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A Step Towards Smart Oil Platforms

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Remote I/O Valve
Terminal For Zone 1/21
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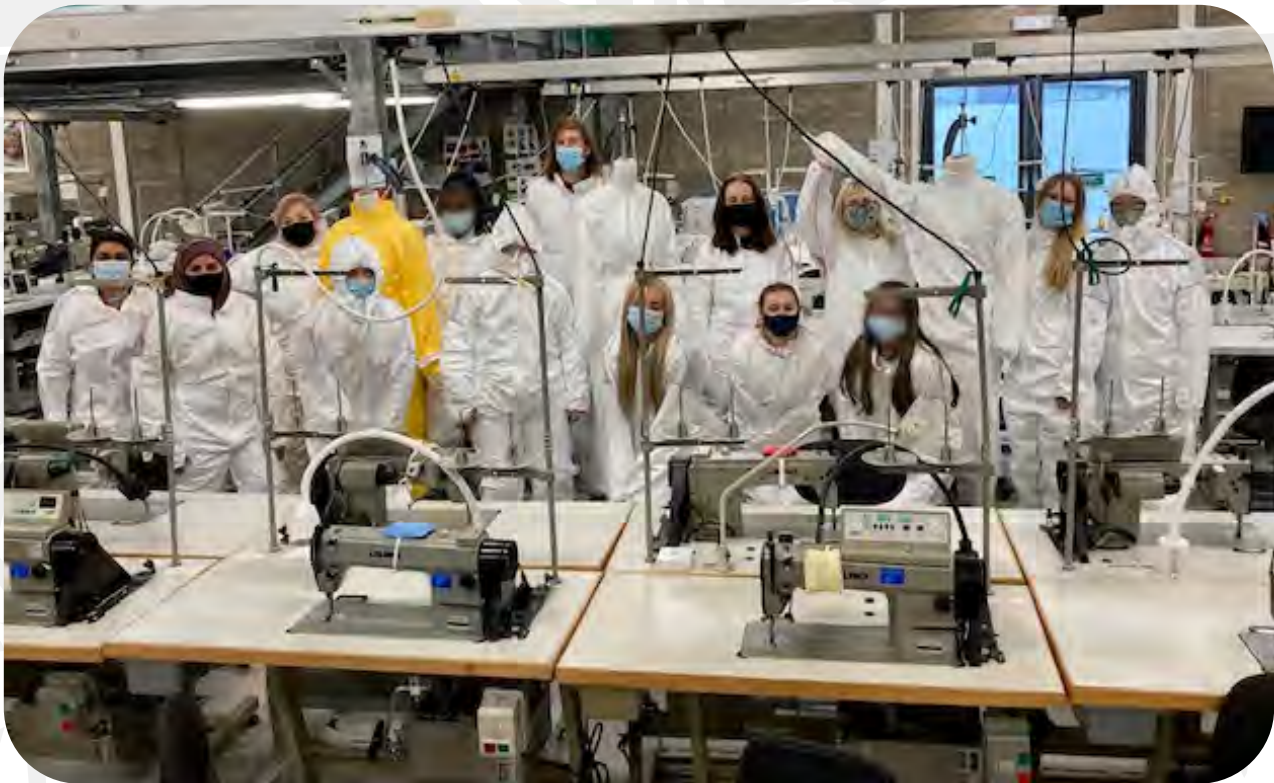
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DuPont Joins Forces with Heriot-Watt University to Develop PPE for a Changing Workforce

The collaboration with the School of Textiles and Design aims to develop PPE that is fit for the evolving demographic makeup of the workforce

LUXEMBOURG, 13 July 2022 – DuPont (NYSE:DD) has partnered with a leading UK fashion design university to develop Personal Protection Equipment (PPE) that is fit for today's changing workforce. The collaboration between Heriot-Watt University's School of Textiles and Design and DuPont Personal Protection aims to innovate protective clothing in line with evolving worker needs.

The demographic makeup of the workforce is evolving. The share of European women in employment rose from just over 58% in 2009 to over 64% ten years later, and is continuing to grow. The workforce is also undergoing demographic ageing (1 in 5 workers in the EU are over 55) and is becoming more diverse due to migration. These trends call for a new approach to PPE design that maximises variety, comfort, and ease of use. This is where DuPont's collaboration with Heriot-Watt University comes in.

our materials and PPE design to address the changing needs of workers around the world," comments Valérie Pierret, Global Market Development Leader, DuPont Personal Protection. "We decided to join forces with one of the leading fashion and textile research institutions in Europe to bring new, disruptive ideas to our garment design process." The project already generated over 500 pages filled with ideas, more than 20 prototype concepts and preliminary evaluations of the performance of the concepts.

"We are committed to continuing innovating

The School of Textiles and Design, located in

Galashiels (Scotland), is a centre of excellence for fashion, design and textiles that brings together talented students from across the globe.

The partnership between the School and DuPont paved the way for a new research project involving a group of around 20 students and led by industrial and fashion technology expert, Assistant Professor Bruce Munro Roberts.

"Working on this collaborative project with DuPont provided the BSc Fashion Technology students with real life industry experience," comments Roberts. "The support for the students in terms of learning materials, sample PPE, fabrics and feedback exceeded our expectations, and overall, we were delighted to be working with this international

company".

DuPont provided the team with a thorough overview of its current solutions, relevant market information including voice of customer research findings and key regulatory requirements for PPE. With this information at hand, the students then received a detailed brief, including information on target applications, specific parameters for success, key requirements and desired deliverables.

The students quickly got up to speed with the subject and took inspiration from sportswear and outerwear to develop innovative PPE design solutions.

"I was amazed by the volume and quality of the ideas the students were able to generate," comments Pierret. "Despite the challenging task they faced, the students were able to

think outside of the box while complying with the stringent requirements that PPE typically entails."

A panel of DuPont experts reviewed the project and selected three concepts, which will be implemented in existing and new product designs. DuPont will continue collaborating with Heriot-Watt University on new design projects to continue innovating PPE.

About DuPont Personal Protection

From first responders to industrial workers, DuPont provides a wide range of personal protection solutions, including some of the most trusted and innovative brands in the industry, such as Kevlar®, Nomex®, Tyvek® and Tychem®, to meet your safety needs. More information can be found at personalprotection.dupont.com



The Differences Between Intrinsically Safe and Explosion-Proof

When the time comes to purchase safety lighting, it is vital to understand the difference between Explosion-Proof (Ex) and Intrinsically Safe (IS) lighting products.

What does Explosion-Proof mean?

EX and IS equipment are both certified by nationally recognized testing laboratories for use in hazardous areas, but there are some key differences. EX lighting is typically built using heavy enclosures made from rugged materials such as stainless steel or aluminum alloys, and EX equipment is designed to both contain an explosion and survive an explosion.

What does Intrinsically Safe mean?

IS equipment is designed to prevent an explosion rather than contain it. It is light weight and limits the energy and temperature

in the device to prevent it from producing a spark or reaching a temperature that could ignite a hazardous environment. Using the IS protection method is why these devices require much lower energy levels than EX-protected equipment.

IS and EX are often used interchangeably but are entirely different in how they work. EX contains the explosion and releases the resulting gases from the device at a safe temperature but IS devices reduce the risk of explosion by managing available energy, which eliminates sparks and thermal effects in a hazardous environment before they happen.

Other benefits of IS equipment are cost savings, reduced weight, and portability. The quality of IS equipment is vital in potentially explosive environments, and one must

ensure their lighting is manufactured by a reputable company with documented experience in creating IS products. Because of the knowledge, time, and expense required to engineer and produce IS products, a very limited number of companies can achieve this.

Nightstick is a global manufacturer of IS portable LED lighting products that exceed industry standards in performance, quality, and user safety. From penlights to floodlights, above ground or below ground, Nightstick has you covered. Focus on completing your job with confidence, knowing your equipment was designed and rated for the highest safety levels.

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Protecwork Protective Wear By Snickers Workwear

Class 1, 2 and 3-accredited Protective Wear for heat and flame, electrostatic and chemical risk environments from the UK's leading workwear innovator.

Protecwork is an advanced range of protective working clothes and accessories from Snickers Workwear.

Fully accredited for Class 1, 2 and 3 protection in risk environments such as heat and flame, electric arc, electrostatic, chemical as well as bad weather conditions, all the garments are manufactured from tailor-made fabrics designed to respond to the demands and risks in the conditions in which they're worn.

For more information on Snickers Workwear's Protecwork range and the brand's sustainability philosophy you can call the Helpline on 01484 854788; check out www.snickersworkwear.co.uk or email sales@hultaforsgroup.co.uk

Designed for men and women operating in high-risk work environments, all the clothes are ingrained with the Snickers Workwear hallmarks of best-in-class durability, comfort, ergonomics and fit. What's more, the market-leading risk-protection properties of the clothing are integral to all the Base-, Mid- and Top-Layer garments in the range.

With over 60 different garments and accessories to choose from, you can make sure you get the right protection, visibility, flexibility, comfort and durability – wherever you're working. Check out the new Snickers Protecwork range to fit your workday and well-being on site.



Enerpac VLP and XLP Presses Offer Superior Performance

Enerpac announces two new series of workshop presses—the XLP-Series H-Frame Workshop Presses and VLP-Series Benchtop

a simple, welded design and the 50- and 75-ton presses have an open frame and bolted design. The 50-and 75-ton models come standard as unassembled kits, and include complete press frame, winch, cylinder, pump with gauge, couplers and hose.

To learn more about the Enerpac VLP and XLP Presses, visit www.enerpac.com.

Presses. Whether for differential assembly in the automotive industry, gear components assembly in the aerospace industry, or bearing maintenance in the mining industry, the new Enerpac VLP and XLP presses offer superior performance.

New VLP-Series Benchtop Presses

Enerpac VLP-Series Benchtop Presses work with manual or air pumps. They feature a welded frame and are available in 10-ton models.



New XLP-Series Workshop Presses

Available in 25-, 50-, and 75-ton models, the XLP-Series Workshop Presses feature adjustable side-to-side cylinder movement, a locking winch for easy height adjustment of the press bed, and high-performance manual, pneumatic or electric pump options with remote valve operation. The 25-ton press has



Elis Provides Sustainable Alternative For Protective Workwear And Laundry

With businesses looking for ways to improve their sustainability, protective workwear and laundry services provider, Elis UK, explains how its circular economy approach can help.

Elis was the first company in its sector to announce its target of net zero emissions by 2045 and is one of only twelve companies selected to join the NHS Net Zero International Leadership Group. It uses a circular economy model to provide its customers with a more sustainable solution.

Elis supplies protective workwear on a rental basis, collecting used items and delivering laundered garments on a schedule to meet the needs of the customer. In its circular economy approach, customers' items are maintained, repaired, reused and redeployed in order to optimise their lifespan. Elis's expertise and processes in its highly efficient industrial laundries help to minimize water, energy and cleaning product consumption to reduce the impact on the environment.

The use of workwear maintained by Elis, rather than at home or using a traditional laundry, reduces CO2 emissions by up to 37% and water consumption by 48% (Source: EY). Based on the circular economy, Elis's services increasingly enable customers to reduce their emissions.

Comments Elis UK marketing and customer experience manager, Paul Swift: "The circular economy is specifically designed

to eliminate waste and pollution, circulating and sharing products and materials and regenerating nature. The Elis circular economy model, primarily through reducing the consumption of natural resources and keeping products in use, is a sustainable solution that addresses environmental issues. In 2021, the Group's CO2 emissions per kg of delivered, laundered textiles were 19% lower than in 2010, which is testament to the efforts made over many years. Our mission is to make our customers' lives easier and contribute to their success through a sustainable, responsible process."

As part of its commitment to net zero carbon emissions, Elis is undertaking a

number of major initiatives, which will help to ensure that its customers receive services that leave an ever-smaller environmental footprint. These include continuing to improve the energy efficiency in its operations; constantly improving the vehicle fleet and delivery routes; optimising the product lifespan, optimising the choice of materials and expanding reuse and recycling of textiles. In three years, Elis UK has already reduced its CO2 emissions by 33% and its consumption of water per kilo of laundered linen by 23%. Elis UK has been certified over many years by the Carbon Trust for reductions in CO2 emissions and water usage."

For further information see uk.Elis.com or call free on 0808 1698265.





Hart's Largest Speedor Storms' Order

Hart Door Systems has secured its largest order for its Speedor Storm door, the high-performance exterior roller door designed for frequent use in high traffic situations and constructed to withstand harsh environments including 90mph for wind class 5.

Brian Woodcock, Hart's regional sales manager for the Midlands and South West, says the rapid roll door, with its robustness, low maintenance and exceptional wind resistance was required for a factory in an exposed part of Lincolnshire.

"With half a dozen major storms so far this year there is a noticeable increase in enquiries for a high speed door which can withstand exceptional weather," says Mr Woodcock.

The order for 15 'Storms' is for a pre-World War 1 building which is undergoing phased redevelopment to create new space and streamline production. The high-speed Storms will help to reduce energy consumption, keep the building warmer and more efficient.

Mr Woodcock adds: "While its high-speed opening and closing action improve efficiency, the energy-saving potential of this rapid roll door is high, controlling internal temperatures as well as reducing escaping dirt, odours and noise."

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Remote I/O Valve Terminal For Zone 1/21 Areas – Make Room For Your Standard

Why are so many isolating switching amplifiers and pneumatic valve terminals still installed in large control cabinets to send intrinsically safe signals and pneumatic drives from Ex zoned areas?

There are numerous concepts for planning of potentially explosive systems, such as the optimization of the zoning, the reduction in size of zoned areas or the wish to run everything out of hazardous areas into a central cabinet via cable routes.

The crux of the issue is that the calculation of the cabling is often not within the scope of the plant or machine builder. Logically speaking, the effort and costs arise elsewhere, but they do not vanish into thin air. An innovative solution while considering the potential trade-offs must be carefully considered.

It is clear that many plants, especially in the chemical industry, have long been equipped with Ex Remote IO systems. Large and modular Remote IO cabinets are widely established in this industry. In this article I would like to draw the attention of plant and machine builders to a new concept.

What is new about it and what are the benefits? The new concept for zoned areas is: Place small Remote IO valve terminals distributed within a system instead of building central or large decentralized solutions. The aim is to collect the intrinsically safe signals on-site and to supply the pneumatic drives decentrally via short pneumatic lines. From there, communication takes place directly via PROFINET to the controller.

Newly developed technologies from non-hazardous areas are usually upgraded and certified for zoned areas with a time delay. In the case of products for Zone 2/22, this may happen very quickly. However, for devices for Zone 1/21, which also supply sensors from Zone 0/20, new and innovative products can usually only be implemented with considerable effort by the manufacturer.

Through the successful partnership between BEx Solution, FESTO and Exepd, the 3 in 1 solution was created, which as a result provides an innovative, tried-and-tested and

certified compact Remote IO valve terminal for potentially explosive areas in zone 1/21.

What added value results from this solution? You gain space, time and money! The small boxes combine bus nodes, isolating switching amplifiers, intrinsically safe IO channels and the valve terminal, guaranteeing short distances to the sensors and the pneumatic actuators. Connect compressed air, power supply and PROFINET, quickly and easily!

Now many will say yes, but what about the software effort? Those who already have experience know that it does work but costs a lot of time and money. We are back on the big topic of resources. When developing the new concept, particular care was taken to ensure that the Remote IO module itself does not have to be configured. Communication and I/O settings take place via 64 I/O bytes.

Areas of application: Painting plants, pharmaceutical and chemical industry, bulk goods plants, mixing / grinding plants, industrial heating / cooling systems, sewage plants, and much more.

Functions: The connection is possible via PROFINET or Modbus TCP / IP. Up to 16 pcs 3/2-way valves or up to 8 pcs 5/2-way valves

can be configured, or combinations thereof. 16 Namur inputs are available for the position indicators. The module is also equipped with analogue 4 to 20mA Ex i signals

One final point: Many customers like the compact concept very much, but they have decided on existing solutions based on long-term specifications by their end customers or company-specific specifications. That is certainly the reality, especially in explosion-prone systems, where technology should last for several decades. With existing and well performing systems, you have to think twice about a change. But when it comes to modernising old systems or planning new systems, we recommend that you take a closer look at this solution which will enable more flexibility in the future.

"Not yet convinced , simply request a test device"

More information at: <https://exloc.co.uk/bex-remote-io-valve-terminal/>

Contact: sales@exloc.co.uk

Contribution by Karl Vogel CMO - BEx-Solution GmbH & Andrew Tither Exloc Instruments UK Ltd



TÜV SÜD UK Appoints New Head of Machinery Safety Division

TÜV SÜD UK has appointed Darren Hugheston-Roberts as the new Head of its Machinery Safety division.

Darren joins TÜV SÜD from Bureau Veritas, where he was Service Lead of Engineering Technical Services and Technical Manager for its machinery & UKCA Approved Body. Previously, he served for 25 years in the British Army, within the Royal Electrical and Mechanical Engineers (REME). Most recently he served as the senior engineer within a battle group, providing technical advice to the commander to optimise equipment use and ensure its availability.

He also oversaw the work of over 40 multi-skilled engineers and engineering managers, and was responsible for the inspection, maintenance and repair of vehicles, plant, weapons and lifting equipment.

Paul Taylor, Business Development Director for Industrial Services at TÜV SÜD, said: "Darren brings a unique set of skills to TÜV SÜD, with 30 years of extensive engineering and people management experience in a high-pressure environment, backed up by his commercial work in technical safety and machinery conformity. His appointment will be a real asset to our growing business - further strengthening our team's capabilities and our ability to deliver excellent customer service."

Darren Hugheston-Roberts said: "I am really excited by this new opportunity to work as part of a team that is the UK market leader in machinery safety. TÜV SÜD is at the forefront of industrial safety developments and its certification mark has become a globally renowned symbol for

safety, security and trust. Our dedicated and experienced team are superb, and I am really looking forward to working with them to build on that success and develop the business."





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Encora Unveils National Expansion Plans

A fast-growing Teesside engineering and management services consultancy in the energy industry has revealed plans to target UK regions as part of an ambitious national expansion plan.

Stockton-on-Tees-based Encora Energy already has a strong presence in the north east of England, having had a base on Teesside since 2015. In the last few years, the company has expanded its geographical reach, working on projects in East Anglia and the south of England.

Now Encora has made its first senior appointment in the Midlands to bolster its presence in this region, hiring Michael Coe, a project engineer. In his new role, Michael will be responsible for managing projects on Midlands-based sites that are set to begin construction soon.

A mechanical engineering graduate, Michael previously held the position of international business development manager for environmental consultancy Fosse Liquitrol. He is also working alongside Durham University and Northern Power Grid on a research project to develop a heat exchanger for transformers.

His appointment marks the next phase of Encora's growth strategy as it looks to expand into new UK markets. The company is eyeing up several regions, including Scotland and the north west and east of England.

Andrew Normand, new business manager and UptimeAI partnership lead at Encora Energy, said: "We're already very well-known in the north east of England but now we're looking at markets further afield. Michael's appointment will allow us to get a greater foothold in the Midlands – an important UK region for us – and win more work there."

Michael Coe said: "I'm delighted to be joining

a company that has ambition which matches my own. Encora is a forward-thinking consultancy that's helping clients to exploit opportunities arising from the rapidly changing needs of the energy market.

The Encora provides project development, engineering, consultancy and operations management services to customers, helping them deal with the practicalities of developing, installing, operating and maintaining new energy systems such as renewable and battery storage systems, combined heat and power (CHP) plants, fuel cells, gas engines and gas turbines. The company also acts as UK and European agents for UptimeAI, providing cutting-edge artificial intelligence (AI) solutions for the process industries.

For more information, visit <https://www.encora.energy/> or Encora's LinkedIn profile:

<https://www.linkedin.com/company/encora-energy-limited/>

The MSA Roadshow: A Truly Hands-On Safety Training Experience

MSA Safety – leading global manufacturer and supplier of safety solutions – is delighted to announce the return of its UK and Europe Roadshow, designed to connect face-to-face with customers and industry peers to offer an interactive safety training experience.

On the road safety

The MSA Roadshow is travelling across Europe providing demonstrations, training and hands on previews of safety products. Specifiers and customers have the opportunity to use and try all types of safety equipment first-hand for an extremely versatile and exciting learning experience. The truck will be seen at many of the leading health and safety shows throughout Europe, as well as distributor and customer demonstration days, and MSA would love to hear from anyone who would like a visit from the truck. Supported by MSA's experts in the field of industrial safety solutions, it is a great aid to supporting training courses.

A range of real situation training and demos

From fall protection and head protection, to portable gas detection and confined space entry solutions, the Roadshow will

demonstrate MSA's 360 approach to safety. Visitors can also view MSA's industrial M1 SCBA (Self Contained Breathing Apparatus) and experience safety products in a virtual environment across roofing, confined space and oil and gas.

Get involved

Alfonso Fernandez, Marketing Manager (Europe) for MSA, comments: "We are delighted to get our safety truck back on the road - there

is no substitute for hands on experience, and the tour gives us a unique opportunity to talk to the industry about recent safety trends and how we can continue to overcome safety challenges. We hope to see at many people as possible at each stop."

Alternatively, to find out more about our training centre please visit:

https://gb.msasafety.com/training?utm_source=Editorial%20&utm_medium=PR&utm_campaign=Truck%20roadshow%20release



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DLM Pioneers Industry Sustainability Drive

Dynamic Load Monitoring (UK) Ltd. (DLM), of Southampton, UK is pioneering a series of measures to inspire the engineering sector to be greener and more sustainable. The strategy will align the business further with the industries it services day-to-day, especially renewable energy.

DLM has been ISO 14001 certified for many years, which means it meets the criteria for an environmental management system and can be certified accordingly. ISO 14001 maps out a framework that a company or organisation can follow to set up an effective environmental management system. This has supported much wider sustainability strategy that serves as a blueprint for other businesses to follow.

Martin Halford, managing director at DLM, said: "Although we are a small company in the engineering sector we have big plans around sustainability, backed by a passion to change the culture and behaviour of our organisation and lead by example. We have several passionate staff members, who are keen to drive a few key initiatives that we have already been implementing for a period."

The company identified third parties to assist, including the Clever Software Group, a bespoke software development firm that crafts custom software and data solutions for people in business. The first task was to digitalise the sales and calibration department, empowering employees to adopt completely paperless working processes. DLM embraced a Solent Local Enterprise Partnership (LEP)

scheme and worked with True Horizon, a unique consultancy supporting brands to balance purpose and profit, introducing carbon footprint tracking along the way.

A purpose and profit balance

Halford acknowledged that a switch to recycled and recyclable packing, for example, did see the business incur initial cost but reiterated that this was about a long-term, moral obligation to balance purpose and profit. As well as top-level strategy, DLM has also implemented smaller, equally important, behavioural measures, such as introducing plants to the office and encouraging lunchtime walks.

He said: "Some ideas were suggested by a group of Southampton University students, who worked with us on an innovation project. They investigated our current habits across the company and tabled some improvements. They have all so far been well received, but we need to keep momentum up by continuing to encourage fresh input. It's a team effort—much like watering the plants. Taking lunch and other breaks is a constant challenge because we're trying to dovetail this campaign at a time when we've never been busier, but it's about bigger-picture thinking."

While the short-term impact of these

improvements has already been felt, DLM is committed to long-term, cultural change both within the business and elsewhere as the benefits are noted in and out of the engineering and manufacturing markets. It is also important to demonstrate to offshore wind and other renewable energy stakeholders that the company is committed to the same end goals.

There are business incentives too. Sustainability is likely to see companies looked upon favourably in future tender situations, and DLM would rather be proactive than playing catch-up. Where ISO 14001 was once the standard, it will likely go beyond that in time. Recruitment too will be easier for greener companies, especially as the next generation enters the workforce. Halford hopes that future employees will accelerate this rate of positive change.

He said: "We believe that a younger audience will be more naturally ambassadorial. To that end, we will continue to work with the [Southampton] university and one day hope to have a dedicated sustainability role within the company—perhaps filled by a former student that already knows the business. We'll also more forthrightly challenge suppliers and partners to come with us on the journey. We can yet make sure we have a bright—green—future."

OTC Global Holdings Recognized As Broker Of The Year For The Fifth Time

THE LARGEST INDEPENDENT INTERDEALER BROKER IN THE WORLD WINS THE PRESTIGIOUS ENERGY RISK AWARD AS IT CELEBRATES ITS FIFTEENTH ANNIVERSARY

LONDON and HOUSTON and NEW YORK, July 11, 2022 / PRNewswire/ -- Leading independent interdealer broker OTC Global Holdings (OTCGH) continues to strengthen its worldwide leadership position as it is recognized with Energy Risk's 2022 Broker of the Year award. Over the past 15 years, OTC Global Holdings has transformed into a highly technological brokerage firm focused 100% on global commodity markets, and being named Broker of the Year in 2011, 2016, 2017, 2019, and now 2022. "Since 2007, we've worked hard to compile the best talent in the world and an operation powered by EOXLive, our proprietary technology. Today, one third of worldwide natural gas options, one third of all NAPTHA and one third of global gas-oil futures moves between our shops," said Javier Loya, Chairman and Co-CEO of OTC Global Holdings.

OTCGH has built an unparalleled business model, focusing on three key operational pillars: (1) high quality execution; (2) unrivaled customer service and; (3) innovative technology with EOXLive. Joe Kelly, President and Co-CEO of OTC Global Holdings explained, "We want to provide solutions for all of our clients' trading needs. Having the premiere liquidity pools around the globe and the products, means we have the top experts in that space. In times like these, you can't just look at a screen, you need to have that

expertise, you need to have all the information together. So, taking research, analytics, an expert to talk to, market data, unparalleled trade execution, and tying that together with not only a physical product but at the same time giving you the freight along with it, the ship logistics to move it, and your financial hedge, that itself makes it incredibly efficient and very valuable for the trader." OTCGH's portfolio includes nearly 20 of the industry's most powerful and agile independent brokerages across the world. The company serves more than 500 institutional clients, including over 70 members of the Global Fortune 500, and transacts in hundreds of different commodity delivery points in Asia, Europe, and the Americas. According to Joe Kelly, "commodity markets will continue to experience a radical transformation throughout the next decade due to the global linking of energy markets." "As we move forward into a new era, the time is now to continue to innovate, incorporate

new products around renewable energy, and consolidate our leadership position in every commodity market around the world. The time is now to accelerate our journey with technological superiority and high-quality broker execution," he added.

Energy Risk's Broker of the Year award is the most prestigious recognition in the industry, recognizing innovation in trading and risk management, demonstrated prudent energy risk management and expertise and thought leadership in energy derivatives and other risk management tools. "This year's award is very special. It comes on our fifteenth anniversary and it is a testament to our expertise, our leadership and our teamwork. To be recognized as Broker of the Year five times, it takes a team that wants to roll up their sleeves and know that their working for each other and, ultimately, for our clients," concluded Javier Loya.

Visit otcgh.com to learn more or watch a short video here: <https://vimeo.com/718433168>



ATEX Fans In Wind To Hydrogen Renewable Energy Generation

One promising solution to the problem of carbon emissions and Global climate change is the direct use of renewably generated hydrogen in fuel cells or in internal combustion engines for transportation and electricity generation. Although the most common element in the universe, Hydrogen isn't found in its purest form and must be either electrolysed from water or stripped out of natural gas by means of steam methane reforming. Both are energy intensive processes that result in greenhouse gas emissions. Using electricity in a process called electrolysis splits water into hydrogen and oxygen. The hydrogen is then removed, compressed, transported and used effectively.

Wind Turbines & Green Hydrogen Production

Green hydrogen starts with wind. Lots of wind. Harvesting wind offshore on a massive scale can produce stable green hydrogen on a large scale quickly. By combining wind turbines to hydrogen production there is a synergy that mitigates the energy intense

electrolysis process. A substantial proportion of offshore wind farms could eventually make hydrogen rather than transmit electricity. Safe hydrogen exhaust using effective and suitable ventilation will be a key factor in designing these emerging renewable electrolysis technologies. For wind to hydrogen generation, the systems work by linking wind turbines to electrolyzers which pass the wind generated electricity through water to split the liquid ions into hydrogen (to the cathode) and oxygen (to the anode). The hydrogen can then be stored and used later to generate electricity. The only by-product of producing hydrogen is water. Currently wind turbines produce huge amounts of energy with much of that volume going to waste as the grid cannot use it fast enough. In wind to hydrogen initiatives this energy produced from wind farms would be used efficiently to produce hydrogen, meaning none of the electricity produced would go to waste. Current developments are allowing researchers to work on increasing the efficiency of wind to hydrogen systems. When a wind turbine is co-located with the electrolysis system, more direct connection between the source and the electrolyser

emission free, climate-friendly method of making, storing and using energy in the future and as wind turbines are placed further out to sea, hydrogen production close to source becomes even more attractive.

Key Fact: The Global demand for hydrogen is 75 million tonnes and is likely to rise sharply

Is it an ATEX Application?

Most wind to hydrogen systems will incorporate combustible gas detectors that monitor the air flow from the generation cabinet in addition to the compression building air make up, and will shut the system down if a set % of the lower flammability limit of hydrogen in the air is reached. The lower flammability limit of hydrogen in air is 4% by volume. ATEX fans are required if situated in the gas zone containing hydrogen. Typically, an exhaust fan installed in the production and compression building would run continuously during production to avoid a potential build-up of the combustible hydrogen gas. A differential pressure switch on an exhaust fan that indicates proper airflow can be used to inhibit the operation or the electrolyser and compressor ensuring safe working conditions. One of the largest consumers of ancillary power may very well be the fan that continually forces fresh air through a generation cabinet so choosing the most efficient industrial fan to suit the system is important. Industrial fans are required for cooling system components to prevent overheating and additional fans may be used to continuously purge the building for safety.

stack is possible, this eliminates the need for long distance cables and transportation, resulting in a much more cost effective and efficient system. The technology has the potential to deliver a completely

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Proposed Amendment To UKCA Ex Rules For ATEX

There is a 'proposed' amendment being circulated that has not yet been voted on by the UK Government

(so we cannot say it will happen or not). If the vote passes in late Autumn, the UKCA legislation will be changed once again to allow 'EU Notified body' ATEX Certificates (aligning with UK Designated Standards) to be used in lieu of Approved Body certificate in a 'self-declaration' for 5 years, or until a variation is required. This also applies to the ATEX QAN (when it expires you will need a UKCA QAN).

You will need the UKCA Declaration of Conformity to UK Designated Standards and the UKCA Marking on your product (but if the proposed is passed a 'sticker' may be used for temporary UKCA Ex Marking)

All new products requiring certification must have a UKCA Appointed Body Certificate in 2023 (so only Certificates with an issue date up to December 31st, 2022, would be accepted and only until they have a variation or for 5 years, whichever is sooner)

There are obviously major concerns with having two different sets of requirements at

the same time with no apparent mechanisms for monitoring or controlling conformity, particularly in the field of explosion prevention.

The UKCA Ex Group have raised the problems with the relevant parties. An official post on this will be made on the UKCA EX Approved Bodies Group (UKEX-ABG) www.ukex-abg.org.uk

Free Downloads

You can download graphic and CAD files for the UKCA Mark, the CE Mark and the Hexigon Ex Mark at www.exveritas.com/downloads/



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OHS appoints Nick Bye as new Group Commercial Director

Appointment will enable OHS to offer clients a comprehensive property proposition

Manchester-based compliance consultancy, OHS, has appointed Nick Bye as Group Commercial Director as it diversifies its business to become the UK's only comprehensive solution for compliance and protection services in occupied and unoccupied property.

OHS has long been in the business of environmental compliance services in occupied, managed spaces, covering risk assessment of asbestos, water and fire, but with the appointment of Nick it will now provide new services to manage vacant property. It will become one of the few providers that offer services that can cover the full property lifecycle, from being vacant to occupied again.

Nick has 10 years' experience in the property services sector, formally working for VPS Group. His experience in vacant property services will see him sell OHS's wraparound solution of ensuring protected occupied and unoccupied properties to the property management, facilities management, and social

housing sectors.

Commenting on his appointment, OHS Group Commercial Director, Nick Bye said: "Part of my role will be to take the business forward with new service lines, such as property maintenance and clearance work, while also developing OHS's current service lines.

"I have a number of years' experience of knowing what clients do and do not want from a property support service company, so I will be able to grow the business rapidly as it offers a completely holistic service."

OHS Managing Director, Andy Fowler follows: "The business has a lot of heritage and lots of exciting expansion plans, but we also needed someone to spearhead the strategy to deliver more services. This holistic approach will help us stand out in a crowded market space that sometimes can fall victim to poor service delivery and a lack of understanding of true customer needs.

"When we met Nick, the realisation that if we diversified into unoccupied property management – there are so many more following the pandemic- we could grow our portfolio of

services and also offer a unique proposition to current customers and potential customers. Nick has fantastic contacts within various sectors, including major insurance companies who have strict requirements on making sure properties are protected and compliant. In addition, as a new board director, he will bring a new dynamic to the management team and we're sure he'll be a real asset to OHS."



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Is Your Equipment Certified To The Correct Level For Its Use?

Carrying out inspections with testing equipment certified to a suitable protection level is crucial to ensuring the testing operation does not jeopardise the safety of hazardous environments. This article explains the key details to understand in regard to the correct equipment to use, and where.

Zones & Division

Under ATEX, IECEx and UKEX (to name but a few) Hazardous Areas that contain explosive gasses, must be identified and categorised into a Zone according to the severity of risk.

- Zone 0 for locations where the risk of explosion is permanent
 - Zone 1 when the risk is likely to occur
 - Zone 2 when the risk may occasionally occur
- In North America, a two Division system is used,
- Division 1 = Zone 0 or Zone 1
 - Division 2 = Zone 2

Equipment

All equipment taken into and used in these hazardous areas must be certified to a suitable equipment protection level (EPL) for that Zone. For example,

- Zone 0 requires the highest level of protection - "Ga"
- Zone 2 requires a lower level of protection - "Gc"

This equipment must be designed such that it cannot generate conditions that could ignite the explosive atmosphere, for example, by a spark or a hot surface.

Finally, this equipment must be inspected, tested, and certified safe by a notified body, and the equipment manufacturer must commit to regular audits to ensure product is being built to the certified design. Then the equipment may be marked with a 'Ex' Marking label showing its group, protection level and protection concept used.

Protection Concepts

Depending on the type of equipment there are various Protection Concepts used to design a product and obtain an 'Ex' certification.

Intrinsically Safe

For equipment that contains electronic components including batteries, the intrinsically safe protection concept ensures that under both normal use and with applied fault conditions, no arc or spark can be generated, and no component can heat up enough to cause an explosion.

Some intrinsically safe design criteria,

- The output energy at the terminals is limited so a spark cannot ignite an explosive atmosphere.
- The equipment must be anti-static and not be able to hold a static electricity charge.
- Voltages must be electrically 'clamped' to safe levels.
- The use of redundant safety components.
- If a battery or component fails, it should not produce high temperatures that could be incendiary.



In both IECEx, ATEX and North American systems, intrinsically safe equipment can be used in any Zone or Division with the correct equipment protection level.

Explosion-proof or Flame-proof

Explosion-proof is generally a North American term, but it has the same meaning as flame-proof as used by IECEx and ATEX.

This protection concept assumes that the surrounding explosive atmosphere can enter into the equipment enclosure and internal explosions are likely. The equipment enclosures are constructed in such a way that an internal ignition of a flammable atmosphere cannot get outside of

the enclosure, thus preventing the ignition of surrounding flammable gasses. The enclosure effectively quenches the flame.

Under the IECEx and ATEX systems, flame-proof equipment cannot be used in Zone 0 areas, regardless of equipment protection level.

In North America, explosion-proof equipment may be used in both Division 1 and Division 2 areas with the correct equipment protection level.

Cygnus 1 Intrinsically Safe Ultrasonic Thickness Gauge

Cygnus 1 Intrinsically Safe ultrasonic thickness gauge is the only one of its kind in the world certified to Zone 0 for ATEX, IECEx and UKEx, and Class 1, Division 1 for CSA-US - specifically designed for measuring metal thickness to determine wastage or corrosion in Zone 0, Zone 1 hazardous and potentially

explosive environments. This heavy-duty unit boasts an extremely rugged, dust-tight and splash-proof construction with IP65 rating. It is supplied ready to use and comes with two rechargeable battery packs, offering up to 12 hours continuous operation. NO plant shutdown or hot work permit is required.

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For more information visit

www.cygnus-instruments.com, call +44 (0) 1305 265533 or email sales@cygnus-instruments.com. Quote HES2022 for 10% off a gauge.



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Solutions for harsh and hazardous locations



Wolf recommends ATEX certified lighting for safe use in potentially explosive hydrogen atmospheres

Using ATEX or IECEx certified lighting in atmospheres where hydrogen may be present is strongly recommended as a safety precaution by technical experts at Wolf Safety.

While acknowledging that hydrogen's 'green' credentials are highly encouraging, Wolf Safety believe the risks of explosion in atmospheres where hydrogen is present should not be underestimated.

As world leaders in the design and manufacture of portable and temporary lighting for use in hazardous areas, Wolf Safety are well aware of hydrogen related risks and offer safe, certified lighting solutions for use in hydrogen atmospheres.

Says Michael Morley, the company's Technical

Director: "Engineers and technicians working where hydrogen or other explosive gases or vapours could be present can be confident that Wolf has a safe, ATEX certified and cost-effective portable and temporary lighting solution which can be tailored to meet their specific needs."

The company's range of portable lighting, temporary lighting and power distribution solutions includes products already certified for safe use in workplaces where hydrogen gas could be present.

They include Wolf's robust yet highly portable WF-300@XL and WF-250XL LED floodlights which are used worldwide, especially by engineers inspecting, repairing and maintaining storage tanks in the oil and gas industry.

The robust WF-250XL, easy to carry and more

economical than comparable units, produces over 3,000 lumens of white light, more than enough to illuminate a 5m square tank or similar space without dazzling.

It effectively illuminates smaller work areas when using a limited power supply, providing the optimum level of light for working in confined spaces at lower cost. It's also lighter and more compact than similar products, is easily carried and consumes less electrical power."

Mains and low voltage versions of floodlights and luminaires, battery powered LED work lights, torches, handlamps, head torches and warning lights are also available from Wolf Safety.

For technical information visit:
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The electronic design of the FQ series is available in two versions, independent of the mechanical versions: Frequency range from 0.1 Hz - 20kHz and 0Hz- 40kHz. A variant with additional temperature detection is in preparation. The high temperature resistance combined with the high protection class make the FQ series the ideal sensor for innovative, electric drive solutions. Sales and Marketing Manager Wolfgang Sexauer is certain: "We are following the development of electric and hybrid drive concepts for construction and agricultural machinery with great interest. With the FQ series, we provide the perfectly matching speed sensor. At bauma Munich,

bauma China and CONEXPO-IFPE we are looking forward to interesting discussions on this topic".

You will find RHEINTACHO at the following trade fairs:

bauma Munich - Hall A3/ Stand 313

bauma China - German Pavilion

CONEXPO IFPE - South Hall / Stand S-80040



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No Job Is Worth Dying For – Masks And How Every Face Should Fit

In 2019, 1,082 workers per 100,000 were diagnosed with a work-related, respiratory condition many of which could have been prevented by a properly fitted mask," says Mark Smith, technical director of Simon Safety who is also an accredited face fit tester. "Ten years earlier (1999), that number was 3,418 so we've come a long way but 1,082 per thousand is still too many. The majority of those workers work in hazardous engineering environments.

"Whichever way you look at it, that number is unacceptable. It's criminal that lives are still being lost and compromised by people's work. It's criminal that our health service is having to treat patients who have been made sick by their work. And it's criminal that some employers are still not taking their responsibilities seriously enough and may end up in prison for that negligence," says Mark Smith.

HSE now on the face mask case

During Covid, the Health & Safety Executive visited circa 1,700 engineering businesses and gained a deep insight into the state of UK engineering sector's health and safety.

Given how much attention face masks were given thanks to the Covid pandemic, you would think that people who use masks professionally would know how to wear them but that's not the case from what the HSE saw in the engineering frontline.

More often than not, the HSE inspectors saw people wearing masks which weren't the right size, weren't the right fit, leaked all around, didn't take into consideration both facial hair and how long they were being worn.

Engineers - and those responsible for their safety - thought it was OK to wear a mask for an entire job, no matter how long that job

took ie several hours. A mask's effectiveness decays fast once it becomes water-logged with condensation after prolonged wear. Masks need to be regularly refreshed to work efficiently.

Why so many masks are wrong

"There's a hierarchy of control and respiratory control is at the bottom of that list, which means that your mask and other PPE is your last line of defence," says Mark Smith of Simon Safety, which is a registered member of the British Safety Industry Federation (BSIF) and the Registered Safety Suppliers Scheme (RSSS).

"As soon as a toxin is inhaled, it's in your system because that's how breathing works.

"And if a mask doesn't fit someone's face - and we're all different - it's never going to protect you."

Getting masks fit for purpose

In a Hazardous Engineering Solutions exclusive, Simon Safety shares a simple guide to help you stay safe - both employee and employer - if you follow four steps:

- 1Get the right mask.
- 2Fit the mask and train.
- 3Maintain the mask.
- 4Regularly review.

Step 1: Get the right mask

The right mask is the mask you've identified which meets your needs through a risk assessment.

Type of mask:

- Disposable half masks.
- Reusable half mask.
- Full face masks.
- Powered air purifying respirators (PAPR).
- Breathing apparatus.

What's right for the worker and their:

- Type of task.
- Face shape.
- Physical build.
- Ethnicity.
- Facial features eg scars/warts.
- Facial hair (only certain equipment will work with beards).

Does the mask need to work with:

- Prescription spectacles (it's the employer's responsibility to ensure the operator's spectacles fit inside the mask).
- Eye protection.
- Ear defenders.
- Helmet/other head protection.

When several vulnerabilities need PPE - e.g. eyes, ears, head and respiratory - combined protection is best because it's easier and faster to use which aids productivity. Where a combination of different items of PPE is used, it is the employer's responsibility to ensure that the combination is effective.

What's right for the work environment:

- Duration of task e.g. how long will the task take? If the task involves wearing a close-fitting mask, the worker should take a break at least every hour. Different PPE is needed for day or night operation and inside or outside.
- Work rate - does the task involve movement/perspiration? That may mean the mask could loosen over time.
- Nature of the toxins - eg they may be flammable, explosive, aerosol, vapour, dust etc.

Your compliance obligations:

1. Health and Safety at Work Act 1974.

2. Fit testing is referred to in HSG53 – the HSE's guide for employers to know (pages 19/20) and table 20 lists what type of mask employees need to wear.

3. Fit testing brochure INDG479 – describes the methods you should use unless you have a process that's as good or better. If you're deviating from this guidance, you'll need to prove good or better practice, which can be tricky so it's usually best to stick to INDG479.

Step 2: Fit the mask and train

A competent person must conduct the fit test.

Find out exactly how the HSE defines 'competent' on their website. It's easier to prove that someone's incompetent than to prove they are competent.

The HSE and the BSIF (British Safety Industry Federation) define 'competence' as an individual fit tester that has been accredited to the Fit2Fit scheme. Accredited testers have proven an extensive knowledge of respiratory protective equipment in conjunction with demonstrating a high level of competence in one or more of the accepted fit testing methods.

Quantitative test methods – eg in a lab test chamber or using a portable device, how effective is the mask at filtering contaminants? Does the performance comfortably exceed the minimum expected pass rate?

Qualitative test – eg wearing the mask under a testing hood, can you discern bitter vs sweet smell?

Step 3: Maintain the mask

- Every time you use it, check it over.
- Before every use, perform a 'fit check' as shown during your formal fit test.
- Closely inspect and keep a written record of the check at least once every month.

Step 4: Regularly review the mask and its fit

- A competent person must conduct tests.
- Follow the manufacturer's instructions.

• Appropriate frequency: when a person's face changes eg due to significant weight gain/loss or significant dental work.

• Recorded appropriately for the candidate's training / HR records.

• Remind everyone of best practice of properly fitting masks on notice boards so malpractice can be called out.

• Review every one to two years to ensure all protection is suitable for the people and the environment.

Conclusion

In 2024, the Health & Safety at Work Act will be 50 years old.

The appeal from Mark Smith from Simon Safety: "We must all continue to learn from our mistakes if we're to cut work-related respiratory illness and death in the hazardous engineering industry.

"Independent and authoritative research suggests if your average DIYer breathes in a small amount of spray-paint, two weekends

a year, it might have no detrimental impact. But if you're doing that every working day, it has a cumulative effect. Slow and incremental daily doses often lead to debilitating chronic, long-term health conditions or can be killers and contribute to premature death," says Mark Smith of Simon Safety.

"Today's filtering technology means respiratory masks efficiently trap and protect your lungs from the smallest particles providing they fit correctly.

"The mistakes made in the past – such as the tragedy of asbestos – were due to ignorance. But we now know better. The internet puts all the appropriate information at our fingertips. It's criminal not to act on it," says Mark

"If you're concerned about face masks or other piece of PPE call 01646 600750 or visit Simon Safety's website. Take advantage of our expertise and let's make 2024 a reason for celebration of how far we've come rather than regret."



What explosion safety measures are available and how can spray dryers be protected while keeping costs to a minimum?

Explosion safety concerns almost everyone. The following article explains the available protective systems as well as a cost-effective way to protect spray dryers.

Explosion safety measures

The obvious steps include organisational measures such as regular maintenance of the plant components, comprehensive, thorough cleaning of all parts as well as the production facilities themselves, and training of the responsible personnel. Nevertheless, there is plenty of potential for improvement in many areas.

Explosion prevention concepts are designed to prevent a build-up of explosive dust or gas/air mixtures and/or ignition sources. The goal here is to reduce the probability of explosions occurring. Various options are available: dedusting and cleaning, inerting, earthing, vibration monitoring, camera systems for nozzle monitoring and the use of CO detection systems.

But even if all these precautions have been taken, reliable or complete explosion safety is often not guaranteed. Explosion protection, by contrast, involves reducing the effects of an (inevitable) explosion and is the central, most frequently applied explosion safety concept.

Certified protective systems are used to safeguard employees, affected plant components and the entire environment. All

available options for explosion protection are briefly described below.

Conventional venting via explosion vents

Explosion vents are often used in systems located outside buildings or for plant components mounted on an exterior wall. For example, dryers, silos, filters and elevators located outdoors are protected in this way. In the event of an explosion, the explosion vent protects the corresponding system by opening, thus dissipating the overpressure in the vessel and releasing the explosion outside to a safe area. Since virtually no two industrial processes are the same, various types of explosion vents are available, which differ in terms of their shape, material, temperature and pressure/vacuum resistance. Nowadays, even processes that are subject to strict

hygiene requirements can be protected using explosion vents.

For example, the EGV HYP hygienic explosion vent instantaneously protects critical systems such as spray dryers with or without wet cleaning, fluid bed dryers, filters and mixers, thus providing a cost-effective protection solution that ensures compliance with the requirements of hygienic design.

Flameless explosion venting for plants inside buildings

For plants located inside buildings, explosion vents are not suitable due to the lack of a sufficiently large safety area into which the escaping dust and flames can be directed. Since this represents an enormous safety risk for personnel and plant components alike, this problem is often solved by means of vent



Fig. 1: Explosion vents differ in shape and structure depending on the application.

ducts, also called relief ducts. However, the latter often preclude a process-optimised plant design and are usually very expensive, since the pressure that the duct and the system must withstand increases in proportion to the distance from the explosion source. This cost increase is due to the fact that the vessels to be protected require increased compressive strength.

Flameless venting is an economical and effective solution. Different manufacturers use various technologies to ensure flameless venting.

REMBE, the inventor of flameless venting, offers three different products: Q-Rohr, Q-Box and Q-Ball. The special stainless steel mesh filter inlet used in the products cools down flames efficiently so that no flames or pressure escape. The typical pressure increases and noise during an indoor explosion are reduced to a barely perceptible minimum, ensuring the protection of both man and machine. In addition to the special stainless steel mesh filter, Q-Ball, Q-Rohr and Q-Box consist of an explosion vent with integrated signalling, which informs the process control system



Fig 2: Flameless Venting Q-Rohr

about the burst of the explosion vent.

Explosion isolation

In every production facility, individual plant components are interconnected by means of pipelines.

The purpose of explosion isolation systems is to seal these pipelines in the event of an explosion to prevent the propagation of pressure and flames, thereby protecting the adjacent plant components. A distinction is made here between active and passive isolation systems.

Active systems use sensors or detectors to detect an explosion as it occurs. They register the rising pressure or flames as they form and activate the associated isolation device, e.g. a quench valve.

Due to their structural design, passive isolation systems, which are ideal for dust applications, react purely mechanically to a build-up or loss of pressure. Explosion isolation flap valves are a popular example of such a solution. They are kept open during normal operation by means of the currents present in the pipeline. In the event of an explosion, the valve closes due to the expanding pressure front, effectively preventing the propagation of pressure and flames.

Explosion suppression

In addition to the methods already mentioned, explosion suppression is another aspect of explosion protection. In this case, the idea is to eliminate the explosion before it can fully form. This is made possible by detectors that use sensors to detect pressure or flames and

immediately trigger the extinguishing agent canisters that are also installed in the system. The latter disperse a highly effective extinguishing agent within milliseconds and thus nip the explosion in the bud. If required,

an explosion suppression system can also be used for explosion isolation. The Q-Bic extinguishing barrier from REMBE was developed in strict compliance with the hygiene requirements for spray-drying plants. Thanks to the convex dirt protection cap, neither water nor dust deposits can accumulate on the Q-Bic. The blue-green QXP extinguishing powder prevents cross-contamination and the patented SJX nozzle ensures optimum application of the extinguishing powder.



Fig. 3: REMBE extinguishing barrier Q-Bic

The Q-Bic is particularly suitable for large pipes attached to dryers and filters or complex shaft geometries such as conveyors and elevators.

Protection of spray dryers and cyclones – a case study

The task is to protect a spray dryer and a connected cyclone; the product is discharged via the cyclone.

The technical data at a glance:

- Drying temperature: 90°C
- Dust specifications:
 - o organic dust St1
 - o KSt value: 150 bar*m/s
 - o Pmax: 8 bar
 - o lower explosion limit: 255g/m³
 - o strength of all system elements: tested
- Pdesign of min. 0.3 bar

A safety concept is required that incorporates as few explosion safety products as possible. This is a common requirement; however, it can only be met by considering the plant as a whole and taking all technical specifications, as well as the latest research findings, into account.

In the present case, explosion isolation of the spray dryer from the cyclone is not necessary.

At first glance, this contradicts the statement made earlier that isolation is absolutely necessary to prevent an explosion from propagating. However, scientific evidence shows that decoupling can be dispensed with if a Pred of max. 0.3 bar is determined for the entire plant, since any hazardous pre-compression in the neighbouring equipment can then be ruled out.

Protection for the spray dryer

VDI guideline 2263, or more precisely Sheet 7.1, states that under the following circumstances a reduced volume can be assumed when calculating the necessary vent areas / protective systems:

1. No integrated fluid bed
2. No recirculation of fine dust into the head of the spray dryer
3. The average dust concentration inside the spray dryer is lower than the lower

explosion limit of the dust.

If these three conditions are met, as in the present case, either a reduced volume of 1/3 of the total volume or the volume of the cone can be assumed. The larger volume must be selected in each case.

For the spray dryer in question, 1/3 of the total volume, i.e. 19.85 m³, was selected.

Observance of VDI guideline 2263, Sheet 7.1, allows an additional reduction in addition to the volume, resulting in smaller required vent areas. If it can be assumed that, due to the process, the optimum dust concentration for an explosion will never be present, the protective systems can be designed with a reduced KSt value.

Due to the nature of the process – the product is to be dried after all – it has been scientifically proven that a maximum concentration of 250 g/m³ cannot occur in the spray drying system.

The inclusion of the latest research results and current guidelines in the design thus leads to a reduction in the volume to be considered and the KSt value.

This in turn allows the creation of a safety concept that is not only safe but also cost-effective. By comparison, without taking these reductions into account, the vent areas for the spray dryer to be protected would have been up to 340% larger. From the operator's point of view, this is over-engineering, because larger relief areas always mean greater effort to modify the respective plant components and, last but not least, higher acquisition costs.

The following table shows how the

protection system for the spray dryer under consideration might look with and without the described design requirements:

For round vessels such as spray dryers, selected flameless explosion venting systems, e.g. the Q-Box, can be installed by means of an adapter flange. Since the entire plant is located inside a building and the operator wanted an explosion protection system with the lowest possible maintenance requirements, flameless venting was chosen in this example.

Protection for the cyclone

For the associated cyclone, the original safety characteristics of the dust in question must be taken into account. Cyclones are usually vented via the vortex finder, which must be included in the design as a vent duct.

Therefore, it is also crucial to know the exact dimensions of this plant component. In this particular case, the cyclone is protected by a DN 800 Q-Rohr equipped with an ERO hygienic explosion vent. By ensuring that the smooth surface of the explosion vent faces the processing area, all hygiene requirements from production are met.

The product discharge area below the cyclone is equipped with an explosion-proof and flame-proof rotary valve.

Risk of tampering with safety systems

Even the highest quality protective systems can only do their job if they are installed correctly and protected against tampering.

The risk of tampering is an important issue, and also one that is sometimes ignored.

Protective systems in use	Conventional design	Design according to the latest research findings
Explosion vents, free venting to outside areas*	4 x EGV HYP hygienic explosion vents (586x920mm) (with EHEDG approval)	1 x EGV HYP hygienic explosion vent (586x920mm) (with EHEDG approval)
Flameless explosion venting	5 x Q-Box 586x920 with EGV HYP hygienic explosion vent	2 x Q-Box 586x920 with EGV HYP hygienic explosion vent
Combination of vent ducts and explosion	5 x EGV HYP hygienic explosion vents (586x920mm)	1 x EGV HYP hygienic explosion vent (586x920mm) (with EHEDG approval)

vents	(with EHEDG approval) + duct cover	approval) + duct cover
Suppression	3 x extinguishing agent bottles (45 l)	2 x extinguishing agent bottles (45 l)

* Rather unusual in the industry, as the plants are typically located inside buildings and "free" explosion venting is therefore not possible.

Recently, REMBE engineers have found indications of such deficiencies increasingly frequent during plant inspections:

For example, safety devices are disabled,

electronic signalling and warning devices are bridged, mechanical elements are secured with too few fasteners and bolts. The reasons for this are complex and certainly not easy to understand. The protective systems from renowned manufacturers such as REMBE are therefore designed from the ground up to ensure a high degree of in-built safety that

is immune to tampering. For example, screw connections are replaced by non-detachable riveted connections; bolts are designed to be self-locking and captive.

This is particular essential for more complex components such as devices for flameless venting.

These systems are typically installed indoors, but always in locations where free venting, e.g. via explosion vents, is not possible. However, if the part responsible for flameless venting fails or has any weak points, this could have devastating consequences for the surrounding area, which would be left defenceless against the flames and pressure of an explosion.

www.rembe.de



Fig. 4: REMBE Flameless venting on a fluidbed

Remotely Controlled Robot Will Remove Risk To Humans During Pressure Vessel Inspections

A SEMI-AUTONOMOUS robot currently being manufactured to inspect pressure vessels will remove the risk to humans while also saving industries millions of pounds each year.

As a health and safety requirement, routine internal pressure vessel inspections must be carried out at plants across the world but the process of closing down production, depressurising the vessel and transporting any fluids or liquids is extremely costly.

In addition, these inspections in hazardous environments are currently carried out by

humans and there is a high level of risk involved.

To combat these problems, a remotely controlled robot, Chimera, has been developed by a collaboration of companies across the UK for use across all industries, including oil and gas, nuclear and water.

Chimera is a machine which can withstand hazardous environments and is built in two components to allow a great deal of flexibility so it can climb internal vessel walls, and is attached to a tether to enable the machine to be controlled remotely by an operator from a safe distance.

The robot will have a camera attached to relay live images back to the operator and an ultrasonic phased array inspection system and LIDAR scanner will also be included to create a 3D map of the internal structure to paint an accurate picture of the state of the vessel and identify damage.

A slender 'snake' arm can also be attached to carry out any minor repairs needed in such a confined space.

Cumbrian engineering firm Forth has developed the robotic platform of the Chimera project and has successfully trialled the machine to prove that the concept model accurately carries out its functions.





Joshua Oakes, a Project Engineer at Forth, said: "Maintenance inspections need to be carried out routinely on pressure vessels the world over and the process of having to stop production and draining or transporting any fluid or gas is a long, and very expensive, one. On average, it can cost £40,000 per day to shut production down, and these inspections can go on for days.

"It also requires people to conduct the inspections and it can be hard getting in and out of the confined spaces, and very dangerous due to the substances which have previously been stored in the vessels.

"Chimera removes the human element from hazardous environments, and lets the work get carried out from a safe, remote distance.

"The job can also be completed in hours rather

than days, with production not having to be stopped at all."

The Chimera innovation will come equipped with four heavy duty magnets each with a pull of 116kg worth of weight so it can climb interior walls and ceilings.

The machine features a four-track drive and the operator will be able to steer each track individually to ensure it can be easily controlled.

The purpose of it being constructed in two separate parts is twofold: to allow for a greater deal of flexibility and to enable the machine to be dragged back should power be lost in the machine's motors.

To reduce the risks of losing power, a water cooling system has been included on the

machine to keep the electrics cool during use.

The team at Forth has proven the concept of Chimera with partners, and has successfully trialled a working model.

They are now looking to gain financial backers to progress the process of the innovation to the next stage, allowing the machine to be modified and adapted into a commercial piece of equipment.

The Innovate UK-backed programme has also been supported by The Welding Institute, Headlight AI, Sound Mathematics, the University of Nottingham, Rolls Royce, Metallisation and Race.

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Hazards 32

18–20 October 2022, Harrogate, UK

The Institution of Chemical Engineers' (IChemE) annual Hazards conference returns in person this year, taking place in Harrogate, UK on 18–20 October.

Hazards 32 will help to advance the understanding of and application of managing major hazards and provide valuable networking opportunities. This industry-focused event is aimed at anyone who is active in process safety and hazard management for chemical process facilities or other facilities dealing with hazardous materials, at all levels and in all sectors.

What to expect from Hazards 32

The programme features over 80 technical presentations from industry practitioners, researchers and regulators covering a wide range of topics in the functional areas that are key to managing and reducing process safety risk effectively. Presentations will share examples of good practice, new approaches and valuable lessons learned in process safety and hazard management that attendees can transfer to their own operations, as well as exploring the emerging challenges and major hazard implications of new technologies and applications. There will also be a workshop on bowties delivered by Gold Sponsor, Wolters Kluwer.

Facilitated discussion time has been built into the programme to encourage attendees to share experiences and learn from each other, whilst helping to identify the common issues facing industry practitioners. There will also be a panel discussion where attendees can share their thoughts on meeting the major process safety challenges in industry.

Speaker line-up

The programme includes contributions from key international players in the process industries including Atkins, DEKRA, INEOS, Sellafield Ltd, Shell, the Health and Safety Executive, Wood and many, many more.

The technical presentations will be complemented by an impressive line-up of

plenary speakers. Dame Judith Hackitt will speak on the challenges of learning lessons in the industry and the importance of ethics in engineering during a lecture created to honour the memory of process safety pioneer,

Trevor Kletz. Joining Hackitt are various leaders within the major hazards industry. Jane Lassey, Director of the Health and Safety Executive's Chemicals, Explosives and Microbiological Hazards Division, and Michelle Roberson, General Manager, Process Safety at Shell, US will explore the emerging challenges in hazard management; Lassey from a regulatory perspective, and Roberson from the viewpoint of the operator making the energy transition. The Tank Storage Association's Executive Director, Peter Davidson, will present on the role of leadership in managing major hazards. Jasper Clark, Risk Engineering Hub Leader at Marsh Energy & Power, will share insights from an insurance industry perspective on turning good practice into common practice. And the Chemical Industry Association's Chief Executive, Steve Elliott, will present on the importance of cross-sector learning.

Trade exhibition and industry support

A trade exhibition will run alongside the conference, showcasing products and services to support the major hazards community. Several leading companies in the industry are sponsoring Hazards 32 including Wolters Kluwer, BakerRisk, ESR Technology, MES and ABS Group. There are more packages available to suit all budgets, and companies interested in sponsoring or exhibiting at Hazards 32 can learn about the opportunities that are available on the event website.

Networking opportunities

Hazards was last held in-person in May 2019. Virtual conferences have continued to facilitate knowledge-transfer and learning since, but they couldn't replicate the valuable networking opportunities available at an in-person event. This year's in-person event offers the chance for the major hazards community to rebuild networks and make new contacts, with plenty of social and networking time built into the programme.

To view the Hazards 32 programme and register to attend on 18–20 October, visit www.icheme.org/hazards32





A Step Towards Smart Oil Platforms

For smart devices, use in the oil industry, for example on an offshore oil platform, represents a real endurance test. The Pepperl+Fuchs brand ECOM Instruments subjected the Visor-Ex® 01, the first system consisting of smart glasses and smartphone certified for use in hazardous areas, to this endurance test during its development phase. The practical test reveals great potential for rollout in future applications.

Inhospitable environmental conditions, confined spaces and limited WLAN connectivity – the offshore oil and gas industry with its remote drilling rigs is not the easiest place for digitalization.

The stringent requirements for hazardous areas further restrict the choice of smart devices that can be used. This is a reason why, up to now, the staff on oil platforms often works with pen and paper. For example, to provisionally document inspection results before manually transferring the data to digital files at a computer desk. For mobile workers, this practice is associated with traversing long distances along the multilevel oil platforms. So, there is great efficiency potential waiting to be tapped in the oil and gas industry, particularly in the area of knowledge management.

Smart devices for extreme conditions

Another special feature of drilling rigs is that the hazardous areas can change depending on current conditions. So the highest level of protection is essential for the equipment used. Since crews on an oil platform should be kept to a minimum for safety, cost and

time reasons, remote support solutions for maintenance and repair are becoming increasingly attractive. Currently, oil and gas Industry is looking for suitable digitization solutions to ensure real-time knowledge transfer for employees and to accelerate the first-time fix. With up to 10,000 maintenance activities per month on the oil platform, streamlined processes are a significant factor to ensure efficiency.

That's why a company in the oil and gas value chain started its search for suitable smart devices to help digitize processes. In addition to remote support, the most important application scenarios included data harvesting, for example during inspections or for the upcoming general storage system overhaul. Potential devices had to meet a number of requirements in order to make it on the shortlist. Wearables were of interest because they allow hands-free work – this is essential, since mobile workers must be able to safely navigate long distances along steep staircases. Global certifications such as ATEX or IECEx are mandatory to enable safe use. In addition, the devices had to be comfortable to wear, i.e. not too heavy or bulky.

visor-Ex® 01 smart glasses in a practical test

The company also subjected the explosion-proof Visor-Ex® 01 smart glasses from the Pepperl+Fuchs brand ECOM Instruments to an extensive practical test on a drilling rig. The lightweight wearable (180 g) combines high camera quality and reliable communication features in an ergonomic design. Coupled with the intrinsically safe smartphone ECOM Smart-Ex® 02 as computing unit with reliable LTE connectivity and a pocket device with replaceable battery for power supply, the smart glasses become part of an intelligent ecosystem. A total of three integrated and suitably positioned cameras transform the Visor-Ex® 01 smart glasses into a bionic eye, with the help of which remote support workers can observe the situation from a natural perspective and an unrestricted field of vision. All these features help to implement remote support scenarios without unnecessary complication, even under challenging environmental conditions. During the field test, the company was in close contact with the development team at ECOM Instruments, and the feedback contributed the smart glasses development.

Experience and future application scenarios

Visor-Ex® 01 was able to demonstrate its strengths during the field test, particularly in the area of data harvesting. With the help of cameras and image processing, QR codes from devices and machines can be read to gain access to sensor data such as pump pressure. This opens up a wide range of possible IoT application scenarios. But smart glasses are already scoring points because they improve the documentation of incidents not only quantitatively, but also qualitatively. Mobile workers can not only note down the causes of malfunctions, but also enrich the information with photos or video recordings. The digitized information can then also be shared with external support experts or employees on other rigs or at the company's headquarters – for comprehensive, up-to-date knowledge management. They also don't have to rush from the scene back to the computer or decipher handwritten notes.

The freedom of movement and vision that mobile workers gain from using smart glasses proved to be one of the other advantages. Because their hands are free, employees can move safely and freely up and down the stairs of the multilevel rig while fully concentrating on their task. Furthermore, they can make all the configurations they need on the associated smartphone and use the smart glasses as an optional augmented reality layer. When not in use, users can conveniently fold the OLED display of the Visor-Ex® 01 out of their field of vision and gain an unobstructed view of analogue reality.

Overall, the testing company attests the Visor-Ex® 01's versatility and good usability, even at the prototype stage; the intuitive operation was particularly emphasized. In the short term, the most obvious use scenario for the smart glasses is remote support during inspection and maintenance.

The stable LTE connectivity of the ECOM devices facilitates communication with external experts. This point is particularly

worth emphasizing, since WLAN cannot be relied upon in every area of a drilling rig. In the medium term, the augmented reality functions could also significantly facilitate the onboarding of new specialists on the drilling rig. During a tour of the most important areas, for example, the relevant information or efficient routes could be shown on the OLED display of the Visor-Ex® 01 – or a connected expert could communicate via the integrated loudspeaker and describe what to look out for in certain areas. The ability to retrieve data quickly and easily from various sources (data harvesting) lays the foundation for sophisticated application scenarios for smart glasses.

Short portrait ECOM Instruments

The Pepperl+Fuchs brand ECOM Instruments is one of the top addresses internationally for holistic solutions for mobile computing and industrial communication in potentially explosive atmospheres. As an industry pioneer, ECOM has played a key role in the development of explosion protection for mobile devices since 1986 and has demonstrated its technological expertise with a large number of innovations. ECOM is

the preferred brand for explosion-protected mobile phones, smartphones, tablets, wearables as well as peripherals that meet the highest requirements in industrial use. As part of the Pepperl+Fuchs Group, technology leader for industrial sensor technology and intrinsically safe explosion protection, customers benefit from a seamless portfolio with technologies for conventional and Industry 4.0 applications.

In the five core disciplines of mobile computing, communication, digital products and services, measurement and calibration technology and mobile luminaires, ECOM offers an enormous variety of innovative and field-proven mobile solutions, peripherals, services and intelligent software. Each individual solution combines uncompromising safety with maximum functionality - with all the necessary approvals and certificates for the specific application. Worldwide support, with service centres in Germany, the USA, Singapore and the United Arab Emirates, rounds off the range.

For more information on ECOM, please visit: www.ecom-ex.com and www.pepperl-fuchs.com





Vacuum Cleaners For Hazardous Dusts

It is essential when evaluating a vacuum cleaner for industrial and commercial cleaning tasks that consideration is given to the relevant hazards and that the equipment is therefore specified appropriately.

Hazards from dusts and spilled product fall in to two distinct categories; the first is dusts

that are hazardous to health. This category includes obvious products like asbestos and silica dust, but any dust that can be breathed in by the operator or other personnel in the workplace is likely to be hazardous to health to a degree. The second category is dusts that are hazardous in the environment. The obvious category is dusts that can potentially cause an explosive atmosphere, particularly organic products like sugar and flour. Some

products fall in to both categories such as wood dusts, which are both hazardous to health and potentially explosive.

Selecting an appropriate Industrial Vacuum Cleaner requires consideration of the potential hazards which then informs the specification of the machine. BVC – British Vacuum Cleaners is the leading brand of British manufactured industrial vacuum cleaners.

Manufactured by Quirepace in Fareham, the range includes both M-Class and H-Class machines for dusts hazardous to health and ATEX rated equipment suitable to operate in potentially explosive environments.

BVC equipment is manufactured to order to match the specific requirements of individual customers. One of the principal considerations is the choice of filter material used for the primary filter. This can be constructed from several different materials including PTFE coated, fire resistant and anti-static materials in addition to standard filter materials. Within machines designed to recover hazardous materials there is always a second stage filter, usually a 3rd stage filter, and sometimes a 4th stage filter, with each stage designed for a specific purpose to ensure the hazardous product is collected safely and that the exhaust air is as clean as possible.

The range of BVC Industrial Vacuum Cleaners extends from 1kW single phase units to 15kW 3 phase machines. In addition Quirepace supply both compressed air and petrol/diesel powered units. The smaller machines in the range; the IV40 and IV60, are both available as several different versions rated as either M/H Class or ATEX, or indeed both, for when dusts are both hazardous and require rating for ATEX rated environments.

The standards that describe the specifications to conform to M/H Class are not appropriate for the largest machines in the BVC range; the Ti60 and Ti80 Centurions. These machines, typically with 4-15kW 3 phase multistage

exhausters are available in ATEX versions, and can also be supplied with HEPA filtration to a similar specification to M/H Class units. Again, machines can be configured with filtration against dusts hazardous to health and with specifications suitable for ATEX rated environments.

The choices available to the potential customer are not just related to the specification of the vacuum cleaner itself; the specification of the hoses and tools must also be considered to ensure that they are appropriate for the use the machines will be put to.

Quirepace's extensive knowledge combined with our experienced sales team, UK manufacture, and local service and spares

support, means that BVC UK manufactured Industrial Vacuum Cleaners, with their 5 year parts warranty, deliver excellent durability and value for money in the industrial environment.

In addition to portable equipment, Quirepace also design and install fixed installations for Central Vacuum Cleaning, where multiple outlets are served by central plant through a network of fixed pipework.

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Water Jetting Standards Get WJA Audited Member Boost

The Water Jetting Association has introduced an Audited Member programme giving its members a powerful new opportunity to promote the standards they set to customers.

The initiative gives users of water jetting services greater assurance that contractors displaying the Audited Member logo meet the WJA's high standards.

It has been made possible by the introduction of an audit procedure that requires new and renewing members to provide more information and evidence to show services are aligned with WJA codes of practice.

David Malin, Chairman of the WJA Technical Committee, whose members have been overseeing the development of the auditing procedure, said: "We're excited by the opportunities presented by our Audited Member programme.

"It's going to help the WJA safeguard trusted water jetting standards and, thanks to the quality of the data we're gathering, will play a key role in helping us to raise them over time. "Equally important, also, is the opportunity it provides members to promote their services, and make the most of the advantages of being members of the WJA."

Companies and organisations that use water jetting services, along with regulatory bodies, look to the WJA to set and uphold vitally-important safety and technical standards, said David Malin.

He added: "At the same time, our members join the WJA because they share our values and know customers will be assured by their association with us. The Audited Member programme will help us achieve both outcomes."

The WJA has now added a range of new

questions to its application forms for new members and for companies renewing their membership.

These are designed to extend the amount of information the WJA gathers about the safety and technical standards and processes companies work to, including equipment management and training.

The auditing process is closely aligned to standards detailed in the WJA's codes of practice – the Blue Code for high and ultra-high water jetting, the Red Code, for use of water jetting in sewers and drains, and the new Purple Code, for pressure washing.

It also requires members and renewing members to abide by the principles laid down in the WJA Charter of Professional Conduct, covering issues that include professional behaviour, competence, incident investigation, and equality.

High and ultra-high pressure water jetting contractors – under the C1 and C1P (Provisional) categories – have been the first to undergo the auditing process. Auditing for members and prospective members in C2 to C6 categories will be rolled out over time.

All members who pass the auditing process will be allowed to display an 'Audited Member' logo on their websites, and promote the enhanced status they have achieved to customers and prospective customers. Development of the auditing system has been led by Jeff Haigh, a WJA Ruling Council member and a qualified auditor.

Under the auditing system, all the new information provided in application forms is being carefully examined. Gaps or inconsistencies

are resolved with applicants. Only then can the applications move to the next stage in the approval process.

The WJA also retains the option of carrying out visits to work sites or to company offices as part of the auditing process.

The WJA is grateful for the patience and cooperation of members during the introduction of such a fundamental new programme, said Jeff Haigh. Learning would be fed into later phases of its roll-out.

He added: "This is designed to be a positive process. The WJA wants to support applicants at every stage, sharing information and expertise that will help them with their applications, and to meet the standards we all want to achieve."

www.waterjetting.org.uk



Veolia Set To Transform Waste And Hazardous Waste Operations With First Cloud-Based Management System In The Uk

To help businesses manage the collection, treatment and disposal of complex waste streams, leading resource management company, Veolia, has introduced the first end-to-end cloud based system that can ensure compliance and traceability for hazardous and non hazardous wastes. Developed by Veolia's technical teams, the new system manages the complete cycle from enquiry through collection, treatment and disposal and is designed to cover more than 100,000 different waste profiles. Since starting trials last autumn, the system has already managed over 300,000 tonnes of waste processing and scheduled nearly 120,000 service appointments across the UK.

With the specific aim of enabling customers to access waste management services quickly, and generating all the necessary data to meet applicable regulations, the system can help users to remove wastes from their sites efficiently with the back up of the necessary data. This covers all aspects of the waste management process, from the initial collection at the point of production and on-site transfer and consolidation, through to off-site transportation, treatment, and disposal.

The system segregates each item based on potential hazards, physical and chemical properties to ensure correct classification, storage and movement in accordance with the local geographical legislation. It also generates all the required regulatory documents to demonstrate that the necessary pre-acceptance and disposal considerations have been completed. As the system is paperless this eliminates the need to print paper forms, consignment notes, work orders and invoices which reduces the carbon footprint.

The whole system is browser based and is supported by various operator interfaces including android atex (explosion proof) scanners to identify waste using 2D bar codes written into the ADR waste transport labels, and in cab drivers tablet devices. This provides flexibility by enabling the accurate monitoring, logging and tracking needed for these operations.

Originally designed to manage hazardous waste covering the components and concentration, waste description, classification, volume, EWC code, UN number and details, the system now forms an essential tool for total waste management and is linked to weighbridge data. Following the testing phase of the project the capabilities

have been extended to enable processing of clinical wastes.

Stuart Stock, Chief Information Officer at Veolia commented

"By developing this using our in-house waste management experience, we believe the new system now represents a major step forward for managing wastes for our customers. It also demonstrates Veolia's commitment to innovation for the sector, and our drive to use the latest technologies that can enhance our

operations."

"For the first time users will have an end-to-end system that deals with their wastes compliantly and efficiently, and ensures all regulatory requirements are met. This will help drive recycling rates and further backs the aim of achieving a circular economy, backed by the increasingly automated recycling and treatment infrastructure that is able to capture more resources and do this more effectively."

For more information visit www.veolia.co.uk.



The in-house developed system will handle more than 100,000 waste profiles, ensure tracking and compliance, and will reduce carbon emissions

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Since IPAF began analysing accident data in 2012, falls from the platform have been the most common cause of injury and death when using mobile elevating work platforms (MEWPs).

From 2012 to 2022, there were 239 reports of falls from the platform in 20 countries, resulting in 132 deaths.

IPAF's *Don't Fall For It!* safety campaign identifies key causes of falls from the platform, and provides advice about how to avoid associated hazards.



www.ipaf.org/safe