

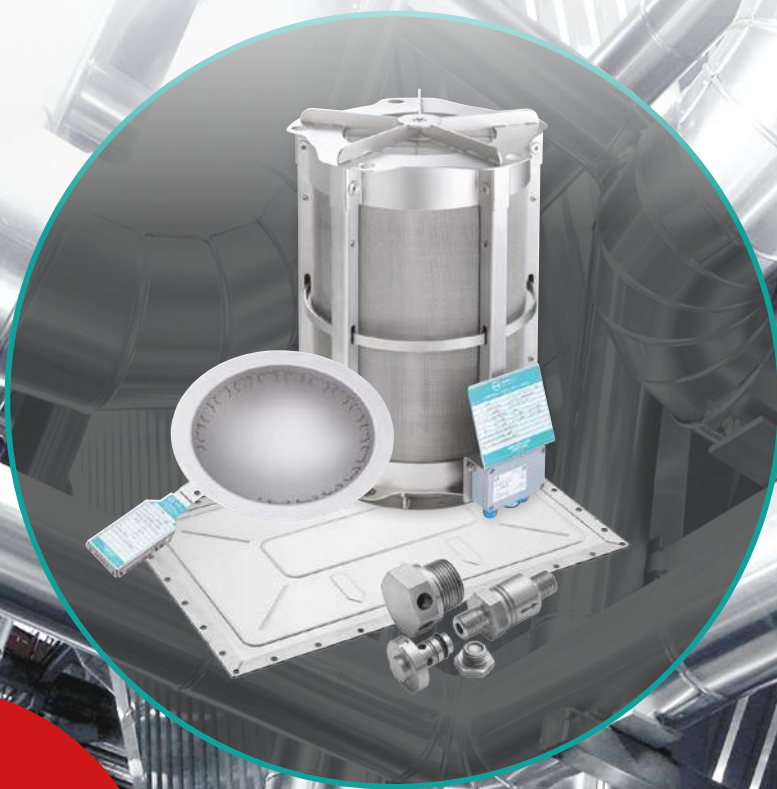
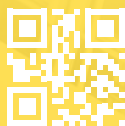
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Highly Specific Safety Concepts For Hydrogen Infrastructures



**ATEX Application
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Highly Specific Safety Concepts For Hydrogen Infrastructures

In the context of the desired decarbonisation, hydrogen is becoming increasingly important as an energy carrier (thermal utilisation) and as a starting material for chemical production lines (molecular utilisation). Plant operators and manufacturers of specific subcomponents often plan to use methane-hydrogen mixtures initially, and then to continuously increase their hydrogen content. The long-term goal is to completely substitute methane with hydrogen. However, it is often disregarded that the safety concepts and technologies suitable for the original methane operation are only functional to a limited extent or not at all for protecting plants, single components and infrastructure during operation with high hydrogen concentrations.

Particularly in the area of explosion protection, as well as pressure venting at medium to very high overpressures, the existing concepts must be carefully reviewed using the available models, and possibly re-evaluated. A comparison of the explosion characteristics of stoichiometric methane-air and hydrogen-air mixtures quickly makes this necessity clear.

	Unit	Methane	Hydrogen
Lower explosion limit	Vol-%	4,4	4,0
Upper explosion limit	Vol-%	17,0	77,0
Limiting oxygen concentration	Vol-%	9,9	4,3
Min. ignition energy	mJ	0,23	0,017
Ignition temperature	°C (°F)	595 (1103,0)	560 (1040,0)
Flame temperature	°C (°F)	1970 (3578,0)	2130 (3866,0)
K _{st}	bar m s ⁻¹	68,4	550
Laminar burning velocity S _L	cm s ⁻¹	43	346
Max. explosion pressure	bar	8,2	8,2

Fig. 1: Comparison of explosion characteristics under atmospheric conditions (20°C; 1.01 bar)

Sources: BAM final report on research project 2539 and own investigations.

If the maximum explosion pressure at atmospheric conditions is about 8 bar in each case, significant increases can be observed both in the K_G value (rate of pressure rise) and in the laminar flame propagation speed. This may mean that safety devices tested with methane explosions show too high inertia for the rapid pressure increase. Valve-type protective systems can be severely damaged when they respond that they do not return cleanly to their original state and their functionality is impaired or they are operated unsafely. Special care must be taken when designing and assessing

the geometric dimensions and sizing. For example, certain length-to-diameter ratios of vessels and pipes, especially for hydrogen as a Class IIC gas, favour the tendency towards detonative transition. If explosions propagate from one vessel to another via a pipe, there is also the risk that the ignitable mixture is pre-compressed in the second vessel, which results in significantly higher explosion pressures compared to explosions under atmospheric conditions. A hydrogen-air mixture is also more susceptible to ignition than a methane-air mixture due to the lower ignition energies and ignition temperature. In addition to the expected more severe course of events, the probability of occurrence is also higher.

Hydrogen explosions under prepressure

In addition to the aforementioned secondary prepressurisation in the event of an incident, there are applications in which ignitable mixtures are deliberately precompressed and can ignite uncontrollably under certain circumstances. For several reasons, these scenarios pose a special challenge with regard to the design of the corresponding equipment and to the constructive protection concepts.

Firstly, the existing normative regulations do not provide any models for the design of safety relief devices for gas explosions under prepressure. Due to the prepressure at high dynamics, the problem at hand is neither covered by DIN EN 14994 (Gas explosion venting protective systems) nor by DIN EN ISO 4126 (Safety devices for protection against excessive pressure). Thus, there are no assured design standards, which means that the problem is in the "grey area of safety technology". Secondly, the explosion dynamics are significantly influenced by barely assessable turbulence-generating effects, which primarily result from the geometry at hand. Thus, it is difficult to predict

what explosion pressures, flame propagation speeds and rates of pressure rise are to be expected. Whether a detonative transition occurs and whether an explosion venting device is suitable to protect the present scenario therefore requires separate investigations.

One possible way to validate a safety concept for the "hydrogen explosion under prepressure" problem dealt with here – in addition to very complex numerical simulations – is experimental verification. For this purpose, the protection scenario is simulated as realistically as possible with flameproof components and the explosion pressure resistant concept is tested with regard to its functionality via repeated explosion tests. Starting from a stoichiometric methane-air reference test, either the proportion of hydrogen in the methane-hydrogen-air mixture, the prepressure or the combustion air ratio is increased when testing a pure hydrogen-air mixture, depending on the problem. By registering the pressure curves within the simulated structure, the maximum explosion pressure can be inferred and the tendency towards detonative transition can be estimated.

The aim of the verification is always the identification of safe operating parameters as well as to check product suitability, as no standard product certification is available due to the lack of a normative basis. When selecting a suitable product/explosion venting device, it is important to ensure that it is not only suitable for explosion venting, but also guarantees a long and reliable service life under the prevailing conditions during normal operations. If the explosion venting device was an explosion vent or rupture disc, the burst pressure, operating ratio, working temperature as well as the occurrence of vibrations and cyclic loads and, of course, the corresponding material must be taken into account when making the selection.

REMBE GmbH Safety+Control has been a leader in the technological fields of Process Safety and Explosion Safety for almost 50 years. As such, the careful selection of suitable safety systems and (explosion) relief devices is a key aspect of the company's service portfolio. REMBE has thus built up a profound understanding of how to analyse customers' processes and plants and identify suitable protection technologies.

GmbH, an independent testing laboratory accredited to EN ISO / IEC 17025:2018, REMBE can also validate even highly complex protection concepts on an experimental basis. Especially in scenarios where new technologies need to be tested, no assured design standards are available or high-precision protection concepts are required, it is precisely this multidisciplinary approach that enables REMBE to develop high-quality solution concepts. In collaboration with the customer, the company combines experimental verification with its extensive expertise in explosion safety and explosion venting solutions to create highly specific protection concepts tailored to the customer's processes.

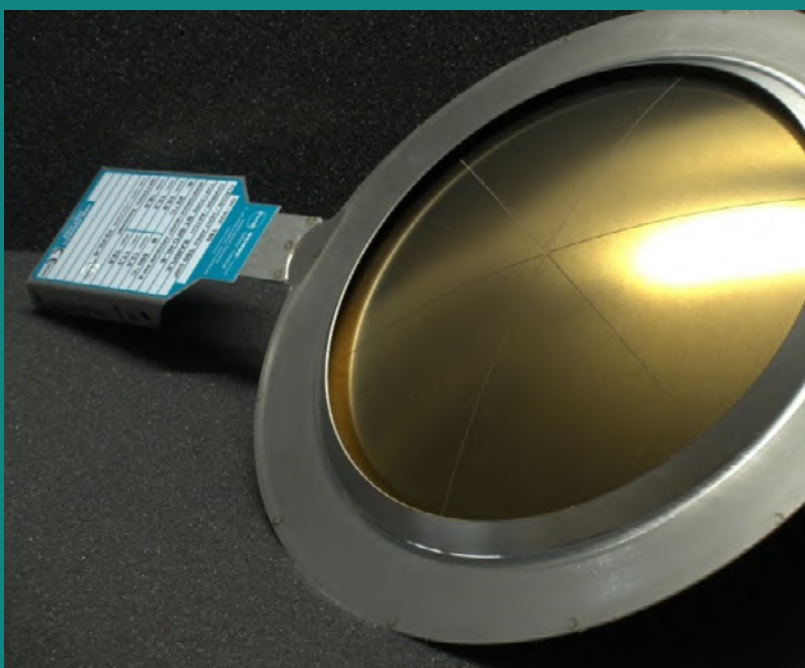


Fig. 2: REMBE produces high-quality explosion vents and rupture discs that are not only aesthetically appealing, but also suitable for safely venting hydrogen explosions under prepressure.



Fig. 3: Successful venting of a hydrogen explosion at REMBE Research+Technology Center GmbH.

Snickers Workwear Hoodies – Built For Comfort

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long with the Work Trousers range, these Hoodies and Sweatshirts are probably the most popular products among Snickers Workwear users. Designed specifically for professional craftsmen and women, they're built for durability and comfort.

available with the unmistakable Snickers logo and are ideal for company profiling.

Getting more information on the Snickers Workwear clothing range is easy. You can call the Helpline on 01484 854788; check out www.snickersworkwear.co.uk and or email sales@hultaforsgroup.co.uk

The 'full zip' or 'overhead' styles are ideal as mid-Layer working clothes. They'll fit well with a jacket on chilly days and can be worn as an outer layer in the spring and summer months. You can choose from a selection of fabric options that include Polartec® micro fleece and cosy polycotton.

Street-smart and great for on-site work or leisure activities there's over 40 styles and a host of colours to choose from including the new khaki green option as well as Class 1 and Class 2 High-Vis. They're also



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Managing Director Delivers Knockout Performance For Charity

Hi-line Industries, a UK-based leader in the design, manufacture and installation of energy-efficient compressed air purification equipment, is well known for the long-standing support it provides to the local sporting community in Burton upon Trent. The company is a main sponsor at both Burton Albion Football Club and Burton Rugby Football Club. Now, Hi-line's Managing Director Steve Smith is adding to this tradition by raising thousands of pounds for Cancer Research UK through his endeavours in White Collar Boxing, a series of high-profile fundraising events organised by Ultra, the UK's largest charity sports organisation.

Ultra White Collar Boxing (UWCB) is a unique opportunity for people to experience the wonderful world of boxing in a safe and enjoyable environment, while simultaneously raising money for Cancer Research UK (CRUK) and getting into shape. The organisation is a spin-off of the original White Collar Boxing, which began in New York in 1988 when two 'white collar' workers, a doctor and an attorney, trained for a few weeks before boxing each other at a black-tie event. UCWB commenced in 2009, becoming a corporate partner of CRUK in 2013. Today, the organisation is one of CRUK's largest fundraising partners, donating over £25 million to date.

In memory of his late mother June Smith, Hi-line's Managing Director Steve Smith decided to get involved when UWCB announced it would be staging a series of bouts in Burton upon Trent between 18 March and 18 April 2023. UWCB has now organised events in over 100 towns and cities in the UK.

All those agreeing to participate in a UWCB bout receive eight weeks of free training at a local boxing gym with professional coaches. Once training is complete, participants get paired with an opponent from the same group of trainees based on weight, fitness, ability and age to ensure a fair and competitive bout under strict safety guidelines.

Every participating boxer must pledge to raise at least £50 for CRUK, but Steve Smith wanted to do more, setting up a Just Giving page with a target of £3,000. At time of writing, the total had already exceeded £4,600.

"I wanted to raise money for research into cancer cures because this devastating disease must cease," he said. "At Hi-line we have a long association with supporting local sport, so UWCB seemed the ideal opportunity to make a further contribution. I must offer my thanks everyone who has made a donation. We associate ourselves with success at Hi-line Industries and take our social and charitable responsibilities very seriously, so a massive thank you to all who have helped make this fundraising event so hugely successful."

A video of the entire bout between Steve 'Nitro' Smith (wearing blue) and his challenger Matt Long is available to view on YouTube at www.youtube.com/watch?v=_3l9k42cKjA. Anyone wishing to support Steve Smith and pledge a donation to Cancer Research UK can do so at: www.justgiving.com/fundraising/steve-smith222

The company are also sponsoring a MotoX race team started by their Fabrication Manager, Darren Stretton. The team features a group of like-minded dirt bikers and ride at AMCA level, meeting throughout the Midlands. The all Yamaha team wear Hi-line blue with bikes in full Hi-line decals.

Further information is available from: Hi-line Industries Ltd, Green Street, Burton on Trent, Staffordshire DE14 3RT

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www.hilineindustries.com



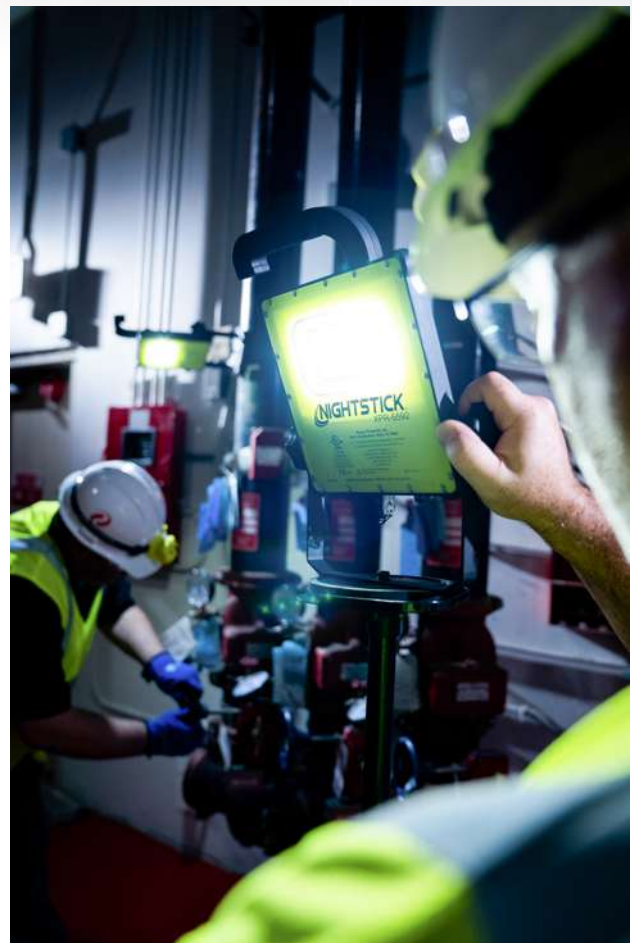


Lightweight, Portable, Zone 0 Area Light

The XPR-5592GX area light has revolutionized how oil and gas industry workers interact within hazardous Zone 0 environments. With its powerful LED array and durable construction, this one-of-a-kind area light is a must-have tool for any worker operating in both tight confined spaces and large open spaces regardless of the environmental conditions.

The Nightstick XPR-5592GX is the only portable LED area light with integrated carry handle and rare-earth built-in magnet rated for ATEX and IECEx Zone 0 hazardous environments. It provides bright, reliable, and consistent lighting up-close or at a distance.

In addition to its lighting capabilities, the XPR-5592GX is engineered to withstand the most demanding tasks. This light is purpose built with rugged, industrial-grade rare-earth magnets in the base, allowing it to firmly adhere to any ferrous metal surface. The XPR-5592GX is certified waterproof and



shock-resistant, ensuring it will remain functional in the harshest locations. The full-kit model XPR-5592GCX includes an extendable six-foot tripod and blow-molded carrying case for quick deployment.

With up to 12 hours of continuous use on a single charge, the extended li-ion battery life makes this life-saving tool reliable and long-lasting light throughout each and every shift.

Designed for easy, convenient use, the 360-degree rotation and tilting design, rapid emergency deployment and brightness

adjustments meet every need. Even while wearing gloves, the telescoping handle adjusts for comfort and makes it easy to hang on a door, ladder, or other equipment in a moment's time.

The Nightstick XPR-5592GX area light is a must-have tool for any oil and gas industry worker. Its powerful Zone 0 lighting, rugged construction, long battery life, and convenient features provide a range of benefits that help teams work more efficiently and safely. When Life Depends on Light®, trust Nightstick. Visit us at nightstick.com or call 1-469-326-9400.



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Hart completes TVH UK Ltd Contract 'Energy saving features a key'



Hart Industrial Doors has completed a contract to supply and install a Speedor Storm at the new Kidderminster facility for TVH UK LTD, global parts and accessories suppliers.

Brian Woodcock, Hart's sales manager for the Midlands and South West, says the impressive building has a two storey, 6300 sq m mezzanine with 20,000m of long span shelving containing more than 32,000 product locations. At ground floor level there are over 16,500 pallet places in high-bay racking holding 71,000 stock-keeping units (sku).

"This is an outstanding development where the emphasis is on efficiency of parts delivery and faster delivery times, critical for their clients. Our high-speed Speedors have an important part to play in this," says Mr Woodcock.

"We installed Hart's external high-speed Speedor Storm fabric door which is designed for frequent use in high traffic situations and capable of withstanding harsh environments. This rapid roll door is robust, requires low maintenance and delivers exceptional wind resistance in exposed areas.

"While its high-speed opening and closing action improves efficiency, the energy-saving potential of this rapid roll door is also high, controlling the internal temperatures as well as limiting escaping dirt, odours and noise."

Mr Woodcock adds: "Given rising energy and the whole of the Climate Change issue, Speedor's energy-saving features are very important. The automatic action ensures doors are closed for as long as possible thus reducing the loss of heated air and penetration of cold air from outside the building. Given an intensely busy loading bay scenario, heat loss and increasing energy costs have to be controlled, reducing CO2 emissions at the same.

"Hart were selected for cost of product, quality of product and are a UK based manufacturer, this helps to reduce carbon footprint of the purchase and installation."

Other special features include moisture- controlled electrics

and shielding for mechanical components together with a unique guide system offering exceptional wind resistance up to class 5 as defined by DIN EN 12424.

"The Speedor Storm is our bestselling door, ideal for challenging applications where reliability is indispensable as well as speed of the opening/closing cycle which is essential to optimise traffic flow, improve working conditions and of course save energy."

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Minimise Energy Bills With Tundra Refrigeration Air Dryers

With energy bills likely to remain high for some time, users of compressed air must consider every potential energy-reducing measure.

In tandem with growing demands to reduce carbon footprint as the UK transitions to a net-zero future, many companies are looking at compressed air technologies for the solution. Air dryers, which are essential to improve the quality of compressed air and protect valuable assets, are no exception. With this thought in mind, Hi-line's latest Tundra range of refrigeration air dryers is its most energy-efficient to date, helping companies reduce costs, remain competitive and boost their green credentials.

Tundra refrigeration air dryers outperform rival technologies in energy efficiency by minimising pressure drop and lowering absorbed power. The principle of operation is direct expansion, which offers a notable advantage over thermal expansion dryers, namely a far more stable dew point of +1°C at all load levels. This stability contrasts greatly to thermal expansion dryers, where dew points can range from +3°C to +20°C. Importantly, this impressive stability in no way compromises performance: Tundra refrigeration dryers deliver continuous dry air that satisfies ISO 7183 industry standards.

One of the secrets behind the energy-efficient Tundra series is the improved and patented single-cell heat exchanger, which delivers highly efficient heat transfer at low energy costs. In essence, pre-cooled air enters the all-aluminium heat exchanger module while post-heated air departs, supporting a reduction in the energy consumed by the chiller circuit. Another energy-saving attribute of the Hi-line's Tundra range

of refrigeration air dryers involves condensate removal. A link between the microprocessor controller and the condensate removal valve ensures minimum loss of compressed air during condensate discharge, again saving energy. This function is fully programmable in line with climatic and seasonal conditions.

A variable-speed fan is among further energy-reducing technologies that help to drive down bills. Fan speed is adjustable via the multifunction control panel, providing users of Tundra refrigeration air dryers with improved process control, increased power factor and significant energy savings.

Controlling the fan speed on the refrigerant circuit also presents the opportunity to eliminate components such as fan pressure switches which, over time, can sometimes become defective in compressed air dryers. The less moving parts, the more reliable the product.

Providing a robust and highly reliable build quality is a priority at Hi-line. For instance, following significant company investment, all Hi-line Tundra dryers now feature Scroll Freon



refrigerant compressors, which offer the lowest possible power consumption and deliver cost-effective, long-life performance. The refrigerant system also takes advantage of liquid receivers, line dryers, thermostatic expansion valves and a series of safety features to protect the Freon compressor and its parts. In short, the design of Hi-line's Tundra range centres on engineering specification, rather than budget.

As a point of note, Tundra dryers take advantage of R513a refrigerant in models up to and including Tundra 115 (115 cfm, 195 m³/hr capacity). A HFC/HFO blend, R513a refrigerant has no ODP (Ozone Depletion Potential) and a much reduced CO₂ impact in comparison with the previous R134a refrigerant.

Tundra refrigeration air dryers with capacities up to 1530 cfm are available ex-stock from Hi-line's centrally located headquarters and manufacturing facility in Burton upon Trent. The company also offers larger and higher pressure dryers (up to 40 bar) on short lead times.

Further information is available from: Hi-line Industries Ltd,

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Fax: 01283 533367

e-mail: enquiries@hilineindustries.com

www.hilineindustries.com



Water Jetting Injury Research Achieves Global Reach

A study commissioned by the Water Jetting Association into the management of high pressure fluid injection injuries has been accessed online 10,000 times in four years.

It has also been cited in five specialist medical papers over the same period, making it one of the most important and widely-referenced research papers on the topic in the world.

Now, an injury treatment algorithm developed from the research, has been updated to make it easier to use. The WJA Water Jetting Injury Treatment Algorithm gives step-by-step best practical guidance on the treatment of water jetting injuries from first response through to definitive hospital care.

It provides vital guidance for paramedics and clinicians, as well as water jetting contractors, which include pressure washing specialists, service commissioners and health and safety professionals.

The WJA is the member organisation for the water jetting industry in the UK. Its codes of practice and City & Guilds accredited training courses are respected for setting water jetting standards internationally.

Water jetting is commonly used for cleaning tubes and chambers in oil and gas, petrochemicals and energy plants, carrying out hydrodemolition of concrete structures, and cleaning culverts, tanks and sewers in drainage systems, as well other surface preparation, cleaning and materials cutting tasks.

The research the WJA funded was led by Dr Sancho Rodriguez-Villar, an intensive care consultant at Kings College Hospital, London, and Dr Robert Charles Kennedy (PhD), the WJA's clinical research and development advisor.

Dr Rodriguez-Villar said: "The study is one of the most important sources of expert opinion on high pressure fluid injection injuries in the world. It is a complex multidisciplinary piece of research involving knowledge from industry and three medical specialties.

"Researchers and clinicians are clearly finding it useful. It is highly likely that doctors and surgeons around the world are searching for advice on such injuries, finding this research, and using it to guide their treatment.

"In this sense, it is having the desired and very important effect of educating clinical teams about how to treat these unique and serious injuries. This, in turn, will be greatly improving the treatment outcomes for patients, contributing to their long-term health and wellbeing."

The study is called the Management of Industrial High Pressure Fluid Injection Injuries (IHPFII): the Water Jetting Association Experience with Water Driven Injuries. It was published in the European Journal of Trauma and Emergency Surgery in March 2019, and is also available via the medical database Researchgate.

The injury treatment algorithm helps first aiders, paramedics and clinicians optimise treatment, reducing the risk of death, long-term disability or unnecessarily prolonged periods of recovery.

The WJA has now created A4 version which is easier to view, both online and offline. Its sections have also been colour-coded so users can easily follow a patient's journey through a treatment pathway.

It can be instantly accessed via a red tab on the home page of the WJA website.

IHPFII injuries can be caused with water pressures as low as 7 bar, or 100 pounds per square inch (PSI) – while water pressures for industrial applications can exceed 1,700 bar, or 24,650 psi.

They are characterised by small entry wounds, caused by fine fluid jets, and no exit wounds. This can mask the extensive internal disruption they can cause. Debris and bacteria can be also carried far into the body, increasing the risk of serious infection.

These factors can lead to delays in patients receiving the appropriate emergency treatment. This can result in complications that, in worst cases, cause life-changing serious injury or death.

Robert Kennedy said: "The evidence shows that, without early and correct intervention, the outcome for those injured is often catastrophic. We strongly advise all parties to observe the WJA's algorithm for the management of high-pressure injection injuries."

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ATEX Application For Water Re-Injection

Cat Pumps (U.K.) were contacted by an onshore wellsite operator looking for a complete pump and motor unit that was able to deliver the pressure and flowrate required for their water injection "downhole re-injection" system.

Following an online search, they discovered that Cat Pumps offer ATEX Pumps and Pump Motor Units that were a suitable solution for their application.

The operator, appraises and develops any hydrocarbons found at an onshore wellsite in the Weald Basin in the South of England, and wanted produced water from oil and gas fields to be reinjected into the formation to stimulate hydrocarbon production in aging wells known as water injection or water flooding. Produced water is very expensive to dispose of, so it is cost effective to re-inject into designated wells with compatible ground formations.

Cat Pumps has provided high-pressure pumps, pump systems and components to the well drilling industry for over 30 years. Due to the field-proven dependability and superior suction capabilities, our pumps have become the industry

standard for water injection applications worldwide.

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The onshore well operator advised:

"Cat Pumps had a very good understanding of our requirements. Their Technical support, after-purchase correspondence and ease of delivery to our location, made it a pleasure to do business. Any further requirements, we will contact Cat Pumps as our preferred supplier."

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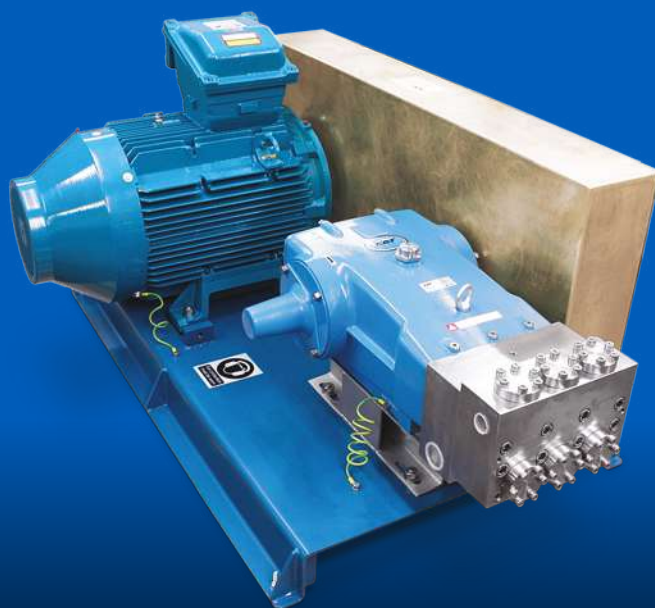


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- Accumulator Charging; Blow-Out Preventers
- Equipment for Use In Explosive Atmospheres (Zones 1/21 & 2/22)



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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:

www.wolfsafety.com

TOUGH & RELIABLE IN HAZARDOUS AREAS

- ATEX/IECEx ZONE 1/21
- UP TO 3,100 LUMENS (EMITTED) - IDEAL FOR SMALLER CONFINED SPACES
- UP TO 8 LIGHTS CAN BE CONNECTED FROM ONE WOLF TRANSFORMER
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- CERTIFIED SAFE TO 0 VOLTS
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PRODUCT CERTIFICATION

ExVeritas offer highly accredited and internationally accepted product certification including UKCA Ex, ATEX, IECEx and North American Listing with award winning 'customer service' levels. Our unique 'CMS' system gives customer 24/7/365 access to their quotes, certification project status, and issued certificates. Whilst we specialise in explosion safety, we also have in house EMC and Electrical Safety testing to offer turnkey global approvals.



TRAINING AND COMPEX CERTIFICATION

ExVeritas are the leading CompEx provider with international practical training centres around the world. We have more experienced lecturers and more benefits than any other Ex training provider, including free software tools and pre-and post e-learning. Our unique speciality courses include 'advance' level Ex Inspector and 'Advanced Intrinsic Safety Circuit Design'. Only a company with ExVeritas depth of experience can deliver courses at this level.



The Explosive Atmosphere Safety Specialist

The ExVeritas Group provides Product Certification, Management System Certification, CompEx Certification and Site Safety Services. We are a UK Government Appointed Body for UKCA 'Ex', an ATEX Notified Body and an IECEx Certification Body and Test Laboratory

Our Product and System Certification is internationally recognised for global markets, and we can parallel issue UKCA, ATEX, IECEx and UKAS ISO9001 Certifications to save our clients time and money.

For sites we offer safety consultancy on explosion safety including equipment risk assessments and Ex inspection. We also qualify people with CompEx certification as well as specialist and bespoke training.

ExVeritas is a multi-award-winning company including the 'Queen's Award', the highest honour that can be bestowed on a UK company. We have a proven track record of delivering world class certification, consultancy and training.

With Certification Bodies in the UK, Mainland Europe and North America and training facilities in the UK, Malta, Italy, Denmark and Ireland, we can offer a global service and a cost effective and efficient service.

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MANAGEMENT SYSTEMS CERTIFICATION

ExVeritas are one of only a handful of companies in the world that can offer a time and cost saving combined audit. We can certify UKAS (ILAC) ISO9001 and other QMS systems, UKCA QAN, ATEX QAN and IECEx QAR audit in one visit. In addition, we can combine other audits such as INMETRO, FUS (for North America) and even IECEx Service Facility Certification for further cost savings. We have redefined the 'one stop shop' for QMS Certification with the customer in mind.



SITE SAFETY

ExVeritas conduct electrical and non-electrical 'Ex' Inspections. We also offer explosion risk assessments, fitness for purpose assessments and even 'on site' UKCA, Notified Body or IECEx Certification. All of this makes us uniquely positioned to deliver full compliant explosion safety solutions, including our unique online and tablet based 'iEx Inspection & Management' solution.



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Designer and Project Engineer Ex Training and Competence

Many of you will be aware that the Ex-Standards aimed at 'end users' (such as IEC 60079-14) have very specific requirements for competence. These can include both 'knowledge' and 'skills' assessments and the need to retain and be reassessed regularly. 'Installers' have historically had to have some form of special certification to be allowed to work in Hazardous Areas (for Example, CompEx 01-06) but it is now also the case that people involved in design and equipment selection will also be asked for their qualifications and evidence of competence.

In addition to the current requirements of the users' standards, a new standard (initially a technical specification) is being developed specifically covering Ex Competence (IEC TS 60079-44 Personal Competence) so now is a good time to refresh our memory on the role of the designers and project engineers!

Ex Design Competence

The requirements for personnel involved in the process of designing plant or equipment for use in potentially explosive atmospheres (including equipment that may be in the safe area but have functionality involved in the safe explosion prevention or mitigation) should be given serious consideration.

Reviewing case studies of many recent explosions will demonstrate that it was the fundamental design that was unsafe, even when correctly built and installed (such as an incorrectly specified level switch or an impractical maintenance procedure post installation).

The requirements will obviously be applicable to companies who design plant but are equally applicable to project engineering companies or manufacturers who may provide rigs, skids or assemblies (now covered by IEC TS 60079-46) that may or may not utilise certified hazardous area equipment. (ExVeritas offer specific course for 'Assemblies' that cover these specific risks and challenges for 'manufacturers' as well as end users)

According to the Installation Standard, Designers must possess, to the extent necessary to perform their tasks, the following skills:

- Detailed knowledge of the general principles of explosion protection; this would include knowledge of terms such as LEL, MESG, Flashpoint and factors that affect dust and gas

explosion properties (pressure, temperature, oxygen etc).

- Detailed knowledge of the general principles of types of protection and marking; this would include all of the electrical concepts such as i.c., m.a. op is, Non-electrical h, etc., group markings such as IIB+H2 (Gas) or IIIC (dust) and EPL's such as Ga/Gb.
- Detailed knowledge of those aspects of equipment design which affect the protection concept; this may include SIL if safety systems or protective systems are used and in-depth design knowledge if concepts such as constructional safety (c) or IEC special safety (s) are used.
- Detailed knowledge of content of certificates, such as use of the 'X' or 'U' and the many different certificate types and issuing bodies. It is also important to make sure these corticates are to 'current' Standards and not certified to 'withdrawn' standards!
- An understanding of practical skills for the preparation and installation of relevant concepts of protection (full knowledge of the installation requirements).
- Detailed knowledge of the additional importance of 'Permit to Work systems', safe isolation and 'risk assessment' in relation to Explosion Protection; Process and procedure documentation – most explosions occur during startup/shut down or maintenance!
- Detailed knowledge of the techniques to be employed in the selection and installation of equipment referred to in IEC/ EN 60079-14 and a general understanding of Inspection and Maintenance requirements of IEC/EN60079-17.

Designers must be able to demonstrate their competency and provide evidence of attaining the knowledge and skill requirements specified above, relevant to the types of protection and/or types of equipment involved. They must also be able to demonstrate their competency with documentary evidence such as 'Designers training Certificates' to the user and suitable documented safe operating procedures and list of required checks and maintenance (including intervals).

One of the most used and widely accepted levels of certification for Designers is CompEx EX12, it is also worth noting that CompEx has also added an introductory Functional safety course to their portfolio which is useful alongside EX12.

Full details of the new CompEx Courses can be found here:
<https://www.exveritas.com/training-and-competence-certification/> or email info@exveritas.com for a prospectus.

More Power to the IS load

BEKA associates have introduced two new Power Isolators which although primarily intended for powering their Pageant Operator Panels, may be used with any certified apparatus having compatible input safety parameters.

Performing the same function as a conventional galvanic isolator, the new power isolators employ an alternative configuration which delivers more power into a hazardous area. The BA212 is a single channel device, delivering 4W of usable power into a IIA or IIB flammable gas, or a combustible dust atmosphere, within Zone 0, 1, 2, 20, 21 or 22.

The BA243 has four separate galvanically isolated outputs, each can deliver 1W of usable power into a IIC flammable gas. These four outputs may be remotely combined by a certified network to provide 3.6W of usable power into a IIC hydrogen atmosphere located in Zone 0, 1 or 2.

Both models have IECEx, ATEX and UKEX [Ex ia Ga] IIC intrinsic safety associated apparatus certification, plus Ex ec increased safety component certification allowing installation in Zone 2. The isolators are DIN rail mounting,

have input and output LED indicators with tagging facilities.

BEKA Application Guide AG210, which can be downloaded from the BEKA website www.beka.co.uk describes the function of these isolators and how they can safely power Pageant Operator Panels.

For further information please visit <https://www.beka.co.uk/power-isolators> or phone the BEKA sales office on +44 (0) 1462 438301.



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Android 13 Update Announced For The Third Quarter Of 2023

The current IS530.x smartphone and IS930.x tablet series from i.safe MOBILE will soon be able to run with Android 13. This update option provides more features and increased security for end-users. Lauda-Koenigshofen, 27 April 2023. i.safe MOBILE is proud to announce that their IS530.x smartphone and IS930.x tablet series will continue to be available in the product portfolio and can be updated from Android 10 to Android 13 starting in third quarter of 2023. Qualcomm Technologies, Inc. assisted in the upgrading of the Qualcomm® SDM660 System-on-Chip (SoC) devices to the latest Android version.

I.safe MOBILE GmbH is innovation and world market leader for explosion-proof mobile devices and solutions. i.safe MOBILE is based in Lauda-Koenigshofen (Germany) and one of the most innovative developers of mobile communication devices such as mobile phones, smartphones and tablets for safe use in hazardous areas. Engineers and specialists develop practical products and customer-specific software solutions based on legal regulations such as ATEX, IECEx and NEC 500.

Not only the IS930.x tablet series, but also the IS530.x smartphone series will soon be available with ANDROID 13. The update option is provided free of charge and can thus be requested and downloaded remotely from all connected devices at any time.

Our industrial smartphone IS530.1 combines the important ATEX and IECEx standards for explosion protection with high performance and communication requirements for use in networked industries. Automation, industry 4.0 and the Internet of Things (IoT) constantly present users of industrial communication devices with new challenges that can be easily mastered with the smart and innovative IS530.1: Equipped with Bluetooth® 5.0, a multifunctional ISM interface, huge internal 64 GB memory and the highest camera resolution in its class (13 MP main camera and 5 MP front camera), it enables users to deploy it without any difficulties in critical environments. The smartphone IS530.1 from i.safe MOBILE is ATEX and IECEx certified for zone 1/21 and can therefore also be used in potentially explosive areas. The device is also available for zone 2/22 as IS530.2. Under its i.safe MOBILE brand, the company has developed an extremely robust device for use in harsh industrial environments in non-hazardous areas. This rugged version is available under the name IS530.RG.

A high working speed is one important requirement in industrial environments. This is ensured the powerful Qualcomm SDM660 SoC inside the IS530.x and IS930.x series devices and a large internal memory capacity of 64 GB (expandable to 128 GB via microSD) and a 4 GB RAM. To act even more flexible, secure and adjusted to customers'

requirements, updating to Android 13 provides more features and improved security. Some of the new Android 13 features are customizable apps, improved privacy controls and cross-device features, enhanced audio features, new media controls, pre-app language preferences for fluid moving between languages.

All new devices of the IS530.x smartphone and IS930.x tablet series will be shipped with Android 13 from the third quarter of 2023. "We are glad to announce that the Android 13 version will be soon available to our customers. With this new software update, we meet the requirements of our customers who

constantly asked for high-level communication devices with state-of-the-art software features", summarizes Martin Haaf, CEO of i.safe MOBILE.

About i.safe MOBILE

i.safe MOBILE GmbH, based in Lauda-Koenigshofen/Germany, was founded in 2011 and is today one of the world's leading and most innovative developers of mobile communication devices such as mobile phones, smartphones, tablet PCs etc. for safe use in hazardous areas and for robust use in industry and outdoors. Engineers and specialists at the Lauda-Koenigshofen site develop practice-oriented products and individual, customer-specific software solutions based on legal regulations such as ATEX, IECEx and NEC 500. The i.safe MOBILE development team incorporates all international standards into product development and is itself an active member of the relevant standardization committees. In order to meet all explosion protection requirements, the products are developed from scratch. This gives customers worldwide the certainty of using high-quality communication technology at the latest technical level. In addition, i.safe MOBILE cooperates with solution providers in the areas of push-to-talk or lone worker in order to be able to offer complete solutions from a single source.

i.safe MOBILE is represented by sales partners in 72 countries in Europe, the USA, Latin America, South Africa, the Middle East, Australia and Asia.

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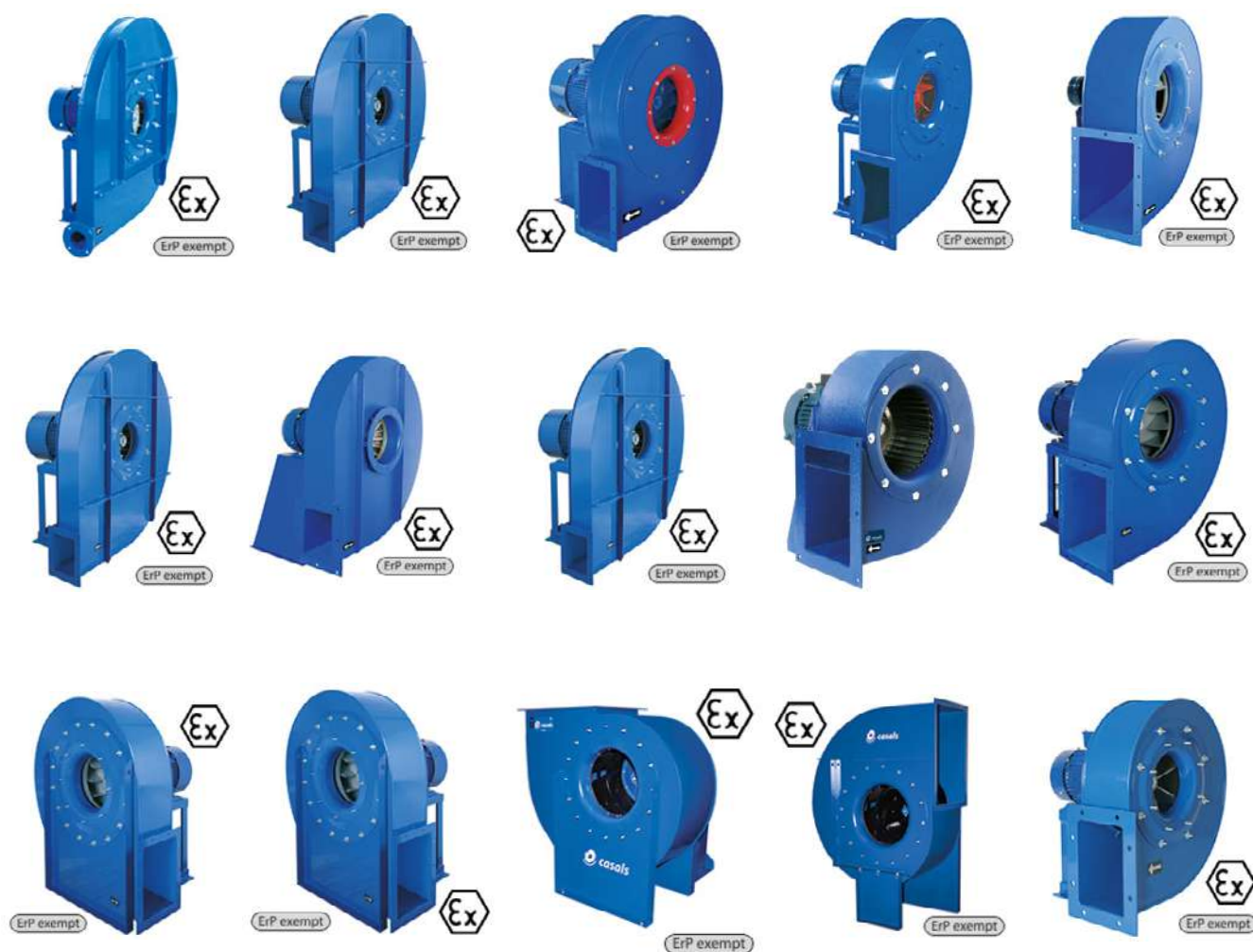
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A wide range of ATEX compliant axial, centrifugal and roof fans suitable for Gas Group IIC to ensure the adequate and safe removal of Hydrogen gas. Request a quote online at www.axair-fans.co.uk or talk to one of our fan integration experts on **01782 349430**



Ventilation & Dilution Of Hydrogen Leaks With Exhaust Fans

Hydrogen is a colourless, odourless, and tasteless gas, therefore small gaseous leaks are difficult to detect by human senses. Small leaks are common due to the small size of hydrogen molecules and usually do not present a problem since the tiny amount of mixture will not be enough to cause a flammable mixture in the air. Small amounts of leaking hydrogen will rise and diffuse quickly in air because of its low density resulting in high buoyancy (it's 14 times less dense than air).

Hydrogen is less likely to cause a fire or explosion hazard in an open or well-ventilated space, but a problem arises when hydrogen gas is allowed to accumulate in a confined area. If this is allowed to happen, there will be a risk of a flammable mixture building up. When a large amount of accumulated hydrogen rises and mixes readily with air, it creates an ignitable mixture that can result in flames or explosions. Hydrogen is flammable in air at a volume of 4-75% by volume. Any structure that contains hydrogen components should be ventilated adequately. Since hydrogen is lighter than air, it collects under roofs and overhangs. Most people are familiar with protecting plants from heavier than air vapours, but are unfamiliar with upward issues. There have been many reports of hydrogen leaks igniting over the decades, and several potential ignition prevention mechanisms and hydrogen leak detection systems have been proposed.

Methods for hydrogen leak detection include:

- listening for high pressure gas leaking such as a loud hissing sound
- using portable hydrogen detectors
- using permanently installed hydrogen detectors linked to local facility-wise audible or visible alarms. Set at 1% by volume (25% of LFL)
- monitoring piping pressures or flow rate changes
- locating detectors where leaking hydrogen can accumulate
- ventilation, dilution, and exhaust

Ignition can occur at a volumetric ratio of hydrogen to air as low as 4% due to the oxygen in the air and the simplicity and chemical properties of the reaction.

The best practice to avoid accumulation is to determine where hydrogen leaks are likely to occur and how they may disperse and ventilate accordingly to manage the airflows sufficiently to keep hydrogen concentrations below the lower flammability level (LFL) during probable release scenarios. Ventilation rates should be sufficient to dilute hydrogen leaks to less than 25% of the LFL which is about 1% volume by air. The minimum ventilation rate should safely dilute hydrogen build-up in the event of leakage and the ventilation should not shut down in emergency or during periods of shut down.

It is generally safe to exhaust hydrogen into open atmosphere providing it is kept high enough that the heat does not harm anyone. Ventilation systems should not be used for the disposal of hydrogen; this should be managed by a separate system called a vent system.

IIC Fans for Potentially Explosive Environments

Hydrogen is a gas group IIC gas and belongs to the T1 temperature class making it one of the hottest, most dangerous gases. Mechanical exhaust fans should be ATEX rated to the appropriate IIB+H₂ or IIC T1 ATEX certification and constructed from the suitable permissible material pairings as noted in the current legislation surrounding equipment for explosive environments. Material pairings should specifically relate to the rotating and stationary parts that may come into contact with each other during standard or rare malfunction. This material pairing reduces the risk of ignition created from friction and the build up of static electricity to create a spark. ATEX fans are therefore often referred to as having a spark proof construction.

Our entire range of ATEX certified fans are suitable for gas group IIC or IIB + Hydrogen applications for effective hydrogen ventilation. Learn more by visiting our website.

Reducing the Volumetric ratio of Hydrogen to Air

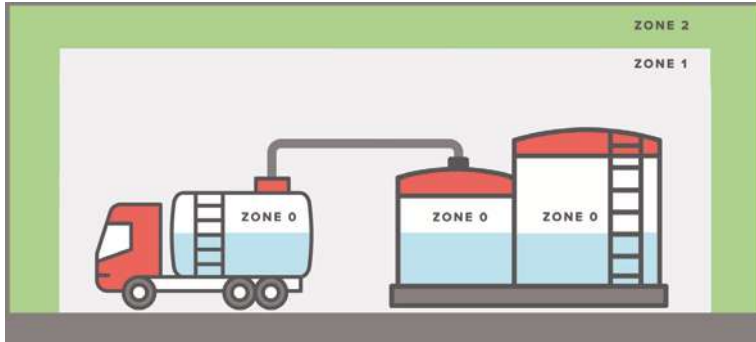
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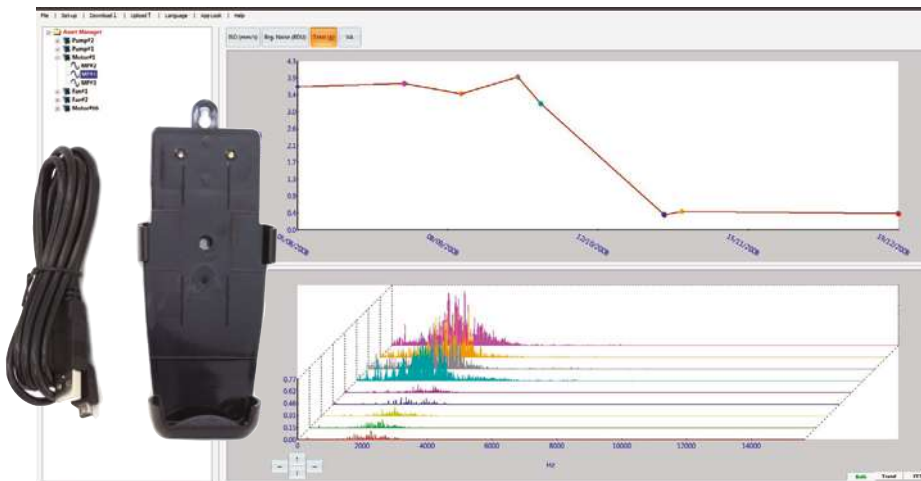
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- Set Routes for personnel to follow to help with asset & test point identification
- Receive e-mail **ALERTS** when 9080 is docked and a potential problem is highlighted on a route
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See the Problem before it becomes the Problem

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Condition Based (CBM) Versus Planned Periodic Maintenance (PPM)

Surprisingly, many companies still use a system of Planned Periodic Maintenance in an attempt to avoid costly downtime arising from the failure of their equipment and machinery. In other words, they replace parts that tend to wear out (e.g. motor bearings) on a routine basis whether they need replacing or not. Not only is this needlessly costly, but can make matters worse by introducing faults during the process of stripping down and rebuilding a perfectly good machine. Even more of a problem is deciding the PPM time intervals. Too frequent, means more wasted time and cost (and more potential for introducing faults) but not frequent enough, means more unexpected breakdowns.

Condition Based Maintenance relies on the fact that a machine's condition (degree of wear) can be monitored, by measuring the vibration levels in motor bearings for example. This way, the machine only needs to be maintained when its condition deteriorates beyond an acceptable level. This decision is based on recording and tracking changes in the machine's condition over time (trending). Put simply, CBM philosophy is if it's not broken, don't try to fix it!

This approach obviously saves time and money since machine parts are only changed when they need to be. However, CBM can potentially save a lot of money by spotting a machine that is about to fail prematurely before it fails and hence avoid an unexpected and costly shutdown.

Clearly, CBM is a superior technique but until now, its cost of implementation has put off some companies from using it. Traditionally, both CBM equipment and the expertise required to use it has been prohibitively expensive.

Test Products International (TPI) has however completely revolutionised this concept with the introduction of its low cost, portable vibration analysers and free to use trending software. Both

the analysers and software are very easy to use, stemming from the fact that they are very intuitive and based on internationally agreed (ISO) alarm levels for rotating machinery.

TPI's free to use VibTrend machine management and trending software stores machine condition readings and displays their trends in a clear and easily understood graphical format. In addition, various 'expert system' features are incorporated into the software, such as bearing quality assessment, which is achieved by analysing the frequency components of the vibration data and automatically identifying the classic 'signatures' associated with bearing wear. That way, it is very easy to monitor the health of a bearing simply by observing the level of bearing quality displayed on the trend plots.

A complete CBM system can cost from as little as £1,450 with the TPI 9080, which uses industry standard accelerometers and offers on-meter analysis for the detection of machine faults such as unbalance, misalignment, looseness and bearing wear. The equivalent intrinsically safe version (IEC Ex, ATEX and North American) TPI 9080Ex offers a complete Zone 1 CBM solution for £3,500. Both versions include a full VibTrend free to use unlimited software license.

For more information please contact TPI Europe's head office on +44 1293 530196 or take a look on the website at www.tpieuropa.com or email sales@tpieuropa.com



New SEEPEX Pump Tailored to the Battery Industry

Rechargeable batteries ensure that the power in electric vehicles, smartphones, notebooks and many other applications lasts. Gigafactories are being built around the world to meet the huge demand for lithium-ion batteries in the automotive, electronics and semiconductor industries. For the highly complex manufacturing process with all its technological challenges, SEEPEX stands by manufacturers with the precise performance of its specialized pumps. SEEPEX pumps and pumping solutions complement the battery manufacturing process from start to finish.

"New range in response to customer demands With the new BF range and its exceptional advantages, SEEPEX recommends itself as a reliable partner for the battery industry. The new pump can be installed quickly, has a flow rate of up to 30 m³/h and operates at a pressure of up to 12 bar. It is available in block or bare shaft design and can meet customer-specific drive requirements. A TA-Luft or ATEX certified version is also available. A great deal of data analysis and customer input went into the highly optimized development of this latest generation of pumps. After all, battery production is full of challenges.

Contamination-free pumps are also essential for smooth operation. The coating process plays another important role, as the pump has a direct impact on product quality by minimizing variations in coating thickness. Finally, investment and operating hour costs should be kept as low as possible. Reduce maintenance time and total cost

of ownership The maintenance-friendly design reduces downtime and the total cost of ownership (TCO). The clamp connections for quick installation/removal and the removable rotating unit simplify replacement and maintenance work. "Operational safety and maximum cleanliness when using valuable dispersed raw materials were the driving forces behind the development of the BF range. It helps reduce total cost of ownership and improve energy efficiency in virtually all battery applications by eliminating contamination and being easy to maintain. Cleaning cycle failures and disposal of contaminated battery compounds are not only wasteful, but also very costly," says Dufner. "Chemical resistance and chemically compatible materials are necessary to prevent contamination of expensive raw materials. With BF, we assure that the materials are chemically compatible.

The stainless steel design and flexible titanium shaft ensure contamination-free product quality.

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SAFETY TORCHES

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PELI
LIFETIME GUARANTEE

Peli™ Products (UK) At Offshore Europe 2023

Peli Products (UK) offer a wide range of tough safety torches including head torches, right angled models, compact versions and heavy-duty hand lights; all designed for use in hazardous areas.

Peli™ ATEX torches and lights will be on display at Offshore Europe in Aberdeen 5-8th September 2023 on Stand 3F40. They are ideal for use offshore and in hazardous areas such as silos, tanks and chambers where an individual may be exposed to a range of potential hazards. From large worklights to compact pen lights, Peli safety torches are built tough for durability and reliability in extreme conditions and are highly resistant to chemicals, drops and shock. The range offers high quality safety lighting for every requirement and budget. The Peli sales team cover the whole of the UK and will be on hand to discuss the benefits of this ATEX certified range.

Peli Protective Solutions

Also ideal for industrial and offshore locations is the Peli range of rugged, corrosion proof cases, offering exceptional performance; essential when transporting vital equipment in the offshore environment. This series of 60+ models, offers watertight protection and includes the 0450 Tool case, a wheeled tool chest which is IP67 rated. The 0450 is designed to withstand extreme temperatures, rough handling and the worst offshore conditions while keeping tools intact and organised.

Peli Products (UK) also offer an in-house custom foam design and manufacturing service to ensure items are secured in position and fully protected in transit. Bespoke inserts optimise the space efficiently and using coloured foam, ensure missing items are easily identified, eliminating the risk of Foreign Object Damage (F.O.D.). Custom foam is highly durable, ensuring the contents are secured in place and fully protected.

Industry professionals have chosen the Peli brand for many years; trusting in the reliability, performance and durability of the products in the most testing conditions. Established for over 30 years, Peli Products (UK) is ISO registered; ensuring quality systems and excellence in service. The company has

grown considerably during this time and has developed an outstanding reputation for both the quality of products and excellence in customer service.

For more details telephone 01457 869999 or go to www.peliproducs.co.uk.



The Ins And Outs Of Thermal Fluid Analysis

How do you know when a kitchen sink is about to clog and overflow? Most residential pipes are hidden, so food waste and product build-up can go unnoticed until it leads to damage. In manufacturing, leaving pipework unmonitored can lead to unexpected downtime and safety issues, particularly when working with thermal fluids, so proactive monitoring is the best way to prevent these problems. Here Clive Jones, managing director of thermal fluid supplier and condition management expert, Global Heat Transfer, outlines the steps of thermal fluid analysis for proactive fluid monitoring and how businesses can use the results to increase fluid lifespan.

Thermal fluids are designed to operate effectively for many years, but over time, operating at and maintaining high temperatures means that the oil will naturally degrade. Thermal fluid analysis provides a deep dive into the condition of the oil and allows businesses to gain expert advice about how to effectively maintain the fluid and the system. Analysis also ensures health and safety compliance with The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) of 2002 and UKEX (formerly the Explosive Atmosphere Directive ATEX 137 in the UK).

To comply with relevant safety regulations, such as DSEAR in the UK, manufacturers must take proactive steps to

reduce the risk of fire or explosion caused by working with dangerous substances. If this fluid is left unattended, for example, fluid degradation – where thermal oils can be broken down into carbon molecules that stick to the pipes – can occur, reducing heat transfer efficiency. If not monitored effectively, degradation may go unnoticed until it causes significant production issues and system failure, leading to costly downtime and risk to health and safety.

Instead of reacting to issues, regular thermal fluid sampling and analysis enables businesses to proactively monitor fluid condition and intervene before issues impact production, extending thermal oil lifespan and reducing maintenance costs.

Analysing a sample

Effectively monitoring heat transfer oil condition requires engineers to regularly take samples of the oil and send it to a specialist for analysis. Historically, thermal fluid experts conducted seven tests, however, in our experience conducting eleven tests provides results that best reflect the reality of what's happening inside the system.

Once the sample arrives to an impartial lab for testing, an analytical chemist will look at its appearance, looking at the colour and for any particulates in the fluid. Fluid colour can range from clear and bright, which is common to newer fluids, to hazy, which can be a sign of high-water levels, to dark, which shows there is a high level of carbon build up in the system. These initial observations are confirmed in later steps to ensure the thermal fluid specialist provides the best recommendations.

Testing the water content of the oil is vital to regulatory compliance. Any water in the system and oil will convert to steam and expand, increasing the pressure in the system. By analysing water content, analysts and heat transfer fluid specialists can advise on how best to reduce the risks associated with high pressure.



The next step is to test viscosity and assess the impact the fluid has on the system pumps. If a fluid is too thick, flow rate will reduce, increasing the pressure on the pumps. This reduced flow rate can create hot spots in the system, leading to inconsistent heating or cooling of products that results in waste products, increased damage to the system and rising maintenance costs.

Measuring the level of carbon in the system is key to understanding the degree of system fouling. If the thermal fluid expert detects high levels of carbon deposits, it suggests that there is more carbon in the system, which can harden in the pipes, acting as an insulator. As a result, the entire system heat transfer efficiency will reduce and more energy is required to heat up the system. Manufacturers should consider how they can prevent carbon build-up as it can create hot spots that accelerate wear on the pipes and increase the risk of leaks.

Analytical chemists will then test the total acid number (TAN). If there is a high level of acid in the fluid, it can lead to increased corrosion of the system and accelerated carbon creation. By measuring this parameter, manufacturers can understand how the fluid impacts the pipes of the system, ensuring that they can slow down degradation and reduce the frequency of scheduled maintenance needed to replace corroded parts.

Particulate quantity and iron tests highlight the degradation of components of the heat transfer system. Both tests can show signs that there is wear in the system that needs addressing so that manufacturers can intervene before the wear turns into a dangerous leak.

Manufacturers should also look at the results of the Pensky-Martens Closed Cup flash point, Cleveland Open Cup flash point and fire point tests to reduce health and safety risks. The industry standard suggests that closed flash point of the fluid cannot be below 100 degrees Celsius, because it means the fluid could ignite at lower temperatures, so these tests are vital to understanding if the fluid is safe for use.

Reporting

Once analysis is complete, the thermal fluid expert delivers a report to the plant manager, organising points into cautions, actions, or serious findings. At this point engineers can take the recommendations and plan interventions based on the priorities in the report. Making a record of each result will also help plant managers in the long term. By monitoring thermal fluid condition over time and looking for trends, helping them to anticipate when the system will require maintenance before downtime occurs.

Maintaining an efficient heat transfer system is integral to

productivity, so unlike domestic pipes where a blockage may cause a minor overflow, manufacturers should consider how they can effectively monitor fluid inside the system. Thermal fluid testing can be complex, so manufacturers can work with thermal fluid experts, like Global Heat Transfer, to ensure they complete the process effectively and get an accurate representation of what's happening inside the system. For example, by including Global Heat Transfer's Thermocare® as part of a preventative maintenance programme that aligns with the ATEX triangle, experts can offer both on-site and remote technical support to help manufacturers rapidly sample and analyse fluid. From this, manufacturers can track fluid condition, anticipate and resolve issues quickly and implement preventative measures to extend fluid lifespan, reduce downtime and the facility's environmental impact, and ensure system compliance.

To learn more about the thermal fluid testing and tailored solutions available, visit the Global Heat Transfer website www.globalhtf.com/heat-transfer-management/heat-transfer-fluid-analysis/.



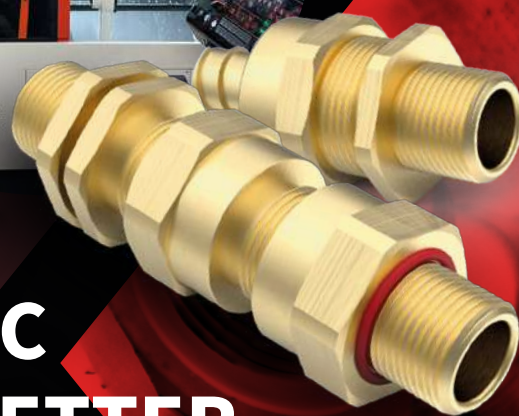
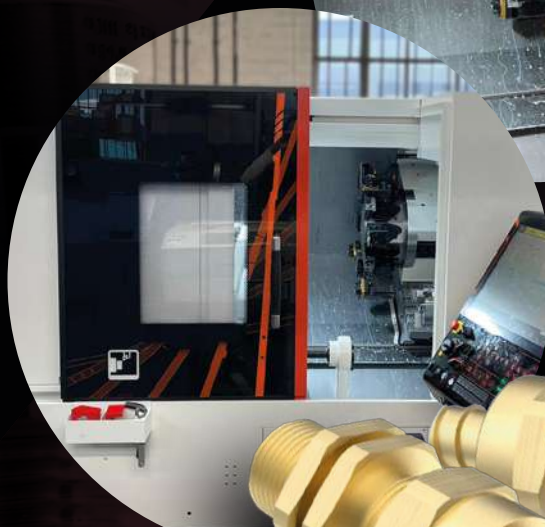


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GROUND-BREAKING INSTANT RESPONSE CNC – THE BEST JUST GOT BETTER

At Peppers, we specialise in the design, manufacture, and supply of what are widely regarded as one of the best cable gland products and enclosure accessories on the market today. Our new, innovative Quick Response Cell is a revolutionary and automated system, designed to provide customers with faster lead times on orders and improve service delivery.

With the QRC we can now:

- Respond to ever-changing customer needs.
- React to market conditions.
- Adapt to fluctuating demand.
- Ensure are always ready and able to meet our customers' requirements.

The launch of the Quick Response Cell marks a significant step forward in our mission to provide a world-class service to our customers, delivering on our promise of quality, reliability, and innovation.

So, save your business time and money with a priceless end-to-end offering - a unique combination of unrivalled product quality, technical support, and service delivery.

Check out our website for more info about the QRC.

peppers.co.uk

Peppers Promises Industry Leading Quick Response Cable Glands

Peppers Cable Glands has been one of the leading cable gland and enclosure accessories suppliers for 75 years, and even though we're confident in what we do and how well we do it, we never stop trying to be better. What makes us so successful is the way we commit to developing our company, and we continually look at what we could be doing to improve the service we can offer to our customers.

In a world where speed and agility are more critical than ever, businesses must find ways to stay ahead of the curve. Peppers has done just that with its recent significant investment in the innovative Quick Response Cell. This forward-thinking system is designed to provide customers with faster lead times on orders, enhancing overall delivery service and setting a new standard in the industry.

At Peppers, we fully recognise that our customers uphold high standards for quality and service. With the integration of the Quick Response Cell, we are confident in not just meeting, but exceeding these expectations. The key to this system's success is its capability to streamline our operations and significantly improve our response times.

One of the standout benefits of the Quick Response Cell is its ability to process customer orders more efficiently. With this advanced system, we can reduce lead times, ensuring our customers receive their products when they need them. This efficiency is critical in today's fast-paced business environment where delays can cost both time and money.

Sales Manager Grayham Churchouse said, "The Quick Response Cell also allows us to respond more agilely to fluctuating customer needs and market conditions. By

leveraging automation, we can quickly adapt to changing demand, ensuring we are always ready and able to meet our customers' requirements."

Investing in the future of customer satisfaction is not just good business practice—it's essential for long-term success, and the Quick Response Cell is a testament to our commitment to meeting the evolving needs of our customers. This initiative represents our drive to remain at the cutting edge of the industry, ready to tackle whatever the future may hold.

We are excited about the launch of the Quick Response Cell and are confident that it marks a significant step forward in our mission to provide world-class service to our customers. It's not just about staying ahead of the competition—it's about building strong, long-lasting relationships with our customers and delivering on our promise of quality, reliability, and innovation. That's the Peppers way.

www.peppers.co.uk





Does your cable gland installation really meet the requirements of EN60079-14 10.3?

Most hazardous area cable gland manufacturers A2F & E1WF type glands have a special condition for safe use requiring cables to be clamped to prevent twisting or pulling. EN60079-14 states that “a clamp should be placed as close as practical to the gland” - preferably within 300mm from the end of the gland. EN60079-14 also states that cables shall be routed straight to prevent the cable seal being compromised by lateral tension.

A poorly supported cable compromises the integrity of the equipment, invalidates the Hazardous Area certification and most importantly poses a serious safety risk to both plant and personnel.

Compatible with most major gland designs, the Omni® Accessory from Blayds Group ensures that cables are routed straight from the cable gland - preventing twisting or pulling of the cable whilst in operation. This securing of the cable also stops unnecessary pressure on the gland IP seal – a common place for water ingress. Manufactured from nickel plated brass, the Omni® Accessory also provides an earth connection, bonding point, integrated high-temperature

silicone Ingress Protection washer and a cable identification location all in one easy-to-install accessory. The design also allows for disassembly and inspection of the gland without the need to move the cable marker as is often the case in many standard installations.

So, to make sure your installation is fully compliant, fit the Omni® Accessory. One part – multiple benefits. To receive a free sample simply email gareth@blayds.com or visit www.blayds.com for more information



Amazon Filters At ChemUK 2023

One of Europe's leading chemical filter manufacturers, Amazon Filters, is showcasing the latest developments with its wide range of filters and housings. A key theme is how its proprietary technology safeguards operators and improves process economics in hazardous production environments worldwide.

They include coatings manufacture, pharmaceutical processing, particulate and contaminant removal and laboratory-based separation systems. As well as filters such as the new VisClear II, specifically designed for the high-temperature manufacture of viscous fluids, Amazon Filters is highlighting its SupaClean system that accepts the company's full range of filter types while providing exceptional operator safety.

Visit Stand M30 or <https://www.amazonfilters.com/industry/chemicals-and-coatings>.



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CHEMUK records 41% increase in visitors for 2023 Expo!



CHEMUK 2023 opened its doors on Wed 10th & Thur 11th May at the NEC in Birmingham to a record attendance of 3956 visitors (excluding exhibitor staff) over the two days, representing an increase of 41% from the 2022 edition. The total two-day attendance (visitors plus exhibitors) was 5559.

CHEMUK show founder, Ian Stone, sums up this year's event: "The industry is now responding to the single 'destination experience' of CHEMUK providing deliberately segmented zones of specialist industry capability and solutions, supported with unmissable intelligence, whilst at the same time uniting the entire UK chemical industries 'value chain' under one giant roof annually".

Minister George Freeman leads UK Government briefing

A dedicated video address from the Minister of State at the Department for Science, Innovation and Technology, George Freeman, underpinned a comprehensive UK Government presence and input across the two days, with show floor presence and vital conference input from the Department for Business and Trade, the Department for Environment, Food and Rural Affairs, and Health and Safety Executive. You can watch the full address at www.chemicalukexpo.com.

CHEMLAB Laboratory & Innovation Zone launches at CHEMUK 2023

Commenting on the introduction of the 'CHEMLAB' Laboratory & Innovation Zone this year, Stone states, "This addressed, head-on, the need of R&D teams, analytical chemists, and teams in the crucial areas of early-stage growth and scale-up, showcasing a wide range of progressive lab-based solutions from the latest lab automation, chemical analytical tools, speciality services, flow chemistry innovations, innovation ecosystems, and much more, supporting the quality and acceleration of R&D cycles in the chemical, biochemical, and formulated product sectors."

IChemE adds to the line-up of supporting bodies.

The 2023 show saw the Institution of Chemical Engineers (IChemE) join an already impressive line-up of supporting industry and trade bodies both on

the show floor and hosting crucial intelligence and keynotes across the integrated CHEMUK conference. This included the likes of CBA, BCA, BASA, BioVale, BCMPA, CPI, CCUK, IBioIC, GAMBICA, NEPIC, SIA, and InnovateUK KTN, to name a few.

RSC as CHEMUK 2023

The Royal Society of Chemistry (RSC) was again at the centre of CHEMUK, with a packed two-day programme including an RSC stand, careers clinic, feature RSC conference sessions, a keynote from current RSC President, Professor Gill Reid, and a dedicated members reception.

'Sustainability' ever-present at CHEMUK

'Sustainability' was the common thread across the event this year, with progressive energy and emissions reduction solutions, process optimisation and greater operational efficiency of petro-chemical-based plants, through to a wealth of coverage on developing 'green chemistry' innovation supporting the transition towards bio-based chemicals and downstream products. Industrial Biotechnology and Bio-process innovations were reflected across all three zones and extensively through the conference programmes. Where the magic happens!

CHEMUK has become the only destination in the UK where all the key bodies, major companies, and industry stakeholder groups embracing organic and inorganic synthetics, formulation chemistry, analytical and materials chemistry, industrial biotechnology, and chemical and process engineering are 'predictably' in the same 'time' and 'space', under one giant roof, alongside a wealth of downstream chemical-dependent industries.

Stone reflects on this crucial sector-wide annual convergence under the CHEMUK canopy: "This is where the magic can happen, where conversations can take place with wider networks, outside often restricted 'silos of interest' in pursuance of wider common industry goals, fostering exciting dialogue and new project momentum".

Dates for Diary: CHEMUK 2024 (NEC, Birmingham) Wed 15 & Thu 16 May 2024

www.chemicalukexpo.com

Safe & Efficient Drum Handling In Hazardous Areas

Do you have a need to lift or move drums, de-palletise or just generally move drums around a workshop or factory site in Hazardous Areas.

The St Clare Engineering range of Grab-O-Matic ATEX fork attachment and pedestrian drum handlers will provide a safe and efficient solution for you.

The popular and versatile Grab-O-Matic DLR range of rim grip fork attachment drum handlers are suitable for all types of steel drums, plastic 'L' ring drums and most fibre drums.

The extensive drum handling range includes the SC10 for lifting and rotating drums to

dispense the contents, scissor grabs, base gripping units and waist grippers, the whole range can also be fitted to pedestrian stackers for use in confined spaces and places where fork trucks are banned. Bespoke units can be manufactured to suit customer specification.

We also have a range of Drum Cages for off-shore use and fork attachment Whiskey/Wine Barrel Base Grippers for use in the drinks industry.

We have also developed a Quick Attach/Release drum handler fork attachment for use in ATEX hazardous areas.

All Grab-O-Matic models can be Quick Attach/Release units and are securely attached to the forks and released without the

need for the truck driver to dismount from his cab, saving time and increasing safety!

The drum handlers can be manufactured completely from stainless steel or part stainless steel to suit customer requirements and the spark proof area the units are operating in.

All Grab-O-Matic fork attachments are issued with Test Certificates, CE marked and manufactured entirely in the UK to ISO 9001:2015 and will be certified for use in ATEX spark proof areas.

For more information on our extensive range of drum and materials handling equipment please contact Andy Bow on 02380 643402 or email sales@stclare-engineering.co.uk



Drum & Material Handling Fork Truck Attachments



Single Drum Handler (1-DLR-P-St/St)



Waist Gripper (DH-1 St/St)



Drum Rotator (SC10-St/St)

Drum & Material Handling Equipment

Handle your drums Safely, Simply & Efficiently with the Grab-O-Matic Range of Stainless Steel /ATEX Drum Handling Equipment



Our Stainless Steel/ATEX Product Range Includes:

- Drum Handling Attachments (Rim and Waist Gripping)
- Drum Cages
- Pedestrian Drum Carriers
- Drum Rotation Units (Fork Mounted and Crane Slung)
- Self Dumping Hoppers
- Pallet & Stacker Trucks
- Pedestrian Drum Rotators
- Scissor Grab Drum Handler

St Clare Engineering Ltd (Grab-O-Matic)

Unit 1, Brookwood Industrial Estate, Brookwood Avenue, Eastleigh, Hampshire SO50 9EY

Tel: 02380 643402 Fax: 02380 642189 Email: sales@stclare-engineering.co.uk Web: www.stclare-engineering.co.uk

Denmark's leading recycling company relies on XPower® wheel loader from Liebherr

RGS Nordic specialises in recycling construction and demolition waste materials and is the market leader in Denmark. It operates a fleet of around 130 construction machines, about two-thirds of which have been supplied by the Liebherr Group. Among them are 40 XPower® wheel loaders of various sizes featuring wheel power-split travel drive as standard and returning notably low fuel consumption.

Copenhagen (Denmark), 10th March 2023 - Every day, more than 1,000 truckloads of construction waste and other material arrive at RGS Nordic's facilities to be converted into reusable and circular products and reintegrated into the product cycle. The 40 Liebherr XPower® wheel loaders are used for material handling as part of the process.

Michael Jørgensen, strategic purchasing manager, commented: "The Liebherr wheel loaders need less fuel, are powerful and have hardly any downtime. We are particularly impressed that we achieve 30% more productivity with the same fuel consumption than with comparable wheel loaders in this size class." Those enormous advantages in fuel consumption also ensure lower CO2 emissions, meaning the machines align perfectly with RGS Nordic's core values. Clear statement: Recycling is the future

At Denmark's largest waste management site, recycling the delivered material is top priority. "We aim to make circular economy a sustainable business", added Jørgensen. The Liebherr wheel loaders play a key role in helping the company achieve that aim. On one hand, they transport the bulky waste pre-sorted by Liebherr excavators to the sorting plants, and on the other, feed the numerous crushing and screening plants with various construction wastes. At the end of the treatment process, the recycled material is reused on construction sites around Copenhagen.

RGS Nordic also returns the supplied, partly contaminated material to the product cycle through specialised processing operations, for example by adding substances such as calcium and by constantly shifting the piles of earth using the Liebherr wheel loaders. That function is important to ensure a reliable oxygen supply during composting. Once that operation is complete, the XPower® machines load the recycled material on to trucks for RGS Nordic's customers to use as a natural raw material on a wide variety of construction sites rather than rely on new products.

RGS Nordic at a glance

RGS Nordic employs over 200 people and operates 22 reception and treatment facilities in Denmark, including the country's largest waste treatment site and the Nordic region's biggest commercial biological site for treating industrial wastewater. The recycling specialist has set itself a goal of converting even more waste into quality building materials and implementing sustainable processes in the circular economy. The large Liebherr fleet plays a vital role supporting the company in its daily work.

About Liebherr-Werk Bischofshofen GmbH

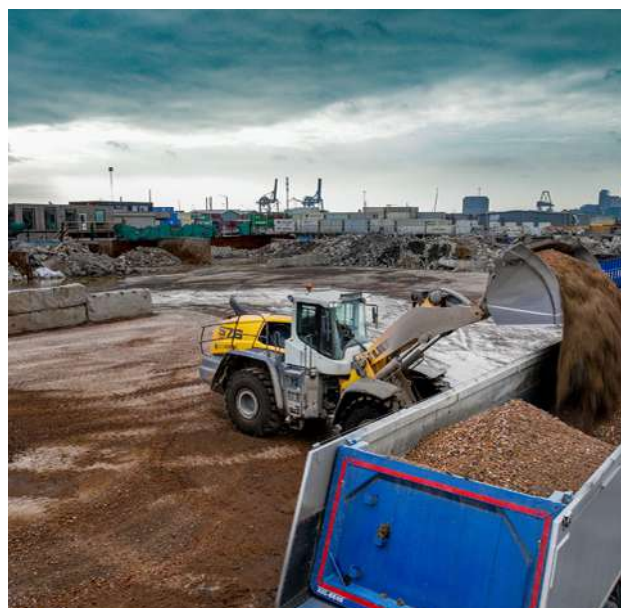
Liebherr-Werk Bischofshofen GmbH develops, produces

and sells wheel loaders from the Liebherr Group. The plant in the state of Salzburger Land (Austria) has grown steadily over the decades thanks to sustainable innovations, creative solutions and high quality standards. The wheel loader range is constantly being expanded and includes different models in four different product groups: compact, stereo, mid-sized, and large wheel loaders, which have impressive, innovative drive designs.

About the Liebherr Group

The Liebherr Group is a family-run technology company with a highly diversified product portfolio. The company is one of the largest construction equipment manufacturers in the world. It also provides high-quality and user-oriented products and services in a wide range of other areas. The Liebherr Group includes over 140 companies across all continents. In 2021, it employed more than 49,000 staff and achieved combined revenues of over 11.6 billion euros. Liebherr was founded in Kirchdorf an der Iller in Southern Germany in 1949. Since then, the employees have been pursuing the goal of achieving continuous technological innovation, and bringing industry-leading solutions to its customers.

www.liebherr.com





Supertouch Partners with Diadora Utility

Personal Protective Equipment (PPE) and Workwear specialist, Supertouch, has announced a strategic wholesale distribution partnership with Diadora Utility – leaders in high-quality safety shoes for everyday work.

The brand new collaboration means Supertouch will hold UK stock for core Diadora Utility lines, for immediate availability – with additional options available on a two-week lead time. The move significantly strengthens Supertouch's footwear offering, which aims to address the diverse needs of workforces across Great Britain and Ireland.

The Diadora Utility range currently includes water-resistant, lightweight, highly breathable and fully eco safety shoes that are suitable for both male and female workers, across the nation's core industrial sectors. Incorporating a variety of technologies, such as Vibram Litebase, BSAF D-Light midsole cushioning and K-Sole penetration resistance, the entire collection has been designed and manufactured to optimise comfort, mobility and protection.

Fast becoming a specialist footwear destination, Supertouch has also recently partnered with safety shoe specialist, Cofra. The relationship will see Supertouch stocking a core range of Cofra's best-sellers in the UK, with the potential to expand that offering. The footwear selection uses technology such as Gore-Tex, a waterproof yet breathable fabric, to counter the impact of the UK's unpredictable climate.

Furthermore, Supertouch has also expanded its range of safety shoes, which are tailored to the food-industry. This includes a blue variant of the popular Food-X PU Pro S4 Wellington and the Agri Non-Safety Wellington. These are made from PU rather than PVC, making them 23% lighter, more durable, and better at providing insulation from cold work environments. Khurram Akhtar, Director of Products at Supertouch, commented: "In potentially hazardous operating environments, effective foot protection is crucial to mitigating risks and safeguarding employees. Supertouch is therefore aiming to build on its existing offering to give customers the very best choice when it comes to sourcing safety footwear.

By expanding our own range of footwear and striking new partnerships with well-established high-quality suppliers, we are confident in achieving this ambition.

"The new partnership with Diadora Utility, which is a brand that provides unprecedented levels of comfort and quality in safety footwear, is central to positioning Supertouch as an industry-leading footwear specialist. For that reason, this is an especially exciting partnership for us - and while it will be mutually beneficial for both businesses, the alliance between the two brands will ultimately be of greatest advantage to our customers."

Hicham Madouar, Head of Sales Western Europe at Diadora Utility also told us: "We are delighted to welcome Supertouch as our Diadora Utility partner in the UK. Supertouch will enable our high quality Diadora Utility safety footwear and workwear products to be supplied easily and quickly to distributors and end users in the UK. More safety footwear and workwear users will be able to experience the exceptional comfort, technology and durability Diadora Utility provides, and we look forward to working together with Supertouch over the coming years,"

For more information, please visit www.supertouch.com



UVEX 1 Trainer Delivers On Fit, Comfort, Performance And Style

Uvex has launched an innovative trainer that combines strong PPE functionality with the fit, comfort and style of leisure footwear.

The uvex 1 trainer has been created for workers who spend all day on their feet and want safety footwear that offers high levels of comfort and support without sacrificing style.

Standing for long periods has been shown to increase the risk of varicose veins, bunions, plantar fasciitis, high blood pressure and poor circulation. Working on hard surfaces can also generate shock with every step, putting extra strain on the feet, ankles and calf muscles and potentially leading to discomfort in the feet, legs, hips, back, neck and shoulders.

Footwear that provides comfort, support, cushioning, breathability and is light on the feet is therefore vital to protect against ailments throughout the body.

The uvex 1 trainer has been designed to offer a solution that ticks every box. It provides support, anti-fatigue shock absorption, and high levels of slip-resistance, with breathable, flexible, ultra-lightweight materials. The trainer's sleek design has also been inspired by high-street fashion to help encourage maximum PPE compliance.

Clair Weston, head of marketing at uvex, said: "We often forget that looking after our feet can prevent difficulties throughout the body. The uvex 1 trainer provides excellent comfort and protection for those working on hard surfaces in manufacturing, warehousing and logistics, automotive and airport environments. It's also a good-looking shoe that can transition between work and leisure so helps to increase compliance and improve wearer wellbeing."

Premier protection

The uvex 1 trainer's non-metallic construction allows for the natural, flexible movement of the foot. Extra protection is afforded by a metal-free toe cap that is anatomically shaped to promote a biologically normal structure and function which offers good lateral stability and no thermal conductivity. The scuff cap also helps protect the upper material for longer-lasting wear.

Furthermore, the trainer features a metal-free, highly

flexible, penetration-resistant midsole, and meets the ESD specification with volume resistance under 35 megaohms. Made from synthetic materials, the uvex 1 trainer is suitable for people allergic to chrome.

Built for comfort

The virtually seamless design eliminates pressure points for all-day comfort, while the soft textile upper delivers high-level breathability. A mesh lining allows feet to breathe while the soft-padded tongue and collar increase comfort.

Its removable comfort insole has antistatic properties and provides moisture control and enhanced shock absorption. The insole is also made of 73 percent recycled polyurethane with no impact on performance. The uvex 1 trainer's dual-density PU anti-fatigue, flexible sole has been developed to provide optimal slip-resistance, exceptional shock absorption in the heel and forefoot, and arch support.

User-friendly fashion

Available in black or blue, the uvex 1 trainer also offers user-friendly features including elastic 'speed' laces that allow the shoes to be individually and quickly adjusted, slipped on or off as well as a pull tab that offers an easy on-off fit. A reflective element on the logo and pull tab, meanwhile, enhances wearers' visibility to others.

For more information about the new uvex 1 trainer, visit:
www.uvex-safety.co.uk



Cyber Security Of HMI Systems

HMI systems are the staff's main window to processes. However, certain ground rules are necessary to prevent them from becoming an open invitation to hackers. The choice of systems is key to success: state-of-the-art technology as is used for R. STAHL's new ORCA HMI device platform can exclude a great many sources of human error right at the start.

You can always depend on human error, both in environments such as company IT as well as in OT (operational technology), which includes automation systems. A careless click of the mouse on a link or file accompanying what seems like a mail sent by a colleague or business partners can create havoc in integrated company IT systems. Operational systems such as control or process control systems also increasingly come under attack by hackers. A recent study by Trend Micro – a company specialising in network security – showed that in 2021, 90% of German companies in electricity, oil and gas supply as well as in the manufacturing sector were the target of cyber-attacks. On average, a successful attack resulted in damage to the tune of 2.9 million Euros.

Automation systems are increasingly becoming the primary target of such attacks. After all, whilst office IT becomes ever more secure, there are still a lot of companies with gaping holes in their OT security. When machines that used to be operated in isolation are being integrated into the company networks during a digitalisation drive or as part of IoT projects, these security gaps become the entry point for hackers. Latest at this point operators should check

whether there is unprotected maintenance access to the machines, whether the security of all control systems is up to date, whether USB interfaces are deactivated, and, last but certainly not least, whether the default password of an operator station or a SCADA system has ever been changed. If the answer to any of these questions is "no", the door to the system is wide open for anyone to enter – as a simple internet search for "scada system passwords" will show.

Recent legislation has also recognised the importance of this subject, in the European Union for example by defining key requirements for operators of critical infrastructure in the DIRECTIVE (EU) 2022/2557 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL by numbering chemical companies amongst critical infrastructure, in addition to assets essential for the functioning of society and economy. Such companies have to go to great lengths to meet the statutory requirements for IT security and cyber resilience, and non-compliance could lead to fines of up to 2 million Euros.

Authentication as the most common blind spot

Efforts to ensure cyber security have always suffered from moving goalposts: although staff awareness of cyber risks is on the increase, cyber criminals are constantly upping their game. Social engineering and phishing attacks are becoming ever more sophisticated. But the good old USB trick also still works: plausibly labelled USB sticks left lying around are connected by unsuspecting staff to operator stations and control stations. Private mobile phones are also often connected to company systems. Then there are easy to guess passwords or passwords written down on pieces of paper stuck to the screen, a notice board or a whiteboard for any visitor or video conference member to see. A post-it note under the keyboard is also not a safe hiding-place for passwords. A Trend Micro study from 2018 showed just how important safe authentication is: according to the study, almost half of the successful cyber-attacks on HMI systems were down to unsafe passwords and insufficient access authority management.

Often it is a question of ergonomics that leads to laughably easy passwords being used: which operator using several



stations within a plant takes the time to enter a complex, 16-digit password via the screen keyboard every single time? Also, the software and hardware used in the process industry has often been in place for many years and has been developed at a time when integration, digitalisation and the Internet of Things were neither relevant terms nor development targets. Many operators simply have no idea exactly which devices and software systems are running in their plants.

Thin Clients reduce on-site cyber risks

During the development of the ORCA HMI series, launched in the summer of 2022, R. STAHL has addressed many aspects of cyber security. The Thin Client approach forms the basis: unlike independent on-site computers such as the ones used in Client/Server environments, the actual logic processes and data back-up for Thin Clients take place on a centrally administrated server. This means that many IT risks are immaterial for the on-site operator station. The operator's IT specialists can focus on security measures for the server. The ORCA HMI operator devices are closed systems with industrial-grade security. They have neither hard disk nor drives where malware could attack. To prevent manipulations at the level of the operating system, the UEFI-BIOS with the "secure boot" function is used: Windows is only booted up once it has been ascertained that parts of the firmware such as the boot loader have not been manipulated by unauthorised access. Also, the configuration supports customised security concepts.

R. STAHL is using the Remote HMI firmware for its Thin Clients. This has been designed as a closed system and is based on the Microsoft Windows 10 Enterprise 2019 LTSC operating system. LTSC stands for "Long Term Servicing Channel", an update channel through which the company guarantees a 10-year long support with security updates. The firmware is used to configure, establish and secure remote connections to application servers, or, in the simplest case, to a workstation. This allows remote access from one operating



station to one or more workstations within a network. This is not only the case for the new ORCA devices, but also for the manufacturer's earlier device platforms.

Ergonomics relevant to security

Easy handling in day-to-day work is a precondition for maintaining a high level of security: security solutions that hinder staff in their daily routines provoke workarounds. For example, when passwords are constantly requested at different workstations users tend to choose a simple, short password, or they simply do not log off when leaving the work area. With the ORCA devices, users can log on by means of contactless RFID authentication. This ergonomic solution allows staff to easily log onto a workstation without even taking their gloves off, ensuring a high level of access protection.

The RFID readers support the particularly user-friendly LogOnPlus software from i.p.a.s-systeme. This is a modular server-client application that manages log-on control for production applications. Users are, for example, identified through their RFID ID card, authenticated vis-a-vis the company's active directory and then logged on to a target application such as a distributed control system by LogOnPlus via an application-specific connector.

But it isn't just the question of usability where R. STAHL is looking after the operators' interests. The hardware was designed such that the devices can be used for a long time: Thin Client and display box can be easily disconnected, with no cables involved, making replacements that might be needed for a more powerful system easy and simple. R. STAHL guarantees a service life of at least 15 years for the modular ORCA design. This enables us to achieve the balancing act between short IT innovation cycles and long-term plant operation – without having to compromise on cyber security.

www.r-stahl.com



Valve Sense: Smart Inspection System For Maintenance In Hazardous Areas

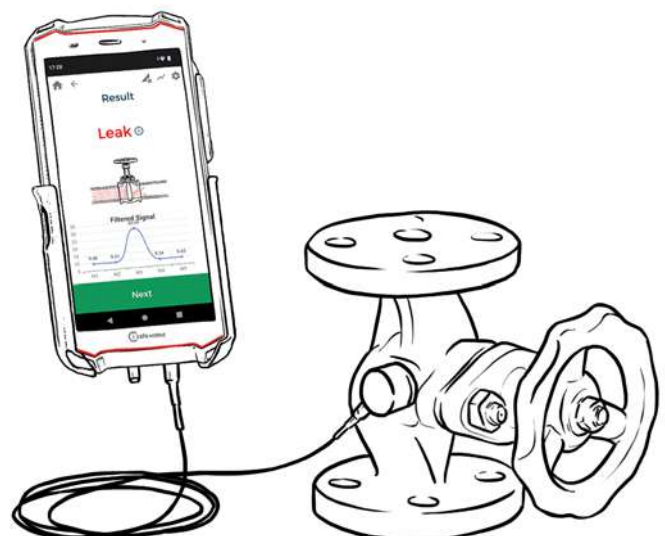
Pioneering innovation from i.safe MOBILE and Senseven for simple leak detection in valves without interrupting the production process

Lauda-Koenigshofen, 23 May 2023. i.safe MOBILE, innovation and world market leader for explosion-proof mobile devices and solutions, presents together with its strategy partner Senseven the mobile inspection system Valve Sense. Industrial customers can now use the software and AI-based system in conjunction with i.safe MOBILE's IS540.1 smartphone to monitor critical valves in international explosive hazardous areas.

This solution uses advanced sensor technology based on the proven acoustic emission method which can be easily applied by maintenance personnel via software guidance – without special training and expert knowledge. Companies can use the mobile inspection set consisting of a smartphone, measuring electronics, waveguide, sensors and a software package to regularly check their plants themselves during ongoing production, thus saving time and money. Intact valves ensure smooth operation, guarantee product quality and also provide safety for employees. Valve Sense helps to detect valve leakage of water, gas, steam or air at an early stage and to react promptly. With the combine expertise of both companies, Valve Sense meets the high demands of customers in the chemical, pharmaceutical, oil and gas sector and other demanding industries in explosive areas. Valve Sense – The new generation of valve inspection for Ex-zones. With the launch of Valve Sense for Ex-zones, i.safe MOBILE and Senseven are pioneers in the market applying today's digital capabilities to an inspection system for leak detection in valves.

The user-friendly kit easily connects acoustic emission sensors to i.safe MOBILE's innovative 5-G smartphone IS540.1 and transforms it into a smart valve inspection system through Senseven software. The software guides the user through the inspection process in a self-explanatory way and algorithms and artificial intelligence help with data analysis and provide immediate results on site. All data is automatically stored in a back office – a cloud-based platform for the structured management of all inspection data - to use it for further analysis and reporting. Valve Sense / i.safe MOBILE GmbH Valve Sense – Smart inspection system for maintenance in hazardous areas p. 2/3 Efficient maintenance process In manufacturing plants, valve inspection is an important part of the maintenance program.

Depending on the production process, there are often harsh operating environments with high temperatures, corrosive chemicals and abrasive particles. This can lead to damage



on the valve and associated unplanned machine downtime. An estimated five to ten percent of all industrial valves leak. Undetected leaks caused by non-regular or improper maintenance can result in serious consequences such as injuries, raw material losses and thus produce costs or contamination/environmental pollution.

By performing regular in-house valve maintenance with Valve Sense, companies have the option of only having to replace valves when they really have a defect. Functioning valves can continue to be used. And this can be done during the production process without having to test the valve functionality on an external test bench. This avoids a production standstill and at the same times ensures considerable cost and time savings. "Thanks to the cooperation with Senseven and the new, joint Valve Sense technology solution, we can now also offer our customers the most innovative mobile solution currently available on the market for valve monitoring in hazardous areas - with our usual reliable safety standards.

The combination of Senseven's technology with our 5G smartphone IS540.1 offers our customers an enormous increase in efficiency in the area of maintenance", comments Martin Haaf, CEO of i.safe MOBILE. „Valve Sense is a revolutionary technology that will change the way industrial valves are monitored and maintained in hazardous environments. Our team of experts has worked tirelessly to develop a system that is safe, reliable and easy to operate", says Michael Hettegger, CEO of Senseven. The Valve Sense set consists of a case containing the IS540.1 smartphone equipped with the Senseven software,

the IS-VS1A.1 measurement electronics, a waveguide and acoustic emission sensors and will be available from Q3/2023.

www.isafe-mobile.com



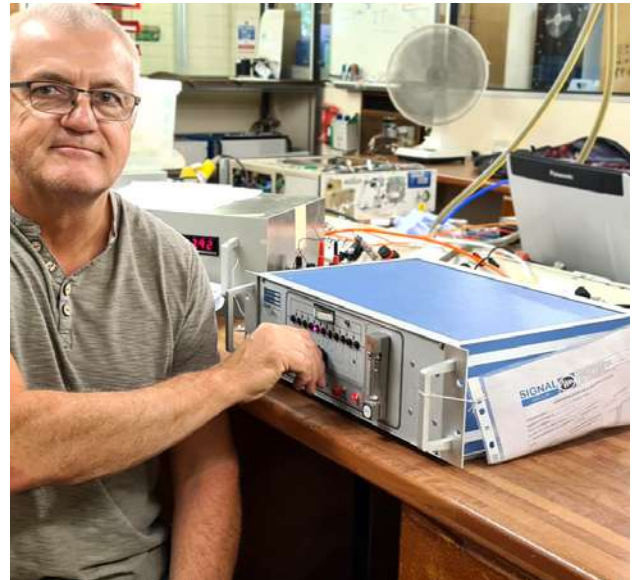
Signal Group Establishes Gas Monitoring Hire Fleet

Responding to a demand for short-term monitoring, Signal Group has established a fleet of gas measurement instruments that are available for hire. "Some of our customers only need the equipment for a specific project or for a short-term investigation," explains MD James Clements. "In these circumstances it would not be sensible to purchase the equipment, because it may not be required at the end of the project, and the capital cost may be preclusive. We have therefore established a small range of our more popular instruments, which are now available for rent."

The rental equipment includes Signal analysers employing FID for VOC and non-methane hydrocarbons; chemiluminescent analysers for NO/NO_x; NDIR for multiple species such as CO, CO₂, CH₄, NO, N₂O, SO₂ and HCl. In addition to reference method gas analysers, Signal Group also manufactures a comprehensive range of ancillary instruments including heated lines, sample conditioners, filters, cooler/dryers,

methane cutters, NO_x converters, sample dividers and calibration equipment. These instruments are all available for hire on a first-come, first-served basis.

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Quick And Reliable Flame Detection Made Even Easier With Latest Spyglass™ Series

Teledyne Gas and Flame Detection is unveiling its Spyglass™ SG50-F series of flame detectors to make the safeguarding of people and assets easier than ever before. With updated optics and algorithms, and onboard video in either colour or near-infrared options, the SG50-F series offers superior performance and security.

For any facility to protect its most valuable resources such as human lives and capital assets, reliable flame detection systems are a necessity. Spyglass™ SG50-F series open-path flame detectors elevate the level of reliability and functionality available in comparison with existing flame detection products on the market.

Notably, these innovative flame detectors come equipped with HD video capabilities, allowing for the detection of fires that may not be visible to the naked eye. Colour video is effective in detecting fuel fires like gasoline and jet fuel, while the near-infrared video option can detect fires caused by other fuels such as hydrogen and methanol.

The on-board video also enables remote confirmation of fire situations and provides valuable information on fire progression and suppression methods. Such information can prove vital in responding to fire emergencies and enabling users to make important safety decisions from a remote location.

Spyglass™ series products from Teledyne Gas and Flame Detection feature a robust and durable housing. Made from 316L stainless steel to meet IP66/IP68 and NEMA 250 6P protection rating standards, the enclosure houses state-of-the-art optic technology and advanced software algorithms, enabling rapid and reliable fire detection. The range offers improved optical flame detection capabilities, with a quicker detection time and better performance even over extended distances. They can serve as a cost-effective alternative to employing multiple line of sight point gas detectors, which would entail higher initial costs and maintenance expenses. Notably, these detectors also offer industry-leading false alarm immunity to several challenging environments while performing in adverse climates.

Carrying a wide range of global approvals that include ATEX, FMus, FMc, IECEx, EACX and SIL2, all Spyglass™ flame detectors work by analysing the absorption of radiation caused by gases in the atmosphere and comparing it to background atmospheric absorption. They come with triple infrared (IR3) and UV-IR options to suit a range of applications. The IR3 version is specifically designed to

detect hydrocarbons, making it ideal for applications such as refineries, oil and gas platforms, FPSO (floating production storage and offloading) systems, petrochemical plants, marine facilities, compressor stations and turbine enclosures. There is also an IR3-H2 option for hydrogen and energy transition applications.

For those seeking a solution for both hydrocarbon and non-hydrocarbon fires, look no further than the UV-IR option, which is perfect for battery rooms, as well as ammonia and metal-based applications. There is even a UV-IR-F option offering suitability for munitions facilities.

Supplied with configuration and video display software, the Spyglass™ SG50-F series offers multiple output options for easy detector communication, such as 4-20mA, Modbus, HART and relays.

For more information, visit www.TeledyneGFD.com or contact gasandflamedetection@teledyne.com





Is Real-Time Data Important For Gas Detection Programs?

There's been a lot of talk in the world of safety about the need for real-time data with gas detection systems. Although most will agree that real-time data benefits safety programs by providing information that leads to better decision-making, some may wonder if real-time data is as crucial as they've heard.

The short answer is yes, and here's why.

A properly calibrated and bump-tested gas detector is a powerful personal protective device. By itself, however, it's simply not enough to help ensure the highest level of safety.

That's where a connected work platform comes into play.

A connected work platform combines real-time data, connected PPE/gas detection wearables, and advanced software solutions, so you can have the best possible visibility across these areas of concern:

- Workers
- Worksites
- Workflows

In fact, connectivity enables the kind of visibility that can lead to a stronger safety program and improved safety outcomes.

Even better? A strategic connected worker-worksites-workflow platform helps simplify safety, curb risk, and boost productivity all at the same time. Plus, it sets you up for a scalable and adaptable safety program for today – and tomorrow.

Consider these three reasons why real-time data via a connected platform is a must for worker and worksite safety:

1. Real-time data enables real-time visibility for safety teams.

By their very nature, remote workforces leave safety managers disconnected from what's happening on the job. So, what's a disconnected and physically distant safety manager to do in the event of an unsafe incident, especially when every second counts?

Here's what they can do. They can ensure that lone workers are not alone, thanks to the visibility provided by a connected platform. If workers, worksites, and workflows are not connected, there's likely going to be too much lag time between incident and information – lag time that's costly to both worker safety and infrastructure.

With connectivity-enabled real-time data, safety managers can have continuous situational awareness. That means seeing the state of workers and monitoring their safety behaviours in the field. It means you'll get gas exposure alerts, man-down alarms, panic button presses, and device concern warnings in real-time so you can act as swiftly as possible. Plus, it means simplifying compliance and improving productivity to help reduce risk and costly downtime.

Real-time data gives safety managers real-time visibility and awareness into what's happening, so they can respond to incidents – and help improve safety of workers, worksites, and workflows – much faster.

The key to leveraging critical real-time data is having your hardware or gas detection devices connected to both the right software and to the cloud through a seamlessly integrated solution. While the device does its job of collecting data, the software does its job of empowering safety managers with information and insights that let you drive a more proactive safety culture.

Even better is that this creates a more unified and streamlined workflow. No relying on cumbersome file transfers and downloads. No more time spent on the arduous and complicated task of piecing together information for incident reporting.

A comprehensive hardware-plus-software connected gas detection solution gives the entire safety team a single, go-to place (accessible anytime, anywhere with an internet connection) for the data and support required to support operational efficiency and enhanced worker and worksite safety.

2. Real-time data helps improve operational efficiencies.

Gas detector check-ins and check-outs can be extremely slow and inefficient. They are, however, crucial to ensuring that workers use their PPE devices correctly – and that the devices are properly returned to the fleet. Based on our work with clients across a variety of industries around the world, MSA estimates that roughly 20% of gas detection devices never make it back to the fleet. Not only are the devices lost, but in a disconnected program, the data is also gone forever.

Thanks to a connected program, safety managers can assign a device to a worker, enabling real-time, worker-specific data. That, in turn, can lead to significant operational efficiencies, including:

- Automated check-in and check-out for daily, project-specific, and long-term use

- Increased worker accountability for the device and its whereabouts
- Faster understanding of what's happening with the worker, including the type and level of exposure
- Easier identification of noncompliant workers (those that ignore alarms and remain in a hazardous environment) so they can be trained or re-trained on proper safety procedures and protocols

3. Real-time data better safeguards lone workers for better peace of mind.

There are more than 50 million lone workers in the U.S., Canada, and Europe, most of whom are found in the oil and gas, telecommunications, utilities, construction, and industrial industries.¹ It's no secret to lone workers or their safety managers that their working conditions are uniquely and inherently fraught with a variety of potential hazards, including accidents, emergencies, and illnesses that require trained, capable, and properly equipped workers to do their jobs under such conditions.²

Connected workers, on the other hand, can be better kept free from harm. Compliance, fleet manager, or live monitoring services extend visibility, helping ensure that critical data points are delivered in real-time from on-site workers to off-site safety managers. Not only does this help protect the lone worker from gas exposures, but it also connects them to real and tangible help when needed.

As any lone worker can attest, working alone is not the same as being alone. Thanks to in-the-moment monitoring and real-time data, lone workers can have the peace of mind that comes from knowing their safety team has their back whenever and wherever they're on the job.

What safety teams can do

A connected work platform can seamlessly integrate connected workers, connected workflows, and connected worksites to help you build and maintain a flexible and proactive safety program that only gets better with time. Now that you know the benefits of a connected gas detection program, the next step is to take a deeper dive into understanding where you are on your connected journey and identifying the right partner to help support your organisation's safety, productivity, and compliance goals.

Learn more about connected work, real-time data, and more:

<https://gb.msasafety.com/connected-work>



Measurement Accuracy Depends On More Than Just The Gas Analyser

Levels of uncertainty in gas measurements can be increased, for example, by calibration gases that offer poor levels of accuracy. For this reason, Signal Group manufactures gas handling and calibration equipment as well as gas analysers. "The linearity check is particularly important," explains Managing Director James Clements. "Our Model 821S Gas Divider, for example, has been tested independently against our main competitor globally, and found to be dramatically superior."

Conducted in North Carolina, USA, the trial found the slope accuracy for the Signal 821S to be just 0.25% for a NO/N₂ gas mixture, whereas the competitor gas divider offered 1.6% slope accuracy. Similarly, for a SO₂/N₂ mixture Signal's slope accuracy was 0.74% and the competitor's was a disappointing 2.5%.

"Sources of uncertainty are incremental," James explains, "so it makes no sense to introduce extra error unnecessarily, which is why the 821S Gas Divider is popular with both our customers and with other gas analyser manufacturers."

The European standard EN14181 describes the quality assurance procedures for Automated Measurement Systems (AMS) installed to measure emissions to air. Under this standard, an analyser's linearity must be checked using five different reference concentrations, including zero. The reference concentrations should be approximately 20%, 40%,

60% and 80% of the range of two times the emission limit, and the test concentrations should be applied in a randomised sequence.

It is common practice to employ a gas divider to create the different reference concentrations, however, it is of course also necessary to be able to validate the gas divider. To protect accuracy and reliability, the Signal Group Model 821S Gas Divider does not use mass flow controllers. A manifold block with ten identical capillaries and a precision pressure balance regulator ensure the high levels of accuracy demonstrated in the USA trial.

The procedure for checking the accuracy of the 821S Gas Divider is simple. Users connect the zero and calibration gas to the opposite connections and repeat the test, and if the gas divider is operating correctly, the gas analyser will show exactly the same readings.

Summarising, James Clements says: "Bottles of calibration gas have a fixed 'use-by' date and can be expensive to purchase and store, so it makes sense to employ a gas divider to conduct multi-point calibrations. However, purchased calibration gas itself incurs a level of uncertainty, so we designed the 821S Gas Divider to minimise increases in uncertainty, and I am grateful to the researchers in North Carolina for highlighting this technical superiority."

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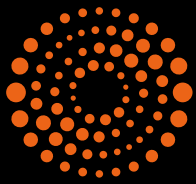
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