



INSIGHT

Tank storage provides an essential interface between sea, road, rail and pipeline logistics.

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ANNUAL REVIEW OF THE BULK STORAGE AND ENERGY INFRASTRUCTURE SECTOR

The quarterly magazine from the Tank Storage Association

Also in this issue, we explore digital twin technology, the role of terminals in the food and feed supply chains and the many initiatives that are taking place in the bulk storage and energy infrastructure sector.



Insight is published by the Tank Storage Association, the voice of the UK's bulk storage and energy infrastructure sector.

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Peter Davidson
Chief Executive, TSA

Welcome to the autumn issue of Insight. The bulk storage and energy infrastructure sector plays a vital role in providing products and services that are critical to UK consumers. Terminals may either store single products or multiple products within a single facility and can provide supplementary services such as blending, heating, product treatment and analysis, warehousing, as well as bonded facilities for duty suspended products. In this issue of Insight, we provide an overview of latest statistics on terminals, process safety, occupational health and safety as well as the industry's contribution to the UK economy. We also explore the role of terminals in the food supply chain, and we continue to shine a light on our vitally important sector and the proactive steps it is taking to open up new possibilities. I hope you enjoy this new edition of the magazine.

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ANNUAL REVIEW OF THE BULK STORAGE AND ENERGY INFRASTRUCTURE SECTOR

The bulk storage and energy infrastructure sector plays a vital role in providing products and services that are critical to UK consumers.



The bulk storage and energy infrastructure sector plays a vital role in providing products and services that are critical to UK consumers. Tank storage infrastructure is an integral part of a complex web of global activities and supply chains including the extraction of raw materials and the production, refining, trade, investment and consumption of a diverse range of essential products for the energy, manufacturing, food, agriculture, and transport sectors.

Terminals and tank farms also provide greater resilience within the supply chain by ensuring flexibility to meet demand, particularly in periods where domestic supplies of stored products cannot be guaranteed. Around twenty-two of the terminals operated by Tank Storage Association (TSA) members in the UK are designated by the Government as Critical National Infrastructure (CNI) due to their importance in providing energy to industrial, transport and defence markets. Storage capacity also includes strategic reserves held for emergencies and supply disruptions.

Most recently, the TSA has published its ninth Annual Review of the sector. The publication provides a broad range of statistics and valuable insights on terminals, process safety, occupational health and safety as well as the industry's contribution to the UK economy. This year's publication also includes a new dedicated section on global tank storage assets and introduces data on global expansions and construction projects, regional capacity and market share as well as regional throughput data in partnership with Insights Global, an independent market research company.

Terminals may either store single products or multiple products within a single facility and can provide supplementary services such as blending, heating, product treatment and analysis, warehousing, as well as bonded facilities for duty suspended products. Terminal operations are present throughout the world with storage hubs having become established in Europe, the United States, the Middle East and Asia. According to most recent data contained in TSA's Annual Review, the Middle East holds the most capacity per terminal. In the Middle East, the average capacity is ~365 kcbm. Asia ranks second with 244 kcbm and North America ranks third with ~190 kcbm. In addition, globally a number of projects have been announced with most storage investment planned located in Asia (20,852 kcbm), followed



by North America (7,856 kcbm), the Middle East (5,576 kcbm) and Europe (5,523 kcbm). In addition, most tank storage capacity is being constructed in Asia, followed by Europe and North America. Other regions, such as South and Central America, Africa and Oceania have less capacity under construction, ranging between 0% and 4% of the total. There are also 120 terminal expansion projects being realised globally, with most tank storage expansions taking place in Asia with 61% of the total (29,179 kcbm) followed by Africa with 12% of the total (5,560 kcbm), North America with 11% of the total (5,299 kcbm) and the Middle East with 10% of the total (4,910 kcbm). Expansions in other regions range from 1% to 4% of the total. Adding up all capacity projects under construction, under expansion or planned, the main growth area is Asia, more than doubling its storage capacity. Globally, some 108 Mcbm are expected to be added.

In the UK, the bulk storage sector generated over £23 billion in revenue in 2023 and planned investment over the next five years is estimated at around £1.5 billion. TSA members operate 302 terminals and distribution hubs across the UK and store many different substances including transport and heating fuels, low emission fuels, chemicals, LNG, animal feed and foodstuffs. Collectively, TSA members have around 11.5 million cubic metres of storage capacity. Well over 500,000 cbm of storage capacity is used

for low emissions fuels including biofuels, methanol, ammonia and sustainable aviation fuels (SAF). As the sector looks to the future, this figure is expected to rise. Indeed, the tank storage sector is actively engaging in the decarbonisation process which lays at the centre of the UK's Net Zero priorities. It is investing, innovating, and leading the way to open up new possibilities and take full advantage of the wealth of opportunities ahead. The decarbonisation of transport in the medium term is expected to rely on blending conventional fuels with sustainable ones, such as biofuels and synthetic fuels. Terminals will play a key role in these transitional activities by providing the necessary infrastructure and expertise required. With an increased reliance on new energy products, the bulk storage and energy infrastructure sector is at the very heart of the UK's journey towards climate neutrality. In addition, it is clear that hydrogen in all its forms, carbon capture, utilisation, and storage (CCUS) as well as electricity storage will be critical to accelerate decarbonisation efforts.

TSA members also safely execute over one million movements for a range of products each year. By far the greatest number of movements is carried out by road tanker. However, this is not representative of the volume of product moved by type. For example, there are far fewer movements by ship than road tanker, but the volume of product moved by ship is much higher. In 2023, around

123 million tonnes of product were moved by coastal shipping and around 25 million tonnes by road haulage. Around 60,000 tonnes of product were moved by barge and around 1,400 tonnes by rail. A number of TSA members own and operate pipeline networks across the UK. Pipeline throughput reported by TSA member companies in 2023 was just under 19 million cubic metres (this figure excludes regasified LNG). During the same period, the sector had an aggregated throughput of just under 75 million tonnes.

The tank storage sector continued to maintain very high standards of occupational safety during 2023, remaining one of the safest industries in the UK with proportionally fewer injuries than almost all other sectors. Process safety standards continue to be very high, with only two Tier 1 events, and two Tier 2 events reported when measured against the API RP 754 standard. TSA's dedicated Safety, Health and Environment Committee works closely with peers, other industry sectors and regulators to share knowledge and good practice relevant to safe operations. To monitor performance and highlight potential emerging issues, the TSA collates, shares and discusses process safety data quarterly with members. It uses the API RP 754 standard for its process safety performance indicators as well as its own leading indicators.

For more information, please visit www.tankstorage.org.uk

THE TANK TERMINALS OF THE FUTURE: A VISION POWERED BY DIGITAL TWINS

As digital twin technology continues to evolve, the tank terminals of the future will be characterised by unprecedented levels of efficiency, safety, and sustainability.

GiZiL



The industrial landscape is undergoing a rapid transformation, and the tank terminal industry is no exception. As the demand for storage and handling of liquid and gaseous products continues to rise, the industry faces increasing pressure to enhance efficiency, safety, and sustainability. Digital twin technology is emerging as a key enabler in this evolution, offering unprecedented opportunities to revolutionize the way tank terminals operate. This article explores the vision of the tank terminals of the future, powered by digital twins, and the profound impact this technology will have on the industry.

Understanding digital twins

A digital twin is a virtual replica of a physical asset, system, or process, created using real-time data and advanced simulations. It provides a dynamic, real-time representation of the physical world, enabling operators to monitor, analyze, and optimize their assets remotely. In the context of tank terminals, digital twins can encompass everything from storage tanks and pipelines to control

systems and safety protocols.

The challenges faced by tank terminals today

Tank terminals play a crucial role in the storage and distribution of a wide range of products, including petroleum, chemicals, and liquefied natural gas. However, the industry faces several challenges that hinder its efficiency and sustainability:

1. **Aging Infrastructure:** Many tank terminals operate with aging infrastructure that requires frequent maintenance and upgrades.
2. **Safety Concerns:** The handling of hazardous materials poses significant safety risks, necessitating stringent safety protocols and real-time monitoring.
3. **Environmental Regulations:** Increasingly stringent environmental regulations demand better monitoring and management of emissions and spills.
4. **Operational Inefficiencies:** Manual inspections and maintenance procedures can be time-consuming and prone to human error.
5. **Data Silos:** Disparate systems and data silos make it challenging to obtain a comprehensive view of terminal operations.

The role of digital twins in addressing these challenges

Digital twin technology offers a holistic solution to the challenges

faced by tank terminals. By creating a digital replica of the entire terminal, operators can gain real-time insights into the condition and performance of their assets. Here's how digital twins are set to transform the tank terminal industry:

1. Enhanced Asset Management

Digital twins provide a comprehensive view of all assets within a tank terminal, including their condition, performance, and maintenance history. This enables predictive maintenance, where potential issues are identified and addressed before they lead to costly downtime or accidents. For example, sensors installed on storage tanks can monitor parameters such as temperature, pressure, and corrosion levels, feeding this data into the digital twin. Machine learning algorithms can then predict when maintenance is needed, optimising the maintenance schedule and reducing unplanned outages.

2. Improved Safety and Compliance

Safety is paramount in tank terminal operations. Digital twins enhance safety by enabling real-time monitoring and simulation of various scenarios. Operators can use the digital twin to simulate emergency situations, such as leaks or fires, and develop effective response strategies. Additionally, digital twins can help ensure compliance with environmental regulations by continuously monitoring emissions and detecting any deviations from acceptable levels. This proactive

approach not only enhances safety but also helps avoid regulatory fines and penalties.

3. Operational Efficiency

Digital twins streamline operations by automating routine tasks and providing actionable insights. For instance, digital twins can automate the scheduling of product transfers, optimising the use of storage space and minimizing the risk of contamination. They can also monitor energy consumption and identify opportunities for energy savings, contributing to overall operational efficiency. By integrating data from various sources, digital twins eliminate data silos and provide a unified view of terminal operations, enabling better decision-making.

4. Remote Monitoring and Management

One of the most significant advantages of digital twins is their ability to facilitate remote monitoring and management. Operators can access the digital twin from anywhere, using a computer or mobile device, and obtain real-time information about the terminal's status. This is particularly valuable for terminals located in remote or hazardous areas, where on-site inspections can be challenging. Remote monitoring also enables rapid response to issues, reducing downtime and enhancing operational resilience.

5. Training and Simulation

Digital twins serve as powerful

training tools, allowing operators to gain hands-on experience in a virtual environment. New employees can use the digital twin to familiarize themselves with the terminal's layout and operations without the risks associated with real-world training. Additionally, digital twins can be used to simulate various operational scenarios, helping operators develop the skills needed to handle complex situations. This improves overall workforce competency and preparedness.

The future of tank terminals: a digital twin vision

As digital twin technology continues to evolve, the tank terminals of the future will be characterized by unprecedented levels of efficiency, safety, and sustainability. Gizil GmbH's Virtual Plant is at the forefront of this transformation, offering a comprehensive platform that integrates real-time data, advanced analytics, and user-friendly interfaces to revolutionize tank terminal operations. Here's a glimpse of what this future might look like with Virtual Plant leading the way:

1. Smart terminals

Virtual Plant equips tank terminals with a network of interconnected sensors and devices, creating a fully integrated digital ecosystem. The digital twin, powered by this platform, serves as the central hub, aggregating data from all sensors and providing a real-time view of terminal operations. Smart

algorithms continuously analyse this data, identifying opportunities for optimization and providing actionable insights to operators, resulting in improved efficiency and reduced operational costs.

2. Static digital twin as a single source of truth

The concept of a static digital twin, where a digital replica of the terminal's physical and static assets is maintained as a single source of truth, is crucial for ensuring data accuracy and accessibility. This static digital twin includes detailed information about the terminal's infrastructure, layout, and equipment, which can be accessed and updated in real-time.

Benefits:

- **Data integrity:** All stakeholders access the same up-to-date information, reducing errors caused by outdated or conflicting data.
- **Simplified maintenance:** Maintenance schedules and records are easily managed, ensuring timely interventions and reducing downtime.
- **Regulatory compliance:** Simplifies reporting and compliance

by maintaining accurate and comprehensive records of terminal operations and equipment.

3. Sustainable practices

Sustainability is a core focus of Virtual Plant. Digital twins help minimize environmental impact by optimising energy consumption, reducing emissions, and preventing spills. The platform provides continuous monitoring and reporting, ensuring compliance with environmental regulations. By integrating sustainable practices into daily operations, tank terminals can improve their environmental footprint, enhance their reputation, and meet the expectations of stakeholders.

4. Enhanced collaboration

Virtual Plant facilitates enhanced collaboration between different stakeholders, including terminal operators, maintenance teams, regulatory authorities, and customers. By providing a single source of truth, this digital twin platform ensures that all parties have access to accurate and up-to-date information. Improved coordination and decision-making lead to more efficient operations,

quicker response times, and stronger relationships with partners and customers.

Conclusion

The tank terminals of the future, powered by digital twin technology and Virtual Plant, represent a paradigm shift in the way industrial operations are managed.

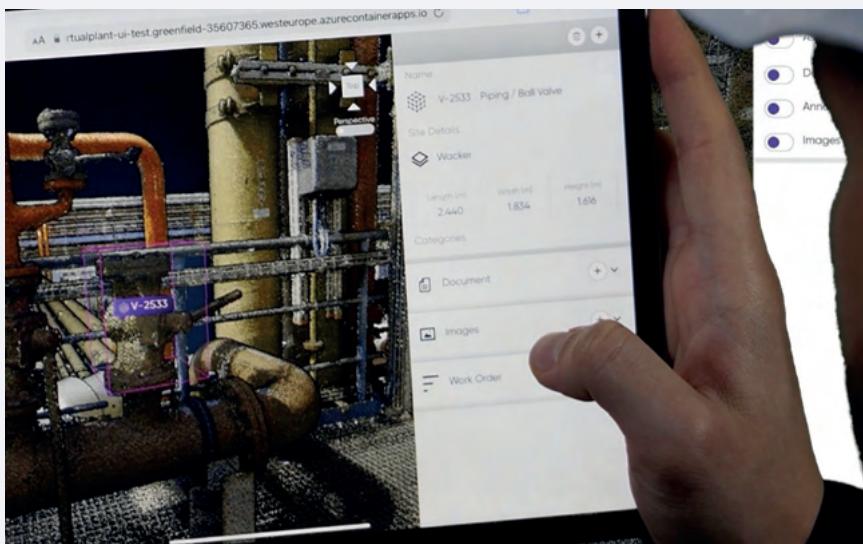
By providing a comprehensive and real-time view of terminal operations, this platform enables enhanced asset management, improved safety, operational efficiency, and sustainability. As the industry continues to embrace this technology, tank terminals will become smarter, more autonomous, and more resilient, driving significant value for operators and stakeholders alike.

In embracing Virtual Plant and digital twin technology, tank terminals are not just adapting to the future - they are shaping it. The journey towards fully integrated, efficient, and sustainable operations is well underway, and the vision of the tank terminals of the future is closer to becoming a reality. Virtual Plant stands ready to lead this transformation, delivering the tools and insights necessary to thrive in the evolving industrial landscape.

About Gizil

Gizil offers engineering and digitalization services for industrial plants, including tank farms, refineries, and petrochemical facilities.

For more information, please visit www.izilenerji.com



Do you transport dangerous goods? ...Are you compliant?

The transport of dangerous goods is based on the classification, identification, packaging, marking and labelling of the substance, and legislation under the CDGR and ADR 2023 Agreement is complex.

Your organisation may not legally be required to appoint a Dangerous Goods Safety Adviser (DGSA) but at Teamwork Security and Training Services, we can give guidance on what your legal requirements are and what level of service your organisation requires.

We provide services that are specifically designed to meet the requirements governing the carriage of dangerous goods by road under the current ADR Agreement, including DGSA monitoring compliance services, audits, DGSA training courses and ADR Awareness courses (Chapter 1.3).

Ensure you are compliant! Get in touch for a free initial consultation; 01752 425424 - enqs@teamwork-security.co.uk

For more information, please visit teamwork-security.co.uk

About Teamwork Security and Training Services Ltd.

Teamwork Security and Training Services Ltd. delivers complete ISPS support to its clients; including audits, ISPS compliance, security exercises,

as well as Wharf Approval and ADR support packages and provides a high-level security guarding service to Port Facilities.

They also deliver training and are approved by the Department for Transport to deliver Port Facility Security Officer and refresher courses along with Harbour Master's investigators courses, staff Security Awareness and Search Training courses, consistent with the latest Port Facility Security Instructions as issued by the Department for Transport. Find out more: teamwork-security.co.uk

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security**
& training services ltd



UM TERMINALS HELPS RAISE OVER £33,000 TO SUPPORT VITAL WORK OF FARM AFRICA AND ANNOUNCES KEY STRATEGIC APPOINTMENTS

UM Terminals, along with colleagues from the wider UM Group, raised an incredible £33,444 for the charity Farm Africa.



UM Terminals, along with colleagues from the wider UM Group, raised an incredible £33,444 for the charity Farm Africa. The money was raised through the Great Molasses Challenge which started towards the end of April and saw colleagues running, walking, playing football, cycling, rowing, swimming and going on dog walks, all with the aim of clocking up as many miles as possible.

Every single contribution, big or small, got the team closer to our target distance of 4820 miles (7712km) which represents the distance of the first ever UM molasses shipment in 1912 from the Dominican Republic to Hull.

In fact, by the end of the Challenge, colleagues had not only covered the distance of the first ever shipment, they had also done the distance back and a further halfway back again! The final mileage achieved was 12,468 miles (20,065km).

A total of £17,222 was raised via the Challenge's Just Giving pages with a further £16,222 being provided in match-funding by UM's holding company W&R Barnett making for a grand total of £33,444.

The Challenge was the flagship fundraiser of UM Group's Global Wellbeing Initiative in 2024. All money raised from the Challenge is going to Farm Africa, UM Group's chosen charity, which works tirelessly to reduce poverty by helping farmers in eastern Africa to grow more, sell more and sell for more. Thanks to the work of the charity and its supporters, rural families are growing their incomes while also protecting their local environment for future generations.

Anissa Msallem, Head of Partnerships at Farm Africa, said: "It is amazing what you have all achieved over the last few weeks. To give you some idea, the money you have raised could fund a store house for vegetables grown by our farmers. Storing their produce is so important to ensure better quality, reduce waste, sell for more money which, in turn, increases the incomes of those farmers and gives them a better quality of life."

Ben Macer, UM Group's CEO, said: "I just want to say a huge thank you to all colleagues who got involved in this remarkable Challenge. It was a truly incredible sum of money that was raised and then very generously match-funded by W&R Barnett. I would also like to thank the

committee in London who drove the project along with various champions across the business. It was a fantastic team effort."

UM Group is now committed to building on the momentum of the Challenge with a Wellbeing Month being held in September with a series of events, presentations and exercises planned. Ben added: "We have had lots of positive feedback that the Challenge has made a real difference to many colleagues' lives, making them feel better. We've had lapsed runners getting their trainers out again and others taking up an activity for the first time. We want this to be the long-term legacy of the Challenge and the Wellbeing Month that we are holding in a few weeks. UM Group is also planning to create a photobook as a lasting memory of this great and memorable fundraiser and provide a copy in all offices and terminals."

UM Group announces key strategic appointments

United Molasses Group, the owner of bulk liquid storage specialist UM Terminals, has announced two key appointments.

Current UM Terminals Managing Director Phil McEvoy becomes UM Group Terminals Director, with Commercial Director Vic Brodrick replacing him as MD of GB Terminals. Vic will be responsible for all aspects of the GB Terminals business, supported from an asset management and Health and Safety perspective by Phil's team.

Phil said: "I am looking forward to taking on this new role which will allow me to have a broader strategic responsibility regarding capitalising on our global terminal footprint to expand our tank storage offering within the wider UM Group. There has been and continues to be significant investment in our terminals business, both in the UK and worldwide, and we are committed to further cementing our reputation as a world-leader for providing bulk liquid storage and logistical solutions."

Vic said: "UM Terminals has made significant progress in lots of different areas during the last two years under Phil's leadership. My focus will be on continuing to deliver the returns on the investment that has been made into the business as part of its strategic growth plan, while ensuring our processes for safety and quality assurance continue to be of the highest possible standard. The roll-out of the Group's Environmental, Social and Governance (ESG) programme is also high on the agenda, with the aim of further reducing our carbon footprint through the introduction of 'greener' fuels and other initiatives. Several of our long-term customers have increased their storage requirements, while we have also onboarded a number of new customers, meaning that we are almost at capacity. We do still have a small number of storage opportunities available at our Hull terminals. We are committed to investing in the right opportunities to ensure the facilities and services we provide match our customers' requirements. We pride ourselves on the quick turnaround from customer enquiry to product in tank,

finding the right solutions to meet their varied logistical challenges."

UM Terminals' strategic growth plan aims to ensure that the breadth of product expertise, bulk liquid storage capability, value-add services and sustainability credentials remain industry-leading. Over the coming months, Phil and Vic will be working together on the roll-out of a pipeline of further Terminal development projects in GB with Phil additionally responsible for projects at many of the other terminals within the Group.

The GB company operates seven terminals located in Liverpool, Hull and Portbury, all strategically situated to meet the logistical opportunities and challenges facing customers. Value-added services include biofuel feedstock pre-treatment, blending, water dilution, product packing, HMRC bonded warehouse and COMAH compliance. For more information, please visit www.umterminals.co.uk

Phil McEvoy, Terminals Director,
UM Group



ED&F Man Terminals: our role in the food supply chain

The food supply chain is long and complex and there is debate about where it starts. However, we all know where it finishes: with the food on your plate!

ED&F Man Terminals plays a key role in the global food supply chain by providing storage and logistics solutions for key products and ingredients. While the consumer may not recognise the importance of the feed ingredients we handle, those in the supply chain certainly do. ED&F Man Terminals is part of ED&F Man Commodities, one of the world's leaders in the sourcing, supply, storage and distribution of key soft commodities including sugar, coffee, molasses, animal feeds and fish oil. Everything our business does is part of the global food chain, and this is particularly true for ED&F Man Terminals.

The UK is a net importer of molasses. ED&F Man Terminals is the UK's largest storer of molasses and molasses based liquid products, with terminal operations in Grangemouth, Liverpool and Hull. While the overall storage capacity for these products may be relatively small in comparison to that of hydrocarbon and chemical products, ED&F Man Terminals performs a vital function in the UK food and feed supply chains.

What is so important about molasses?

Molasses is used in a number of key processes and performs a vital and

unique function.

1. Molasses is probably most recognised as being used in animal feed where it provides a number of functions, from helping to bind feed pellets together, reducing dust in animal feed production, and helping to drive feed intakes. Molasses is one of the critical ingredients in feed production as without it feed producers would not be able to make feed: no animal feed means no milk, cheese, butter, yoghurt, beef, lamb etc.
2. Another big user of molasses is industrial fermentation where it is used to produce, among others, yeast. Yeast is vital to the UK food supply chain as without yeast there would be no bread, beer, whiskey etc.
3. Molasses also features in other industrial processes such as briquetting - where it is used to bind the fines from steel production - fibreglass production and coal processing.
4. The advent of renewable energy has also led to new uses for molasses, primarily in biogas production where it helps to increase yield as well as the efficiency of the overall plant.

What else do we store?

ED&F Man Terminals store a range of non-hydrocarbon oils including fish oil and vegetable oils. These oils again form the foundations to the food chain being used in animal feed with the production of fish feed, in

particular, supporting the UK's well-established farmed fish industry.

ED&F Man Terminals also store a range of high value feed ingredients which need particular specialist handling to both receive and store. It is not an exaggeration to say that you will have eaten or drunk something today which has a connection with a product stored by ED&F Man Terminals.

About ED&F Man

ED&F Man source, store, sell, ship and distribute agricultural products including coffee, sugar, molasses, animal feed and pulses. ED&F Man trade those products around the world, and with some, process and brand them for industrial customers and the supermarket shelves.

ED&F Man Terminals have a network of bulk liquid storage terminals in key ports in Northern Europe, offering receipt, storage, handling, blending, distribution and related services. Our experienced team offers storage solutions tailored to the specific requirements of our customers and their products. ED&F Man is constantly investing in infrastructure, storage facilities and terminal expansion enabling us to quickly provide the capacity to expand our customers' networks now and in the future.

www.edfman.com

Dantec continues to be a key player in the composite hose manufacturing industry

Dantec continues to be a key player in the composite hose manufacturing industry, celebrated for producing high-performance hoses designed for the safe transfer of hazardous fluids in sectors such as petrochemical, marine, and oil and gas. Their composite hoses are distinguished by their flexibility, durability, and exceptional chemical resistance, making them essential for demanding industrial applications. Dantec composite hoses are manufactured to meet EN13765:2018 and EN13766:2018 and have DNV type approval.

The advanced engineering of Dantec composite hoses involves multiple layers of thermoplastic films and fabrics, reinforced with inner and outer wire spirals made from high-strength materials like stainless steel. This sophisticated construction offers superior strength and resilience, allowing the hoses to endure extreme temperatures, pressures, and corrosive environments. Additionally, Dantec hoses are lighter than traditional rubber hoses, which facilitates easier handling and installation, thus reducing labour costs and enhancing operational efficiency.

Safety is a paramount concern for Dantec. The multi-layered design ensures a high level of chemical resistance, minimizing the risk of leaks or ruptures when transporting aggressive chemicals. Moreover, these hoses are designed to prevent

static electricity build up, significantly reducing explosion risks in hazardous environments, underscoring Dantec's commitment to providing safe and reliable fluid transfer solutions.

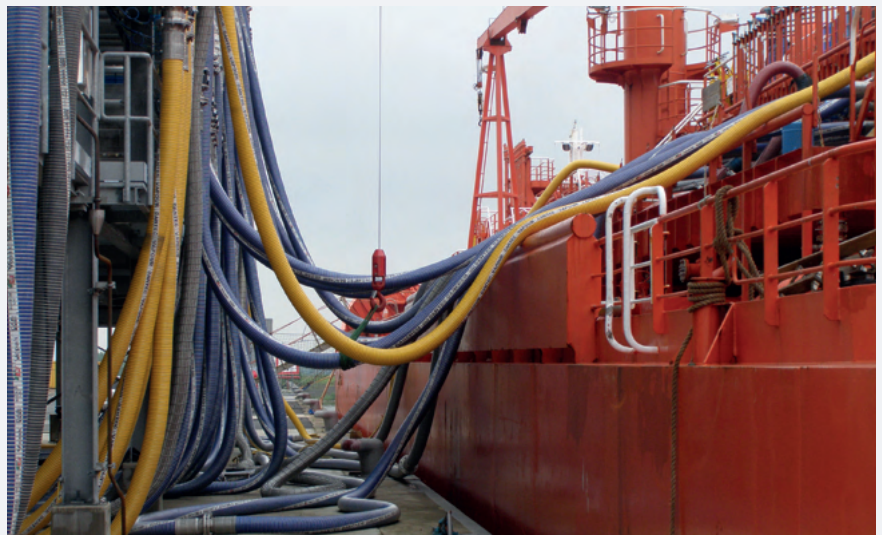
To further advance safety Dantec works closely with its sister company MannTek to offer their full range including dry disconnect couplings (DDC) for leak free transfers. MannTek are a Swedish manufacturer of customized couplings and solutions for safe and environmentally friendly handling of aggressive fluids and gases. MannTek stand for innovation, safety and constant development.

Dantec's innovations extend beyond hoses to include their advanced PTFE coated couplings. The PTFE (Polytetrafluoroethylene) coating on these couplings enhances their chemical resistance and durability, ensuring they can withstand aggressive chemicals and harsh operational conditions. The

PTFE coated couplings integrate seamlessly with Dantec composite hoses, providing a robust and reliable solution for aggressive and corrosive fluid transfer applications.

Dantec is part of the Elaflex Hiby Group based in Hamburg who are at the forefront of developing solutions for emerging markets, particularly in the field of hydrogen. The group is actively working on hydrogen hoses and couplings designed to meet the rigorous demands of hydrogen fuel transfer and storage. These developments are crucial as the world transitions towards cleaner energy sources, with hydrogen playing a significant role in this shift.

In summary, Dantec Ltd., supported by Elaflex Hiby, continue to demonstrate their dedication to quality, safety, and forward-thinking solutions to secure their position as a trusted provider in the global market. Please visit www.dantec.com for further details.



ETS DEGASSING HELPS CUSTOMERS WORLDWIDE TO REDUCE EMISSIONS AND ENHANCE SUSTAINABILITY IN OPERATIONS AND MAINTENANCE

Former companies ENDEGS and SIS merge and now form the leading provider for industrial degassing.

ETS Degassing
MOBILE EMISSION TREATMENT

David Wendel, Managing Director
ETS Degassing GmbH, Managing
Director & CCO ETS Group



Reducing the global carbon dioxide (CO₂) and greenhouse gas (GHG) footprint is a paramount goal for the industrial sector as well as for governments. An important factor contributing to environmental protection is enhancing sustainability in industrial operations and maintenance. Despite many good actions have already been taken, industry is still a major contributor to global GHG emissions. Emission reduction in the industrial sector involves a multifaceted approach, including implementing cleaner technologies and energy sources, improving energy efficiency and implementing effective management practices of wastes that are released into air, water or soil.

Among the innovative technologies aimed at mitigating these emissions, mobile degassing stands out as a vital technology. In many processes, hazardous emissions such as hydrocarbons, volatile organic compounds (VOC) or hazardous air pollutants (HAP) are created and released into the air untreated.

Reducing emissions from these sources is critical not only for meeting international climate targets, but also for improving air quality and public health. The treatment and safe combustion of emissions ensures that almost no residual gases and emissions are released into the atmosphere where they would harm human health and the environment at the same time.

Passionate about sustainable emission reduction

ETS Degassing offers its international customers innovative highly efficient technologies for mobile emission reduction and degassing. Building on the experience and know-how of former companies ENDEGS and SIS, the ETS Degassing team has been operating successfully for more than 17 years and has completed over 3,000 projects at more than 200 customer locations. ETS Degassing operates under the umbrella of the ETS Group, a provider of environmental technologies for a wide range of different industries, and continues to offer customers the services of former companies ENDEGS and SIS under a new name. With three locations in Germany and further offices in France, the Netherlands, Saudi-Arabia and Bahrain, ETS Degassing helps customers world-wide to reduce their emissions. The ETS Degassing fleet consists of about 50 mobile vapour combustion units, mobile nitrogen vaporizers, blower skids that are certified for use in the ATEX Zone 0 and the rental of the remote-controlled

ATEX Zone 0 Robot. As part of the ETS Group, ETS Degassing offers a comprehensive set of services and technologies that are tailored to the needs of diverse industrial markets, including chemical, petrochemical, oil, gas, marine, shipping, logistics and food and fertilizer industries.

Reducing emissions right where they occur

The ETS Degassing mobile vapor combustion units are available in different combustion capacities (3, 4, 5, 10 and 20 MW) and destroy all kinds of gases, gas mixtures and vapors of the explosion groups IIA, IIB and IIC with an efficiency of more than 99.99 % – without any flame or odour.

This makes ETS Degassing the only company operating in Europe being able to guarantee mobile emission treatment in such a sustainable and environmentally-friendly way. ETS units are suited to work with a wide range of products, for example petrol, crude oil, hydrogen, methane, ammonia, propylene, butane, benzene, naphtha, n-hexane and many more products. The units are autonomously operated and transportable on a trailer and thus can be deployed flexibly to the customer's sites, treating emissions directly where they occur.

Mobile degassing

ETS Degassing mobile incinerators

are suited for a wide range of applications, for example for the degassing of tanks, containers, pipelines, ships, vessels, barges, rail cars and many more components that are used in industrial facilities. The mobile vapour combustion units ensure environmentally-friendly services during commissioning and decommissioning procedures as well as during turnarounds, shutdowns and revisions. With a European patent, ETS Degassing also offers the degassing of vacuum trucks.

In the Port of Duisburg – the biggest inland port worldwide – ETS Degassing has established a permanent degassing site for inland



barges, motor tankers and gas tankers. Thus, the first legal option in Germany was created for the degassing and disposal of hazardous residual gases of inland vessels. To this end, ETS Degassing has also achieved important changes in regulations.

Temporary VRU replacement

The mobile vapour combustion units can also be applied as back-up for stationary emission reduction systems. In many refineries, loading terminals or storage tank farms, systems like vapour recovery units (VRU) or vapour processing systems (VPS) are used for emission treatment. However, the whole facility cannot uphold operations and needs to be shut down in case of VRU/VPS downtimes due to maintenance or failure until the system is back in service. To prevent such downtimes, ETS Degassing mobile vapor combustion units can temporarily replace stationary systems during maintenance or repair, allowing operations to be continued normally and without interruptions, helping customers to save both time and money.

Recently, ETS Degassing was awarded

the TotalEnergies Safety Award 2023 in the category "Safest Contractor Tank Farms". Last year, ETS under the former name of ENDEGS worked reliably and safely with the customer to operate the mobile vapour combustion units during emergency situations for the VRU replacement. Thus, environmental damage was prevented in cooperation with the customer and the tank terminals were kept in operation, ensuring the supply of fuel in the respective regions.

Mobile nitrogen vaporizers

For a holistic emission treatment process, mobile nitrogen vaporizers widen the portfolio of ETS Degassing. Nitrogen is an inert gas that doesn't react with other substances and that therefore doesn't cause any unwanted reactions. Therefore, nitrogen is a perfect medium for working with highly flammable substances such as liquefied gases under pressure that pose a risk of explosion. Inerting and purging components containing substances such as LNG, ammonia or liquid gas creates a safe surrounding.

The mobile vaporizer can be combined with a mobile vapor

combustion unit to also enable the degassing of components filled with liquefied gases. This is of the uttermost importance as products like LNG and green ammonia are increasingly used as alternative and more sustainable energy sources.

In the ETS Degassing site in the Port of Duisburg, a mobile nitrogen vaporizer is permanently stationed as well as a mobile vapour combustion unit so that barges, vessels and gas and motor tankers can not only be degassed, but also purged.

Increased safety in the ATEX Zone 0

The holistic ETS Degassing portfolio is completed by mobile blower skids that are certified for applications in the ATEX Zone 0 and that safely extract gases and vapours from tanks, plants and more components. ETS Degassing also offers the rental of the remote-controlled ATEX Zone 0 Robot for the cleaning of industrial tanks from a safe distance. As industries worldwide strive to reduce their environmental impact, ETS Degassing stands ready to lead the way with innovative, efficient, and reliable solutions.



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Smarter pump use for energy saving

Creeping energy bills are having an enormous effect on businesses, and tank storage sites are no exception. As energy costs increase, operators could benefit from reassessing how their pumps are running, and a few small changes could make a big difference.

Tom Hamill, Area Sales Manager for Vogelsang, explains: "Pump running costs can be a significant overhead for a tank or terminal storage site, particularly when you consider that 20 per cent of the world's electricity demand is used to power pump systems. We're finding a lot of storage operators are reviewing their running costs and looking for areas to reduce energy consumption. Like all of us, they are conscious of their bills, but also don't want to pass on their costs to their supply chain."

ED&F Man Terminals has used rotary lobe pumps supplied by Vogelsang for over a decade, and recently leveraged them to help with reducing its energy consumption, which it achieved by nearly a third.

Ian MacKenzie, UK Operations Manager, ED&F Man Liquid Products UK, said: "We had an efficiency drive and looked for ways to cut our energy costs. Vogelsang looked at our pump systems and suggested that we don't need to run them at full speed to achieve the BEP (best efficiency point); they could do the job we need

with them running at as little as 50%. This reduced our energy costs by 30% which was fantastic."

Whilst energy efficiency should be taken into account when specifying a pump, so should other costs associated with the life of a pump (installation, maintenance, replacement parts). As time is of the essence for storage and transit jobs, reducing downtime is important to Vogelsang, which is why they come with Quick Service capabilities; parts can be changed and the pump serviced with minimal disruption and downtime. Compared to other positive displacement pumps, the rotary lobe pump has a smaller footprint due to its compact design and can easily be installed in tighter, trickier areas. Another factor which makes this type of pump popular with tank storage and terminals is its ability to handle a variety of media, including viscous and abrasive solutions.

"We first installed Vogelsang rotary lobe pumps on our molasses tanks over 15 years ago and they have worked brilliantly in the years since," Ian said. "We move and store liquids such as molasses, vegetable oil and non-hazardous products, and needed pumps that are capable of pumping a wide range of viscosities and the rotary lobe pumps have no trouble in doing so."

www.vogelsang.co.uk

REVOLUTIONIZING IN-SERVICE AST INSPECTIONS: PETROBOT UK'S BREAKTHROUGH

PETROBOT UK, a leader in robotic inspection and Non-Destructive Testing (NDT) solutions, is transforming AST inspections with their advanced robotic technologies.

Petrobot



A

boveground Storage Tanks (ASTs) are critical in industrial asset management but pose significant inspection challenges, including high costs, safety risks, and operational downtime. Traditional inspection methods require tanks to be taken out of service, causing production losses and exposure to hazardous environments. PETROBOT UK, a leader in robotic inspection and Non-Destructive Testing (NDT) solutions, is transforming AST inspections with their advanced robotic technologies. This case study explores how PETROBOT's innovations enhance safety, reduce costs, and provide comprehensive data for asset integrity management, while also addressing the regulatory and industry barriers that have hindered widespread adoption.

The PETROBOT Solution

Technology overview

PETROBOT UK LTD leverages cutting-edge robotic systems equipped with Artificial Intelligence (AI), Machine Learning (ML), and Internet of

Things (IoT) technologies. Certified to ATEX standards, PETROBOT's robots are designed for explosive atmospheres, making them ideal for petrochemical, oil and gas, and energy sectors. Flagship products like the PETROBOT ITIS Rover and the PETROBOT MagRover navigate complex environments such as tank bottom plates, shells and pipelines, performing inspections without operational shutdowns, scaffolding, or human entry into hazardous zones. The robots efficiently operate in environments with residual sludge and hydrocarbons, substantially cutting down on degassing and desludging activities.

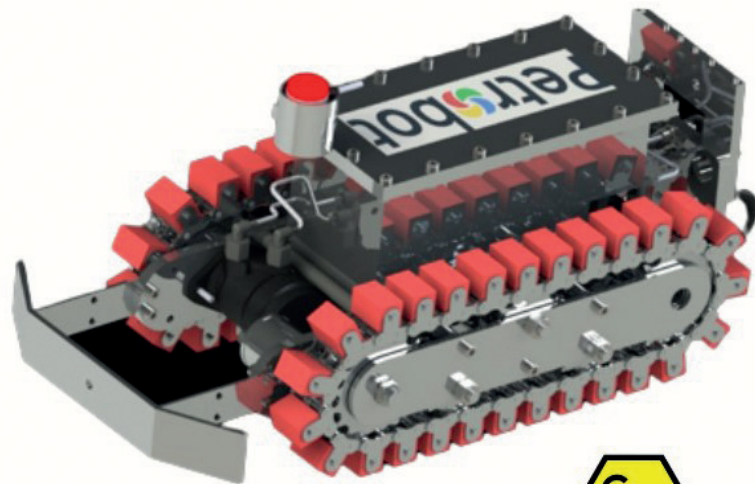
Key features and benefits

1. ATEX Compliance and Enhanced Safety: Certification for explosive atmospheres minimizes risks of accidents and exposure to hazardous substances, significantly enhancing workplace safety.
2. High-Density UT Wall Thickness Measurements: Advanced ultrasonic sensors provide direct, detailed wall thickness measurements of soil side, mid-wall and product side metal loss, enabling precise monitoring and proactive maintenance without the need for calibration checks or sensitivity corrections.
3. Cost Efficiency: Robotic inspections are up to five times more economical than traditional methods, eliminating the need for tank cleaning, degassing,

and scaffolding, and reducing the need for a large onsite team, thereby lowering labour costs and reducing expenditures related to safety training and personnel management.

4. **Speed and Data Volume:** PETROBOT's inspections are ten times faster and capture 1,000 times more data than conventional techniques, accelerating the inspection process and ensuring a comprehensive understanding of asset conditions.
5. **Enhanced Integrity Reporting and Accurate Remaining Life Predictions:** Advanced analytics provide accurate predictions on asset service life, facilitating maintenance planning and regulatory compliance. PETROBOT's in-service inspection technology allows for timely completion of scheduled inspections per EEMUA 159, API 653 and API 570 standards, ensuring strict compliance with industry regulations without disrupting normal operations.
6. **Real-Time Data Transmission:** Systems transmit data in real-time, enabling swift, informed decision-making.
7. **Advanced Onboard Navigation Systems:** Precise and autonomous operation in challenging environments reduces human intervention, enhancing safety and efficiency.
8. **Durability and Adaptability:** Designed to withstand harsh industrial conditions, PETROBOT systems perform consistently across diverse environments.

Revolutionizing tank inspections, the ATEX Certified PETROBOT ITIS Rover offers reliable in-service inspection of tank bottom plates.



ATEX Certified

The PETROBOT Mag Rover inspects AST shells both vertically and horizontally, providing precise UT wall thickness measurements and thorough coverage.



Case Study: INDORAMA Nigeria's Breakthrough

Overview

INDORAMA Nigeria, a leading petrochemical complex in Sub-Saharan Africa, faced the challenge of inspecting storage tanks without halting operations. Utilizing the ATEX Certified PETROBOT ITIS Rover, INDORAMA successfully inspected over eight storage tanks while maintaining full production capacity. PETROBOT's data analytics enabled precise asset assessments, proactive maintenance planning, and extended tank service life, resulting in significant cost savings and operational efficiency.

Project scope and execution

Initially contracted to inspect six tanks at Indorama, Nigeria, PETROBOT's seamless execution, faster inspection speeds, significant cost benefits, and value-added service delivery led to the project's expansion to eight tanks. The tanks, with diameters ranging from 13.56 m to 20.34 m and heights from 12.70 m to 16.7 m, included

various types: Fixed Roof, DDFR, and Dome Roof.

The comprehensive project scope involved on-stream UT inspection of tank bottom plates with the ITIS Rover, UT inspection of the tank's external shell and roof with the MagRover, external visual inspection per API STD 653, UT thickness inspection of nozzles and appurtenances, tank foundation settlement survey, tank shell verticality and plumb tests per API 650, and remaining life calculation and life extension study in accordance with API STD 653 and 650. All eight tanks were successfully inspected with a fast turnaround, to the customer's satisfaction.

Challenges and innovative solutions

Challenges included performing inspections while tanks were filled with petrochemical liquids, completing inspections within a stringent 30-day schedule, and dealing with the rainy season. PETROBOT's robots, designed for operation during tank filling/emptying processes, completed the project in 28 days, ahead of schedule.

Their IP68/IP69K protection ensured reliable performance in harsh weather conditions, and scaffold platforms facilitated dome roof inspections.

Outcomes and value addition

The project was completed in record time, with substantial cost savings and enhanced safety. Traditional inspection methods would have taken over two years and cost at least three times more. The project also eliminated 14,600 man-days of confined space entry and approximately 108,000 kg of CO₂, aligning with global efforts to reduce industrial carbon footprints.

Case Study: PETRONET LNG's Success

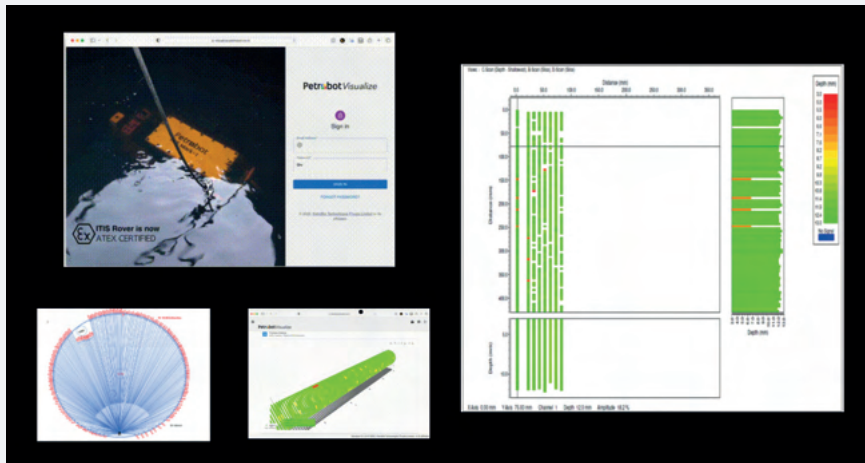
Overview

At Petronet LNG's facilities in Dahej and Kochi, PETROBOT's technology ensured the integrity of fuel storage tanks while maintaining continuous operations. This proactive inspection approach mitigated risks, optimized storage capacity, and maintained operational flexibility, enhancing safety and providing economic benefits.

Project scope and execution

In just a tight 6-day window during the challenging monsoon season, PETROBOT executed a comprehensive inspection project. The scope included on-stream UT inspection of tank bottom plates, external shell, and roof, alongside visual inspection of the tank shell, roof, and nozzles. Further tasks involved UT thickness inspection at nozzle necks, tank foundation settlement surveys, and verticality and plumb tests.

[The PetroBot Visualise Data Analytics Platform empowers operators with real-time inspection data, enhancing decision-making and ensuring regulatory compliance.](#)



The project also covered remote visual inspection of the underside roof structure and vapor area, along with remaining life calculations and a life extension study adhering to API STD 653 and 650 standards. Despite the adverse weather conditions, the project was completed efficiently and successfully.

Challenges and Innovative Solutions
The primary challenge was conducting inspections during active tank filling/emptying processes. PETROBOT's advanced robotic technology, capable of ten times faster operation than conventional methods, ensured timely completion. IP68/IP6gK protection ensured reliable performance in harsh weather conditions.

Outcomes and value addition

The project was completed in 6 days, with traditional methods requiring over two months and three times the financial investment. The inspections were completed without operational disruptions, ensuring safety and continuity. The project also saved 1,200 man-days and reduced CO2 emissions by 27,000 kg.

Industry Challenges and Regulatory Landscape

Historical practices and norms

Traditionally, AST inspections are conducted during scheduled shutdowns, supported by long-established regulatory frameworks. This conservative industry culture favors proven methods, leading to resistance against new technologies.

Regulatory uncertainty

Despite the advantages of robotic

inspections, regulatory uncertainty remains a significant barrier. PETROBOT is actively engaging with regulatory bodies to advocate for standardized guidelines that facilitate the adoption of their technologies.

Market hesitancy

Adoption of new technologies faces resistance due to initial costs and concerns about integration with existing protocols. PETROBOT addresses these concerns by showcasing successful case studies and demonstrating tangible benefits, including cost reduction, enhanced safety, and improved asset management.

Data management

Robust analytics and data management systems are essential for handling the substantial data volume generated by robotic inspections. PETROBOT has developed a user-friendly, proprietary software platform, PetroBot Visualize, for enhancing timely integrity decision-making and regulatory compliance.

Overcoming barriers and future outlook

PETROBOT is working with regulatory bodies to establish clear standards and investing in educational efforts to inform industry stakeholders about the benefits of robotic inspections. By providing comprehensive training and support, PETROBOT helps clients integrate these systems into existing workflows.

Conclusion

PETROBOT UK LTD is revolutionizing industrial asset inspections with their advanced robotic technologies, offering a safer, faster, and more cost-

effective alternative to traditional methods. Successful projects at INDORAMA Nigeria and Petronet LNG highlight the transformative potential of PETROBOT's solutions. As more companies experience the benefits, the adoption of robotic inspections is expected to grow, setting a new global standard in the industry. Through continuous engagement with regulatory bodies, technological advancements, and market education, PETROBOT is paving the way for widespread adoption of robotic inspection technologies, ensuring significant cost savings, improved safety, and enhanced asset integrity management. For tank asset owners and industry stakeholders, the message is clear: Robotic Inspection solutions for storage tanks are not just an innovative option but a strategic necessity for the future of AST inspections. To explore how PETROBOT UK can enhance your asset management strategy, contact us today at sales@petrobot.uk for a detailed consultation and demonstration. PETROBOT Is Redefining Asset Integrity with Robotic Inspections. Find out more at www.petrobot.uk

Authors

Scott Bulloch, Suji Kurungodan, and Sahab Gurjar from PETROBOT UK highlight the challenges of traditional offline inspection methods and showcase successful user case studies where PETROBOT's innovative robotic inspection solutions transformed the experience for AST operators.

PRACTICAL STEPS FOR PROJECTS THAT WILL BECOME COMAH SITES

The COMAH regulations are designed to minimise the risk of major accidents involving dangerous substances to protect both people and the environment.



Safe | Smart | Sustainable



Where projects involve the handling, storage or processing of hazardous substances, the team involved should be aware of the potential to become a facility subject to the Control Of Major Accident Hazards (COMAH) Regulations 2015.

Understanding COMAH

The COMAH regulations are designed to minimise the risk of major accidents involving dangerous substances, to protect both people and the environment. The criteria for determining whether a site falls within the scope of COMAH are centred on the quantities of hazardous substances held on the site; either specifically named substances or substances in certain hazard categories. The regulations outline threshold levels for each substance in tonnes and above these a facility would become a COMAH site.

Projects need to ask - will we fall under COMAH?

The maximum foreseeable inventories of hazardous substances to be held on the site should be determined and evaluated against

the thresholds outlined in the COMAH regulations. If the thresholds for any of the substances individually are met or exceeded, then the facility will fall under COMAH. Furthermore, if the total combined quantity of substances held on site exceed the thresholds under the aggregation rule the regulations will also apply, so the total inventory must also be considered. As part of this calculation, it can also be concluded whether the site would become subject to the Lower Tier or Upper Tier COMAH requirements which each have distinct levels of requirements. Whether a site is designated as Lower or Upper Tier depends upon the quantities of hazardous substances present, with the Lower Tier thresholds for substances being smaller.

Performing this check against the COMAH thresholds at any early stage will enable the project to integrate COMAH compliance within the workstream from the outset. There may be preference to work towards the site becoming a Lower Tier establishment due to the less onerous requirements, which may influence the project by dictating the maximum hazardous inventories.

What are the practical steps to take to become a COMAH facility?

Once the COMAH classification has been determined, work towards meeting the requirements should be integrated into the project workstream. Integrating COMAH requirements in parallel with the planning and design

stage of the project will minimise the burden towards the end of the project to ensure that the site can become an operational COMAH facility.

The practical steps to take during each stage of the project lifecycle are summarised in the following figure.

Step 1: Monitor any changes to the substance inventories throughout the project to determine the potential impact on the COMAH requirements.

Step 2: Prepare your Hazardous Substance Consent and Environmental Permit applications as required.

The threshold levels for COMAH Lower Tier and Hazardous Substance Consent largely overlap, so if you are COMAH you will highly likely require Hazardous Substance Consent under The Planning (Hazardous Substances) Regulations 2015. If the site is subject to the COMAH regulations, then it should be evaluated whether the site will require an environmental permit under the regulations, which will depend upon whether the activities performed have the potential to pollute the air, water or land.

Step 3: Start the activities required to become a COMAH facility such that you are prepared ahead of time.

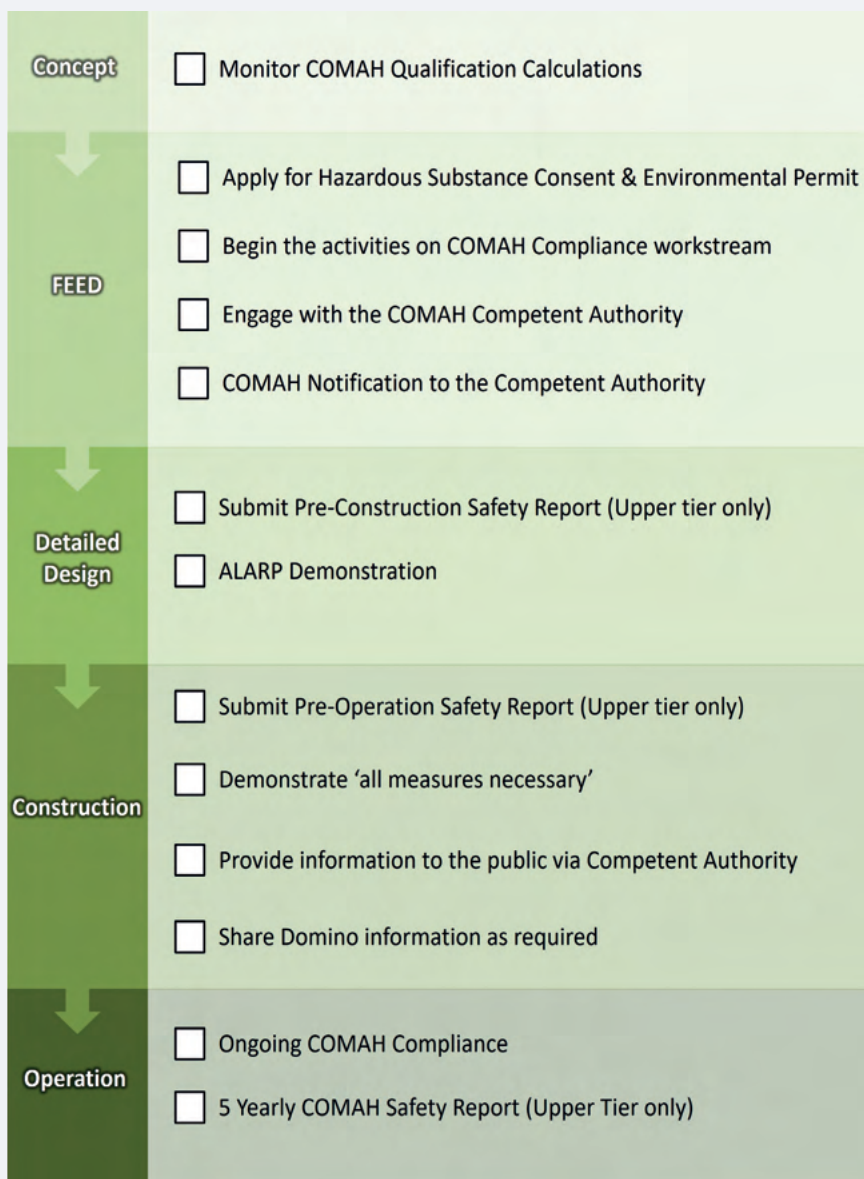
This would include at a minimum for a Lower Tier site:

- a. Develop a Major Accident Prevention Policy (MAPP)
- b. Identify the major accident hazards
- c. Draft emergency response plans in line with the major accidents
- d. Develop the Safety Management System for the facility

Additionally for an Upper Tier site:

- a. Liaise with stakeholders for the external emergency response plan
- b. Start the process of developing the structure of the COMAH safety report by reviewing the requirements under the SRAM 2015 guidance

Step 4: Engage with the COMAH Competent Authority (the HSE and the



EA in England, the SEPA in Scotland and the NRW in Wales).

Working with the Competent Authority and creating a positive line of communication at an early stage will be beneficial to the project and will help to understand the expectations of the regulator.

Step 5: Submit your official notification under regulation 6 of COMAH to the Competent Authority.

Complete a COMAH notification form at least 4 months before the start of construction. Once notified, the Competent Authority will develop an assessment and inspection plan for the new COMAH establishment.

Step 6: If you are an Upper Tier COMAH facility, submit Pre-Construction Safety Report 4 months

before construction begins.

Step 7: Prepare a demonstration of safe design by justifying how the risks have been managed to level that this As Low As Reasonably Practicable (ALARP), including compliance with industry good practice and consideration of further risk reduction measures.

Step 8: If you are an Upper Tier COMAH facility, submit Pre-Operation Safety Report 4 months before first operation of the site.

Step 9: Develop a suitable and sufficient demonstration that all measures necessary to prevent major accidents and to limit their consequences to people and the environment have been taken.

Step 10: Provide information to the

public on the nature of the site and the hazards present via the Competent Authority.

Step 11: Share any information with Domino partners if the Competent Authority identify any.

Step 12: Ongoing compliance under COMAH including COMAH Intervention Plan and Upper Tier, 5-yearly submission of COMAH Safety Report.

About RAS Safety Consultants

Established in 1993, RAS is an independent company of Risk Management Consultants which has grown from a handful of specialists in the North West to a continually evolving team working with leading companies in the energy, pharmaceuticals, and specialist chemical sectors across the world.

For more information, please visit www.ras.ltd.uk



The UK government is set to introduce a sustainable aviation fuel (SAF) mandate

The UK government is set to introduce a sustainable aviation fuel (SAF) mandate. The SAF mandate remains subject to parliamentary approval but is expected to come into force from January 2025.

The proposed SAF mandate will require 2% of the UK aviation fuel mix to be SAF in the first year, rising to 10% in 2030 and 22% in 2040. From 2040, the obligation will remain at 22% until there is greater certainty regarding SAF supply.

The government has decided to not limit the supply of HEFA for the first two years of the mandate, but then to curb its production to no more than 71% of the total SAF target in 2030 and 35% of the 2040 SAF target.

The mandate will also include a separate obligation on power to liquid fuels (or e-fuels) from 2028 that reaches 3.5% of total jet fuel demand in 2040. The mandate buy-out mechanism for the main and power to liquid obligations will be set at £4.70 and £5.00 per litre of fuel, respectively. According to the government, these will provide a significant incentive for fuel suppliers to supply SAF into the market rather than pay the buy-out while also setting a maximum price for the scheme, and therefore deliver emission reductions at an acceptable cost. The plan includes a review mechanism to help minimise the impact on ticket fares for passengers.

There are a number of SAF projects being developed across the UK and a SAF Bill will be introduced to support SAF production, as announced in the King's Speech on 17 July 2024. The Sustainable Aviation Fuel (Revenue Support Mechanism) Bill is aimed at supporting SAF production by introducing a revenue certainty mechanism for SAF producers. The Bill will extend and apply UK-wide and the government hopes that it will increase the likelihood of SAF plants being built in the UK and secure a supply of SAF for the UK aviation sector.

The government's background briefing document states that the associated greenhouse gas emissions from using SAF are 70% less than fossil jet fuel on a life cycle basis, and that planes can already use up to 50% SAF under current rules.

Further information on the SAF mandate, the King's Speech and the accompanying background briefing document can be found on the UK government's website.

ISO MANAGEMENT SYSTEM STANDARD UPDATES AND WHY YOUR ORGANISATION SHOULD BE PERFORMING A CLIMATE CHANGE RISK ASSESSMENT

It is now a requirement for organisations to consider climate change as part of their management system.



The impacts of climate change on an organisation can have wide ranging implications, for example on bulk storage and transport, supply chain availability, quality of raw materials, logistics, employees' health and wellbeing and information security, to name a few.

The International Accreditation Forum (IAF) and the International Organisation for Standardisation (ISO) have deemed climate change to be such a significant external factor that it is now a requirement for organisations to consider climate change as part of their management system. As a result, over thirty ISO management system standards were amended in February 2024 to include the requirement to consider climate change, including ISO 14001 (environmental management), ISO 9001 (quality), ISO 45001 (occupational health & safety) and ISO 50001 (energy management). This new requirement will be included in all ISO standards moving forward. A full list of affected standards is contained in the IAF/ISO

Joint Communiqué on the addition of Climate Change considerations to Management Systems Standards.¹

Clauses 4.1 and 4.2 of the affected standards have been amended as below:

Extant Clause 4.1 Understanding the Organisation and its Context

The organisation shall determine external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended result(s) of its xxx management system

February 2024 Amendment: Clause 4.1 now includes the statement - **the organisation shall determine whether climate change is a relevant issue.**

Extant Clause 4.2 Understanding the Needs & Expectations of Interested Parties

The organisation shall determine:

- The interested parties that are relevant to the xxx management system
- The relevant requirements of these interested parties
- Which of these requirements will be addressed through the xxx management system.

February 2024 Amendment: Clause 4.2 now includes the following - **NOTE: Relevant interested parties can have requirements related to climate change.**



Organisations may have considered climate change impacts already as part of their management system during the determination of internal and external issues in clause 4.1, or if they have an environmental management system requirement as part of an environmental permit regulated by the Environment Agency (EA). The amendments to the ISO standards, however, are to ensure that climate change impacts on a business are not overlooked and that potential impacts on and/or requirements for key stakeholders, such as customers, partners, suppliers, contractors and employees are also considered.

For those organisations with an environmental permit issued by the EA, the recent changes to the ISO standards align with the EA requirement to consider the impacts of climate change on permitted activities (for those organisations with an environmental permit issued before April 2023, a climate change risk assessment should have been completed by 1st April 2024 and an adaptation plan subsequently developed to address identified risks). Sites that fall under the Control of Major Accident Hazards (COMAH) regulations, also need to consider and understand if climate change impacts could alter the risk of a major accident.

In addition to the ISO and environmental permit climate change requirements, companies that fall within the scope of the EU-mandated

Corporate Sustainability Reporting Directive (CSRD) are not only required to assess physical climate change risks as part of their reporting but are also explicitly required to perform a climate change risk assessment and develop an adaptation plan in order to demonstrate their alignment with the EU Taxonomy. The CSRD came into effect for reporting periods starting on or after 1st January 2024 and over the next 5 years, the CSRD will cover 50,000 of the largest companies in the EU and those with significant operations in the EU bloc.

SLR Consulting, together with ClimSystems (part of SLR and world leaders in climate data and analytics), have been assisting clients in various sectors including bulk liquid storage facilities, chemical and food manufacturing, waste management, logistics, and data centres, to help meet the various requirements detailed above. We have developed climate change risk assessments using the latest available climate data to identify key climate variables (down to 1km resolution) that may have significant impacts on an organisation. We have then worked with our clients to develop adaptation plans in which potential measures are identified to mitigate the impacts of climate change.

The climate change risk assessments and adaptation plans have been developed to meet the requirements of the ISO standards, as well as addressing EA environmental

permitting guidance and emerging EU legislation.

If you would like to understand more about our climate change risk assessment and adaptation planning offering please contact Mat Roberts - Climate Resilience Lead, Europe, at matroberts@slrconsulting.com or Sharon Abram, Technical Director - Environment Management, Permitting and Compliance, at sabram@slrconsulting.com

About SLR Consulting

SLR is a global leader in environmental and advisory solutions: helping clients achieve their sustainability goals.

References

1. AF/ISO Joint Communiqué on the addition of Climate Change considerations to Management Systems Standards. Available at https://iaf.nu/iaf_system/uploads/documents/Joint_ISO-IAF_Communique_re_Climate_Change_Amds_to_ISO_MSS_Feb_2024_Final.pdf

THE IMPORTANCE OF PROFICIENCY IN CAREER PATHWAYS

Within the high hazard industries, competence remains a vital cornerstone of what we do and how we function to ensure safety is maintained across all levels.



John Reynolds, Managing Director,
Reynolds Training Services



In any walk of life, being competent within your given role is important. In the high hazard industries, however, competence is vital to ensure safety is maintained.

In the past, we have discussed the myriad of definitions of 'competence', drawing on the UK Health and Safety Executive's (HSE) definition, which states:

Competence is: *"the combination of training, skills, experience and knowledge that a person has and their ability to apply them to perform*

a task safely. Other factors, such as attitude and physical ability, can also affect someone's competence".

The competence equation

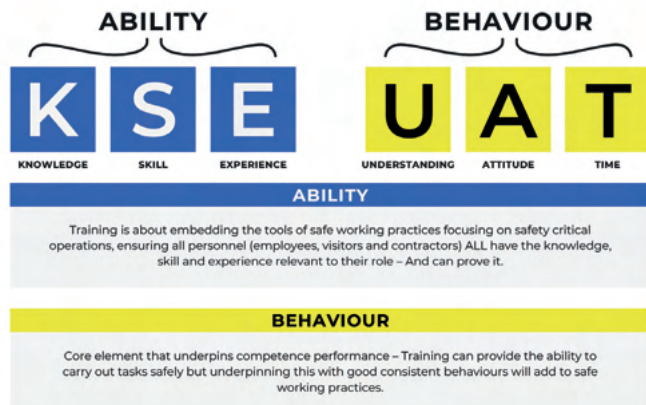
Like any equation, competence has many parts that all add up! We collect these together under two categories: *Ability and Behaviour*.

Ability: This is often seen as a measured value that is underscored by:

- Knowledge – Drawn from direct training, reading SoP's, journals, instructions
- Skill – Developed by doing the job, hands on
- Experience – Doing the work in a range of circumstances, and being able to recognise the 'abnormal' and to know the actions to take!

Behaviour: This underpins competent performance, whilst there is a range of behaviours, there are three of note:

- Understanding – A deeper



aspect of knowledge and built partly around experience, it is about understanding the consequences of our actions.

- Attitude – This can be impacted by home events or even our journey to work. A poor attitude can wreck many a competent performance!
- Time – This is not just about having enough time to complete our task; it is also about the time of day we are undertaking the work.

In a world of limited resources, we have to be mindful of the competence equation, rely on our moral compass and ask ourselves: "Who are we when no one is looking?"

Developing competence

In certain trades, a competent person has official accreditations. For example, Gas Fitters must be accredited as 'gas safe'. This requires them to demonstrate a defined level of competence.

We at Reynolds Training believe that, within the bulk storage operations and energy infrastructure sector, other than a limited range of National Occupational Standards (NOS), there are no defined levels or requirements for Bulk Storage Operations. This gives a limited baseline to set corporate competence against and drive consistency forward, and embedding 'proficiency'. The importance of driving this forward in the era of energy transition should not

be underestimated.

The notion of proficiency

John Reynolds, our MD here at Reynolds Training, recently took part in a planning session with TSA's Skills Committee. This committee is open to all members of the TSA and provides a sector-wide platform for the discussion of skills strategies and the promotion of skills in the bulk storage and energy infrastructure industry. During this workshop, they discussed developing Proficiency Levels and Competence Assessment Criteria. This was preceded by a call to all members to identify their career progression routes (Roles), this information was collated and a core set of Roles identified across the sector, which bring a distinct structure and potential Career Pathway for employees.

Aligned to this is the notion of specialist roles that are peppered throughout our sector, for now though the work is focused on Operational

Pathways. This initial work then led to the mapping of a range of training requirements against each role, this training is split into core areas of:

- Health and Safety
- Process Safety
- Environment
- ESG
- Modes of Transport
- Basic Engineering Inspection and Maintenance
- Process Plant Assets
- Regulations
- People Skills and Well Being
- Statutory Accreditation

This was further reviewed by the skills committee and TSA members. But at what level do we need these roles mapped to?

The workshop focused on two core objectives:

1. Identify a range of proficiency levels that can be used to 'guide' sites.
2. Map the levels against the training identified for each role.

LOOKING AT THE ROLES					
Alongside this we have a range of supplementary roles and career pathways for example:			Terminal Manager		
CoW Coordinator	Safety Officer / Manager	Stock Controller		Deputy Manager	
ER/First Aider / Fire Marshall	Maintenance Tech Supervisor	Project Manager			Site Operations Coordinator
Engineering Manager				Supervisor	
			Control Room Operator		
		Senior Operator			
	Day Operator				
Apprentice					
Within the mapping tool we have highlighted eight core roles within Bulk Storage Operations & Energy Infrastructure Industry, these vary across organisations, but generally provide a similar PATHWAY!					

Proficiency – Four Levels

Three performance levels were agreed by the committee and shared with the TSA Members:

1: Awareness

This is the foundational level of competence where an individual has a basic understanding or familiarity with the subject.

2: Intermediate

At this level of competence, a person can apply the knowledge or skills to familiar situations. They can handle simpler tasks independently.

3: Advanced

This represents a high level of competence and proficiency. An individual at this level has a deep understanding of the subject and can apply their knowledge or skills in new and complex situations. They can also adapt and find solutions to unforeseen problems.

The committee then agreed to add a fourth level of Proficiency specifically for those who supervise or manage the operators with the first three levels of Proficiency.

4: Manages

At this level of competence, an individual has a good understanding and can apply their knowledge and experience to manage others that carry out the task.

A Proficient Manager needs to manage activities with the same competence as the people beneath them. With these levels agreed, they were then mapped to the roles, for example:



To summarise

This work provides a base line for our sector to move forward and continue to develop this structure building on the National Occupational Standards and the success of the apprenticeship, route for a Bulk Storage Terminal Technician, which has 60 clear modules supported by relevant assessment criteria. This will promote clearer career and pathway control for those joining our sector, at whatever level!

John Reynolds: A Profile

I am the founder and MD, setting the pathway of Reynolds Training, with the support of the team, which is growing and is a team I value greatly as we continue to expand our horizons within the changing environment of Bulk Storage Operations and Energy Infrastructure Industries. My role covers Training Delivery, Assessment of Learners, Internal Quality Assurance and Course Developer. As a fully qualified assessor and IQA, I deploy my skills across a range of core Bulk Storage Operations and Process Safety courses.

Industrial experience:

10 years in the Armed Forces, developing my logistic and training skills as well self discipline.

20 years working in the Bulk Liquid and Gas Storage sector, at all levels of operations within upper-tier COMAH sites.

15 years as MD of Reynolds Training, developing and delivering technical operational, occupational and process safety training.

Reynolds are proud to be an associate member of the Tank Storage Association and can be seen at the annual TSA conference which we have always supported.

What motivates me:

Driving Reynolds Training Services forward and, with that, to being the leading provider within the Bulk Storage Operations and Energy Infrastructure Industries developing career pathways that will drive us through the energy transition.

National Composites Centre and the Tank Storage Association call for action to meet hydrogen targets in new workforce foresighting report

Urgent action is needed in order for the UK to meet the government's target to increase hydrogen production, according to a new Workforce Foresighting Hub report.

Hydrogen has been identified as a zero-carbon fuel source which can help the UK reach its ambitious Net Zero targets. In the British Energy Security Strategy, the government set a target to deliver up to 10 GW of hydrogen production capacity by 2030, with at least half of this coming from electrolytic hydrogen. The workforce foresighting report was carried out to identify future skills demands to be addressed to meet the challenge of increasing hydrogen production. It identified future supply chain capabilities, future occupational profiles, and suggested changes to current training provision to deliver the skills needed for its wholesale adoption. Without action now, it is likely that the capabilities and capacity of the workforce will be insufficient to meet the needs for achieving the government's targets.

The report focuses specifically on above-ground hydrogen storage tanks, which are critical in all aspects of bulk storage, distribution and commercial hydrogen use and are applicable across many sectors. However, concerns about skills gaps

in design, installation, maintenance, and operation threaten to impede progress in this critical area. The report was sponsored by the Tank Storage Association and led by the National Composites Centre, in collaboration with the Hydrogen Skills Alliance, which brought together experts from education, employment and the industry to produce it. The outcomes of the report play an initial role in shaping the future workforce capabilities required to build the workforce with the skills to meet the demand for hydrogen.

The report is part of the Workforce Foresighting Hub programme, an Innovate UK initiative, which brings together domain specialists, educators and employers across innovative technologies to deliver individual 'foresighting cycles' on specific challenges. By assessing capability needs and identifying gaps in current skills development, the goal is to support the education and training sector to effectively drive action within each individual challenge.

The report is available at <https://iuk.ktn-uk.org/perspectives/meeting-the-demands-of-the-evolving-hydrogen-landscape/>



The voice of the bulk storage and energy infrastructure sector



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