined space risk. Whilst the main lid of such tanks provides access and egress to the interior of the CTU, access is restricted and there exists an inherent danger to workers who do enter this space from high or low oxygen concentration or the presence of toxic substances.

The air we usually breathe contains 79% nitrogen and 21% oxygen. Once the oxygen content of the air decreases or increases the associated risks change. Oxygen enriched atmospheres give rise to an increased risk of fire and explosion and potential poisoning. An atmosphere with an increase of as little as 1-2% oxygen can be extremely hazardous. When compared to a fire in normal air, an oxygen enriched fire will be more intense, will burn at higher temperatures and has a greater heat output rate. Where reduced oxygen content is concerned, judgement becomes impaired and ultimately life can no longer be supported, even if the remaining content of the atmosphere is harmless. Lack of oxygen is a silent killer.

Put simply, without sufficient oxygen the human body starts to shut down very quickly, with two primary implications being heart failure and brain damage. In the event of heart failure the brain

can survive for approximately six minutes, but after five minutes irreversible damage can be sustained. Any rescue operations are therefore time critical and even with an immediate deployment the risk of serious injury or fatality is elevated. (see *Table of Oxygen Deficient Atmospheres*)

The quick onset and catastrophic nature of these symptoms often leads to others rushing to the aid of the casualty, unaware of the reason for their collapse. Statistically, over 60% of fatalities connected to confined and enclosed spaces are suffered by those who observe the casualty without appreciating the cause and enter the space to attempt a rescue – people innately seeking to help.

Risk Assessment

Assessing the need to work in any given confined space is a basic start point – by asking the question: is entry essential? There are examples where work could be performed from the exterior. However, where a tank container is concerned, many tasks associated with cleaning and maintenance will make the requirement for workers to enter the confined space inside a tank unavoidable. In these cases adequate precautions must be taken, and the next step should be a risk assessment of the work to be undertaken by a competent person. Thereafter a safe system of work that includes a rescue plan should be developed and implemented, along with a permit to work. This competent person should be appointed and tasked with ensuring that the risk assessment is adequately completed and that the safe working practice is followed throughout. In addition, a competent “watcher” should be physically present throughout the work, providing an immediate response in case of emergency. The “watcher” should monitor each stage of the work undertaken to ensure compliance with the defined safe system of work.

Annex 8 of the ILO, IMO and UNECE Code of Practice for Packing of Cargo Transport Units (CTU Code) focuses on the risk assessment process covering items such as competence, working at height and emergency preparedness. Sub-contractors may be employed to undertake any number of operations in the tank container supply chain. In a supplement to the CTU Code, MSC Circ. 1531 provides valuable due diligence based guidance when selecting third party service providers.

The risk assessment process should have as a minimum the following elements: the task to be carried out; the working environment, materials and tools to be used; the training and competence of those undertaking the work, a method to constantly monitor the atmosphere during the operation and finally, arrangements for emergency response and rescue should it be required. ➔



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- Produced quarterly 'Middle East Tank Container Market Review'
- Founding Editor, *Tankcontainer Magazine*

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A permit to work in the space

In addition, access should only be allowed under a safe system or permit to work procedure and the supervision of a responsible person. A permit to work assists in ensuring that a formal check is undertaken, confirming that all elements of the safe system of work are in place ahead of a worker being allowed to enter the confined space.

The key features of a permit to work are:

- **Clear identification of the person(s) who may authorise entry into the confined space and those who hold responsibility for specifying the necessary precautions**
- **Ensuring that employees and third party contractors engaged to undertake associated tasks are included**
- **Training and instruction in the issue of permits**
- **Training and instruction for confined space working**
- **Monitoring and auditing to make sure that the system works on an on-going basis as intended**

Is the atmosphere suitable to sustain life?

The initial testing of the atmosphere inside the tank should be undertaken by a competent person using appropriate calibrated instruments to ascertain acceptable levels of oxygen and acceptable levels of toxic and flammable vapours.

Oxygen deficient atmospheres

- **19.5% Minimum acceptable oxygen level**
- **15-19% Decreased ability to work strenuously. Impaired coordination**
- **12-14% Respiration increases. Poor judgement**
- **10-12% Respiration increases. Blue lips**
- **8-10% Mental failure. Fainting. Nausea. Vomiting. Unconsciousness**
- **6-8% Fatal in eight minutes exposure. 50% fatal after six minutes exposure. Possible recovery after four-five minutes exposure**

4-6% Coma after around 40 seconds exposure. Fatal

Where the risk assessment identifies that the atmosphere cannot sustain life, or that there is a likelihood that the atmosphere is subject to change, respiratory apparatus is vital and the monitoring of noxious gases and oxygen will need to be continuous through the period of entry. The provision of breathing apparatus is essential if the air inside the space cannot be made fit to breathe.

Training and instruction

Additional training, instruction and signage should be considered. Are the workers aware of what is considered to be a confined space and are they sufficiently trained to recognise such spaces? Do they have experience of undertaking this type of work? Are the workers physically capable of entering and egressing from the tank container? Does the work require entry through the man lid or alternative and smaller diameter access hatches? Consideration may also need to be given where the person may suffer from claustrophobia or their fitness to wear and operate breathing gear.

A confined spaces register could be considered as a means of recording details of individuals that have been trained and certified to competently enter confined spaces and supervise the associated risks. Such a register could be a vital tool in providing assurance to the employer.

Communications and emergency rescue plans

It is vital to develop an established method of communication between those workers inside the confined space and those outside it. This serves as the first step in emergency response. Develop and communicate an emergency rescue plan. Regular drills should be undertaken to ensure effectiveness of the plan and familiarity of the workforce with procedures. The arrangements of the emergency rescue plan should be sufficiently communicated to all the workforce who may ultimately need to rely on it. Recognise the tragic reality from experience of confined spaces incidents. Following the collapse of a co-worker in a confined space, the immediate reaction will be for colleagues to enter the space with the intention of assisting, without due consideration for their own safety. It is instinctive to assist a colleague in distress. There are many unfortunate incidents whereby a second and third worker have become unconscious because appropriate emergency response, escalation and reporting procedures have not been in place, understood or followed.

Further information and advice can be accessed via the TT Club's website where these advisory documents can be downloaded free of charge:

StopLoss: confined spaces (ttclub.com) and StopLoss: tank containers (ttclub.com) ■

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The product range is designed for companies that optimize their processes holistically, from logistics to operations to maintenance, in order to reduce total costs. In particular these are manufacturing companies, pharmaceutical and chemical logistics companies or for example suppliers that use tank containers or freight wagons. These companies are able to further increase both product performance and comparative advantages by using the scalable and intelligent M2M solution.

SAVVY® CargoTrac-Solar has, in addition to the highest ATEX/ IECEx/ UKEx certifications, cCSAus (Class I, Div. 2; Class II, Div. 2) for Canada and the USA and the T6 temperature class, connection options for a range of cable and wireless industrial sensors. This means that real-time notifications in one second intervals, even in the roughest environmental conditions and demanding danger zones 1 (Gas Group IIC T6) and 21 (Dust Group IIIC T85°C), are possible. ➔



By launching the SAVVY® CargoTrac-Solar, SAVVY® is expanding its hardware portfolio with the T6 temperature class, a functionality that is unique on the market, and combining it with a number of cable and wireless industrial sensors as well as with ITSS IF2. This opens up totally new possibilities and applications for SAVVY's innovative customers.

Aida Kaeser,
CEO & co-founde, SAVVY® Telematic Systems AG



The **SAVVY® CargoTrac-Solar** is designed for year-long autonomous use, especially in goods and container operations on rails. The solar-powered version with an integrated backup battery eliminates the need for a wired power supply. Combined with extremely energy-efficient technology, maintenance-free operating periods of more than 15 years are possible.

The device can be installed easily and quickly. The SAVVY® solution pays itself off within a few months because it can be easily integrated into existing systems (e.g. via ITSS IF2) and provides great added value.

SAVVY® CargoTrac-Solar has a large number of interfaces and highest-standard certificates, making it suitable e.g. for applications in LNG and chemical plants.

SAVVY® CargoTrac-Solar uses, like the other devices in the CargoTrac telematics device series, proven technologies such as GPS, GLONASS as well as BeiDou and Galileo to determine coordinates. This enables seamless tracking & tracing along the shipping chain. Sector-specific applications, combined with dedicated interfaces, make the **SAVVY® CargoTrac-Solar** an efficient platform for processing sensor signals and monitoring entry terminals, doors and switches, cooling and heating units, and much more. The device is therefore also suited for monitoring temperature-controlled shipments, controlling heating and cooling units remotely and for stationary applications, e.g. determining filling and pressure levels at LNG and chemical plants.

SAVVY's Smart Bogie

Presented for the first time at the Transport & Logistics Fair 2023 in Munich, where it generated a lot of interest: the **"Smart Bogie"**, SAVVY's newest innovation!

The device highlights the clear advantages of intelligent telematics:

The **SAVVY® CargoTrac-Solar** is combined with the SAVVY® SenseGateway-ExR-2DMS, as a sensor-HUB with four wired connection options, directly on the bogie.

Possible sensors include:

- **Temperature sensors to determine axle bearing temperatures to enable increased safety during daily shipments;**
- **Brake wear sensors to optimize maintenance processes and reduce costs;**
- **Vibration measurements for improved flat spot detection;**
- **Option to connect up to two SAVVY® LoadCell-Ex to a SAVVY® SenseGateway-ExR-2DMS.**

Installation is easy and inexpensive. The SAVVY® LoadCell-Ex can simply be clamped or screwed onto the bogie. Detecting incorrect weight, load shifts and/or full/empty status becomes a walk in the park.

The telematics unit records all relevant data and transmits an encoded version to the SAVVY® Synergy Enterprise web portal. The integrated eSIM-Chip ensures worldwide communication. SAVVY® Synergy Enterprise's BI technology transforms the recorded data into information and visualizes it almost in real-time in straightforward and easy to use dashboards designed according to customer specifications. This makes it possible to generate the necessary quality certificates and reports automatically, significantly reducing administrative work. ■

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This combination is unique on the market. I am very much looking forward to the launch of the SAVVY® CargoTrac-Solar, which clearly reflects the demands of our sector and will assist our customers in achieving a sustainable and even more efficient logistics management.

Bernhard Weiland
Head of Sales at SAVVY® Telematic Systems

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