



INSIGHT



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

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INNOVATION AND EVOLUTION: IN CONVERSATION WITH PETER DAVIDSON

The quarterly magazine from the Tank Storage Association

Also in this issue, we explore environmental protection defence, the tank storage sector's outlook to 2030 and the Bulk Liquids Technician Training apprenticeship.



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 Executive Director, TSA

Welcome to the summer issue of Insight. As we look to 2030 and beyond, it is clear that the bulk storage and energy infrastructure sector has a key role to play in decarbonisation efforts. A recent report by the Hague Centre for Strategic Studies notes that the medium-term will be characterised by the simultaneous decrease in demand for fossil fuels and increase in the use of low-carbon energy carriers. This will require our sector to both balance strains on demand for legacy liquids in a declining market while addressing a growing demand for alternatives. To support the supply chain, never has there been a more crucial time than now to focus on skills development and training needs for our industry. There is also a constant push for innovation: a critical input for change. I hope you enjoy this new edition of Insight and don't forget to follow us on social media for all our latest news.

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Online meetings and webinars

The COVID-19 pandemic has challenged our model of face-to-face meetings. To adapt and respond to the current situation, all of the following meetings will take place online.

- 26 May 2022: TSA Customs & Excise Expert Committee
- 7 June 2022: TSA Energy Transition Committee
- 28 June 2022: TSA Council
- 30 June 2022: TSA HR Committee

For more information on TSA's meetings, write to info@tankstorage.org.uk

News:

The Tank Storage Association has launched a new Instagram account. Stay up-to-date with all our latest news by connecting with us @uk_tsa.

**TSA's Energy
Transition Charter is
available at
www.tankstorage.org.uk/publications**



2022 Tank Storage Conference & Exhibition

The Tank Storage Association's Conference & Exhibition will return to the Coventry Building Society Arena on Thursday 22 September 2022. The UK's flagship event for the bulk storage and energy infrastructure sector provides one of the best opportunities for anyone interested in effective and safe bulk liquid storage operations to come together to share knowledge and network.

The conference programme will once again feature top keynote speakers from regulators and industry, as well as subject experts offering delegates thought-provoking discussions and thorough analyses on a range of key industry issues.

Delegates will get the chance to delve deeper into up-to-the-minute topics relevant to the bulk storage and energy infrastructure sector, including the energy transition, Net Zero priorities, demand trends and supply infrastructure, and much more.

Peter Davidson, Executive Director of the Tank Storage Association, said: *"This year's event allows us to consider latest innovations and developments in the bulk liquid storage industry, while also highlighting our focus on the future of the sector in the journey to climate neutrality. Our industry has a key role to play in the energy transition and beyond, and is already active in a number of areas that will drive success going forward. For example, with regard to transport, it is widely accepted that future solutions will encompass a wide range of*

technologies. Low-carbon liquid fuels will play an essential part for sectors that have limitations in using electricity directly, such as long-distance heavy-duty transport, aviation and shipping. The tank storage sector also has a vital role to play in unlocking the potential of hydrogen which is fast emerging as a potential energy solution for a range of transport modes, including large goods vehicles, where it is proving difficult to meaningfully reduce emissions. The Conference & Exhibition will provide us with an opportunity to hear from a panel of renowned experts about the challenges and opportunities for our sector against a complex and evolving landscape."

Registration is now open for delegates. Exhibitors can book a stand by visiting the TSA's website at www.tankstorage.org.uk/conference-exhibition. For those looking to elevate their presence further, sponsorships packages are also available. The TSA looks forward to welcoming members, exhibitors and delegates on 22 September 2022. To stay connected until then, please schedule a call with our conference organisers on 01462 488232 or write to tsa@tankstorage.org.uk.

For all the latest news and updates, follow us on LinkedIn and Twitter. For more information about the event and an agenda, visit <https://tankstorage.org.uk/conference-exhibition/>

TEMPORARY VRU REPLACEMENT WITH ENDEGS – SAFE AND EFFICIENT

Using ENDEGS vapor combustion service for the VRU replacement ensures continuous productivity without any negative impact to emissions or safety.

Kai Sievers, CEO,
ENDEGS Group



Vapor recovery units (VRU) and vapor treatment systems (VPS) are used to treat and remove vapors and pollutants in refineries and tank farms. They need to be inspected regularly to ensure their functionality – a process that means a downtime for the VRU. But what to do during downtimes caused by maintenance or malfunction as a facility without a vapor recovery unit is not suitable to operate? During such downtimes, ENDEGS' mobile vapor combustion units (VCU) can be used to replace a VRU temporarily and treat the vapors in its stead. This ensures that the operations of our customers are not interrupted. We offer vapor recovery unit replacement services for the road, rail and ship industries. VRU replacement is part of the emissions-free degassing of a wide range of processing facilities we offer our customers. Our mobile VCUs guarantee a safe and efficient degassing process for, among others, tanks, sea vessels, barges and pipelines during decommissioning, maintenance and loading activities.

During a VRU replacement, the ENDEGS mobile combustion unit is able to process the vapors from the loading procedure without noise, open fire or odor. Our highly skilled operators monitor the process and ensure the security of everyone involved. Using ENDEGS vapor combustion service for the VRU replacement ensures continuous productivity without any negative impact to emissions or safety. We further guarantee a reliable operation, low noise and no visible flame. Our technology also complies to safety standards and is conforming to emission regulations. Leveraging the ENDEGS installation, 0,096 kg of vapors were emitted per day during the VRU replacement for a truck loading facility – instead of almost 2.000 kg daily without the technology. Combusting with ENDEGS therefore produces more than 20.000 times less emissions than venting in the air.

VRU replacement in long-term projects

One of our clients contracted us for the VRU replacement in a truck loading facility. This way, we kept the truck loading station in operation and prevented a shutdown of the refinery. The area covered seven connected loading stations with approximately 340 truck loadings per day. The VRU replacement project for this customer lasted three months until the maintenance of the system was completed and

VRU replacement



the VRU resumed its work. The equipment we used for this project contained a mobile VCU of the type E-5VT with combustion power of 5 MW and a mobile piping system (95 mm). We further used several accessories like valves, curves (60° and 90°) and t-pieces and a mobile flame arrestor. In another project, we replaced the broken VRU system for a facility so our customer was able to continue with the loading of rail cars. This VRU replacement lasted for six months.

During this time, 22 rail cars had to be filled weekly. Every train had a capacity of 2.200 m³, the tanks contained Ethanol. We used a E-5VT mobile combustion unit with 5 MW combustion power for the VRU replacement. Further equipment included a 40 m mobile piping system, valves, curves, t-pieces and a mobile flame arrestor.

Mobile degassing with ENDEGS

Our mobile plug & play system enables a safe, sustainable and

efficient degassing process. ENDEGS has developed the world's first fully-equipped trailer-based and mobile vapor combustion unit. With our highly advanced and unique units, we can guarantee a combustion rate of almost 100 % – regardless of what gases, gas mixtures or vapors need to be burnt. Our solution is absolutely safe – for the people working around it, for the facilities of our customers and, last but not least, for the environment and neighborhood. The installation time of our VCUs is reduced to a minimum as they are mobile and autonomously operated. Thus, we have everything we need right on site. Furthermore, there is no need for customer's participation in the process and a low impact on their daily business as production and processes in the facility can continue – downtimes are reduced to a necessary minimum. This makes the service offered by ENDEGS very cost- and time-efficient.

Ship degassing



ENDEGS operates in a wide range of industries: oil & gas, chemistry, marine & shipping, fertilizer, food and automotive. Our technology is specifically developed to meet the special needs of these industries. Our mobile units can burn all kinds of gases, gas compounds and vapors of the hazard groups IIA, IIB and, more recently, IIC.

For more information, visit www.endegs.com

STRATEGIC GROWTH OPPORTUNITIES WITH UM TERMINALS

UM Terminals' customers include some of the world's largest corporates.



Bryan Davies, Managing Director, UM Terminals



UM Terminals, one of the UK's leading bulk liquid storage specialists, prides itself on building long-term relationships with customers.

The company operates out of 8 terminals, strategically located across the UK, with a current capacity of over 300,000 cubic metres of bulk liquid storage.

UM Terminals' customers include some of the world's largest corporates, many of whom have depended upon the Liverpool-headquartered business to meet their bulk liquid storage requirements over a long period.

The company currently has a small number of opportunities for new customers at its Liverpool sites at Gladstone Dock and Regent Road.

There are currently three tanks available at Gladstone Dock, each 13,200m³, while Regent Road has two tanks available, each 10,750m³. All the tanks are of carbon steel construction, have heating available and, crucially,

are located next to deep water at the Port of Liverpool. They will be available from later this year.

Vic Brodrick, Commercial Director at UM Terminals, said: *"We are in discussions with several potential customers who are attracted by the economies of scale provided by tanks of this size and the proximity to deep water. It is highly unusual for UM Terminals to have tanks of this nature coming available."*

"We pride ourselves on building long-term relationships with our clients, many of whom are large blue chips, enabling them to deliver their strategic plans. The tanks we have coming available would suit a company that is seeking to make a key strategic move or supply chain change."

"We very much see this as a partnership as we will be investing to ensure that the tanks meet the needs of any new customer, while they will be choosing UM Terminals as part of a broader strategic growth plan. Liverpool is a fantastic location, not only for the deep water facilities, but also the excellent road connections to and from the city region. One of our key strengths is the great relationship we have with the Port of Liverpool, which is rightly recognised as one of the leading ports in the world."

UM Terminals maintains a broad portfolio of around 40 products that it stores including vegetable oils, industrial, food and feed, chemical,

fertiliser, fuels, biofuels and base oils. UM Terminals is also accredited for FSSC 22000, the certification scheme for Food Safety Management Systems, for Regent Road and its Gladstone Dock sites, while it is Halal and Kosher certified at Regent Road. Every site is also ISO9001 accredited, while terminals handling hazardous liquids are COMAH compliant.

The business has customer centricity at the heart of its operations and continues to invest in delivering the best possible customer service through its dedicated Client Central Services team which is based at the Regent Road terminal.

Headed by Client Central Services Manager Lynn McCoy, the service integrates all weighbridge and administration from across UM's 8 terminals.

A dedicated portal gives clients instant access to essential weighbridge documentation and current stock levels for each tank. They also have a secure log-in and can access their data 24/7, 365 days a year via a desktop, tablet or mobile device.

UM Terminals is part of the United Molasses Group, whose history dates back almost 100 years, and is led by CEO Ben Macer.

UM's founder, Michael Kroyer-Keilberg, was involved in bulk liquid storage even earlier than this – he constructed his first tank for the

storage of bulk molasses in 1911 at Victoria Dock in Hull where today UM Terminals has terminals at Hull West and Hull East.

UM Terminals aims to increase its storage capability to around 400,000 cubic metres as part of its own strategic growth plan. This will result from maximising its existing UK capability and, where appropriate, expanding existing terminals.

The business is also optimising the assets of the wider UM Group and its network of facilities in Europe, while also actively looking for acquisition targets that would be a good fit with the current UM Terminals offer.

Bryan Davies, UMTerminals' Managing Director, said: *"We are working on some exciting opportunities at the present time and one of our key objectives is to identify clients for the tanks we have available. For the right customer, looking for a long-term partnership, we will invest to ensure that the facilities they take on are of the highest possible standard and capable of meeting their own strategic growth goals."*

For more information, visit www.umterminals.co.uk



INNOVATION AND EVOLUTION: IN CONVERSATION WITH PETER DAVIDSON

TSA's Executive Director, Peter Davidson, discusses innovation and evolution in the bulk storage and energy infrastructure sector.

[Peter Davidson, Executive Director, TSA](#)



The Tank Storage Association (TSA) represents the interests of over 60 member companies engaged in bulk storage, energy infrastructure and the provision of products and services to the sector. Collectively, its members operate 302 terminals and distribution hubs in the UK and have over 11 million cubic metres of storage capacity in the UK and Republic of Ireland. TSA's members provide and support an essential interface between sea, road, rail and pipeline logistics for many different substances including transport and heating fuels, chemicals, animal feed and foodstuffs.

Storage capacity is a strategic asset and the availability of reliable and cost-effective infrastructure supports the competitive position of the energy, manufacturing, agricultural and food industries. Tell us more about the role of the sector in this context.

The bulk storage and energy infrastructure sector plays a vital role in providing services that are critical to the UK consumer. This includes the blending and transformation

of substances to meet the diverse needs of both industry and the public in a safe and cost-effective way. For example, the UK is a net-importer of aviation fuel and diesel. It also imports approximately 30% of the gasoline used domestically. All imported products are imported by ship. Against this background, it is also important to note that many of the strategic terminals in the UK, around 22, are designated by Government as Critical National Infrastructure 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. TSA members operate around 11 million m³ storage capacity of liquid bulk. Approximately 60-65% of liquids that are stored are hydrocarbons, 35% of products are chemicals, which are used, for instance, for the production of pharmaceuticals and vaccines, as well as edible oils, acids and animal feeds for the agri-food sector. A small percentage is made up of crude oil. Liquid storage terminals also improve the flexibility of the entire supply chain and its ability to respond to market fluctuations by helping to balance out supply and demand and ensuring that critical liquids are supplied when they are needed in the quantities required.

With regard to strategic stocks, the UK for example, as a member of the International Energy Agency, is bound by International Energy Agency oil stocking obligations for 90 days of net imports of oil both held

in tanks, or national tickets on stock. These strategic reserves ensure that recovery is possible during periods of disruption in supply and provide stability to the global oil market. And we are certainly an essential part of this.

Bulk storage companies are also an essential part of commodity trading. Tell us more.

Tank storage is an essential part of commodity trading. Storage terminals improve the flexibility of the entire supply chain. Terminals may either store single products or multiple products within a single facility and can provide supplementary services such as blending, packaging, canning, drum filling, water treatment and analysis, warehousing, as well as bonded facilities for duty suspended products.

Terminal operations are present throughout the world. However, storage hubs have become established in Europe – representing 30% of the world capacity for bulk liquid storage – the United States, Middle East and Asia to provide the necessary storage required for global commerce in bulk liquids. These vital facilities also provide greater resilience within the supply chain by ensuring flexibility to meet demand, particularly in periods where domestic supplies of transport fuels cannot be guaranteed.

In the run up to COP26 last year, the UK Government set out its new

strategy for Net Zero. Tell us more about the role of the bulk storage and energy infrastructure sector in supporting the Government's ambitious targets.

The UK's 'Net Zero Strategy: Build Back Greener'¹ aligns with emissions targets of net zero by 2050 and a 78% reduction in GHGs from 1990 to 2035, including international aviation and shipping. It further includes commitments such as that to fully decarbonise electricity generation by 2035, to end the sale of new petrol and diesel cars by 2030 and for all cars to be fully zero-emissions capable by 2035. Funding to kick-start the UK hydrogen economy is also included along with support for two industrial clusters.

The Tank Storage Association has been clear and vocal about the vital role of the sector in the energy transition. In this context, with regard to transport for example, it is widely accepted that future solutions will encompass a wide range of technologies. Low-carbon liquid fuels will play an essential part for sectors that have limitations in using electricity directly, such as long-distance heavy-duty transport, aviation and shipping. The tank storage sector also has a vital role to play in unlocking the potential of hydrogen which is fast emerging as a potential energy solution for a range of transport modes, including large goods vehicles, where it is proving difficult to meaningfully reduce emissions. The decarbonisation of heat also brings its own set of

challenges for the bulk liquid storage sector. The UK government has recorded its commitment to fully decarbonise heating in homes and businesses by 2050. In 2018, the residential buildings were responsible for about 15% of total GHG emissions, with consumption dominated by gas. 6% of heat demand was met by renewables², and less than 2% from district heating. Fuel oil is also used to heat homes and businesses that are 'off-grid' and not connected to the gas transmission network. Suppliers and distributors of domestic and commercial heating fuels will also play an important part in meeting the UK's net zero goals by providing liquid biofuels for homes and businesses across the country. For the tank storage sector, this may mean infrastructure upgrades, such as new tankage and loading arm facilities. Hydrogen may also play a part in helping to reduce carbon emissions in the context of domestic heating.

Against this background, the TSA has recently formally launched its new a new Energy Transition Charter³ affirming the sector's shared commitment to supporting the achievement of the UK's climate neutrality targets. The Energy Transition Charter has been developed in conjunction with our member companies and is accompanied by strategic commitments to encourage leadership, innovation, skills development, promotion and engagement in this area. Our members are committed to leading

in the journey to Net Zero and, with efforts already underway, the Charter is very much aimed at highlighting our sector's ambitions to seize future opportunities. What we are also clear about is that an effective transition to alternative energy sources will be made possible by close collaboration with Government, regulators, partners and other stakeholders.

What are the challenges in maintaining safe operations through the Energy Transition?

As industry changes and the breadth of products and services provided by terminals evolve, careful consideration needs to be given to how safety can continue to be effectively managed, protecting both people and the environment. There is a need to consider new energy carriers and how these can be safely imported, stored, and exported, and importantly ensure that workforce competency is aligned with these new challenges.

As a leading member of the COMAH Strategic Forum, Process Safety Forum, Chemical and Downstream Oil Industries Forum, and several Energy Institute technical committees, TSA is at the centre of these discussions. Through our dedicated Safety and Technical Committees, we continue to positively engage in the development of new guidance and standards to safeguard our people, the environment and our assets.

What is the role of new technologies such as automation and AI in the bulk storage industry?

Bulk liquid storage operators are continually seeking to innovate in

order to improve efficiency, while maintaining and improving safety for both people and the environment. Traditionally, bulk liquid storage terminals have not been heavily manned and, as such, rely on automation. It is therefore within the context of maintaining and improving safety that many new technologies are developing – particularly with regards to inspection, removing people from potentially hazardous environments. Remote robotic and drone inspection is becoming more common, and it is likely that this will expand into other tasks, such as small repairs and analysis.

Augmented reality is also likely to become more commonplace in the training of personnel, particularly in relation to safety critical tasks.

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

References

1. 'Net Zero Strategy: Build Back Greener', available: <https://www.gov.uk/government/publications/net-zero-strategy>
2. 'BEIS, 'Digest of UK Energy Statistics (DUKES)'
3. 'TSA Energy Transition Charter', available: <https://tankstorage.org.uk/publications/>



Government publishes British Energy Security Strategy

In April, the UK Government published its Energy Security Strategy setting out the government's plans to scale up the development of a range of energy technologies including wind, solar, hydrogen and new nuclear, while supporting near-term production of domestic oil and gas, on a path to ensuring 95% of electricity by 2030 is low carbon.

In confirming its support for low-carbon nuclear projects, the strategy sees a significant increase in nuclear reactors, with an ambition for around 25% of the country's projected electricity demand to be met by nuclear power by 2050 and plans to triple civil nuclear capacity to 24GW to achieve that. A new body, the Great British Nuclear Vehicle, will be established this year to support prospective nuclear projects "through every stage of the development process" and to develop "a resilient pipeline of new builds". With regard to hydrogen, the government plans to boost production to 10GW by 2030, with at least half coming from with at least half coming from electrolytic hydrogen. Plans also include designing, by 2025, new business models for hydrogen transport and storage infrastructure. A hydrogen certification scheme is also to be set up by 2025.

The strategy also sets out how the government plans to reduce Britain's use of oil and gas in the long-term,

in pursuit of its net zero emissions targets, while addressing the need to reduce dependence on overseas supplies in the shorter term. To that end, a licensing round for new North Sea oil and gas projects is planned to be launched in Autumn by the North Sea Transition Authority.

The government will also look to boost the current 14GW of solar capacity, expecting a five-fold increase in deployment by 2035, and will be consulting on the rules for solar projects, particularly on domestic and commercial rooftops. In addition, a revised target of 50GW from 40GW has been set for increasing the capacity of power that could be generated from offshore wind by 2030. Over the same period, the revised target for floating wind is up to 5GW, having previously been set at 1GW.

For more information on the white paper, building on the Prime Minister's 'Ten point plan for a green industrial revolution', and the 'Net zero strategy', visit <https://www.gov.uk/government/publications/british-energy-security-strategy>.

For a copy of the government's Net Zero strategy, visit <https://www.gov.uk/government/publications/net-zero-strategy>.

YOUR FIRST, SECOND AND THIRD LINE OF ENVIRONMENTAL PROTECTION DEFENCE

Shirley Miles, Head of Environmental Protection at Adler and Allan, discusses the benefits of partnering with a trusted environmental protection provider.



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our primary (tank), secondary (bund) and tertiary (separator) containment systems are your first, second and third line of defence against environmental pollution. Regular asset maintenance is essential to keep all pollution prevention equipment working at optimum efficiency, safeguarding operations handling and storing oil or other hazardous materials. Shirley Miles, Head of Environmental Protection at Adler and Allan, discusses how partnering with a trusted environmental protection provider can help you implement the standards correctly to ensure your critical infrastructure remains compliant.

What does the law say?

Two of the key pieces of legislation that could land you in hot water if you don't properly maintain your primary, secondary and tertiary containment:

- The Water Resources Act 1991 states that *'It is an offence to cause or knowingly permit any*

poisonous, noxious or polluting material, or any solid waste to enter any controlled water'.

- Environmental Permitting Regulations 2016 state that *'It is an offence to cause or knowingly permit a water discharge activity or a groundwater activity without an environmental permit'*.

A pollution incident because of a poorly maintained asset or inadequate containment is a strict liability offence and failure to adhere to standards and good practice guidance is a key factor in considering enforcement action.

The onus is on operators to demonstrate compliance with regulation to reduce the risk of a pollution incident. A robust asset maintenance programme is essential for providing the information needed for service log scrutiny in the event of an incident or during routine environmental inspections. The implications of failing to adequately protect the environment range from environmental, legal, financial, and reputational. There has also been a marked increase in the level of fines over the last decade, especially for large companies. In certain circumstances, senior officers of offending businesses have been held personally liable.

CIRIA C736 is applicable to the containment of a wide range of

inventories and to all sizes of sites from small commercial premises with a single storage tank, through to large chemical or petrochemical sites as well as warehouses storing hazardous substances.

Primary (tank) guidelines

Primary containment is the most important means of preventing major pollution incidents and includes equipment in direct contact with the substances being stored such as tanks, vessels, pipework, valves, and pumps as well as equipment that prevents the loss of contaminants under abnormal conditions. Tanks are subject to various regulations, standards, and good practice guidance, from COMAH, BS EN 14015:2004, EEMUA, API 650, and the Oil Storage Regulations, depending on the contents and tank material. You should carry out routine inspection and maintenance of containers and keep a record of when and who carried out the work. You should always look out for any signs of damage or interference to your tank or pipework, ensuring repairs are carried out immediately by a competent, qualified technician.

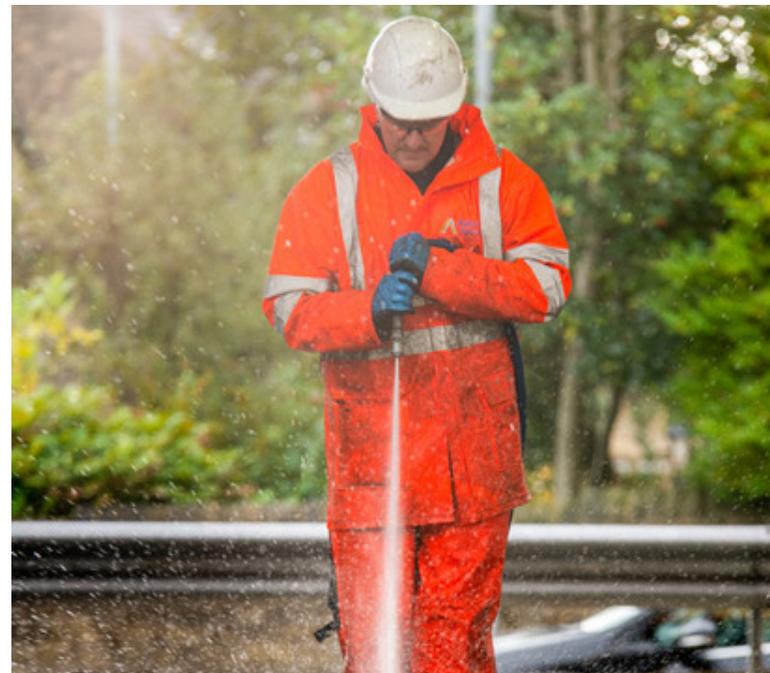
As well as a weekly visual check, you should use a qualified technician to carry out a detailed annual inspection and service of your storage facilities, including:

- checking the condition of tank surfaces and supports for pipework

Primary containment



Tertiary containment



- checking the condition and operation of pipework and fittings
- removing and disposing of any condensation water or sludge in your tank

You should receive a report about your tank which details any faults that must be fixed before you can continue to use your storage tank. Qualified technicians should be a member of a professional scheme for qualified tank installers, such as the Petroleum Equipment Installers and Maintenance Federation (PEIMF), Engineering Equipment and Materials Users Association (EEMUA), or the Oil Firing Technical Association (OFTEC).

Proactive tank maintenance

Tank audits and inspections

Using the latest high-pressure or ultrasonic technology, skilled engineers and specialist welders test for leaks and structural concerns, repair faulty tanks, and provide full follow-up documentation. Inspection and reporting services should be compliant with EEMUA Level 2, API and NDT standards and cover tanks used for fuel, water, chemical, and food storage.

Adler and Allan's proprietary, ultra-sensitive, ATEX Zone 1 AdlerView™ camera can be used to remotely inspect and clean fuel tanks – both above and below ground – from a van positioned up to 50 metres away. You receive a full report and video of your inspection and a faster, more exact

diagnosis of issues. The cutting-edge approach also bypasses the cost of removing tank lids, as well as the health and safety risks of traditional man-entry inspections.

NDT testing against API standards

Non-Destructive Testing (NDT) analysis methods evaluate the quality of materials, fabrication, and integrity of tanks, pipelines, and wells, without destroying their serviceability. Various techniques are employed including fibre optic, ultrasonic, and magnetic flux leakage to scale tank walls and deliver precise views of confined spaces and hard-to-reach or remotely accessed areas. Degradation, corrosion, weaknesses, and welding defects are identified before damage occurs, avoiding unexpected repair costs.

Tank lining

Effective tank linings protect against deterioration and resist water and chemicals, keeping your assets performing for the long term. Glass-reinforced plastic is a resilient internal tank lining solution that offers a seamless, ceramic-like finish to confine even the most aggressive substances – ideal for bunded chemical tanks.

Tank cleaning

Specialist tank cleaners employ proven man-entry and non-man-entry techniques including gamma jetting, 360° cleaning heads, and state-of-the-art robotic systems to

tackle requirements such as changes of stored product, contamination, deterioration, decommissioning, transportation, or standard upkeep.

Secondary (bund) guidelines

A bund is a facility (including walls and a base) built around an area where potentially polluting materials are handled, processed, or stored, for the purposes of containing any unintended escape of material from that area until such time as remedial action can be taken.

The Containment of Bulk Hazardous Liquids at COMAH Establishments containment policy supporting guidance for secondary containment states that:

All above-ground Storage Tanks (ASTs) should be bunded to provide secondary containment.

- Bunds shall be subject to a routine and periodic inspection and certification regime by a competent person regarding their condition and performance.
- During the inspection operators would be asked to provide demonstration of inspection criteria and inspection procedures. This should include both routine inspection and periodic detailed review that the structure remains fit for purpose.
- Bund wall and floor construction and penetration joints should be leak-tight. Surfaces should be free from any cracks, discontinuities and joint failures that may allow

relatively unhindered liquid trans-boundary migration.

- As a priority, existing bunds should be checked, and any damage or disrepair, which may render the structure less than leak-tight, should be remedied.

Proactive bund maintenance

Regular inspection and cleaning are key to an effective bund maintenance programme, ensuring that your secondary containment system is structurally sound and free of contaminants.

Bund audit

Working with a qualified person to train your engineers or carry out routine and periodic inspections of your bund's condition and performance means defects can often be identified at an early stage and addressed before they become more significant and compromise the integrity. Inspections will be carried out in line with CIRIA C736 Containment systems.

Bund cleaning

Powerful vacuums extract water or leaked tank contents, before the entire structure is jet washed to achieve a complete clean, even in the most confined, inaccessible spaces. All breached volatile or toxic liquids – such as acids, inflammables, and dangerous chemicals – should be safely removed and treated, leaving the bund clear, functional, and risk-free.

Bund lining

Because many bunds were constructed more than 20 years ago from porous brick or concrete, a high number require regular reinforcement to perform at their best. Adler and Allan's polyurea AdlerCoat™ technology provides a cost effective, durable and hard-wearing bund lining, with water, chemical, oil, and solvent resistance protecting the environment and your assets against deterioration, degradation, and structural weakness.

Tertiary Containment (separator) guidelines

Tertiary containment measures minimise the consequences of a major incident that causes the failure of or exceeds the storage capacity of secondary containment and enables additional measures to be deployed in time if an incident escalates.

Separators can form an integral part of a tertiary containment strategy. They are designed to trap harmful light liquids before they enter the surrounding area.

Regular separator maintenance is essential to keep all pollution prevention equipment working at optimum efficiency. Separator maintenance, including separator cleaning, also provides the information needed for service log scrutiny during environmental inspections.

The current standard by which separators should be operated and maintained, is BS EN 858-2:2003 Separator systems for light liquids

(e.g. oil and petrol), it states separators should:

- Be fitted with an automatic warning device/high level alarm.
- Be serviced and maintained as a minimum on a 6 monthly basis.
- Be subject to a maximum interval of a 5 yearly integrity test.
- Have full service and maintenance records available for inspection.

There has recently been an increased number of pollution incidents where failed separators have been the cause or has exacerbated a loss of containment and regulators are clamping down on poorly maintained and non-compliant operations.

Proactive separator maintenance

Separator alarms

A separator alarm system monitors oil, silt, and liquid levels within underground separators, ensuring they are operating correctly and preventing pollutants. You should work with an experienced partner who can specify, supply, install and service oil separator alarm systems and provide the necessary services to ensure your alarms are working properly.

Separator inspection and maintenance

Look for an environmental partner that can provide a full 'peace of mind' service package, appropriate to the separator type and setting. The six monthly inspection should be a non-intrusive, 'in-service' inspection to

check levels and functionality of key components.

The five yearly integrity inspection is a critical service, as there are several faults that can develop within the body of the tank, such as fractures, displacements and ground water ingress that would compromise the tank but are not possible to detect during a six-monthly inspection.

The five yearly inspection is an 'out of service' inspection. However, due to the adoption of latest technology and methodologies, the right partner will generally be able to complete the service within a day, causing minimum disruption. Operators are provided with full record of inspection and testing to satisfy regulatory and standard auditing requirements.

Demonstrate reasonable endeavour

Adhering to the guidelines on regular maintenance of your primary, secondary and tertiary containment systems should reduce the enforcement imposed

in the event of a pollution incident. An environmental partner will provide its clients with services to reduce the risk of an environmental incident. However, if a strict liability event does occur, the inspection and service records demonstrating all reasonable endeavour has been taken to implement the proper systems for avoiding the incident will be invaluable in providing mitigation if enforcement action was considered.

For more information, visit www.adlerandallan.co.uk



Steel pipeline products: specifications and dimensions

Every product conforms to a specification, stating dimensions and material types in order to comply. With the wide range of infrastructure involved in a modern tank storage facility, its not always easy to have to hand all of the necessary information for Pipe, Fittings, Flanges, Valves, Stud bolts and Gaskets.

Having the ability to quickly check valve types and dimensions, valve trim API designation numbers, seal materials, connecting flange dimensions and so on, assists plant operators and contractors in their daily maintenance tasks, allowing quick decisions to be made.

Inverurie based TSA Associate Member, JBP, has produced a pocket size technical guide providing all of this information in a practical format. The JBP team said: *'We realised there was a gap in the market, people need something small enough to carry or a digital version which has all of the necessary information in one place and easy to find. A significant amount of work went into producing the guide and we have received some excellent feedback.'*

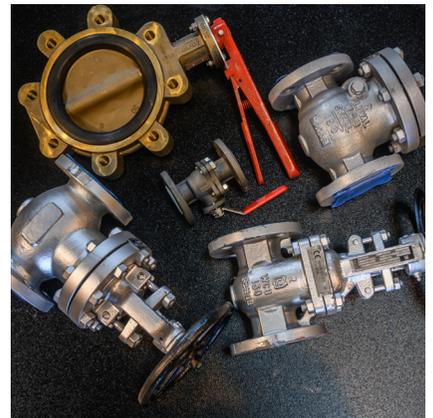
JBP are happy to answer any technical questions, you can call on 01224 714514. They also offer a 24-hour service, 365 days a year to aid with breakdowns and emergency requirements.

If you would like a copy of the technical guide, please contact sales@jbpipeline.co.uk with your name, confirm if you would like a hard copy or a digital copy and the postal or email address to send it to.

John Bell Pipeline is the market leading supplier of Linepipe, Pipe-fittings, Valves & Steel requirements. We are committed to excellent sales and after sales service. On time delivery & quality assurance are key to our success. Members of the global Bianco Group, we have access to over 500,000 tonnes of stock throughout Europe.

For more information about John Bell Pipeline, please visit www.jbpipeline.co.uk

JBP



CATCH IS LOOKING AHEAD TO 2030 AND BEYOND

CATCH has led cluster engagement in the UK's Humber and Yorkshire region for over 20 years and is now set to build on this success with a look ahead to 2030 and beyond.



What is CATCH?

CATCH started as a membership organisation and central hub for the Humber estuary's energy intensive industries and their suppliers back in 1999. Since this time, we have developed our services to support our members by building strong partnerships with regulators, policy makers and public sector organisations at local, regional and national level. Our distinctive CATCH training facilities have grown in scale/size and strength to become a beacon for the region's commitment to supporting the process, energy, engineering and renewable sectors in the Lincolnshire, Humber and Yorkshire region and beyond. Latterly, our role in the UKRI funded Humber Industrial Cluster Plan (HICP) sees us engaging directly with the decarbonisation deployment projects of our industrial members.

A Skills Focus

The UK Government recently launched a levelling up white paper, which rightly focused on skills development as a key focus. The paper tells us that for the UK to

remain competitive and to increase productivity we need to invest in education, including post-16 and adult skills. Despite the SDF providing much needed funding to colleges, private providers seem to be left on the side-lines – for now. However, we as an agile industry are able to tackle these challenges together at a local level.

The industry sectors that CATCH supports are experiencing a UK wide skills gap. A recent survey by ConCom confirmed that locally to CATCH, 95% of respondents are experiencing skills shortages. With nearly half of respondents experiencing mechanical, pipefitting and electrical skills challenges. CATCH has developed, with industry members, two regional networking groups to drive forward the skills agenda and to lead the training provision that is offered at CATCH.

CATCH Skills is a technical training provider arm of CATCH that specialises in Mechanical, Electrical, Process and Health & Safety training. All training is offered in a contextualised environment at our famous £12 Million, state of the art facility in Stallingborough – recently re-branded to incorporate our partnership with lead TSA member Reynolds Training Services – to the National Centre for Process and Manufacturing (NCPM). Together, with our cutting-edge plant, equipment, instrumentation and controls, which align directly with industry standards,



we are able to bring our courses to life - by presenting bespoke and practical solutions to industrial training requirements and helping to close the ever-growing skills gap. We offer a flexible approach, training is delivered at CATCH, at your company site, or at a blend of locations.

Feedback from our network groups, tells us that the industrial ageing workforce continues to be a concern for many of our members. That is why, we are investing in the next generation of industry professionals and have created CATCH Apprenticeships. Our new flagship brand delivers industrial apprenticeships, but with a difference. We are proud to say, that we offer the most employer-focused process operations, bulk liquid storage, and engineering maintenance apprenticeship programme in the Yorkshire & Humber region. By utilising our industry knowledge, networks and connections, recognising skills gaps and working closely with employers, we have thus developed specialised engineering and operations-based CATCH apprenticeship programmes. These encompass Mechanical, Electrical, Instrumentation, Process Operations, Welding and Pipefitting. The programmes are delivered from the National Centre for Process and Manufacturing and the Process and Manufacturing Centre in Huddersfield.

CATCH apprenticeships align directly with industry requirements and will provide young people and adult learners with a pathway to fantastic

career opportunities. Recognising how important it is to offer contextualised training, we continue this ethos throughout our pathways. One of the key areas for apprentices to focus on outside of the job, are soft skills. Soft skills are essential to improving your ability to work with others, problem solve and communicate well - an important element of working in high hazard industries. Therefore, CATCH carefully selects and works with a small number of local specialised training providers to cover subjects such as driver safety, knife crime and gambling awareness.

Importantly for the TSA membership and its related industries, CATCH is also the registered provider of a specialist Science Manufacturing Technician Apprenticeship in partnership with Reynolds Training Services. Utilising the National Centre for Process and Manufacturing, we bring together our joint expertise and the specialised, hands-on facilities to deliver a premium Bulk Liquid Terminal Technician qualification. This is the only one of its kind in the UK. Developed in partnership with industry, the Tank Storage Association and Cogent, this practical course helps to create a focused workforce ready for the future.

Leading Cluster Engagement

At CATCH we are proud of the services we offer our members throughout the Yorkshire, Lincolnshire, and the Humber region. We have supported manufacturers and producers in

the chemical, pharmaceutical, petrochemical, process, energy and renewable sectors for over 20 years and our member led services have evolved and changed to reflect the industry support required.

In addition to supporting the growth of our industry, membership offers access to many benefits alongside our industry leading networks that relate to specific areas of activity - such as Environmental Managers, HR Managers, Major Hazards and Human Factors. We offer membership for client companies - with a direct operational workforce, and subscriber and supply chain membership for those companies who support the industry.

Our ConCom scheme is the Yorkshire and Humber areas only dedicated local contractor competency forum that enables collaboration between client industries and supporting contractors. Led by a committee of members - its aim is to establish high standards of competency for companies in the region. The scheme is not for profit, with funds reinvested to maintain a low-cost service, improvements to the scheme and awareness training. Audits are carried out every two years, with contractors then deemed competent to work on some of the region's largest manufacturing sites.

Including a Net Zero Future

In the last 12 months CATCH has supported the development of the

Humber Industrial Cluster Plan – securing significant UKRI grant to spend on meeting industrial net zero targets for the Humber. Part of our role will be ensuring the cluster plan underpins the future status of the Humber Cluster as the leading low carbon cluster in the UK.

CATCH is committed to supporting our members and the major infrastructure projects that will deploy technology such as carbon capture and storage and hydrogen manufacture, storage and distribution across a region ready for the next step.

To support the supply chain and skills and training needs created by these large projects we will work with a wide range of partners to implement recommendations from studies commissioned by the HICP team and continue to support those bringing inward investment into the region with industry data and vital regional connections that make the difference.

Our vision to establish the Humber Industrial Decarbonisation Centre is being developed with public and private sector partners in order to establish a stakeholder board to drive the concept forward.

Our site here in Stallingborough is at full capacity, with footfall reaching levels never seen before. That is why our vision includes expansion of our capability, with facilities such as a new head office and reception, a low carbon skills centre and an industrial decarbonisation centre - all powered by renewable energy technologies for a sustainable future.

We will continue to provide industry with the best possible services, training facilities, and opportunities and we believe that our vision will continue to put CATCH at the heart of the industry's Net Zero future.

To find out more you can visit one of our dedicated websites or call us to

arrange a 1-2-1 visit of our facility to discuss how we can support you and your business.

Note: Enrolment is currently open for all our apprenticeship programmes, including a September 2022 start in the Bulk Liquids Technician Training apprenticeship delivered with Reynolds Training Services through the partnered National Centre for Processing and Manufacturing (NCPM).

For more information, visit:
www.catchuk.org
www.ncpm.uk
www.humberindustrialclusterplan.org
01469 552828 - info@catchuk.org



Safety starts with Dantec

Dantec, a world leader in composite hose technology, exports products from their UK-based factory to over 60 countries worldwide. The company is committed to innovation, minimizing environmental damage and above all else, safety and efficiency.

Through continuous innovation and development, Dantec secured themselves as industry leaders in composite hose technology. To produce their high-quality and comprehensive range, the company uses the most stringent procedures and high specification materials to manufacture the hoses in their purpose build factory, in the North of England.

Product hoses form an integral part of transfer operations. The choice of hose must be based on assessments that cover appropriate use, safety and operational efficiency. Due to the uniquely stronger materials in Dantec hoses, the company can manufacture with less layers of material. This makes the hose lighter and more flexible than other alternatives. The stronger materials also provide a higher safety factor/burst pressure. Each Dantec product meets all major national and international standards, including IMO, IBC and IGC codes, along with the Requirement of the United States Coastguard. They also meet type approvals from all major bodies, such as DNV GL, Lloyds Approval and the Korean Register,

Japanese NK and ISO9001:2018. All hoses are manufactured to EN13765 or EN13766, Dantec use either the rubber seal or epoxy sealing system, depending on the demands of the application.

Within the brand's portfolio are composite hoses, created specifically for the transfer of general chemicals, as well as Oil, Hydrocarbons and Biofuels, amongst others. For example, The Dantec Danoil g range is a polyamide (nylon) lined hose used for products with high aromatic content and biofuels. The inner helix is available in 316 stainless steel, galvanised steel and aluminium, with the outer wire available in 316 stainless steel and galvanised steel.

In 2016, Dantec became part of the Elaflex group of companies. Elaflex is an internationally operating family company with a long history that together combine experience and competence, an equilibrium that is essential. Therefore, we stand for key values like responsibility, continuity, the spirit of innovation and flexibility in thought and action.

To learn more about Dantec and its composite hoses, please visit www.dantec.com

DANTEC

WSG CONFIRMS LAUNCH OF NEW INSPECTION DIVISION

Offering a unique service that combines NDT with internal and external UAV inspections for swift data acquisition and condition reporting.



Well Services Group, a leading and well-established UK service provider

within the Energy Industry, has enhanced their existing service offering with the recent acquisition of 50% of Eagle Eye Inspection Services and the launch of a new division WSG Eagle Eye Integrity Specialists.

Eagle Eye was established with a vision of delivering customer focused inspection services using the latest technology and WSG Eagle Eye Integrity Specialists will continue to offer the same 'Best In Class' customer focused asset integrity assessments and fitness for service plant inspections. Their team, certified to API and EEMUA standards, can employ both conventional and advanced NDT inspection methods as well as UAV or drone services.

This innovative approach to asset integrity provides the energy sector and bulk storage operators with an inspection service that utilises a combination of methods to best understand an assets health. The range of inspections offered also

gives them the ability to service the renewable energy market.

For storage tanks, the WSG Eagle Eye team have a range of specialist equipment that enables detailed assessment. Conventional NDT services can include Magnetic Particle Inspection, Dye Penetrant Inspection, Ultrasonic Thickness Testing, Ultrasonic Weld Flaw Detection, Eddy Current of Welds, Radiography Gamma and Xray.

Advanced NDT further enhances the service offering with Phased Array Ultrasonics (Welds and Corrosion Mapping), Corrosion Under Pipe Support Assessments, Time of Flight Diffraction (Welds), MFL Pipeline Scanner, Guided Wave UT, MFL Floor Scans and IRIS Tube Inspection. In addition, using a combination of purging, decontamination, high pressure water and non-entry jetting, vacuum services, bolting and on-site machining, WSG Industrial Services can engineer and provide a full range of solutions for any tank cleaning operation.

The use of UAVs for inspections and thermal imaging has the benefit of allowing vessels to be inspected whilst in operation and can remove the requirement for technicians to work at height or in confined spaces. Their advanced drones can offer 200 x Close Visual Inspection (AI), 640 Resolution Thermography (AI), Confined Space Drone and UT Thickness Drone.



WSG Eagle Eye



Eagle Eye Managing Director, Scott Standing is delighted at the move which he believes will allow for the business to proceed with its global growth plan and continue to offer and extend its unique asset integrity services. *"After working closely with Well Services Group on several joint ventures in the North East and Yorkshire it quickly became apparent that our service offerings complemented each other. Our collaboration with WSG, and their engineering excellence, will further support projects with large-scale scopes in the industry."*

Traditional methods to identify issues such as Corrosion Under Insulation would likely involve inspecting the lagging for water ingress and any obvious signs of damage followed by a further examination. The WSG Eagle Eye team can use thermal methods, using UAVs, to not only identify issues quickly, but also scale the affected area.

For pipelines, in addition to the digital and thermal inspection data provided by UAVs, WSG Eagle Eye can carry out Long Range Ultrasonic Testing, which can assess the wall loss on pipelines over an area of 50m and follow up with corrosion mapping to gather quantitative data. Corrosion under pipe supports can also be assessed.

For one customer, after identifying hot spots on a line following a thermal survey, the WSG Eagle Eye team carried out LRUT on a full 400m

system. This method helped confirm areas of concern and followed by a full API 570 inspection produced a full system fitness for service assessment. As a solutions-based inspection company, they fully understand the need for services on a specific task to fulfil the customers' requirements and integral to that is a unique operating process model that controls the delivery of services and health of assets.

Understanding the day-to-day pressures of customers, the WSG Eagle Eye team have developed a very detailed but clear reporting system, along with simple navigational sections to assist with referencing any areas of concern. Reporting will also be able to utilise WSG's proprietary Asset Integrity Management software as well as the breadth of experience of WSG Eagle Eye personnel.

WSG already provide a full range of high-quality services to the international oil and gas industry, the petrochemical and geothermal industry as well as the energy sector, both onshore and offshore and provides customers with full life cycle support to their assets, covering commissioning and start up, shutdowns & outages, operations, and decommissioning. They currently also own and operate the most modern and advanced fleet of process and pipeline services equipment in the industry.

WSG Eagle Eye Integrity Services will be based out of WSG's Head Office at Normanton as well as their regional offices. For more information on WSG Eagle Eye Integrity Services or the range of services WSG offer then contact uksales@wellservices-group.com.

EUROPEAN TANK STORAGE IN GLOBAL SUPPLY CHAINS: OUTLOOK TO 2030

The Hague Centre for Strategic Studies has published its third report on European tank storage in global supply chains.



Bulk storage and energy infrastructure companies contribute to Europe's resilience and energy security of supply. Last month, the Hague Centre for Strategic Studies published a report titled *"European tank storage in global supply chains: Outlook to 2030"* which analyses the role of European tank storage in the global energy system in the medium term (2030-2035). The study was commissioned by the Federation of European Tank Storage Associations (FETSA), of which the Tank Storage Association is an active member.

The report is the third of a series of four papers analysing the role of tank storage in the energy transition. The first paper *"The European tank storage sector and the global energy landscape"* sets the scene by examining broad developments in the global energy sector and their impact on tank storage. The second paper *"European tank storage in today's global value chains: What role does it play in our economy?"* outlines

the current role of the tank storage sector in maintaining Europe's prosperity, competitiveness, and geopolitical position. A fourth paper *"The European tank storage sector: 2050 and beyond"*, to be published shortly, will look further ahead to 2050-2060 and map out the newly emerging role of the storage sector.

This newly published report explains that, towards carbon neutrality, the years up to 2030 will be characterised by a simultaneous decrease in demand for fossil fuels and an increase in the use of low-carbon energy carriers. In this context, players in energy infrastructures will have to balance both strains on demand for legacy liquids in a declining market while addressing a growing demand for alternatives.

Technical and geopolitical challenges

Against the background of a changing geopolitical landscape, in the medium term, crude oil, refined products and natural gas will gain more relevance in non-European regions, such as East Asia and the Middle East. And new trade hubs could emerge outside of Europe, therefore bridging supply and demand at closer geographical distances. Decarbonisation to a net-zero Europe will also lead to a decreasing investment drive in the region compared to the Middle East or Russia. However, according to the report, decreasing dependence

on Europe's main oil and gas supplier, Russia, while also ensuring sufficient and affordable supplies in the mid-term, represents both a technical as well as a geopolitical challenge. Indeed, it states that replacing 155 billion cubic metres (bcm) of natural gas, equivalent to 40% of European consumption¹, does not only represent a challenge in terms of global prices for gas, reliance on the spot market and decreasing long-term contracts, but also to European liquefied natural gas (LNG) infrastructure and interconnections. However, decreasing this dependency is possible. In the meantime, tank storage will continue to play a vital role in fulfilling domestic demand and securing strategic reserves of oil and natural gas. Coordinated releases of strategic reserves can also bring some stability in global energy markets as they mitigate shortages and decrease prices.

Resilience and energy security of supply

Europe's increased dependence on pipeline gas and LNG imports will make countries more vulnerable to supply disruptions, price fluctuations and overall market volatility. At the same time, the European refining and chemical sectors are losing competitive margins compared to low-cost producers like China and Middle Eastern countries. As such, an important part of European domestic demand for oil products, natural gas and chemicals will be

fulfilled by imports, making tank storage increasingly important for domestic security of supply.

Tank storage and its role in the energy transition

The bulk storage and energy infrastructure sector will both help balance strains on demand for legacy liquids in a declining market while addressing a growing demand for alternatives. The report notes that decarbonisation of road transport in the medium term relies chiefly on blending conventional fuels, such as gasoline and diesel, with sustainable alternatives, such as biofuels and synthetic fuels. The maritime and aviation sectors are similarly dependent on fuel blending to reduce emissions. The report also explains that increased reliance of European economies on new energy products will likely cause a shift in obligations for strategic and military stocks and that new products could eventually dominate global commodity trade. Uncertainty in the adoption process of new energy carriers in Europe is considered evident, however, hydrogen in all its forms, carbon capture, utilisation, and storage (CCUS) efforts, as well as electricity storage, are seen as indispensable to accelerate decarbonisation.

Looking to the future

The report concludes that, despite large uncertainty, for the tank storage industry waiting is not an option. It calls for bulk storage and

energy infrastructure companies to not only develop a strategy for change, expand expertise and knowledge, cooperate with policymakers and stakeholders, but also to increase the visibility of the sector's activities and highlight their role in the European economy in order to ensure that the sector becomes a driver of change and contributes to shaping the decades ahead.

For a copy of the report, "*European tank storage in global supply chains: Outlook to 2030*", visit <https://hcss.nl/report/european-tank-storage-in-global-supply-chains-outlook-to-2030/>.

The report, "*European tank storage in global supply chains: Outlook to 2030*", is by Irina Patrahau, Michel Rademaker, Lucia van Geuns, Sarah Ojukwu and Philip Geurtsis.

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LUBRICANT EXPO: EUROPE'S FIRST FREE-TO-ATTEND EXHIBITION AND CONFERENCE

Lubricant Expo, Europe's first free-to-attend exhibition and conference, will be held on 6 - 8 September 2022 at Messe Essen in Germany.



Lubricant Expo on 6 - 8 September 2022 at Messe Essen in Germany is Europe's first free-to-attend exhibition and conference, connecting lubricant solution providers with the full range of end-user buyers, as well as the entire chemical and equipment supply chain. Visitors from both the lubricant community, end-user facilities and OEM's will find a comprehensive showcase of all lubricant technologies, including finished lubricants, additives, process equipment & machinery, condition monitoring, automation systems, testing & analysis, data technologies, lubricant manufacturing equipment, end-user application systems and more.

Maximise Performance

Lubricant Expo provides the perfect platform to showcase the products and technology that address industry trends, whilst providing attendees with the opportunity to learn from and engage with the people and products they need to solve real-world engineering challenges. The event brings together the lubricant

community and its customers with a free-to-attend exhibition and conference, providing visitors with the knowledge and suppliers they need to reduce costs, improve efficiency, progress development, maximise the performance of their products and preserve the health of their machinery.

Industry-leading Advisory Board

The exhibition and conference has been brought together by industry-leaders forming the advisory board for the event, including: Juergen Ulmer, Country Manager, Chevron Deutschland GmbH, Thomas Fröst, President, SKF Industrial Technologies, Apu Goslia, Sustainability Expert, Tanja Illic, Managing Director, Nanol, Maria Sole Signorini, Head of Group Procurement, Petronas and Enrico Franchini, Executive Customer Centricity Manager, Infineum International Ltd to name a few. Over three days you can explore a show floor with 250+ suppliers whilst networking with 4,500+ visitors. You'll also have access to a full 3-day, two-track conference program where over 60+ expert speakers will be discussing trends and opportunities within educational sessions that will equip you with the ability to solve and optimise real-world lubrication application.

World-class Conference

Lubricant Expo conference serves two distinct audiences, lubrication end-users and lubricant manufacturers. The conference agenda will equip attendees with an understanding

of the future of the industry and how it will serve the evolving needs of lubricant customers. Sessions will address challenges, opportunities, and innovations for both lubricant customers and lubricant manufacturers, with lively panel discussions and educational presentations covering targeted topics for each audience group, as well as universally important discussions to both end-users and lubricant manufactures, including: High-Performance Applications, Lubricants Sustainability, Meeting the Evolving Needs of Lubricant Customers, Lubricant Selection, The Lubricants Supply Chain – Challenges, Optimisation and Management, Energy Efficiency, Carbon Capture and Renewable Solutions, Lubricant R&D and Innovations, Digitalisation, IOT and AI, Cost Reduction Strategies, Process Optimisation and Intensification, Innovations in Blending and Manufacturing, Opportunities with Automation and Testing & Analysis.

Industry Experts Speakers

Industry experts including Annie Jarquin, Director of Global Business Development at Kline, Gunnar Meister, Principal Technologist at Shell, Professor Boris Zhmud, Head of R&D at BIZOL, Tanja Illic, Managing Director at Nanol, Apu Goslia, Sustainability Expert Advisor, Maurizio Abbondanza, Sustainability Director at Infineum International Ltd and many other industry leaders already confirmed to speak at the unmissable

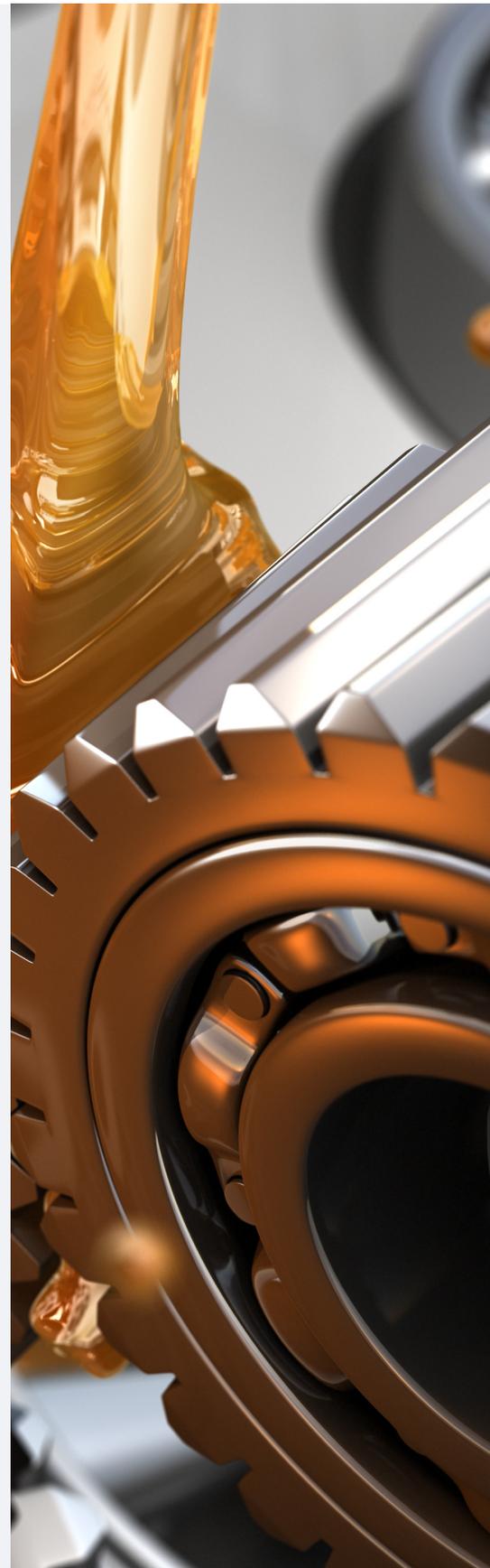
conference on the 6 - 8 September 2022 at Messe Essen.

Thought-leaders from across the industry will be discussing the increased drive for sustainability, enhanced customer specifications, new performance requirements and the ground-breaking integration of mass data technologies which creating a vibrant and evolving landscape of opportunities and challenges, both in the needs of lubricant customers and the production of lubricants themselves.

The Bearing Show – Co-located Event

Alongside Lubricant Expo, The Bearing Show will also showcase an unrivalled insight into current and future bearing technology with experts from all sides of the industry in attendance. Solutions on display will include the latest in complete bearings, condition monitoring, lubrication, testing & analysis, bearing components, digitalisation, engineering, tooling, measurement and more. Companies participating in Lubricant Expo and The Bearing Show include Castrol Germany, Axel Semrau, Biosynthetic Technologies, Croda, BASF, Texaco Lubricants, Infineum, OelCheck, SDT Ultrasounds Solutions, Seqens, SKF, JESA SA, Weiland Group, Valvoline, NKE, Nynas and many more.

Visit www.lubricantexpo.com and www.bearing-show.eu for more information and register for your free pass to Europe's largest lubricant and bearing combined event.



Specialist Risk Management Consultancy

RAS Ltd is an independent firm of risk specialists established in 1993.

We are founded on a set of simple principles: recruit the best people in the industry, only work in our areas of expertise, and work with our clients, not for them. It's an approach that has seen us grow from being a handful of specialists in the North West to a rapidly developing company working with the leading companies in the oil & gas, pharmaceuticals and specialist chemical sectors across the world. Our team have worked on some of the biggest and most influential projects in the industry and continue to expand their specialist knowledge. Only when the risk facing an organisation is well understood can it be effectively managed, that's why at RAS we examine every detail of any project we are working on ensuring we nullify any potential risks that may face our clients. We make sure to always keep full transparency with them so that not only do they know what adjustments we have made, but they know why we have made them and how these adjustments will benefit them, keeping them and their business as safe as possible. We don't only work for our clients, we work with them. Our team of industry specialists offers a range of risk management consultation services:

Safety Risk Assessment

Collaboration is key to our approach. Our teams work with our clients

to provide clear outputs that can then be fed into pragmatic risk management solutions. We focus on communicating complex information in a clear and accessible way.

Business Risk Management

Our role is to help you to understand the hazards and threats facing you from a business risk perspective, some of which may not be obvious. We will build up a clear picture of the risk and help you to focus your efforts in the right places.

Environmental Impact Assessment

Our environmental specialists work closely with you to develop a process that suits your company and objectives, from modelling and reporting to liaising with stakeholders and local communities.

Every project we work on is bespoke to our clients' needs and circumstances. As your risk partner, our job is to make sure you are protected, and your best interests are looked after. Which is why we question everything and don't work in isolation, looking at a project holistically to see how it impacts on the entire organisation. In other words, you're in safe hands.

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



Tank Storage Conference & Exhibition 2022

Presented by TSA

The UK's leading event for the
bulk liquid storage sector

22 September 2022
Coventry Building Society Arena,
Coventry, UK

Discover the event  www.tankstorage.org.uk/conference-exhibition



The voice of the bulk storage and energy infrastructure sector



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