



SPM Instrument releases cutting-edge portable instruments for extreme EX zones , including zone 0. [Page 12 & 13](#)

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Training

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Pumps & Valves

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Explosion





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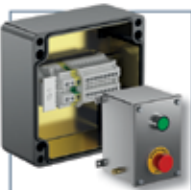
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First Aid – A matter of life or death

Every year in the UK, thousands of people die in situations where basic first aid could have saved their lives.

A survey carried out in 2012 by St John's Ambulance revealed that only 18 per cent of people know basic first aid, yet all businesses are required by law to provide the appropriate first-aid arrangements, including the provision of trained first aiders. In order to help promote workplace safety and guide businesses towards providing the right kit and training, Arco, the UK's leading safety supplier, has published an Expert Guide to First Aid Kits and Training in the Workplace.

With two main bodies providing recommendations on good practice for first aid provision in the workplace, The Health and Safety (First Aid) Regulations 1981 Approved Code of Practice and Guidance from the Health and Safety Executive (HSE), it can be confusing for businesses to understand what is needed to be compliant. Arco's First Aid Expert Guide provides clear instruction on the current regulations and on the correct contents of first aid kits. Advice contained within the expert guide can also help businesses determine how many trained first aiders are needed on site.

As keeping first aid products past their expiry date

can be unsafe, it's important that businesses regularly check any first aid kits on site and replace items where necessary. A wide choice of fully compliant products are available from Arco, including a brand new and exciting range from UK vendor Safety First Aid Group.

When a first-aid needs assessment indicates that trained first-aiders are required within the workplace, businesses can turn to Arco Training & Consultancy. Arco's HSE approved training courses not only provide customers with guidance on how to use first aid products, but also offer realistic training and life saving skills.

Alex Turgoose, Product & Procurement Manager at Arco, says "Workplace accidents and illness can happen at any time and, in some situations providing immediate first aid care can mean the difference between life and death. With safety at the heart of our business, we feel duty bound to help our customers ensure that they have the right first aid kits and properly trained staff, so that any employee who is injured in the workplace can be treated quickly and effectively. We hope to increase the small percentage of people in the UK who are trained



and qualified to administer first aid in the workplace by offering advice and assistance through our expert guide, Training and Consultancy division and local Sales Offices."

For more information and to download a copy of the expert guide, please visit: www.arco.co.uk/firstaid.

Are you Keeping your Business Warm This Winter? Hazardous Area Air Warmers will help to Protect your Business.

Are you preparing your business for the winter season?

At this time of year we notice our clients getting ready for the cold season and as a result, the demand for our hazardous area air warmers increases. Our customers most commonly use these heaters to protect enclosures, cabinets, rooms or stores.

EXHEAT Industrial's range of air warmers ensure that your business doesn't suffer as a result of cold and icy weather. If you haven't yet reviewed your current systems or started to prepare your business then don't worry - we provide fast track solutions with Next Day Delivery available on selected products. All heaters are certified to be used in hazardous areas, however if you need any advice on your specific solution then please don't hesitate to contact us for assistance.

All heaters manufactured by EXHEAT for use in Hazardous Areas are supplied fully certified to meet the latest requirements of the IECEx scheme, CSA, CU TR (formerly GOST) or the European ATEX Directive as appropriate.

Our range of air warmers includes Fan Heaters, Anti Condensation Heaters, Space Heaters, Liquid Filled Radiators and Convector Heaters.

Hazardous Area FAW-C Space Heaters.

The FAW range offers a versatile lightweight air warming solution for small work and storage areas located in Zone 1 and Zone 2 Hazardous Areas.

Flameproof FWD-T

The FWD-T range has an easy to adjust external thermostat which is designed for heating small work or storage areas and similar applications.

'HEF' Hazardous Area Anti Condensation & Space Heaters

The self-regulating properties of the HEF enclosure heaters eliminate the requirement for a thermostat.



Coupled with the compact design, this makes the HEF ideal for anti-condensation, frost protection and temperature control where the enclosure is located within Zone 1 and Zone 2 Hazardous Areas.

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Intertek



New Zealand Defence Force Doubles Number Of Tiger Voc Detectors Used During Field Inspection & Overseas Deployment

Additional handheld PID instruments which help protect military personnel are chosen for compact & robust design, reliability and ease of use.



The New Zealand Defence Force (NZDF) has doubled the number of Ion Science (www.ionscience.com) handheld Tiger volatile organic compound (VOC) detectors it uses to monitor hazardous gas concentrations during domestic field inspections and overseas deployment.

NZDF Equipment Manager, Bryan Geurts comments: "The Health & Safety of military personnel in the field is of paramount importance and last year NZDF started looking for new VOC detectors to replace its obsolete photoionisation (PID) instruments.

He continues: "Both Ion Science and the Tiger model were recommended to us and the device's

compact and robust design was a key point in its favour, since its ruggedness allowed it to be taken into difficult environments where it could be carried around easily by an individual.

"We placed our first order in 2013 and have been so impressed by the Tiger's reliability and simple operation that we took the decision to purchase more units this year," he concludes.

NZDF downloads data from the Tigers onto laptops where it is collated with other measurement information covering weather, heat, humidity and dust.

A robust handheld VOC detector, Tiger provides a dynamic detection range of 1 parts per billion (ppb)

to 20,000 parts per million (ppm), offering the widest measurement range of any other VOC instrument on the market.

The Tiger handheld VOC detector leads the way with its humidity and contamination resistant PID technology, proven to be the best performing against competing instruments when operating in humid and contaminated environments where it provides the most stable, repeatable readings.

Ready to use, straight out of the box, the Tiger requires no complex set up procedures via a PC to perform basic functions and provides the best available VOC detection and software features available.

Ion Science's Tiger also has the fastest response time on the market of just two seconds and can be connected directly to a PC via the USB offering extremely fast data download capabilities.

It has been designed for the safe replacement of batteries in hazardous environments and is intrinsically safe (IS) - meeting ATEX, IECEx, UL and CSA standards.

The NZDF comprises of just over 14,000 people. This includes around 8,900 Regular Force, 2,200 Reserve Force and 2,900 civil staff members across the armed services of Navy, Army and Air Force. The NZDF is spread across camps and bases throughout New Zealand. Its national strategic headquarters are in Wellington and the operational joint headquarters are at Trentham in Upper Hutt.

For product information please contact: Sam Holson, Ion Science, The Way, Fowlmere, SG8 7UJ, UK
tel: + 44 (0) 1763 208503
email: marketing@ionscience.com

New ATEX and IECEx Intrinsically Safe Infrared Temperature Sensor

The new ExTemp series of intrinsically safe infrared temperature sensors from Calex Electronics is designed for use in ATEX and IECEx explosive atmospheres up to and including Zone 0 (gas) and Zone 20 (dust), in conjunction with a suitable safety barrier or isolator.



This range of pyrometers is available with a choice of pre-set temperature ranges from -20°C to +1000°C. All models have a two-wire 4 to 20 mA output that may be rescaled via the optional USB interface and software.

A choice of optics is available so that small or large targets may be measured at short or long distances.

All ExTemp sensors are supplied pre-configured for general-purpose use and may be used in many applications without the need for additional configuration. However, all models are fully configurable: the emissivity setting, averaging, peak and valley hold processing and reflected energy

compensation parameters may be adjusted if required via the configuration software.

The robust stainless steel 316 housing is sealed to IP65 and is ideal for offshore applications.

The sensor is available with factory-fitted cable lengths from 5 to 25 metres, and the cable may be extended even further (subject to safety requirements) if required.

Optional accessories include mounting brackets, air purge collar and a UKAS traceable calibration certificate.

The ExTemp is ideally suited for applications in the petrochemical, pharmaceutical, food, automotive painting, and gas cylinder filling industries, among many more. The hazardous area classification is as follows:

Ex II 1GD, Ex ia IIC T4 Ga (Gas), Ex ia IIIC T135°C IP65 Da (Dust)

Sensors and accessories are available to order now. For more information, contact Calex at mail@calex.co.uk or call +44 (0) 1525 373178
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SVANTEK LAUNCHES SVAN MOBILE

New Android application offers remote operation of SVAN 977 and SVAN 979 sound level meters for environmental and occupational noise & vibration monitoring.

Svantek (tel: 01296 682040; www.svantek.co.uk) – world leading manufacturer of occupational health and environmental noise and vibration monitoring instrumentation – has announced the launch of SvanMobile. This exciting new Android ‘app’ has been designed for use with the company’s high performance SVAN 977B and SVAN 979 sound level meters.

Using the built in Bluetooth functionality of the Android smartphone or tablet, Svantek’s SvanMobile allows remote operation of the company’s high performance SVAN 977B and SVAN 979 sound level meters when making general acoustic measurements or monitoring environmental and occupational noise and vibration. Users can set up and then control the meter using the app.



SvanMobile enables the user to link measurement files from the sound level meter to media from smartphones such as images, videos and audio notes, as well as location and meteorological data. It is also possible to use SvanMobile to connect to the sound level meter over the internet if it has a GPRS modem or WiFi.

John Shelton, Managing Director at Svantek comments: “This is a significant development for Svantek. For devices running on Android platform, SvanMobile helps extend the functionalities of the SVAN 977B and SVAN 979 sound level meters. Plus anyone who monitors noise in the environment will appreciate being able to build a project around their sound level measurements by adding weather data and GPS positions.”

Svantek’s SVAN 977B and SVAN 979 instruments are robust, reliable, accurate and easy to use and capable of type 1 IEC 61672:2002 sound level measurements and acceleration, velocity and displacement vibration monitoring. Both models offer a variety of key features: all weather microphone protection, hand held, lightweight and robust case, real time FFT analysis, advanced data logging and advanced trigger and alarm functions.

In addition, data is stored on a standard micro SD card and easily downloaded to a PC using SvanPC++ software over USB interface.

A key feature of these sound level meters is being able to disconnect the microphone preamplifier and use them for vibration measurements. The instruments also have two high-speed digital signal processors meaning they are capable of measuring 2ms steps of time history, logged simultaneously to audio recording (with 48 kHz sampling) and real time frequency analysis.



As Svantek’s flagship sound & vibration level meter and analyser, the SVAN 979 is one of the most advanced and powerful single channel instruments on the market. It offers 1/1, 1/3, 1/6 and 1/12 octave real time analysis and features a large, super contrast OLED display with excellent visibility in all light conditions. The SVAN 979 also has a large dynamic range of measurement – over 110dB – and incorporates a high quality G.R.A.S. 40AE microphone for measurement in frequency ranges starting as low as 3Hz.

The SVAN 977 is a new generation sound & vibration level meter and analyser offering 1/1 or 1/3 octave real time analysis. Exceptional hardware design enables ultra sound measurements up to 40 kHz.

For product information please contact Paul Rubens, Svantek
 tel: 01296 682040
 mob: 07815 087905
 email: paulrubens@svantek.co.uk
 web: www.svantek.co.uk.

asecos Storage Guides

asecos your expert for the safe storage and handling of hazardous materials, have created five different storage guides to help you understand the basics of storage and define which asecos products would suit your needs.

The guides are based on the current United Kingdom Legislation and help you begin to understand modern Hazardous Material Storage legislation and guidelines. They reference the DSEAR Regulations (2002) and both HSG51 and HSG71.



The guides cover the following topics:

- Acid storage (corrosion resistant).
- Chemical storage.
- Compress Gas storage for internal use EN14470/2 up to 90 minutes protection.
- Highly Flammable and Flammable Solvent storage EN14470/1 up to 90 minutes protection.
- Background to storage legislation in the United Kingdom.

If you are interested in these guides please send an Email with the subject "storage guide" to the following Email address: info@asecos.co.uk

asecos will provide you with the guides directly by Email. www.asecos.com

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New Sound Level Meter available from Shawcity Ltd

New, and now available to buy from Shawcity in the UK, two intrinsically safe sound level meters from 3M, designed to work in the challenging oil and gas environments.

Class/Type 1 SE-401-IS and Class/Type 2 SE-402-IS are extensions to the Sound Examiner SE-400 Series of sound level meters.

The new models are recognised with ATEX approval, a requirement on sites which are hazardous, and therefore lend themselves well to classified zones found on oil and gas sites and platforms. The meters are also certified intrinsically safe to UL and DEMKO standards.

These instruments compute the average sound pressure level (LEQ/LAVG) over the run time, in addition to measuring maximum, minimum and peak levels. The SE-400 Series also offers data logging for download and analysis with 3M Detection Management Software DMS.



To enquire further about SE400 range, please call Shawcity on: 01367 899419 or e-mail us on info@shawcity.co.uk



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FLIR Offers Special Limited Time Promotion on Firefighting Cameras

Free FLIR ONE™ to be Included with New K-Series Camera Purchase

FLIR Systems, Inc. (NASDAQ: FLIR) is pleased to announce a value-added promotion of a bonus FLIR ONE unit with the purchase of a K40 or K50 thermal imaging camera (TIC). This promotion began on November 1st and runs through the end of 2014.

FLIR K-Series cameras are high-resolution thermal imagers, specifically designed for the extreme heat and smoky conditions that firefighters encounter. Both the K40 and K50 offer a bright LCD display for superior visibility, simple operation, image storage, and easy toggling between five imaging modes to optimize sensitivity for higher or lower temperature

ranges, including search and rescue (SAR) and hotspot detection.

The FLIR ONE, on the other hand, is a lightweight accessory that transforms an iPhone 5 or 5s into a thermal imager that is able to detect and display invisible heat energy. For firefighters, this adds situational awareness capabilities to a smart phone platform. While the FLIR ONE is not designed to be used in the extreme temperature environments found inside burning structures, it has the potential to be helpful for scanning exteriors for hotspots during the overhaul phase, detecting heat signatures during outdoor rescue efforts, and as a fire prevention inspection tool.



With the value-added offer of a FLIR One with the purchase of a K-Series camera, FLIR is providing firefighters two complementary thermal imaging solutions.

For more information on the K-Series special promotion, please visit:
www.flir.com/k-seriesoffer

E2S adds SIL 2 compatibility to its horn and strobe families

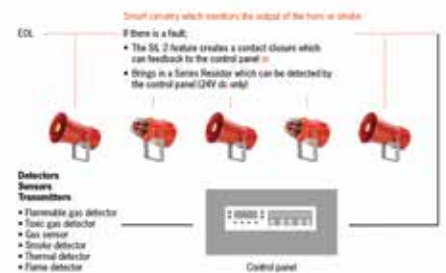
Safety Integrity Level, SIL, is a measure of safety system performance expressed in terms of probability of failure on demand (PFD).

In the oil and gas industry, particularly in the fire and gas detection systems where safety integrity is critical, SIL 2 is becoming a common standard across systems. To meet the growing demand in the oil & gas industry, E2S Warning Signals, the leading independent audible and visible warning device manufacturer, has recently added additional fault monitoring to give SIL 2 compatibility to its products.

Initially available for its BEx explosion proof 117 dB(A) horns and 5, 10 and 15 Joule strobes, its explosion proof GNEEx GRP family will be the next one to be upgraded. In large petro-chemical installations, the safety-critical warning devices are installed over large distances, so central monitoring is a key requirement. While fire and gas detection systems continually monitor the integrity of the cabling, the warning devices themselves are not checked. The new SIL 2 technology in the E2S

horns means that the functionality can be remotely checked and an alert sent to the control panel in case of any fault.

A smart combination of software and hardware removes the need for time-consuming inspection and test of each individual warning device by intelligently reading the sound output of the horn or the light emitted by the strobe to check it is working properly. State-of-the-art technology ensures that spurious signals are not picked up by the sensors to ensure a reliable monitoring at all times. To comply with SIL 2 requirements, this is only done during an automatic test of the system and any faults are reported back when the system returns to its normal monitoring state. Communication with the system control panel can be configured in two ways: either a contact is closed or a series resistor is brought into the monitoring circuit in the event of a fault.



A dedicated SIL 2 information page can be found at <http://www.e2s.com/information/sil2-certified-audible-and-visual-warning-signals>.

The web site www.e2s.com has full product information, distributor contact details and a useful reference section, with technical bulletins and white papers on various aspects of warning signalling, freely available as a resource for specifiers, system designers and consultants.

For more information please visit:
www.e2s.com

Danish Sewage Plant Uses Ion Science Tvoc® Fixed Voc Detector To Track Hydrocarbons

Continuous VOC monitoring of sewage lines helps avoid costly and time consuming clean-up of sludge



In a bid to avoid costly and time consuming clean-up of sludge, Danish sewage treatment plant, Frederikshavn Renseanlaeg, recently installed a fixed ATEX certified Total Volatile Organic Compound (TVOC®) detector from Ion Science (www.ionscience.com) to help detect potentially dangerous hydrocarbons in its sewage lines.

Technical Manager, Rasmus Bendsen, from Duotec A/S, Ion Science distributor in Denmark comments: "Hydrocarbons in sewage lines pose a threat to maintenance personnel and could potentially contaminate the sludge in a sewage treatment plant.

He continues: "Most people believe that sewage is already a highly contaminated product. However, there is a big difference in the risk to human health from sludge that contains just waste and sludge that also contains hydrocarbons."

There are many reasons why sewage sludge might become contaminated with hydrocarbons, including as a result of defective oil separators, unintentional spills or even dumping. Once sludge contains

hydrocarbons it has to be treated as chemical waste rather than fertiliser. This can significantly increase the price of disposal.

Frederikshavn Renseanlaeg chose the Ion Science TVOC model for a number of reasons including its robust design which meant the unit could withstand the harsh conditions typically found in a sewage line. The transmission of a wireless alarm when hydrocarbons were detected was also a factor.

Another major advantage was the 12VDC operation which made the system very easy to set up as only one lead-acid battery was required to power both the detector and wireless module. Plus, it was capable of running continuously on battery power for at least two weeks.

Duotec A/S supplied the TVOC hydrocarbon detector, battery and wireless communication module in a waterproof IP68 pelicase. The TVOC was mounted through the side of the case to allow air to be sampled while protecting the display and electronics inside.

Rasmus concludes: "Supplying a spare battery with the TVOC helped the sewage treatment plant to achieve 100% uptime with only an occasional battery replacement. The spare battery was charged and ready to be fitted by maintenance personnel as required."

TVOC's photoionisation detection (PID) capabilities utilise advanced patented Fence Electrode technology, a three-electrode format with increased resistance to humidity and contamination.

The robust TVOC has a selectable detection range of 0 – 10 ppm, 0 – 100 ppm or 0 – 1000 ppm and is ideal for use in manufacturing and process industries where VOCs are typically present.

With a 4-20 mA analogue output, the TVOC detector can be simply integrated into a DCS control system to provide warnings and enable control of high VOC levels in the working environment.

ATEX approvals enable a three wire TVOC system to be used in Zone two hazardous areas, without safety barriers. ATEX and IECEx approvals allow TVOC to be used in Zone one hazardous areas, with safety barriers.

The TVOC utilises a diffusive sample technique resulting in less contamination issues compared to pumped systems, reducing lamp cleaning and servicing requirements. Simple to install service and calibrate, TVOC requires no hot work permit and the PID sensor is accessible and changeable in a matter of seconds. It is also available for use with a pumped system for applications where sample conditioning is required.

For product information please contact:

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Fowlmere, SG8 7UJ, UK

tel: + 44 (0) 1763 208503

email: marketing@ionscience.com

SPM Instrument releases cutting-edge portable instruments for extreme EX zones

SPM Instrument, The leading provider of condition monitoring technology, now announces the launch of Leonova Diamond® IS and Leonova Emerald® IS. IECEx and ATEX certified, these new arrivals from SPM provide sophisticated condition monitoring capabilities for potentially explosive industrial environments, including zones 0, 1 and 2.

Leonova Diamond IS and Leonova Emerald IS are built to withstand harsh environmental conditions. Heavy industries with intrinsic safety requirements such as the refinery, mining or oil and gas industries are challenging environments. Assets typically are substantial investments placed in remote or dangerous locations, making maintenance difficult and production downtime extremely costly. The wear-and-tear resistance of Leonova makes them perfect for these and other demanding industrial settings.

Leonova provides a unique combination of sophisticated technologies and usability in a single measuring device with exceptional analytical power and versatility. The instruments comply with the strictest IECEx standards and thus can be used in extremely explosive atmospheres, including zones 0, 1 and 2 and gas group I/IC.

SPM HD and three-channel vibration monitoring

The Leonova instruments are uniquely effective tools for condition measurement on hazardous area equipment. The strongest combination of measuring techniques available provides maximum flexibility. Leonova Diamond IS and Leonova Emerald IS are the first portable measuring devices to come with the SPM HD® shock pulse measuring technique for condition monitoring of rolling element bearings in hazardous areas. Outperforming traditional vibration measurement techniques on many applications, the SPM HD method is unrivalled in its ability to measure in the entire 1-20,000 RPM range. The perfect companion to vibration analysis, SPM HD can be used successfully on all types of machinery with rolling element bearings.

Leonova Diamond is also the first ATEX/IECEx certified instrument to offer three truly parallel vibration channels enabling advanced vibration analysis (40 KHz, 25,600 lines) and balancing. Both instruments use supreme HD Order Tracking for shock pulse and vibration measurement to provide crystal clear measuring results also on variable speed equipment.

Lightweight and ergonomic with TFT-LCD color screen

The instruments are easy to use and operate. Compact, lightweight and ergonomic, they have the added convenience of a large, high-resolution TFT-LCD color screen. USB communication interface enables efficient configuration and data transfer. An uncompromising choice of components and materials guarantees long-lasting and trouble-free operation in adverse conditions.

Leonova provides reliable, comprehensible and actionable information – right at the point of measurement. State-of-the-art digital instrument technology and optimal performance utilization enables very rapid data acquisition and processing while maintaining excellent measurement accuracy. Upon completed measurement, the instruments instantly display condition evaluation on an intuitive green-yellow-red scale.

Stan Jackson, Managing Director of SPM Instrument UK: "We consistently strive to develop and deliver superior condition monitoring products to the world's industries. Leonova Diamond IS and Leonova Emerald IS are results of this dedicated work. Our R&D department has engineered two leading-edge instruments that will enhance the possibilities for maintenance engineers to practice advanced condition monitoring in hazardous areas."



SPM Instrument

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Major Pulp Mill Streamlines Condition Monitoring With Leonova Diamond

The portable instrument Leonova Diamond recently made inroads at the Södra Cell Värö pulp mill north of Varberg on the Swedish west coast.

Another one of forestry group Södra Cell's pulp mills, Södra Cell Mörrum, now follows suit investing in this highly advanced instrument for industrial condition monitoring.

Södra Cell Värö was the first of Södra Cell's three pulp mills to invest in portable condition monitoring equipment from SPM. Now the Södra Cell Mörrum mill are also substituting their instruments for the Preventive Maintenance group with SPM's most recent portable instrument Leonova Diamond, which includes the patented SPM HD measuring technique for bearing measurement in the 1 to 20,000 RPM range. The method has received worldwide acclaim since its launch in 2010 and has many users in the pulp and paper industry.

In addition to shock pulse measurement with SPM HD, Leonova Diamond also contains advanced vibration analysis, balancing and many other useful features for a comprehensive condition monitoring program. One example is parallel execution of multiple measuring assignments, which may decrease measuring route times by half.

The purchase also includes a service contract and training for the preventive maintenance (PM) personnel who will be using the instrument for periodic condition measurements. In addition to this investment, preventive maintenance personnel from all three pulp mills in the Södra Cell group - Värö, Mörrum and Mönsterås - will shortly undergo ISO certified vibration training, ISO VIB Cat I, at SPM Academy.

Christer Svensson, Preventive Maintenance Manager, comments: "The Södra Cell pulp mills have jointly

analysed our needs and the market in Sweden to see what products are available. Our equipment was outdated and hence we have a great need to upgrade. SPM delivers a technology that we think currently suits us best. Against this background, Södra Cell Mörrum has chosen to invest in two Leonova Diamond."

Södra Cell is one of the world's largest producers of bleached sulphate market pulp with production at three pulp mills in Sweden. Södra Cell Mörrum has two production lines for the manufacture of bleached sulphate pulp and textile pulp, with a combined annual production capacity of 400,000 tons. Customers are predominantly European paper mills that produce fine paper, printing paper, tissue and speciality products. The mill in Mörrum employs about 335 people.

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Leonova Diamond is the latest proof of our commitment to developing first class condition monitoring products for more profitable maintenance. In a direct response to feedback from SPM customers across the globe, we developed an instrument that will deliver long working life under the toughest, most demanding circumstances.

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2015 Dates for UK based Functional Safety Engineer (TÜV Rheinland) Training for Safety Instrumented System Professionals



Exloc Instruments (UK) Ltd are pleased to announce 2015 dates for UK based Functional Safety Engineer (TÜV Rheinland) Training for Safety Instrumented System Professionals, presented by Worldwide renowned Functional Safety Expert, Tino Vande Capelle.

Tino is an accepted course provider within the Functional Safety Program for Safety Instrumented Systems (SIS) of TÜV Rheinland. The course focuses on functional safety aspects for the process, oil & gas, petrochemical and chemical industries according to IEC 61508 / 61511.

Course objective

The main objective is to provide all engineers involved in safety instrumented systems with elementary and necessary knowledge about functional safety, based on the leading international functional safety standards IEC 61508 and IEC 61511.

A second objective is to give anybody attending the course the opportunity to have his or her functional safety competency confirmed by the TÜV Rheinland upon successfully passing the exam.

Who Should Attend?

- Plant and quality managers
- System integrators and independent consultants
- Control and process engineers
- Maintenance and instrumentation engineers
- Managers of engineering departments
- Risk, reliability, safety and quality engineers
- Loss prevention engineers
- Sales engineers - Sales managers - Marketing specialists for safety-products, systems and services
- Technical staff involved in any part of SIS lifecycle that need or want to develop their competency in Functional Safety

Why Should You Attend?

IEC 61508 ed2.0, released in April 2010, clearly indicates as a 'Normative' requirement, that anybody involved in safety lifecycle activities shall be competent to carry out the activities for which they are accountable. Take advantage of this course, examination and certification to prove your clients, peers and management, your competency in the field of Functional Safety. Success in the final examination certifies your functional safety knowledge on your personal name, adding a great value to your professional career and image.

Participant eligibility requirements:

In accordance with the FS Engineer (TÜV Rheinland) Program:

- Minimum 3 years experience in the field of functional safety
- University degree (Master's or Bachelor's degree in Engineering) or equivalent engineer level responsibilities status certified by employer

Course Duration

3.5 days: 3 consecutive days vocational training with student exercises, + 4 hours closed book exam in the morning of the fourth consecutive day.

Introduction to functional safety

- What is safety?
- Legal status IEC61511
- Overview of legal requirements
- Layers of protection
- Safety Instrumented System
- Safety integrity level
- Problems with safety systems
- Safety system failures
- What is functional safety?
- Functional Safety Standards

The basics of functional safety

- Functional safety management
- Lifecycle concept
- Documentation
- Verification & Validation
- Assessments & Audits
- Modifications
- Competency of people

Hazard & Risk Analysis

- Hazard & Risk definition
- Tolerable risk
- Risk management
- Hazard Identification Techniques, FMEA, FTA, HAZOP
- Hazard Analysis Techniques ETA
- Risk Reduction Techniques, risk matrix, risk graph, LOPA
- Safety Functions
- Safety Requirement Specification

Planning the Safety System

- Planning for end users (integrators)
- Realisation safety system
- Three important documents
- Requirements for suppliers

Hardware design

- Hardware lifecycle
- Hardware concepts
- Hardware fault tolerance
- Diagnostics, Proof test
- Safe failure fraction
- Architectural constraints
- Reliability analysis
- Markov modeling
- FMECA
- Failure Data

Software design

- Software lifecycle
- Safe software
- Three types of software
- Software testing
- V-model
- Measures to avoid failures
- Measures to control failures

Certification and Proven In Use

- Certification & compliance
- Safety Manual requirements
- Certificates & reports
- Proven in use, how to use?
- Reliability data, sources

Using the Safety System

- Installation and commissioning
- Safety Validation
- Operation, maintenance and repair
- Modification and retrofit


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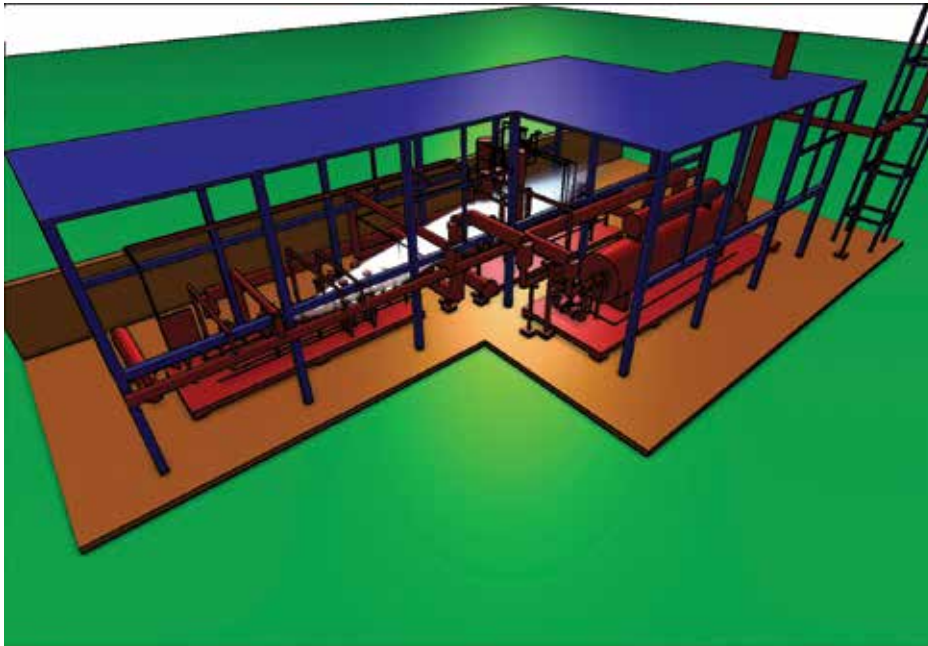





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Advanced modelling of a vented explosion

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- Explosion safety training
- Economic selection of protection systems and basis of safety justification in accordance with the explosion protection document
- Product testing in accordance with the ATEX equipment directive
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¹The ATEX directive 1994/9/EC ("the Product Directive") sets requirements to manufacturers and vendors supplying equipment for use in potentially explosive areas, verifying that the equipment does not represent any explosion hazard. The ATEX directive 1999/92/EC ("the User Directive") sets minimum requirements with focus on health and safety for personnel working in areas with potential explosion hazards. The Dangerous Substances and Explosive Atmospheres Regulations (DSEAR), 2002, Statutory Instrument 2776 (UK) embraces the ATEX user Directive and the safety aspects of the Chemical Agents Directive (CAD) 1998/24/EC.

TÜV SÜD launches new ATEX training programme for 2015

Due to popular demand, TÜV SÜD has changed the format of their ATEX training for 2015, from a half-day seminar to a one-day course.

The new course provided by TÜV SÜD's Principal ATEX Consultant, Andy Holmes, will help guide delegates their way through the ATEX Directives and provide delegates with an understanding of the Directives, knowledge of the markings, the approval process and guidance on how to comply with the Directive.

Introduction to the ATEX Directive, 2015 training dates:

- 26th February – Fareham, Hampshire
- 23rd April – Fareham, Hampshire
- 3rd June – Birmingham, West Midlands
- 21st July – Fareham, Hampshire
- 30th September – Billingham, Stockton-On-Tees
- 21st October – Fareham, Hampshire

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Functional Safety Engineer (TÜV Rheinland) Training Manchester, UK, 17-20 March and 05-08 October 2015

Ideal for gaining crucial IEC 61508 / IEC 61511 knowledge

Following the success of our training course earlier this year, Exloc Instruments are pleased to offer the next presentation of Functional Safety Engineer (TÜV Rheinland) training for Safety Instrumented System professionals, presented by renowned Functional Safety Expert, Tino Vande Capelle.

The course focuses on functional safety aspects of the process industries, providing vital knowledge based on the leading international functional safety standards IEC 61508 and IEC 61511.

..... So Why Should YOU Attend?

IEC 61508 ed2.0, released in April 2010, clearly indicates as a 'normative' requirement, that anybody involved in safety lifecycle activities shall be competent to carry out the activities for which they are accountable.

This course provides you with the opportunity to gain certification by the TÜV Rheinland, proving your knowledge and competency in the field of Functional Safety to clients, peers and management. In accordance with the FS Engineer (TÜV Rheinland) Program the course requires an entry criteria of either:-

- Minimum 3 years experience in the field of functional safety.
- University degree (Masters or Bachelors degree in Engineering) or equivalent engineer level responsibilities status certified by employer.

Course duration is 3.5 days with a 4 hours closed book exam in the morning of the on the final day.



EXLOC Instruments UK Ltd, 59b High Street, Uppermill, Oldham, OL3 6AP www.exloc.co.uk
Tel + (0) 1457 239301 sales@exloc.co.uk Company Registration no:7737802 VAT no 138 6571 86

Bifold Releases Solenoid Operated BXS Pneumatic Valves

Bifold has built on the experience and skills of its workforce to continually broaden its product range.



In addition to the high quality valves and pumps, Bifold are proud to announce the launch of their solenoid operated BXS Pneumatic valve range.

Bifold's BXS valve range offers a compact and flexible solution to low pressure applications. With over 35 common interface modular operators, this versatile range covers a wide spectrum of actuation requirements. Specifically, the solenoid operated types are compact, two-stage valves. The robust design is manufactured from 316L stainless steel as standard with anodised aluminium options also available. The valves are suited for offshore and other corrosive atmospheres.

With a valve operating temperature range of -55°C to + 130°C and worldwide solenoid operator approvals Ex emb, Ex d & Ex ia for ambient temperatures up to 90°C, the solenoid operated product range is available with the widest range of override options. These include: auto reset, spring return manual override, stayput manual override, manual reset, tamperproof manual latch and latch energised. Low power options are also available, rated at only 1.8W.

Product design FMEAs, extensive qualification testing, computerised diagnostic factory acceptance testing and test procedures to confirm operational safety factors of all production valves, combine to support the certification of the BXS series valves as SIL 3 capable.

A NAMUR interface is available on 5/2 port configuration valves. These types are supplied with multi-functional adaptor plates to permit valve orientation through 90° or conversion to a 3/2 configuration.

Alongside the development of the BXS series valves, Bifold has designed the IPV (Integrated Pilot Valve).

This is a cartridge valve that fits within the solenoid operator adaptor, permitting the solenoid operator to be connected directly to the BXS series valve body.

This will be a more compact, simpler to maintain and more cost effective solution for the end user.

For innovative and reliable valve solutions, visit our website bifold.co.uk where more detailed information and a PDF brochure, may be downloaded.

About Bifold

The Bifold Group of Companies are supported worldwide with a global network of agents and distributors.

Bifold is a world class supplier of the widest range of switching instrument valves and pumps in the oil and gas upstream and downstream sector.

Our innovative and reliable range of high-tech valve products and accessories specifically designed with the customer in mind, have gained worldwide approval and credibility for the onerous conditions as found in hazardous (classified) locations, hostile, corrosive and subsea environments.

More Information

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Bifold Fluidpower Ltd, Broadgate, Oldham
Broadway Business Park, Chadderton,
Oldham, Greater Manchester, OL9 9XA. UK.

Free Thermal Imaging Software Trial - Produce Instant TI Survey Reports With Just One Click!

Hazardous Engineering Solutions magazine has teamed up with thermographic services specialist Ti Thermal Imaging Ltd to offer HES readers a free three-month trial of its new TICOR™ Android-based thermal imaging reporting application which provides immediate one click report generation.

TICOR™ is one of two new software packages developed by Thermal Imaging Ltd which cut thermal imaging engineers' survey/reporting time by 25% by streamlining the data capture, input and analysis procedures associated with thermal imaging report generation and maintenance monitoring.

TICOR™ is believed to be the first Android-based thermal imaging reporting application which provides immediate one click report generation. Installing the software on an android tablet enables engineers to enter data from a thermal imaging camera directly into the tablet and produce instant diagnostic reports while they are still on site with just one click at the end of each TI survey.

The TICOR™ software can also be integrated into WEBCOR™ - Ti Thermal Imaging's new online predictive maintenance and condition monitoring programme – and, again with just one click, the data captured on TICOR™ can be uploaded onto WEBCOR™ to provide data comparison and tracking of any changes to give early indication of potential issues or problem areas.

Both software programmes are compatible with any thermal imaging cameras that produce images in various formats as well as the recently-launched Seek Thermal camera attachment for mobile phones. They provide a particularly efficient solution for monitoring and managing thermal imaging information for multi-site operations.

The software packages are the brainchild of Richard Wallace, Managing Director of Ti Thermal Imaging which has over 12 years' thermographic surveying experience, and were born out of his frustration at the length of time engineers have to spend manually copying data to produce a report after a site visit.

Wallace says: "Engineers currently spend around an hour for each three hours of surveying, manually transferring data from TI cameras and cross-referencing and matching it with the images, and I thought there had to be a more efficient way of producing reports. We looked at what was available on the market and none of the software we found did what we wanted it to do. We've worked with a software specialist to create the TICOR™



and WEBCOR™ programmes so that engineers aren't spending another two hours producing reports at the end of a six hour survey."

Wallace adds: "With thermal imaging now being so widely used across a wide platform of industries from oil, gas, water to construction, manufacturing and retail, there are so many applications where TICOR™ and WEBCOR™ will provide engineers with a cost-effective, time-efficient method of capturing and reporting data instantly and on an on-going basis."

FOR MORE INFORMATION OR TO APPLY FOR A FREE THREE-MONTH TRIAL, CONTACT: RACHAEL BROWNING AT Ti Thermal Imaging QUOTING REFERENCE: HES magazine
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Minimise The Risks, Think Cold Bonding

Cold bonding: a safer alternative to hot work



Hot work required for welding, grinding and cutting operations presents certain potential hazards when conducted in potentially explosive and flammable environments. In order to minimise the risk, cold bonding solutions involving materials that are applied and cured at ambient temperatures can offer an alternative solution for repair and newbuild applications on metallic surfaces.

Welding in hazardous environments

Welding is proven to be the most recognised repair and fabrication method for metallic equipment and structures that joins pieces of metal by melting and fusing them together. However, in scenarios of flammable and explosive environments, the welding process is restricted, since sparks and hot metal can fly off in all directions and may drop down, creating hazardous situations. As described in the Defence Works Functional Standard Specification 031 for Internal Cleaning of Fuel Tanks, any hazardous material should be drained, cleaned, purged and tested for flammable vapors before the welding process starts. The transfer piping should also be

Above: Picture 1: Plate bonding repair on equipment

drained, purged and blanked. Assessment of the risks required before carrying out any hot work makes welding a highly time consuming process and therefore safer and time saving alternative options are becoming popular among the industry professionals.

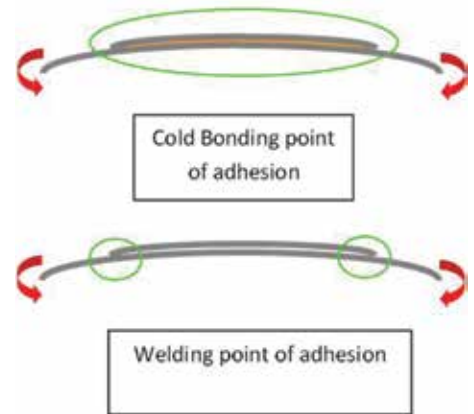
Cold applied solution

Maintenance and construction welding requirements that would historically involve hot work can be completed with the use of polymeric cold bonding composites that are applied and cure at ambient temperatures. As laboratory testing and field experience have shown, polymeric cold bonding composites can be applied for the repair of metallic equipment such as hoppers, tanks, flanges, support pads and pipework, as well as for newbuild applications such as creation of load bearing shims, retention of bearing rings, modification of vessel internals and equipment assembly.

Put it to the test

In order to demonstrate the bonding strength, a tensile shear adhesion test has been conducted on two plates bonded on a deck, a 1.0m² plate bonded using a Belzona adhesive material and an equivalent of 7mm weld along the edges of the plate. Determined in accordance with ASTM D1002, the results demonstrate that the bonded plate will be able to sustain up to 7000kN in pure shear when the weld will only be able to support up to 2000kN.

This demonstrates that the bonded solution gives 3.5 times the shear resistance compared to the same plate welded round the edges with a 7mm weld bead.



Above: Graph 1: Point of adhesion

A quasi-static bending test was conducted to test the mechanical characteristics of the material. The two cold bonded plates did not immediately separate when bending forces were applied. Instead the composite spread out, the bending forces across the entire surface area, both plates and the bond uniformly distorted retaining the bond, demonstrating the retention of in-tact bond lines between both steel/adhesive interfaces.

Cleavage adhesion testing was carried out on Belzona 1111 (Super Metal), a paste grade epoxy material usually used for cold bonding applications, in accordance with ASTM D1062 at 20°C, 40°C and 60°C in order to determine the effect of high ambient temperatures on bond strength. When fully cured,

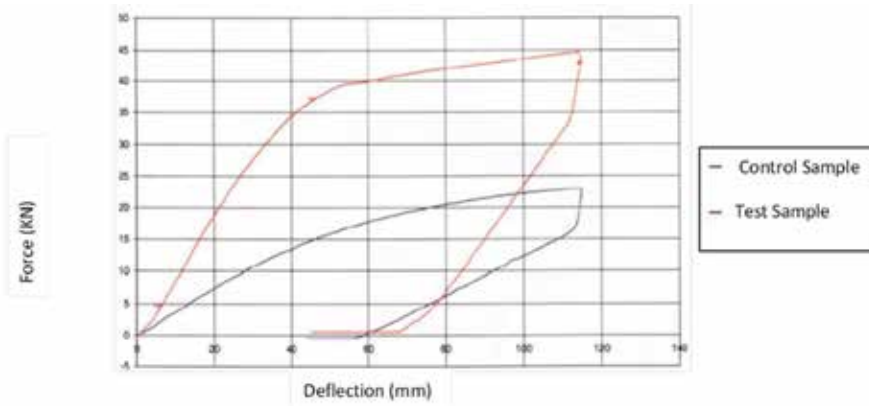


Figure 1: Quasi-static tests on composite panels (Test P)

the cleavage adhesion of Belzona 1111 was found to be maintained across the 20–60°C test range, i.e. the bond strength was unaffected up to 60°C, and adhesion values were actually found to be slightly higher at higher test temperatures by virtue of the higher cure temperature. Cleavage adhesion values obtained were 1330 pli, 1465 pli and 1450 pli, for 20°C, 40 °C and 60°C testing, respectively.



Above: Picture 2- 3: Storage tank roof repaired using Belzona

Refurbishment of 3 LNG Tanks in Algeria

Based on the above testing results, an Algerian Oil and Gas asset owner turned to Belzona cold bonding technology in order to refurbish in 1990 three substantial Liquefied Natural Gas (LNG) tanks severely corroded after 13 years of continuous service in a coastal environment in Algeria.

The client was looking for a reliable and long term

Above: Figure 1 Quasi-static tests on composite panels

solution to repair the LNG tanks taking into account all the safety considerations and without disturbing any parts of the inner tanks and their supports. Several solutions were considered for the repair including welding of new plates to the existing live tanks, welding new plates after purging the inner tanks and the insulation spaces, or fixing new patch plates over the roofs on site using cold repairs with epoxy adhesives. For safety reasons, the use of Belzona cold bonding system was chosen to avoid the welding requirements on site, as this was a major concern considering the thousands of cubic metres of highly flammable LNG in the tanks.

The main part of the project was to seal leaks in the outer skin of the tank and to bond doubler plates over the most corroded areas of steelwork. During the blasting process carried out using non-sparking grit to Swedish Standard SA 2, more live gas leaks were found on the surface of the tank and were directly sealed with Belzona 1291 (ES Metal), a rapid curing epoxy paste grade material.

Belzona 1121 (Super XL-Metal) with its extended working life, was used for bonding the reinforcing plates. Belzona 1111 (Super Metal) and Belzona 1321 (Ceramic S-Metal) were used in conjunction with Belzona Reinforcement Tape to repair and strengthen the nozzles through the tank roof.

As the project proceeded, the ability to use Belzona materials as a structural adhesive was further investigated. Various tests both independent and at Belzona's facilities were carried out on full size test rigs to confirm the suitability of Belzona to bond firstly the hand rail supports around the tank perimeter and finally the main vent pipe trunnion supporting several tons of pipework. The project

was carried out to very stringent standards with salt contamination, blasting profiles, climatic conditions and ultrasonic thickness measurements being constantly monitored. New furniture and platforms were installed on the roofs of the three LNG tanks where the different instruments were fixed to their original positions.

The Belzona solution was applied live to keep the site running with minimal disruption without hot work or use of mechanical equipment. No other alternative was deemed to provide a viable solution to the client's requirements due to time scale and the risk of sparks. Since the application, it has been regularly inspected and has now been in service for more than ten years demonstrating the high efficiency of the cold bonding solution.



Above: Picture 4: View of the three tanks in 1990



Above: Picture 5-6: Application on site.

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"ESAB is focused on excellence in all areas of the business and invests heavily in this effort across our global organization," said John Hagen, vice president, Global Quality and EHS. "This distinguished worldwide recertification reflects our corporate philosophy of continuous improvement. By constantly striving to identify areas to advance our operational processes, product quality and customer service, we operate more efficiently, provide greater value to our customers, a safer working environment for our employees, and reduce our impact on the environment. As a result, we strengthen our global brand."

The International Organization for Standardization (ISO) is the world's largest developer and publisher of International Standards. Its stringent criteria are recognized in nearly 200 countries around the world. Developed through global consensus, ISO standards help break down barriers to international trade. For more information about ISO, visit www.iso.org.

ISO 9001 certification validates that ESAB's quality processes and systems meet specific criteria for ensuring consistent and continuously improving quality systems that fulfill customer requirements.

ISO 4001 certification promotes efficient and effective environmental initiatives, including global warming countermeasures, elimination of hazardous chemical substances from products, and establishment of a product recycling system. This certification strengthens ESAB's environmental initiatives geared toward greater sustainability.

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Our twin grid grating is available in a variety of different thicknesses and panel sizes. This grating is ideal for overhead walkways where a smaller mesh is needed, as it meets the European 15mm ball falling test.

Also available is our standard, and bestselling, grating which has a grit embedded surface to stop slips. This comes as square mesh at 38mm or 50mm hole sizes and thicknesses of 25mm, 28mm or 50mm. If you need a structural grating, but don't need mesh then the grating can have a 4mm top bonded to the top surface. This applies to any of our standard mesh gratings.



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Sonatest Launch A New Flaw Detector Series Offering Choice, Customisation And Performance, Take A Closer Look.

Sonatest Ltd are pleased to announce the release of the latest range of the Sitescan and Masterscan series of flaw detectors.



Retaining the best features of the established series, the new range has evolved in response to the requirements of users and their applications, combining simplicity of use with improved capability and field proven reliability.

The end user now has the freedom and flexibility to customise their instrument to fulfil their preferences and meet their application demands exactly as they need. With all units being field upgradeable, the adaptability of the unit's capability over time is increased. New and standard software options can be customised to meet the needs of the project; as can the hardware of the instrument! Choose your shape - select between the traditional table-top style of case or the more recent hand-held portable case with the rotary wheel menu driver.

Listening to customer requests this new generation of flaw detectors offers new features to boost the

productivity of the inspector. Customisable and intuitive menus create a smooth workflow for the operator and together with improved 4GB of data storage, simplified PC interfacing and new UT-lity reporting software the post-inspection report writing and result processing is greatly enhanced.

The new range comprises of just four models the Sitescan 500S and D-50 offering entry level broadband UT performance and the Masterscan 700S and the D-70 providing the highest specification to the market including 8 filter settings from 100kHz to 22MHz, with 100-450V square wave transmitter and 20 metre range.

DAC functionality, available on all models, now enables up to 3 custom DAC curves on-screen, meeting all known worldwide standards. Adjustable DAC curves increase the available dynamic range and using the same reference indications DAC

curves can now be converted to TCG and back again with ease. The unique Split DAC option gives up to 3 zones of additional gain to permit single-pass scanning of lossy materials and thicker sections.

Angle Measurement Mode is a new standard feature which simplifies beam plotting. Using the built in peak detection mode the beam profile for any transducer can be confirmed in moments.

The introduction of a Corrosion Software option improves reliability over spot-thickness measurements and includes a B-Scan Display function which shows a cross section of the material being tested based on its wall thickness.

A-scan data can be stored with the thickness readings and transferred to a PC using the new data management software UT-lity Pro. UT-lity Pro also provides the end user with the ability to create and manage inspection plans, location notes, historical data and other asset management information.

Software options across the range include TCG, DGS(AVG), AWS, API, Interface Trigger, Backwall Echo Attenuation, Split DAC, Corrosion Software and Dryscan modules.

Typical applications include weld fabrications, corrosion detection, forgings and castings, power generation, composite inspection, bond testing and general UT inspection.

Established since 1958 Sonatest Ltd is a leading independent manufacturer of Ultrasonic UT and Phased Array Flaw Detectors, WheelProbes and Transducers whilst supplying the NDT market with a full range of NDT equipment and accessories.

Find out more about Sonatest Ltd and our products by visiting www.sonatest.com.

EXPLOSION PROTECTED CRANE SYSTEMS

Crane systems manufactured by the J D Neuhaus company can be supplied with Atex classifications EX II 2 GD IIA T4 / EX II 3 GD IIB T4, with increased spark protection also available for explosion level II C.



Their products are currently used worldwide, operating in some of the most dangerous dust laden conditions as well as hazardous, toxic and potentially explosive atmospheres. Typical applications include mining, tunnelling, foundries and cement plants, with toxic and hazardous locations including chemical processing, while oil and gas production on land or offshore involves some unique heavy load handling requirements in addition.

All load lift, lower and traverse operations operate off a pneumatic air-line pressure of 85psi (6 bar), with optional hydraulic operating systems also available. This eliminates the potential hazards and dangers associated with electrically powered equipment when operating within areas of high dust or humidity.

The JDN range covers both single and double girder overhead travelling cranes, together with slewing jib cranes and underslung cranes incorporating

Above: A customised, explosion protected 80 tonne lift capacity crane as supplied by J D Neuhaus for use on an offshore rig.

purpose designed low headroom hoist trolley designs. Cranes with individual hoists having load capacities up to 100 tonnes can be supplied, as well as multiple hoist crane products operating with single or twin parallel beams, while also providing individual or synchronised hoist control systems.

For offshore lifting operations, including on sea going vessels, cranes can be supplied with rack and pinion drive systems for safe operation even in bad weather conditions. Super-silent operation is combined with sensitive controls including an automatic safety function for load-lowering in the event of power supply failure.

Special purpose, fully customised cranes can also be supplied to customer specifications. For companies looking for self-build projects, JDN also supplies crane kits. These are designed for the manufacture of overhead travelling cranes and underslung cranes. They feature the use of a single span beam providing the hoist support and running platform. This includes both overhead travelling and underslung mountings which are supplied with crane drive motors and space saving energy chain systems for the power supplies for both long and cross travel movements.

Typical customised products that have been supplied include a hydraulic semi-portal crane, with a lift capacity of 80 tonnes for use on a drilling rig. This incorporated twin monorail hoists, together with four JDN hydraulic drives for the crane travel movements.

Other specialist products for the oil and gas industry include an 80 tonne double girder overhead travelling design for 'xmas tree' handling on a semi-submersible rig. Another purpose-designed product provided a 200 tonne lift capacity for handling BOP equipment offshore. Cranes for use in the corrosive atmospheres of the galvanic industry have also been supplied.

The J D Neuhaus cranes are insensitive to dust, humidity and aggressive atmospheres as standard, operating within a temperature range of -20°C to +70°C. They provide 100% duty ratings with no downtime and only minimum maintenance requirements. Overload protection and fail-safe braking are incorporated, together with emergency-stop safety features. Special limit switch arrangements for end-travel, anti-collision and protected zone status are also incorporated as required.

Further information is available on request to:
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Explosion At Chinese Factory Shows Devastating Effects Of (Metal) Dust Explosion – Protection Systems Can Prevent Disastrous Consequences

According to provisional casualty figures, more than 70 people died in this latest major explosion at a Chinese factory. Dust was ignited by an open flame, which then led to an explosion. No one knows better than REMBE, the explosion protection specialists from Germany, that tragedies of this kind are avoidable. “The biggest problem is that many companies don’t become our customers until there has been a serious incident,” says Stefan Penno, CEO of REMBE. “It’s quite unbearable to see such disasters on the news – considering that they can be prevented. People lose their lives unnecessarily, while businesses are ruined. Yet expert explosion protection is nothing mysterious, and neither does it obstruct production. In fact, as long as the company works with professionals, it leads to greater productivity and better cost effectiveness.”

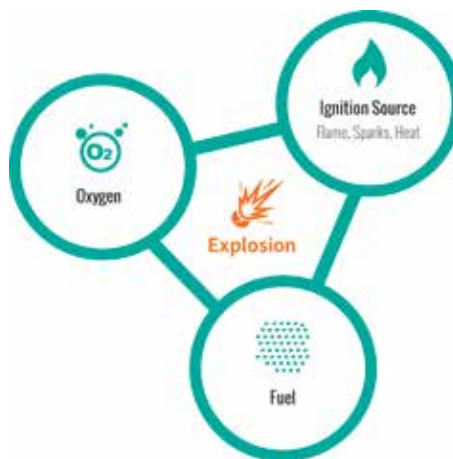
The Chinese government has drawn the right conclusions: To prevent further incidents, it has identified several hundred explosion-prone facilities throughout China and has shut them down for an indefinite period of time. Also, a country-wide safety campaign has been launched, targeting businesses in a wide range of industries and providing information about the dangers and the impact of an explosion. The campaign is aimed at companies in the wood, coal, paper, aluminium and cotton industries.

Obviously, this is no comfort to the families of the explosion victims in Kunshan. Neither does it help the factory operators and their customers which, according to media reports, also include General Motors.

Elements of an explosion

Lack of explosion protection is very common in all industries – throughout the world. However, the necessary elements of an explosion can be found at virtually all production facilities: fuel, a source of ignition and oxygen. The fuel may be any flammable dust, including flour, wood or metal. Some typical

sources of ignition are sparks, hot surfaces and pockets of ember. Unless inerting takes place (i.e. the displacement of atmospheric oxygen by inert gas, such as nitrogen), oxygen is bound to enter the production process.



Oxygen	Source of ignition Flames, Sparks, Friction, Heat Etc
Explosion	
Fuel	

Above:

Illus. 1: The explosion triangle: If the right concentration occurs, there will be an explosion.

Constructive explosion protection

Explosion protection ranges from eliminating potential sources of ignition (i.e. preventative explosion protection) to reducing the impact of an explosion to a level which is harmless to humans and machinery (constructive explosion protection). As it is usually impossible to avoid sources of ignition completely, constructive explosion protection is the most frequent method used at industrial facilities.

The relevant protection products are as different as the plants in which they are used. They include bursting disks, flameless venting, explosion suppression and explosion isolation systems. “Obviously, explosion protection only works if suitable products are used. But it is equally important to have a general, fully comprehensive protection policy. If you only protect part of your plant, forgetting to secure adjacent areas, e.g. through isolation, then the protection system remains ineffective. This is why it’s so important to work with professionals and to look at the production facility as a whole,” says Stefan Penno.

China and successful protection at a similar facility

What could have saved all those casualties in China? At the time of the explosion it was too late. Explosions take place within milliseconds. However, if constructive explosion protection had been applied, this would have prevented any harm to the workforce. The plant would have survived, and production could have been resumed very quickly.

At a similar plant in Germany the operators have installed REMBE products for this purpose. Like the plant in China, the facility belongs to an automotive supplier which – like its Chinese counterpart – works with metal. To protect the metal dust filter system, a Q-Rohr® tube has been installed, and the connected plant components have been protected through isolation. The setup includes a check valve which shuts in response to an explosion, thus preventing the spreading of flames and pressure from the filter into the adjoining containers and tubes.

Q-Rohr® – flameless venting indoors

The Q-Rohr® is a flameless venting product – a technology that was developed by REMBE quite a while ago, in the 1980s. The Q-Rohr tube is attached to the relevant container. If an explosion occurs within the container, it spreads but is deprived of its heat by a specially developed stainless-steel mesh that acts as a dust filter within the Q-Rohr®. The explosion is nipped in the bud. This sounds very simple. And in fact it is. The secret lies in the design of the filter mesh. No flames or dust can emerge, and noise and pressure are reduced to a tolerable minimum. The Q-Rohr® is therefore perfectly suited for indoor production systems.

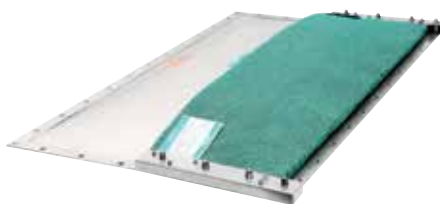


Above:

Illus. 2: The original flameless venting model: Q-Rohr® consisting of a special stainless steel filter mesh, bursting disk with integrated signalling and seal.

Bursting disks and opening angle limiters as an outdoor solution

Bursting disks and opening angle limiters are usually the number-one choice for outdoor use. Bursting disks are available in a wide range of shapes and materials. If an explosion occurs, they open and release the explosion into the environment. This requires sufficiently large safety zones with no buildings and a ban on vehicle and pedestrian traffic. If such space is not available, the opening angle limiter TARGO-VENT from REMBE allows the deflection of pressure and flames into areas where they can do no harm. These are often containers placed near a pavement or a road. TARGO-VENT deflects the explosion upwards into the sky, so that vehicles and pedestrians are safe.



Above:

Illus. 3: Bursting disk with TARGO-VENT opening angle limiter

Preventing future disasters?

“Explosion protection means protecting both human lives and businesses. It should not be taken lightly,” says Johannes Lottermann, Ph.D. (Eng), Senior Consultant in Explosion Protection at REMBE: “Investment in professional explosion protection means investing in the future of the company, the health and safety of the workforce and of course the legal protection of the plant operator.”

The specialists at REMBE know that the disaster in Kunshan (China) will move a number of plant operators to rethink – but not everyone. The next disaster is bound to happen – unfortunately.

About REMBE:

REMBE is the worldwide safety specialist in explosion protection, process safety and measurement technology. It provides customers with cross-sectoral safety systems for their plants and equipment. All products are made in Germany and meet the requirements of national and international regulations. REMBE customers include market leaders in numerous sectors, including the food, wood, chemical and pharmaceutical industries. Its engineering expertise is based on over 40 years of experience with applications and projects. As an independent, owner-managed family business, REMBE combines expertise with the highest quality and actively contributes to a range of professional bodies throughout the world. Thanks to its short lines of coordination, the company can respond quickly and find customised solutions for all applications, ranging from standard products to special high-tech designs.

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