



Manufacturing Engineering Process Control Automation

December 2017

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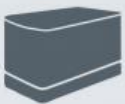
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# December 2017

**T**he end of 2017 is finally upon us! I am sure that we are a long way from being in the Christmas mindset at the minute though, with a lot still to happen throughout the last four weeks of the year. Firstly, we are delighted to announce that



we have a new addition to our Editorial team. Ella, who will be starting with us as of the January 2018 edition, is looking forward to meeting a lot of you throughout next year. At the beginning of November, I hopped on a plane to China to take a look at how the manufacturing and engineering sector is different in Asia. It was a fantastic trip and I spent a couple of days in Shanghai at the Manufacturing in the Age of Experience exhibition. It was fantastic to see a different take on the sector and the show was focused on bringing digitalisation to the forefront of manufacturing, something that I am sure we will see implemented in the UK over the years to come. We have a bumper issue for December, where we run our Yearly Review. We are looking back on some of the most exciting and innovative products and technologies that have been developed in 2017 and have a huge focus on Sensors & Imaging (page 18) which is headed up by UKIVA. Everything is brought together nicely with the most up to date information from our usual selection of industry experts. We say Zàijiàn to 2017, and look forward to catching up with you all again in the new year!

**Ryan Bunce, Editor**

@Mepcamagazine



**12 MANUFACTURING IN THE AGE OF EXPERIENCE**

A brief recap on the Shanghai Conference, look out for more in the next issue



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# Leadership skills

Neil Withey, Director of Technical Training, EEF writes exclusively for MEPCA in the EEF's regular guest column.



## The manufacturers' organisation

**A**s the fourth industrial revolution evolves, developing the skills of current and future leaders is of paramount importance. But, how can the UK continue to be an important player in the digital industrial revolution when companies are consistently encountering a serious shortage of leadership skills?

According to research undertaken by EEF, improving management skills is one of the main areas the UK must concentrate on to increase the economy's productivity performance.

The reason for this is simple. Digital factories are proving transformational as companies implement innovative technology and look for employees with fundamentally different types of skills and qualifications. Skills surrounding big data analytics solutions, autonomous systems, digital twinning and worker augmentation are now essential.

Increasingly, younger employees have been brought up in the culture of a digital world and, from a leadership perspective, these employees frequently need to be managed differently as they have a different thought process to the management structure above them.

It is therefore vital that management and leadership training incorporates an

awareness of this, as well as the ongoing impact of digital disruption at the heart of each organisation's ongoing leadership skills training. Those companies that invest in providing their workforces with the requisite leadership skills ultimately offset those training costs by the efficiency gain that digital factories bring.

As well as the move to a digital world, the introduction of the Apprenticeship Levy has brought leadership training into sharper focus. Manufacturers now have the opportunity to use the levy to upskill their existing workforce through the apprenticeship route, as well as the opportunity to explore and embrace management and leadership development apprenticeships.

Management Development Apprenticeships (MDA) are able to meet the requirements of the funding while simultaneously meeting the specific needs of companies where leadership is a priority area for skills development. A comprehensive MDA programme assesses, appraises and enhances several key leadership skills including organisational performance; personal effectiveness and, interpersonal excellence.

As ever, getting the right people in place is essential with individuals who are committed to embracing their own

leadership competence development, both professionally and, for the benefit of the company they work for.

To maximise the new opportunities presented by the Apprenticeship Levy manufacturers must, in the first instance, actively identify precisely what skills training they require.

This can be done using a leadership gap analysis tool to help professionals identify potential skills gaps, share ideas on how best to manage performance, retain talent and, provide pointers on how to plan effectively for change.

For many manufacturers, the new Apprenticeship Levy will provide an ideal way to boost productivity by investing in human capital. With the right training and direction, people who aspire to be great leaders can improve both workplace and business performance by creating a more effective, motivated and productive environment. That will ultimately be for the benefit of the employee, the employer and manufacturing in general."

To download EEF's free leadership gap analysis tool visit [eef.org.uk/management-effectiveness-tool](http://eef.org.uk/management-effectiveness-tool) or to discuss Management Development Apprenticeships call 0808 168 5874

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# Top tips for implementing industry 4.0

The term 'Industry 4.0' has quickly become the "hot topic" across industry, but is it actually understood, and is it being implemented correctly? Steve Askins, UK Engineering Director at ERIKS UK & Ireland, offers some practical guidance to help you cut through the hype and get the most from the fourth industrial revolution.

## 1. Prioritise your workforce in your IoT integration

Ensuring as much of your workforce as possible understand the benefits of Industry 4.0 will be integral to its correct implementation. Particular attention needs to be paid to senior employees who will lead the way. According to our research, over 55's are less likely to fully understand the benefits of Industry 4.0 than their younger counterparts, and are particularly sceptical around the subject of sharing data. With the older generation of engineers being instrumental in the deployment of Industry 4.0, a good support structure and strong internal messaging from the top down is paramount.



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## 2. Swap out reactive for proactive maintenance

Implementing preventative and predictive maintenance practices, such as condition monitoring, is an ideal first step into Industry 4.0, and one that could immediately demonstrate improved operational efficiency and reduced downtime. Companies should be investing in the technology needed to adopt these maintenance techniques, which could be as simple as applying sensors to a piece of equipment, or even a hand-held tool.

## 3. Invest in training

Realising the benefits of Industry 4.0 is half the battle, but knowing how to implement it is often the biggest barrier to tackle. Investing in training and education opportunities to improve skills in and knowledge of Industry 4.0 is essential and can be done in partnership with a specialist training provider, as well as in-house.

## 4. Don't be afraid of data sharing

Reaping the rewards of Industry 4.0 is largely dependent on sharing data with third party maintenance suppliers or OEMs, which will facilitate correct data analysis and more progressive maintenance practices, such as remote condition monitoring. The impact of not sharing data can be huge, particularly if you lack the skills in-house to analyse that data effectively. Manufacturers can quickly find themselves relying on reactive maintenance to keep operations running,

which is both inefficient and costly.

To give you peace of mind, be sure to invest in solid IT infrastructure that incorporates the latest security software. Make sure that this is updated frequently. You may even wish to conduct a security audit once a year to ensure that your systems are fully-functioning and responsive to the latest cyber-threats. For best practice, generate an open and collaborative relationship with your OEMs and third-party suppliers to ensure that your network is fully protected, end-to-end.

## 5. Partner with an expert in data monitoring and interpretation

Using data and technology correctly will be crucial to improving operations and industrial maintenance practices in line with Industry 4.0, but this will often require the support of an OEM or third party supplier. Integrating sensing systems with the support of a partner will ensure that you generate the data you need. The added benefit of working with an expert in this field is that they can analyse the data for you to help provide insight into your process efficiency, as well as helping you to proactively monitor machine problems.



A recent survey conducted by ERIKS revealed that many manufacturers in the UK have yet to implement Industry 4.0 practices, largely due to concerns over security, skills and available resources. Now is the time to ensure you have everything in place for a smooth transition towards Industry 4.0. First steps into Industry 4.0 needn't be strides into the unknown, and taking on board the considerations above will help your business to adapt before taking the final plunge.

ERIKS' white paper, Is the UK ready for Industry 4.0? Industrial maintenance in a connected world of Big Data, is now available to download here.

For more information, please visit [www.eriks.co.uk](http://www.eriks.co.uk)



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# Critical utility PQ data simplified

Powerful software automates analysis and reporting of data based on international standards to troubleshoot, quantify energy usage, and analyse power distribution systems

**T**he measurement, understanding, and reporting of power quality in distribution systems requires capturing large amounts of data and then spending hours to analyse and report. With powerful software that automates setup, analysis, and reporting, the Fluke 1740 Series Power Quality Loggers simplify the collecting and reporting of critical utility power quality trends. More information about the products can be found at [www.fluke.co.uk/1748](http://www.fluke.co.uk/1748)

The compact Fluke 1740 Series Power Quality Loggers are used for studying and monitoring utility power quality and demand to industry standards. They offer advanced data aggregation and analysis that saves time, reduces manpower, and eliminates errors associated with traditional data collection and reporting.

The Fluke 1740 series loggers are fully compliant with the international power quality standard IEC 61000-4-30 and meet Class A requirements. They are capable of simultaneously logging more than 500 parameters for each averaging period, allowing technicians to analyse power quality in detail and to correlate intermittent events with detailed waveform data to identify the root cause of disturbances.

The included software makes it quick and easy to setup the logger, and automates the complex task of analysing and reporting the data. The software features:

- Easy setup in the field or workshop with PC application software: connect using Wi-Fi, wired Ethernet connection, or USB cable to setup the instrument, download logged data or download directly to USB memory stick.
- Energy Analyze Plus application software: download, analyse and report every measured detail of energy consumption and power quality state-of-health with automated



reporting.

- One touch reporting: create standardised reports according to commonly used standards like EN 50160, IEEE 519, GOST 33073, or export data in PQDIF or NeQual compatible format for use with third party software.

- Advanced analysis: choose any available logged parameter to create a highly-customised view of logged measurements for advanced correlation of data.

An optimised user interface, flexible current probes, and an intelligent measurement verification function that allows technicians to digitally verify and correct connections makes setup easy and reduces measurement uncertainty. Connection errors are automatically indicated via an amber light

on the unit's power button which turns green once corrected. Because measurement and logged data can be viewed using a wireless Wi-Fi connection, the 1740 Series minimises technicians' time in potentially hazardous environments and reduces the hassle of suiting up in personal protective equipment.

The loggers are rated 600V CAT IV/ 1000V CAT III for use at the service entrance and downstream.

Fluke is the market leader in portable power quality instrumentation solutions and the Fluke 1740 is the latest product in a range of products that includes the Fluke 430-II series analysers.

Information about all Fluke products can be obtained via the Fluke web site at [www.fluke.co.uk](http://www.fluke.co.uk).





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# Trend keeps its BEMS options open

Trend Control Systems, a leading international manufacturer and supplier of state-of-the-art Building Energy Management Systems (BEMS), has confirmed its dedication to providing open protocol solutions that are fully interoperable with other manufacturers' products.

**T**he company believes that although it is commonly perceived as a proprietary technology developer, nothing could be further from the truth. This is highlighted by Trend's recent announcement that its industry leading range of IQ<sup>®</sup> 4 controllers – including the IQ<sup>®</sup> 41x, IQ<sup>®</sup> 422, IQ<sup>®</sup> 4E, IQ<sup>®</sup> 4NC devices – now comes with full BACnet Building Controller (B-BC) compliance.

Steve Browning, Trend's partner and end customer marketing communications manager, commented, 'B-BC is currently specified in approximately 50 per cent of BEMS specifications across Europe and although this is an exciting development for us, the fact is that Trend has offered BACnet Application Specific Controller (B-ASC) compatibility for many years. Just as importantly, we have always understood that the complexity of modern buildings and the diverse ways they are configured often means that disparate elements of a building services infrastructure need to be integrated into one holistic, open protocol BEMS.'

Open protocol BEMS provide enhanced usability with one point of operation for multiple building systems such as intelligent lighting controls, fire detection and security, packaged plant etc. This also brings lower installation costs in terms of networking infrastructure.

They also allow the design of systems with the best capabilities for the task in hand, resulting in a more effective, complete BEMS solution. This in turn makes future additions and expansion with any new 'open' compatible systems a simple undertaking.

The primary advantage gained from the use of open protocol systems is the flexibility it provides, as each individual system within a total BEMS can be selected and tailored to the exact needs of the client. Crucially, if one



system needs to be replaced, open protocol flexibility means that it can be changed, upgraded or replaced without disrupting the entire BEMS network.

IQ<sup>®</sup> 4's B-BC compliance is just the latest in a long line of Trend technologies that have been designed to fully exploit the benefits of open protocols. For example, the longstanding and highly successful Trend Open Network Node (TONN) enables a Trend BEMS to interface with protocols such as BACnet, OBIX, LONWORKS<sup>®</sup>, KNX, MODBUS, M-BUS and many more.

Furthermore, IQ<sup>®</sup> VISION – the successor to the 963 Supervisor – integrates Trend controllers and third party smart devices into a software platform that uses open standards to manage buildings at an

enterprise level. This gives building owners and managers the ability to identify issues and optimise their systems by including integrated network management tools that support the design, configuration, installation and maintenance of interoperable networks, where multiple controllers from a variety of manufacturers can be networked together.

Trend's Steve Browning concluded, 'Although there are significant advantages to configuring an entire BEMS using our products alone, we recognise that an open protocol solution can achieve the type of outcomes that are positive to a business commercially, functionally and environmentally.'

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# Manufacturing in the Age of Experience

**M**EPCA were honored to be invited to report from Dassault Systèmes' Manufacturing in the Age of Experience event, which took place November 7-8, 2017 in Shanghai.

Decision makers and influencers from the global manufacturing community joined 3DEXPERIENCE platform users to explore the smart, value, human and creative trends in manufacturing that are changing the shop floor and enabling value networks to replace the traditional supply chain.

Customer testimonials on manufacturing addressed improving speed and agility with real-time learning, connecting value streams from ideation to consumers, empowering collaboration and creativity, and enabling new business models with cost-effective mass customization. Directors and Engineers from Ford Motor Company, Tangshan Steel, CRRC & Joby Aviation showcased this to great effect.

In addition to delivering opening and



closing remarks, Dassault Systèmes executives gave a live demonstration of the 3DEXPERIENCE platform detailing how manufacturers can transform their industry by adopting a "3DEXPERIENCE twin" approach to simulate, experience and optimize operations throughout the extended enterprise.

Breakout 3DEXPERIENCE platform user sessions offered in-depth tutorials on manufacturing trends in the context of twelve industries and multiple domains such as robotics, cobots, digital continuity, and artificial intelligence, as well as on Dassault

Systèmes' DELMIA, EXALEAD, ENOVIA and QUINTIQ applications.

Attendees also experienced a future manufacturing plant in the interactive 3DEXPERIENCE playground. Manufacturing in the Age of Experience 2017 was a great way to gain insight from a roundtable discussion on the future of manufacturing in China and the MEPCA team certainly look forward to future editions!

Keep an eye out for a more detailed write up and pictures in the next edition of the MEPCA magazine.

## BSRIA Instrument Solutions – Christmas prize giveaway

**B**SRIA Instrument Solutions would like to wish you all a very Merry Christmas.

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### About BSRIA

BSRIA Instrument Solutions is a leading supplier of specialist test and measurement instruments to Industry since 1990. It has built its reputation by providing the most reliable and advanced test equipment from leading manufacturers

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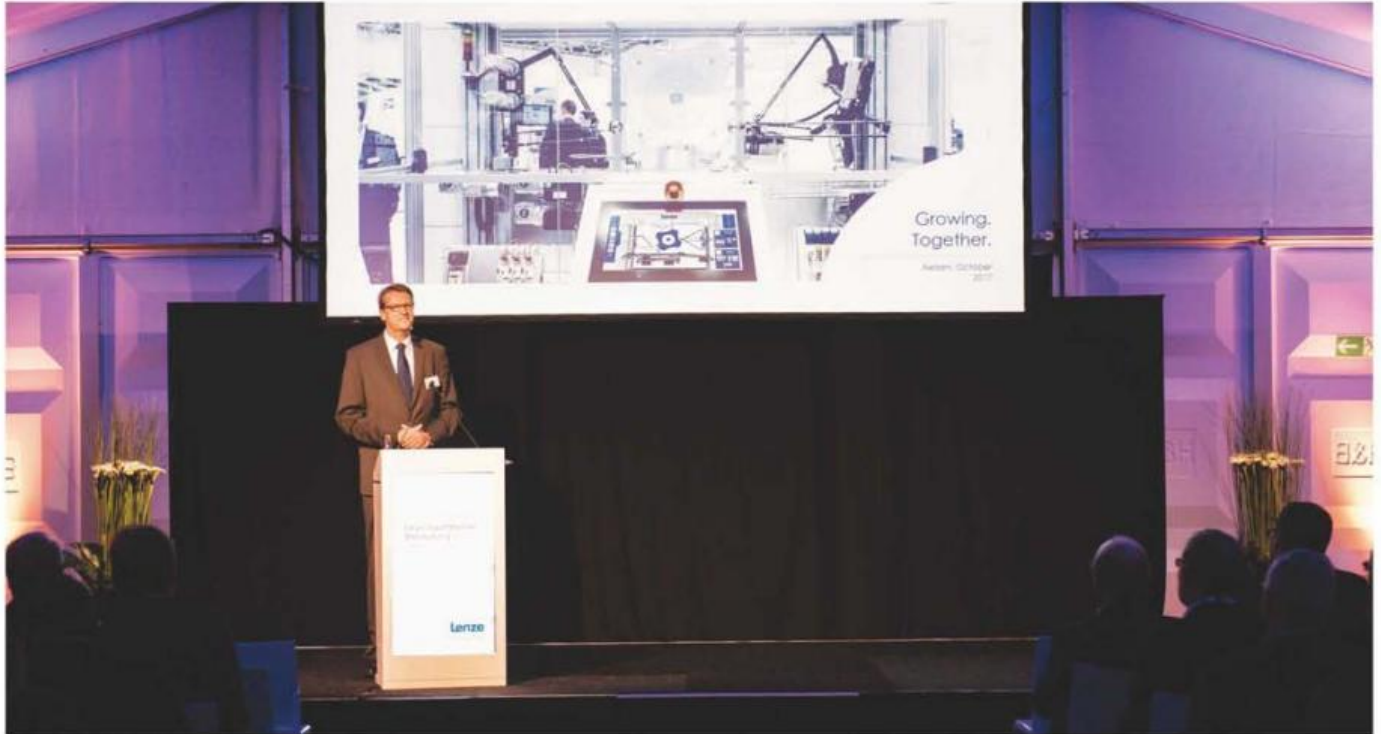


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# Making machine automation easier

Lenze turns 70 – and celebrates with a Future Day of Machine Manufacturing.



**P**roductivity, reliability, ease-of-use: these three qualities are fundamental, even after 70 years. It was 1947 when Hans Lenze began to realise his dream of setting the world in motion. In the era of Industry 4.0 with the rapid spread of digitisation, those three elements are still key in assessing the quality of machines and production lines. Lenze's 70th anniversary was an opportunity to celebrate. In mid-October, more than 400 industry experts and journalists from all over the world came together at the company's German headquarters near Hamelin for the Future Day of Machine Manufacturing. Here they were able to take part in creative discussions on trends, challenges and intelligent solutions for modern machine manufacturing.

What started as a trading company in Hamelin, Germany, has today developed into an international Drive and Automation

company. Lenze takes pride in being a real partner to its customers, developing intelligent solutions for the Smart Factory together.

To share ideas from the forefront of innovation, Lenze celebrated its 70th anniversary with the "Future Day of Machine Manufacturing". Subjects debated included most recent automation trends, latest product developments and future ways to make machine building easier. Pre-eminent experts from varied business disciplines talked about digitisation, the IoT and the future challenges as well as the opportunities for machine manufacturing.

## The focus on people

To make digital transformations possible cooperation is the key factor. Lenze CEO Christian Wendler said "Our ability to develop the right solutions for the challenges faced by our customers has always depended on our people, and this will be the case in the

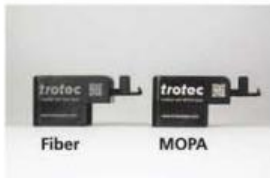
future. The cooperation and partnership with the customer is most important for us. In order to create intelligent machines, the role of our people will increasingly be to work creatively in teams – cooperation skills will become the new core competence".

Industry 4.0 and the digital world also mean a change of role for Lenze itself. From a manufacturer of components, drive solutions and automation systems, Lenze is turning into a service provider that presents itself to its machine- manufacturing customers as a complete engineering partner. "We automate machines – and make it so easy," underlines Wendler. Drive industry experts are a necessary part of this, and they took the opportunity at the Future Day to get some hands-on experience with the automation technology of tomorrow – and also to celebrate Lenze's 70th birthday in a fitting way.

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# Modularisation: Configured to succeed

Machine designers have been pursuing modularisation strategies for more than two decades. The advent of Industry 4.0 has brought new challenges, however, and given fresh impetus to their efforts. Lenze's Neil Beaumont reveals all.



**M**odularisation is one of the defining trends of modern mechanical engineering. A 2014 analysis by market research company Quest TechnoMarketing showed that recent growth in machine production is primarily a consequence of the manufacture of modular machines. The research suggests that modular designs are poised to overtake monolithic approaches, accounting for around 50 percent of new mechanical engineering projects by the end of 2017.

While modularisation began as a way for manufacturers to manage complexity in mechanical components, the evolution of the mechatronic approach to machine design is paving the way for the next breakthrough in the application of the approach. That's because designers are finally getting the tools they need to engineer the mechanical, electronic and software components of a

design together in a coordinated manner.

## Stacking up the benefits

For machine OEMs, modularisation provides a host of advantages. By breaking designs down into standard functional units, and developing modules to fulfil those functions, engineers can dramatically reduce the development and testing work required to produce a new machine. Instead of starting each job from blank sheet of paper, they can apply ready-made solutions to common tasks.

The efficient reuse of design approaches and components enabled by modularisation cuts the development cost of new machines and machine variants. It allows new products to be delivered to the market more rapidly, and reduces faults and quality problems, since much of the new machine's functionality has already been proven.

## Risks and restrictions

Modularisation brings challenges too. Designers may have the freedom to pick different module kits, but each standard module has fixed functionality. That inevitably restricts flexibility. It also creates the risk that the final machine actually does more – and costs more – than the application requires. To avoid this trap, companies need a scalable approach, with 'families' of modules that fulfil the same function at different sizes or capacity levels. Optimising such solutions is tricky, however: too many options mean excess cost and management complexity, too few means the right solution is not always available.

Modularisation can also make it more difficult for OEMs to differentiate their offerings from competitors': Machines built from identical or similar module kits tend to look, and work, alike. The requirements of Industry 4.0 bring further challenges to module design. For machines from different



manufacturers to work together seamlessly, interfaces must be programmed uniformly and compliance with standards, but modules need to retain sufficient flexibility at the software level to meet the requirements of specific machines, applications and users.

## Making modularisation work

For OEMs, a successful modularisation strategy requires the availability of modules that can be combined with each other in a way that is as finely scaled as possible in order to limit the disadvantages of the over-dimensioning referred to above. Manufacturers of drives and automation technology can do much to help customers meet their modularisation goals. That support starts at the hardware level, with the availability of complete, scalable product ranges with a focus on standard components. The adoption of standard communication technologies, meanwhile, aids the integration of components within machines and of machines with each other. On the horizontal level, that means the use of standards such as Ethercat or CANopen.

In the vertical direction, it includes PLCopen and the OMAC PackML standard.

The right software offerings are also increasingly critical. Indeed, 92 percent of the mechanical engineering companies consulted in the aforementioned Quest TechnoMarketing survey saw software solutions as an important competitive advantage. This is an area where technology providers can make a real difference. The Lenze FAST application software toolbox, for example, typically eliminates around 80 percent of the work required to develop control applications from scratch creating technology modules that can be combined with each other. The system also allows the creation of custom modules to handle user-specific tasks.

Another key challenge in modularisation lies in eliminating the time consuming and costly software modifications required to create different machine designs. While parameterised function blocks like the Lenze FAST system make it easier to adjust individual modules, engineers also need quick, reliable ways to bring different combinations of modules together. That's

difficult with traditional fieldbus systems, which require all the nodes on the bus to be defined in advance.

By using the "Optional Nodes" function in Ethercat, Lenze has dramatically simplified the configuration of modular designs. Optional nodes allow designers to define the overall configuration for a family of machines, and then create customised versions at the click of a mouse, by selecting or deselecting particular nodes.

The combination of stronger hardware and software integration and greater flexibility is paving the way for a new era of modularisation. The simple functional modules of the past are evolving into sophisticated "machine modules" that can handle more complex tasks such as winding or product sealing. Integrating those modules into a complete solution is becoming quicker, easier and cheaper. That will enable OEMs to focus more of their time, effort and expertise on creating the features that add extra value for their customers, and which differentiate them from their competitors.

## Fundamentals of Process Safety

5–9 March 2018, Manchester, UK  
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# Emerging technologies in machine vision

UKIVA's Machine Vision Conference and Exhibition ([www.machinevisionconference.co.uk](http://www.machinevisionconference.co.uk)) to be held on Wednesday 16th May 2018 at Arena MK, Milton Keynes UK



**UKIVA**  
**machine vision  
conference**  
& EXHIBITION  
16 May 2018  
Arena MK, Milton Keynes, UK

**T**he conference and exhibition will provide visitors with the opportunity to find out about emerging machine vision technologies. The comprehensive program of technical seminars includes a presentation theatre dedicated to innovations in vision. Three of the most topical issues in the industry at the moment are embedded vision, Industry 4.0 and the IoT and deep learning.

## Embedded vision

The rapid evolution of computing power in embedded, single board computer systems is providing new, exciting possibilities for vision. Embedded vision systems are the newest variants of intelligent vision and are finding increasing use in applications where space is constrained, cost is an issue and a self-contained vision solution is required. Embedded vision is also an obvious platform for large volume solutions where economy of scale can have a real impact. Embedded vision offers great potential but with a wide variety of hardware and operating systems available careful consideration needs to be given to choosing the optimum platform for

the application.

## The Internet of Things (IoT) and Industry 4.0

Machine vision is already used extensively in industrial quality control applications and can be directly linked into process control systems to indicate when actual measurements are nearing the allowed tolerances. Standardisation of communication is an intrinsic requirement for the integration of machine vision into the Industrial IoT-based smart factory initiative. The Open Platform Communications Unified Architecture (OPC UA) is a new interface standard for future Industry 4.0 projects. This will provide the connectivity between different layers of the automated process and machine vision systems to allow abstract results and raw data to be transmitted to a PLC, MES or ERP. These, in turn, may then be used to configure and control machine vision systems.

## Deep learning

Deep learning is a type of machine learning in which a model learns to perform classification tasks directly from images.

Deep learning is beginning to gain some real traction in machine vision by virtue of the fact that it is becoming much more widely available through commercial machine vision products. It is used in applications where it is difficult to predict the full range of image variations that might be encountered using conventional algorithms. Deep learning utilises a special kind of neural network called a convolutional network (CNN) which is taught how to categorise images by being shown a large set of example images and learning to accommodate the variations. The term 'deep' refers to the number of layers in the network - the more layers, the deeper the network. Traditional neural networks contain only 2 or 3 layers, while deep networks can have hundreds. Now deep learning is finding its way into the main stream of machine vision with applications in text and code reading, and classification tasks in the inspection of industrial goods or the recognition of components. This technology is now being included in industry-standard image processing libraries, making it much more readily available to end users.



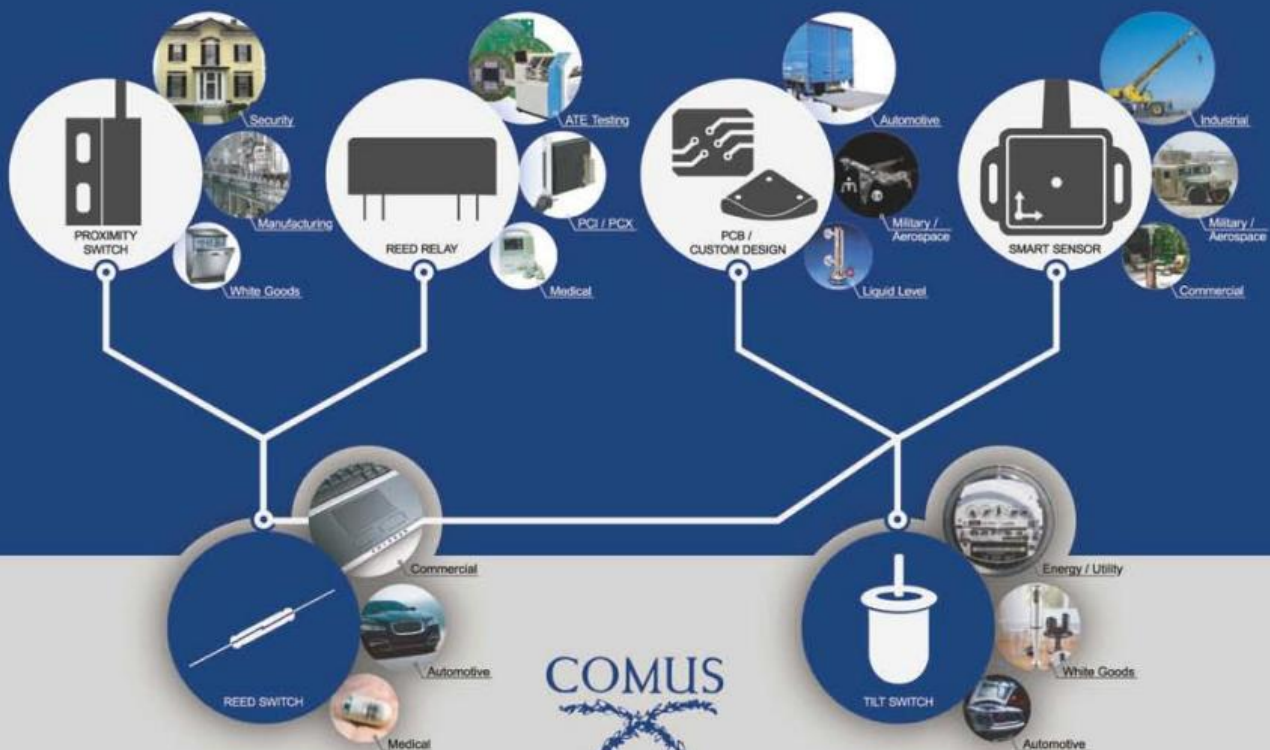
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# Introducing SICK's SureSense

The Flexible Family of Customisable Sensors



**S**ICK has developed the SureSense family of user-customisable photo-electric sensors - a concept that enables machine builders and plant engineers to specify from a wide-range of sensing options all within a standard technology, set-up, mounting and housing.

The durable SureSense sensors can reliably detect nearly any object in any environment – ensuring machines and lines stay up and running at full capacity.

David Hannaby, SICK's UK product manager for presence detection, explains why SICK developed the technology. "We are seeing more companies looking to use a hybrid sensor that allows flexibility in mounting either from the side or from the front. During installation and operation, SureSense's signal strength bar gives clear indication of the sensor's performance and making set up and operation easier for engineers.

"The SICK SureSense enables machine builders and plant engineers to standardise on one single sensor family for the most basic to advanced applications. Users can literally build their own sensors online, expect prompt delivery and quickly commission their sensors for optimal performance.

"As a result, machine design variables, plant maintenance costs and stores inventories can be all be dramatically streamlined."

## Intelligent Sensing Technologies

SICK SureSense offers either laser light, red or infra-red LED in the same housing, multiplying the number of potential applications from one sensor family.

SICK SureSense also incorporates a facility, not seen on conventional sensors, that helps users achieve rapid set-up and ongoing high performance. A signal strength light bar on the back of the sensor housing enables the alignment to be optimised, increasing performance consistency and stability, even when faced with mechanical stress or contamination.

SICK SureSense sensors draw on a comprehensive toolbox of innovative SICK technologies to compensate for the wide variety of shapes, colours and tones, transparency or reflectivity of objects to be detected. Excellent background suppression means the effects of changes in colour or materials, or by reflections from the surrounding production environment are minimised. In applications to detect

clear objects such as bottles or food trays, the sensors automatically compensate for dust and dirt contamination using Sick's renowned Auto-Adapt technology.

## Challenging Products and Conditions

David Hannaby continues: "The SICK SureSense family benefits from all the SICK technologies you would expect to simply detect any object. For example, built-in sensor intelligence compensates for the high light absorption by dark or matt black objects, by adjusting and optimising the emitted light intensity and signal strength.

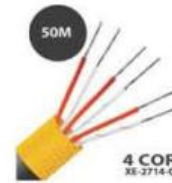
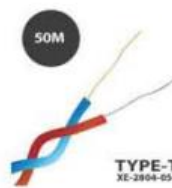
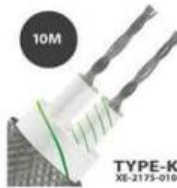
"SICK SureSense is also available with a laser LED emitter that enables superior performance in applications such as counting small objects, detecting small holes, sensing objects through small openings and detecting product defects."

SICK SureSense's tough VISTAL housing and IP69K/Ecolab rating ensure rugged durability and resistance to vibration, chemicals and moisture for a long reliable life. The -40°C to +70°C range means the sensors can be used reliably without risk of failure in a wide variety of temperatures.

[www.sick.co.uk](http://www.sick.co.uk)

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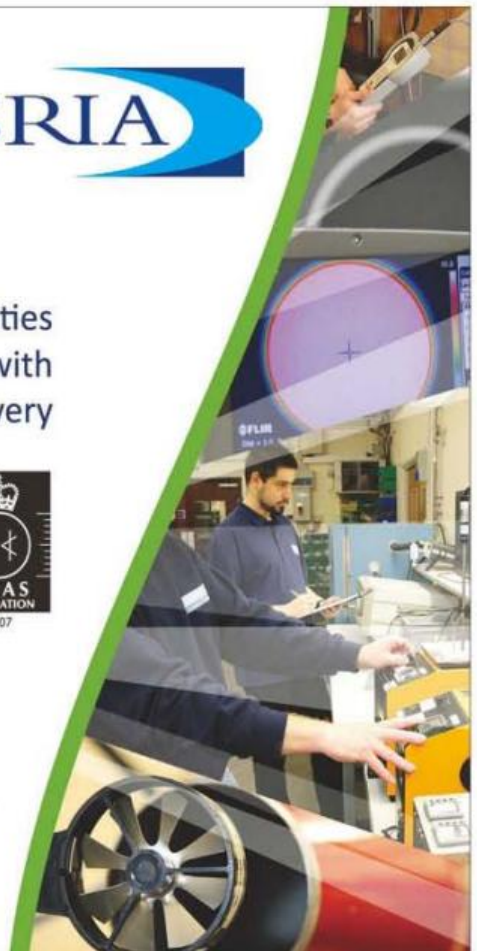


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# 3D – But without the glasses

Easy-to-use true 3D-sensor from ifm electronic does a lot

**D**escribed by some as a game-changer, the novel O3D300 from ifm electronic is a sensor capable of measuring three dimensions at once. The PMD technology that ifm has been using for some time in ground-breaking optical sensors has many more uses. Sensors using this photonic mixer device detect a single point several metres distant from the sensor, and actually measure that distance using time-of-flight. The revolutionary feature of PMD is in capturing that information from a single point, on a single electronic chip. That single point with its distance measurement assembled into an array on a slightly larger chip provides three axes of measurement, resulting in a truly three-dimensional view from a given point. The O3D300 can scan a static object, or pile of bulk material without the movement that might be needed for a line scanner.

Easy to set up: the software that ifm supplies free of charge makes setting the task extremely easy. Basically by showing the sensor where to look and what to look for using on-screen tools that can easily be mastered, the user is guided through tasks that the sensor can handle, such as the following:

Checking a case for completeness: from full-crate checking in the beverage industry to double-dough warning for bakeries, ifm's O3D300 can easily spot a missing item. Cans, bottles, crates, kegs, blister packs, pots, tubes, bags, Tetra Pak packaging - all can be set up for reliable detection of underfill or overfill. The sensor tracks the position automatically and is not affected by such things as colour or extraneous light.

Carton dimensioning: the O3D300 measures the height, width and length to calculate strap length and volume, regardless of orientation. An indispensable aid in storage and logistics. Quality parameters also help with the detection of damaged or deformed objects.



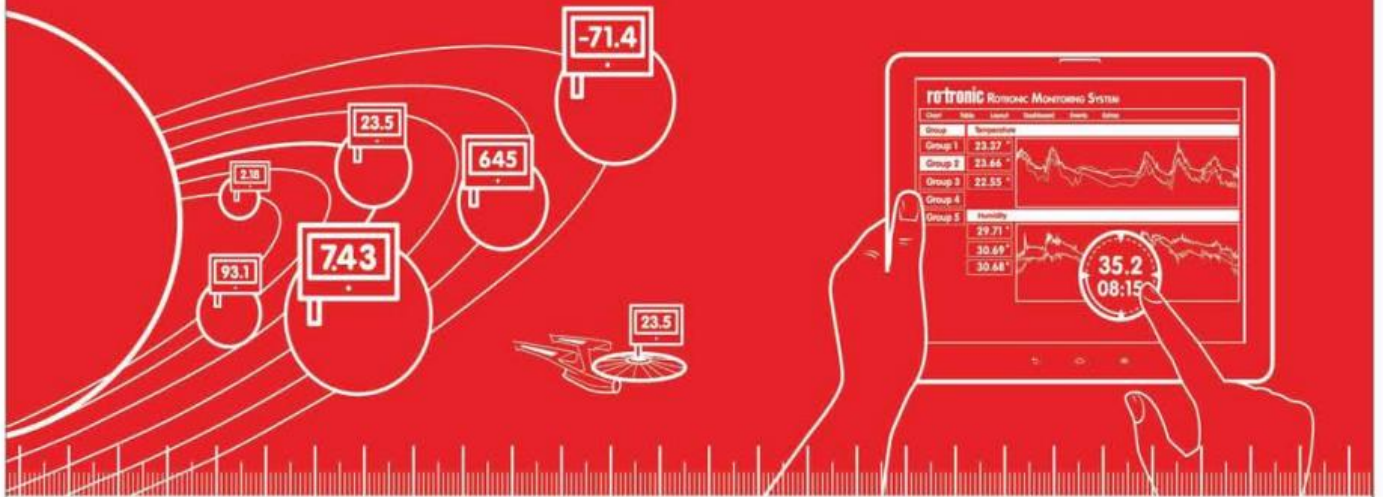
The O3D300 is available in versions for standard environments, or a stainless steel model adapted to suit the food industry. This device is extremely competitive in its pricing, too.

ifm is committed to working closely with its customers to develop products which precisely match their needs, and the company provides expert, readily accessible technical support to help users maximise the benefits they gain from ifm products.

[www.ifm.com](http://www.ifm.com)



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## New programmable TFT display with camera input.

**M**

MS Electronics added two new displays to their extensive range of programmable displays. EA uniTFT050 (5.0") and EA uniTFT101 (10.1" IPS) use the new UNISKETCH software with drag and drop function and object graphics programming. Objects can be placed, moved, rotated and deleted at any time. Elegant effects such as fading in and out or flying in are integrated. Commands for sliders, dials, buttons, images, MP3 sound files or calculations are included. 7 interfaces (master or slave) are available to the outside world. USB, 2 x SPI, 2 x RS-232 and 2 x I<sup>2</sup>C. 4 analogue inputs, PWM output, 16 digital I/O and SD card. It even has an analogue video input for a 3.3V camera. To discover the features of these displays download the augmented reality uniTFT AR App for Android or iOS or install the uniSKETCH program and run the demo programs on your desktop with the built-in simulator.  
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Comus STG reeds are UL rated and CSA approved. UL file # E103299 and CSA # LR57810.

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# LumaSense introduces the m920 Series Semiconductor OEM module

Cost effective, high performance fiber optic temperature sensing module designed for high accuracy Etching and Wafer Fab processes

**L**umaSense Technologies, Inc. introduces the m924 (4-channel) and m922 (2-channel) Semiconductor OEM Modules, designed for Electrostatic Chuck, Chamber, and other device temperature monitoring during Etching and Wafer Fabrication processes.

The LumaSense solution provides advanced and reliable temperature monitoring up to 330 °C. The new m924 Semiconductor OEM module sampling rate is five times faster than most other modules or converters, and provides +/- 0.1C high accuracy measurements with a wide range of industry specific communication capabilities. These combined features provide users with better and more accurate temperature measurements to improve

process control. The new product provides temperature monitoring for smaller linewidth devices at higher and wider temperature ranges with significantly faster sampling rates needed in semiconductor wafer process measurements

The LumaSense solution consists of the Luxtron m920 Series Semiconductor OEM modules, contact and non-contact fiber optic probes, and cable extensions. The Company also provides experienced technical application engineering support and can customize fiber optic probes for your application. The solution also offers tremendous flexibility with the mix and match probe design, minimizing costs and error of matching probes to modules and channels. The new OEM modules are backwards compatible for Luxtron m822 or m602/604

units, probes, and cables, allowing for a seamless upgrade.

**www.lumasenseinc.com**

**info@lumasenseinc.com**







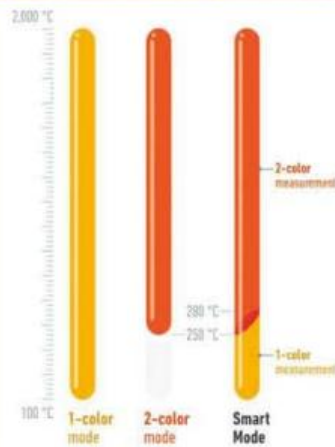
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# HBM offers custom sensor technology

**W**hen a catalogue sensor is not an option or a major modification to an existing system is not considered a cost effective solution, HBM – a market leader in the field of test and measurement – offers a wide range of pressure, force, torque and load measurements to OEMs that need to incorporate strain gauge based sensors into their end products.

For many specialised or demanding applications where off the shelf sensors just won't work, HBM is able to design and manufacture sensors and sub-assemblies that are compatible with today's smart products.

As one of the largest strain gauge manufacturers in the world, HBM can design and manufacture any type of strain gauge to match a specific technical requirement. By working directly with customers, HBM can identify what they are trying to measure; from the design stage, all the way to the finished product; including verification and validation.

By taking clients system into account, HBM can work with them to change or modify an existing structural member to produce a sensor that meets their individual needs. Lastly, HBM can create a higher assembly solution

through modifying existing amplifier circuits or creating new ones', meeting the output needs of customers.

As with all areas of its business, HBM also provide excellent service and support systems to advise on all stages of the design process.

With 1,800 employees worldwide and



more than 65 years of experience, HBM is a leader in designing and manufacturing strain gauge and sensor manufacturing technology and provides the entire spectrum of a custom designed solution, from initial scope and performance definition through the design and build cycle.

[www.hbm.com](http://www.hbm.com)

# Driving efficiency into electric vehicle R&D with wireless torque sensor

**S**evcon in Gateshead, which designs and manufactures high-quality motor controllers and system components for hybrid and electric vehicles, uses TorqSense transducers from Sensor Technology of Banbury to standardise their equipment testing.

The stakes are high in the race to develop electric and hybrid vehicle technologies. Sevcon develops drives for electric vehicles such as fork lift trucks, aircraft tow vehicles, golf buggies and scooters.

Sevcon's latest GEN5 on-road electric motor controller is the result of a collaborative High Torque Density Switched Reluctance Drive System R&D project.

Sevcon's Howard Slater says: "In 2011 we focused on bus and truck applications, but many different vehicles need similar levels of power.

TorqSense is a wireless sensor, the aft twists very slightly when it rotates, the

amount of deformation being proportional to the torque. TorqSense measures the deformation so that it can calculate torque. To do this two tiny piezoelectric combs are glued to the surface of the shaft at right angles to one another; shaft deformation will expand one comb and compress the other. An RF signal emitted by the TorqSense is reflected back by the combs, with its frequency changed in proportion to the combs' deformation.

"The procedure to set up the TorqSense is simple and takes only moments," says Mark Ingham of Sensor Technology. "Other technologies would probably take several



hours to set up".

"TorqSense has an enormous overload capacity, which enables it to cope with robust and demanding test cycles, while its digital output signal can be fed into a computer for instant analysis."

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Type	Model	Voltage	Current	Power
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	PWR801L		0A-80A	800W
	PWR1201L		0A-120A	1200W

80V Type				
Type	Model	Voltage	Current	Power
ML	PWR401ML	0V to 80V	0A-20A	400W
	PWR801ML		0A-40A	800W
	PWR1201ML		0A-60A	1200W

240V Type				
Type	Model	Voltage	Current	Power
MH	PWR401MH	0V to 240V	0A-5A	400W
	PWR801MH		0A-10A	800W
	PWR1201MH		0A-15A	1200W

650V Type				
Type	Model	Voltage	Current	Power
H	PWR401H	0V to 650V	0A-1.85A	400W
	PWR801H		0A-3.70A	800W
	PWR1201H		0A-5.55A	1200W



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# Technologies Build Synergies

Pepperl+Fuchs and Kollmorgen Automation AB Help Automated Guided Vehicles Find Their Way

**P**epperl+Fuchs' R2000 laser scanner (2-D LIDAR sensors) was customised and combined with Kollmorgen's CVC600 vehicle controller.

Having great partners by your side is key to sustainable automation solutions. This holds even truer in the era of Industry 4.0, with the new levels of collaboration and teamwork that it requires. When Pepperl+Fuchs launched the R2000 2-D laser scanner (also known as 2-D LIDAR sensors) at the Scanautomatic exhibition in Sweden in 2012, it turned out to be the starting point for a long-lasting and fruitful partnership fully in line with Industry 4.0.

Kollmorgen Automation AB, specialists in the development of controllers and software, approached Pepperl+Fuchs at the trade fair and were immediately drawn to the benefits of this device. "As an expert in vehicle control solutions, we always want to provide the latest vehicle types with state-of-the-art navigation solutions. At that time, we were looking for a partner who was an innovator in the field of sensor technology, and the benefits of the R2000 sounded promising to us," says Markus Johansson, General Manager at Kollmorgen Automation AB. "So we were very curious to find out what we could achieve together."

The specific goal was to find a solution that could be the "eyes" for their sophisticated automated guided vehicles. Given this, Kollmorgen quickly made a decision after taking a close look at the advantages of the R2000 laser scanner: extremely precise measurements and short response times, detection of tiny objects from one millimetre and up, and its 360° all-round visibility made it a perfect match for their needs. So they contacted Pepperl+Fuchs again after the trade fair to start a collaboration, and they jointly developed an enhanced version of the



laser scanner called LS2000. With the combination of the LS2000 as a navigation sensor and Kollmorgen's CVC600 vehicle controller, users can now navigate via reflectors, natural objects, or natural navigation with reflectors added where necessary. This integrated solution gives automated guided vehicles everything they need to make fast and precise movements, creating new ways for companies to improve efficiency in material handling and warehousing, with a short payback period.

"We've been collaborating for four years now, and we are still proud of the final product solution that Kollmorgen and Pepperl+Fuchs established together," states Arno Hagemann, Business Development Manager at Pepperl+Fuchs. "There is more to come," promises Hagemann.

Both parties aspire to strengthen the relationship and are already looking into new technologies in order to stay competitive and grow their market share.

[www.pepperl-fuchs.co.uk](http://www.pepperl-fuchs.co.uk)

# Temperature Sensors

**L**abfacility are the UK's leading manufacturer of Thermocouple and PRT sensors, made in our South Yorkshire site. Standard configurations are offered in all of the widely used calibrations, type J,K,T,E,N,R,S and B.. Depending on the choice of sensor type and sheath materials, temperature ratings of up to 1750oC are available with single or duplex elements.

The comprehensive stock of mineral insulated thermocouples features 0.5mm sheath diameter versions up to 6mm. The 0.5mm diameter thermocouples combine low thermal mass and fast response to temperature changes with durable construction; they are highly flexible and their use minimizes process intrusion.

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Various Manufacturing videos are viewable on the Labfacility You Tube channel.

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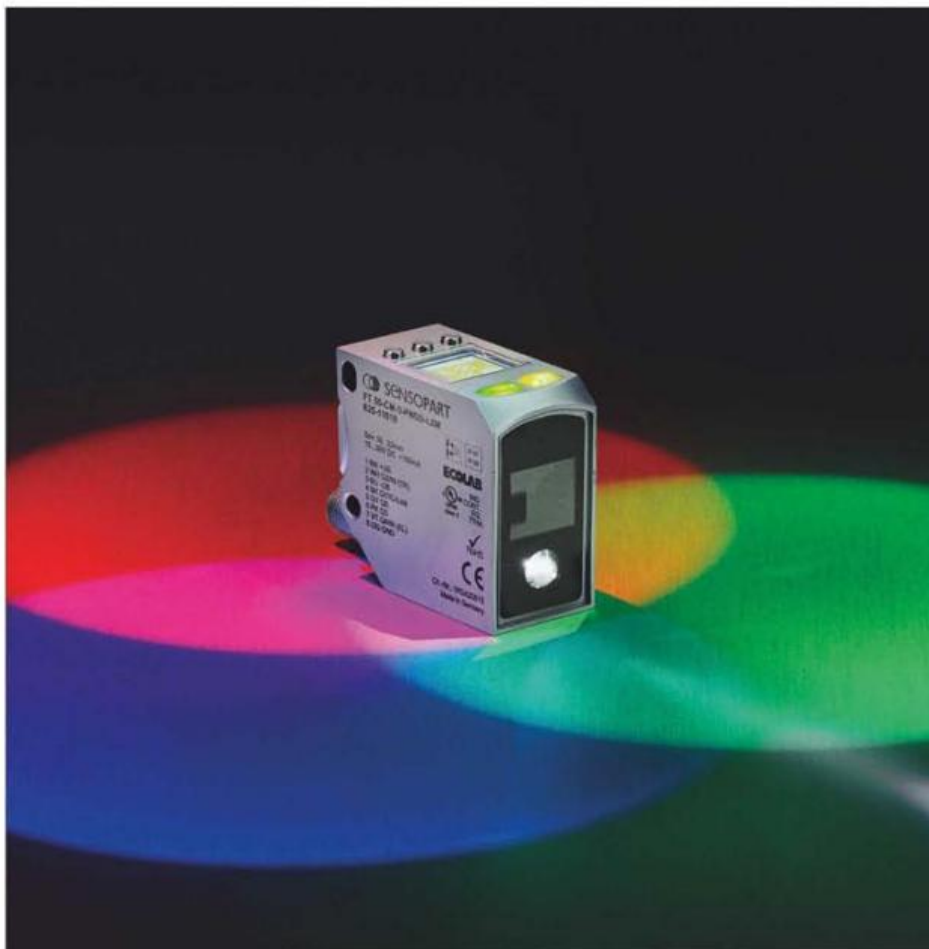


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# SensoPart UK still looks ahead - even after 20 years

**T**he UK subsidiary of the German sensors & camera manufacturer for factory automation celebrates its 20 year jubilee.

SensoPart Industriesensoren GmbH was founded in 1994 and only three years later in the UK, the first subsidiary followed. Since that day, the UK team has contributed towards the success of SensoPart group.

The family-run SME has always specialised in the development, manufacture and sale of optoelectronic sensors and vision systems for automation technology.

"We gauge ourselves not by what is possible today, but by our vision of what can be achieved", explained Dr. Theodor Wanner, founder and Managing Director of SensoPart, "Our goal is to always be a step ahead and to be able to offer our customers the most innovative sensor for industrial automation."

True to this motto, SensoPart has achieved a great deal over the past years. Apart from the

one in UK, three more subsidiaries have been founded, France, USA and China. SensoPart also has sales partners in over 45 countries. SensoPart's innovative strength and entrepreneurial vision have won the company several awards: for example, the Automation Award 2014 or the Vision Systems Design Award 2017.

Many successful products have now been developed from what began as trend-setting ideas. One example is the world's first blue light sensor with background suppression in



subminiature format.

Today, the product range stretches from miniature photoelectric proximity switches with laser light to intelligent vision sensors which are used in a wide variety of automation applications.

More than 20 years after its inception, SensoPart has a solid structure; with almost 200 employees worldwide and the family-run company expects to continue its annual double-digit growth rate.

[www.sensopart.com/en/](http://www.sensopart.com/en/)

# Fire-safe, anti-static, stainless steel ball valves

**A**lbion Valves (UK) Ltd, an increasingly popular UK valve supplier has added a range of fire-safe, anti-static, stainless steel ball valves to its product portfolio, designed to withhold hazardous substances in the event of a fire around the valve.

The new products are suitable for installations within the pharmaceutical and petrochemical industries, as well as a variety of other industrial processes dealing with oil, gas and other flammable media, where there is an increased risk of explosion if it leaked during a fire.

The anti-static device fitted on the valve, ensures that friction caused by the operation of the valve does not cause a build-up of static which could potentially spark and have disastrous consequences.

The API 607 standard, which certifies the valves as fire-safe, looks at the performance of valves by establishing limits of acceptable

leakage when they are exposed to defined fire conditions.

Valves that meet the API STD 607 requirements should allow enough time for the fire to be extinguished whilst still holding the pipeline media, to avoid fueling the fire further. Fire-safe valves are also required to operate once more after fire exposure, from the 'open' to the 'closed' position at a high pressure.

Les Littlewood, Sales and Marketing Director at Albion Valves commented:

"We know that safety is always a number one priority for our distributors, so it makes total commercial sense to add this new line to our portfolio, especially as our presence in the industrial and processing arena continues to grow."



For the full technical specifications please refer to API STD 607.

For further information visit: [www.albionvalvesuk.com](http://www.albionvalvesuk.com), call 01226 729900

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## SIMATIC ET200

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With the SIMATIC ET 200, the widest range of IO systems is available – for solutions in the control panel or mounted directly on the machine. The modular design allows the ET 200 system to be scaled up and expanded in small and easy steps: digital and analog inputs/outputs, intelligent modules with CPU functionality, safety technology, motor starters, frequency converters, and diverse technology modules.

Flexible, distributed solutions are an essential part of modern automation – solutions that are tailored to your requirements and offer significant cost savings. With SIMATIC ET 200, we offer you a multifunctional, modular, finely scalable system for distributed automation. Communication over PROFINET or PROFIBUS, uniform engineering, transparent diagnostic options as well as ideal interfacing to SIMATIC controllers and HMI units are just some of the benefits of ET200 and Totally Integrated Automation.

# Fluke 279 FC TRMS Thermal Multimeter

Combination of full-featured digital multimeter plus thermal imager enables faster, more thorough troubleshooting with a single tool

Until 31st December 2017, Fluke is reducing the recommended price of its 279 FC TRMS Thermal Multimeter from £839 to £669. Thermal imagers are invaluable to help quickly troubleshoot electrical equipment, panels and transformers but electricians and maintenance technicians often do not have access to one when they need it. The Fluke 279 FC TRMS Thermal Multimeter is the first test tool to integrate a full-featured true-RMS (TRMS) digital multimeter (DMM) with a thermal camera in one device to speed troubleshooting. It is also a member of the Fluke Connect® family of wireless test tools allowing users to transmit results wirelessly to a smartphone and save time reporting to validate work is complete. More information about this and other Fluke Specials can be found at [www.fluke.co.uk/promotions](http://www.fluke.co.uk/promotions).

The Fluke 279 FC allows technicians to quickly and safely check for hot spots in fuses, wires, insulators, connectors, splices and switches with the imager, and then troubleshoot and analyse issues with the DMM. By combining two powerful test tools into one, electricians and technicians can carry fewer tools and have a higher level of confidence they have the tools handy to solve problems.

The 279 FC TRMS Thermal Multimeter features 15 electrical measurement functions including AC/DC voltage, resistance, continuity, capacitance, diode test, min/max and frequency. The optional iFlex® clamp can wrap around conductors and wires in tight, hard-to-reach spaces and expands its measurement capabilities to include AC current up to 2500A. The 3.5inch (8.89cm) full-colour LCD screen makes for easy, clear viewing of images.

The wireless 279 FC is part of Fluke Connect - a system of wireless test tools that communicate via the Fluke Connect

app, or Fluke Connect Assets software, a cloud-based solution that gathers measurements to provide a comprehensive view of critical equipment status - allowing technicians to record and share both thermal images and electrical measurements in real time via their smartphones or tablets and automatically upload them to the cloud. Reports can be created and shared right from the job site via email, allowing technicians to collaborate in real time with other colleagues with ShareLive™ video calls, which increases productivity in the field.

The CAT III 1000V, CAT IV 600V safety rated thermal multimeter has a rechargeable lithium ion battery that lasts up to a full work day (10+ hours) under normal conditions.

For more information about all Fluke products, please visit the Fluke web site at [www.fluke.co.uk](http://www.fluke.co.uk).



## About Fluke

**Fluke's mission is to be the world leader in compact, professional electronic test tools. The company's products are used by technicians and engineers in service, installation, maintenance, manufacturing test, and quality functions in a variety of industries throughout the world. Fluke, founded in 1948, currently has offices in 13 European countries and distributes its products to over 100 countries internationally. The company's European revenues contribute approximately 40% of worldwide sales. Fluke's headquarters are located in Everett, Washington State and the company employs over 2,500 people internationally. Its European sales and service headquarters are located in Eindhoven, The Netherlands.**



# More intelligence for the machine.

Beckhoff many-core control offers up to 36 processor cores.

## C6670 industrial server:

1 million PLC commands in just 100  $\mu$ s

CPU: 12, 24 or 36 Intel® Xeon® processor cores, 2.2 GHz and 2 x 30 MB L2-cache

Main memory: 64 to 2048 GB RAM

## TwinCAT 3 software:

Parallel Control Architecture (PCA)

- Many-core real-time
- Many-core PLC and Motion
- Many-core C++ runtime

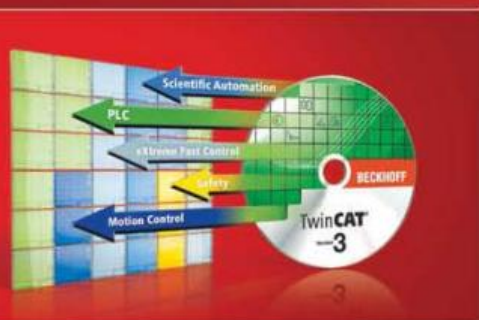
For up to 256 processor cores, up to 64 PLC tasks per core

Simple assignment of tasks to individual cores



[www.beckhoff.co.uk/many-core-control](http://www.beckhoff.co.uk/many-core-control)

In advanced production lines or high-performance machines, more and more functionalities must be implemented with ever shorter cycle times, requiring more powerful centralised control systems. With the C6670 industrial server, Beckhoff has launched a high-performance, paradigm-shifting machine controller offering up to 36 processor cores. This immense computing power can be fully harnessed via the TwinCAT 3 automation platform, which consistently maximises the potential of each individual core in PC-based systems.



# Crane overhaul specialist given a lift

A US-based specialist in the supply of complete electrical packages for oil rig cranes is using Control Techniques AC and DC drives as part of a landmark \$500,000+ order involving the upgrade of 10 LeTourneau cranes.

**T**hree cranes have already been completed with no reported down-time in the first 18 months of operation, whereas prior to the upgrade, maintenance would be required on a weekly or even daily basis in some instances. The financial benefits for the oil rig operator are proving substantial.

Headquartered in League City, Texas, JC's Marine Oilfield Services was established in 1992. The company's Power & Distribution Division specialises in a variety of motor control solutions that are customised to match the needs of oil rig cranes, as well as drilling barges, supply vessels and land rigs.

When a Texas/Louisiana-based customer was seeking an electrical contractor to help upgrade the drive systems on 10 LeTourneau oilfield cranes, JC's Marine Power & Distribution was in prime position to secure the order thanks to its technical support and AC/DC capabilities. As a long-standing advocate and user of drive technologies from Control Techniques, the company proposed the use of a Unidrive SP AC variable speed drive for the boom, and two Control Techniques Mentor MP series DC regenerative drives for the swing and hoist.

"By changing to a Control Techniques variable speed drive for the boom we can ensure complete control over the speed and rate at which the boom moves, so that loads up to 50 tons are 'feathered' rather than 'banged' to the ground," said Mr Costanza.

The boom motor drive system comprises an SP5402 Unidrive variable speed AC drive rated at 210 Amps continuous, while the hook motor drive system features a Mentor MP420A4R DC drive rated at 420 Amps continuous. A Mentor MP210A4R, rated at 210 Amps continuous, is fitted to the swing motor drive system. All of the drives are



purposely sized for twice the normal power required, which means the system never runs at its maximum capacity.

"I've been operating with the new system for 12 months and have not had one issue," said Justin Hillard, LeTourneau crane operator on Atlantic 7 rig. "The controls are user friendly, very smooth and have a wide variable speed in hook, swing and boom. In my opinion the boom is the biggest operating improvement. With its variable speed you can ease into boom and keep the load stable and personnel safe on deck."

Jason also praised the increased safety afforded as a result of the new system: "The crane is also much quieter without the motor-generator sets running; you can

hear what the crane is doing and what's going on around you. I've also noticed that if you're in a position where you cannot see the hook, you can actually hear the hook motor running and know how fast the hook is travelling. I highly recommend this system, it's safer, smoother, quieter and virtually maintenance-free."

Further benefits delivered to the end user as a result of AC and DC drive technologies from Control Techniques include conformal coating on the PCBs, which helps impart protection in marine environments, while the large working temperature range is also advantageous.

[www.controltechniques.com](http://www.controltechniques.com)

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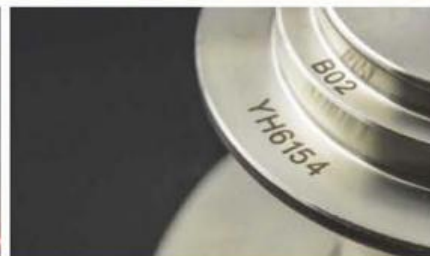
For more information about the possibilities with an integrated controller (IC), please contact LINAK TECHLINE, or go to [LINAK.CO.UK](http://LINAK.CO.UK)



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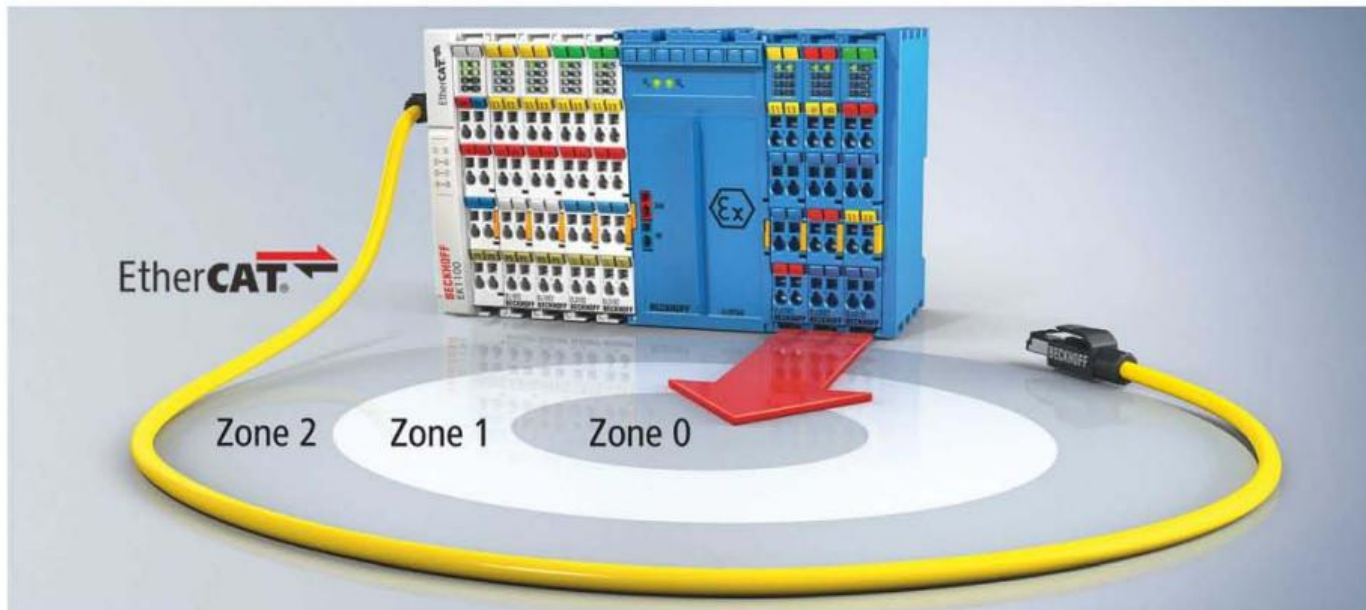


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# PC-based control for process automation

HART functionality integrated in TwinCAT software and I/O system



In the process industries, demands are increasing for groundbreaking and innovative automation solutions that reduce costs. The greatest potential for optimization is opened up by implementing a universal platform that covers both industrial automation and process automation. PC-based control from Beckhoff fits this bill by integrating process-specific protocols and interfaces, and by offering an extended range of products for hazardous areas. Full implementation of HART functionality, both in the I/O system and in the TwinCAT engineering environment, promotes simple project planning and reliable commissioning.

TwinCAT automation software clearly reduces development efforts in process technology because it facilitates the application of comprehensive HART functions directly from the engineering interface. In this way, the TwinCAT FDT (Field Device Tool) container enables implementation of any field device drivers (Device Type Manager, DTM). Thus, an entire HART configuration can be implemented

efficiently using a single tool.

The Beckhoff CommDTM integrates the TwinCAT platform into existing process control systems. With its help, the DTMs can be implemented in any FDT container. This applies to all field devices connected to the HART-capable EtherCAT Terminals. These devices can be configured and parameterized remotely in the known containers without requiring direct PLC access. As a result, system operation is simplified and reduced to the essentials. In addition, the Beckhoff OPC UA Server and Client enable secure global distribution of process data, as well as convenient system control and remote maintenance capabilities.

## Explosion protection systematically integrated into product portfolio

The new, highly compact EtherCAT Terminals in the ELX series are also HART-capable. With intrinsically safe inputs/outputs, they enable the direct integration of field devices installed in hazardous areas, Zones 0, 1 or 2, into the automation system.

The reduced wiring effort and associated space savings result in an integrated, cost-effective solution for process applications. Furthermore, the new CPX series of Control Panels and Panel PCs makes the high-quality design and advanced multi-touch display technology from Beckhoff available for locations subject to explosion hazards.

Beckhoff offers comprehensive system solutions in different performance classes for all areas of automation. Beckhoff control technology is scalable – from high-performance Industrial PCs to mini PLCs – and can be adapted precisely to the respective application. TwinCAT automation software integrates real-time control with PLC, NC and CNC functions in a single package. All Beckhoff controllers are programmed using TwinCAT in accordance with the globally-recognised IEC 61131-3 programming standard. With TwinCAT 3, C/C++ and Matlab®/Simulink® are available as programming languages in addition to IEC 61131-3.

[www.beckhoff.com](http://www.beckhoff.com)



## HCN-5000 + MPP

Providing an unmanned operation system for small volume production

The HCN-5000 equipped with a high capacity MPP automation system is specifically designed for unmanned lights out running.

The machining centre is able to process workpieces up to Ø800mm and 1000mm in height, and benefits from an optional 37kW 14,000rpm high torque spindle for processing difficult-to-cut materials such as titanium. It also offers rapid traverse rates of 60m/min and boasts a tool change time of just 2.6 seconds to minimise non-cutting time.

To find out more visit [www.mazakeu.co.uk](http://www.mazakeu.co.uk) or email [sales@mazak.co.uk](mailto:sales@mazak.co.uk)

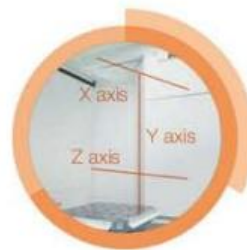
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Multi Pallet Pool (16pc) stocker system increases productivity and prolongs unmanned running



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1G high axis acceleration with 60m/min rapid traverse reduces non cutting time to increase productivity



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# Installation Fittings

Installing temperature sensor assemblies into thermowells or directly into the process will normally require the use of brass or stainless steel fitting.



**F**ittings include various threaded couplings, bayonet caps (and adapters) and flanges. Adjustable compression fittings are used directly on

probes to achieve the required insertion length in the process and to ensure the proper seating of probes into thermowells.

Adjustable flanges can similarly be used to secure the sensor assembly into the process.

Bayonet caps provide a method of quick fitting into suitable adapters located in the process; this technique is widely used in plastics machinery.

Bushes and hexagon plugs are used when adjustment or removal is a lesser consideration. The choice of fitting may be dictated by the need for pressure integrity or by physical size constraints.

Compression fittings and threaded bushes can be supplied with tapered threads to achieve a pressure-tight connection.

Following major investment in CNC machinery, Labfacility can now offer an expanded range of components and installation fittings for sensor manufacture:

- Compression fittings in brass & stainless steel
- Olives & locknuts in brass & stainless steel
- Plugs, nipples and reducers in brass & stainless steel
- Bayonet caps, Adaptors & flanges in brass & stainless steel



- Pot seals, stainless steel, plain & threaded
- Thermopockets & swaged tips
- Connector inserts
- Nozzles & nozzle tips
- Running (captive) nuts
- PTFE ferrules (olives)
- Melt bolts
- Collars

Labfacility are the UK's leading manufacturer of Temperature Sensors, Thermocouple Connectors and associated Temperature Instrumentation and stockists of Thermocouple Cables.

The Company has been trading since 1971 and is ISO 9001 accredited. We have two UK sites – West Sussex and South Yorkshire and export to over 85 countries.

Quality and Service are key elements in the continued growth of Labfacility; technical support is always freely available from our experienced technical sales teams.

For all sales enquiries please contact us as follows:

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# Compact multi-pallet automation with Mazak

With machine tool automation coming to the fore as more manufacturers embrace the working practices encouraged by Industry 4.0, Mike Sykes, Manager – Automation Systems at Yamazaki Mazak outlines the company's latest high productivity offering.

**Y**amazaki Mazak has an illustrious history when it comes to automated pallet systems for machine tools, and has been involved in the design and manufacture of them for over 30 years. Mazak launched its Multi Pallet Pool (MPP) series of compact multiple pallet stocker systems in answer to the increasing global demand for higher productivity automation for multiple variety, small lot production.

Building on the expertise used to develop Mazak's highly popular PALLETECH, the MPP system offers high-speed pallet transfer and extended unmanned running capability compared to twin or six pallet automation systems. Specifically designed for unmanned lights out running, an MPP system can be as much as 94% more productive than a standard 2-pallet changer.

For example, an unmanned Mazak VARIAXIS i-600 machining centre fitted with an 18-pallet MPP could complete 16 more workpieces than the same machine fitted with a 2-pallet changer during a night shift, as the latter requires every workpiece to be loading and unloaded by hand. In contrast, the MPP system can load / unload up to 18 workpieces at a time without the need for human input; freeing up more capacity for the operator to conduct other work in the meantime. This translates to the possibility of either eliminating the need to run night shifts if desired, or conversely, the option to consciously run the cell unmanned through the night to boost production.

The MPP benefits from an economic footprint, which can be up to 40% smaller than a comparable PALLETECH system. The use of AC servomotors in the driving system facilitates high-speed pallet transfer, further minimising the non-cutting time for the machine too. As all axes are driven by



servomotors, traditional maintenance issues linked to hydraulics are easily avoided.

The system is controlled via the machine tool using either Mazak's SmoothX or SmoothG CNC, which are equipped with Mazak's SMOOTH MPP software application.

Smooth MPP facilitates advanced scheduling functions, faster analysis of production results and more efficient system utilisation. Via the touchscreen CNC interface, operators can quickly ascertain the status of both the pallet loader and machine tool, as well production schedule. Realtime analysis is also available, detailing the machining and set-up time. If connected to a network, production data can be accessed both on screen by the operator, and

remotely on PCs, tablets and smart phones.

For those manufacturers keen to embrace Industry 4.0 and drive greater connectivity between their production operations, the unrivalled level of real-time data analysis provided by SMOOTH MPP can translate into tangible productivity benefits, such as reduced non-cutting time and lower indirect labour expenses.

Ultimately, Mazak's MPP range offers a compact yet highly functional automated pallet loading system to meet the evolving need of the modern manufacturer.

For more information on the MPP series, and Mazak's wider automation offering, please visit:

[www.mazakeu.co.uk/machines-technology/by-product/automation/](http://www.mazakeu.co.uk/machines-technology/by-product/automation/)



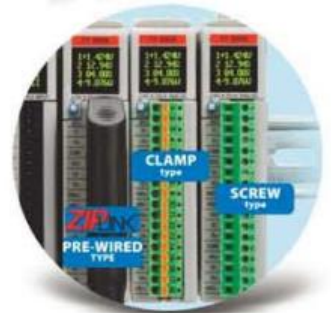
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# Any questions?

Barry Wilkes, Director of Strategy writes exclusively for NEBOSH in their regular Q&A column



**H**ealth and safety is a great career option for young people but what can I do to attract young people just starting out in their career to consider a role in health and safety?

A 2016 'State of the Industry' survey conducted by Safety and Health Practitioner (SHP) with health and safety professionals found that over 60% of respondents were aged over 45 while just 11% were aged 18 to 34. Furthermore, 71% stated that health and safety was not their first career choice. With this in mind, it's no wonder that employers are giving more thought to how they can attract talented, young people to the profession.

Almost every industry from manufacturing and mining through to retail and the public sector employ health and safety personnel. The profession can offer really interesting, rewarding and varied roles supported by good career development paths, attractive salaries and the ability to work almost

anywhere in the world. What's more a degree isn't an entry requirement, which can be a major attraction in this era of rising student debt.

Here, Barry Wilkes, Director of Strategy at NEBOSH, has compiled some useful advice to help you support and encourage young people to join your team.

- Consider offering potential young recruits work experience or an internship with your team. This will give them an opportunity to get a good insight into what a full-time health and safety role will involve and enable them to get to know your other team members before you, and they, make a longer-term commitment.
- If there are already young people working elsewhere in your organisation, you could encourage them to volunteer for the role of health and safety representative or join the company's health and safety committee to build up their experience and develop a support network of more experienced colleagues.

- With the average student graduating from university with debts of over £50,000, the offer of 'learning while earning' will be very attractive to young people looking for an alternative to full time further education. Supporting someone through a professional qualification like the NEBOSH National General Certificate in Occupational Health and Safety will give them a great grounding in the profession. It is also the perfect springboard for continuing their development with one of the degree-level NEBOSH Diplomas.
- Apprenticeships are becoming increasingly common and are another great way of attracting young people as they enable learning on the job. As you'll see from the example we've included below, they provide an attractive alternative to further education for young people who are keen to start their working life straight after school.
- As well as encouraging health and safety-specific learning, make sure you offer any new young recruits an opportunity to

develop their wider business skills too. It is important that they learn core skills like decision-making, influencing, negotiating and networking which are all vital for a successful health and safety professional.

One of NEBOSH's younger students, Lee Broadbent, is a great example of a young person who is building a successful career in health and safety. We hope his story will inspire more employers to consider taking on health and safety apprentices.

Lee joined Calderdale Metropolitan Borough Council (MBC) at the age of 18, after gaining four A levels. His grades were two A stars, one A and one B, but surprisingly he chose not to go to university and to look for an apprenticeship instead.

For several months Lee shadowed senior members of the Council's team, until he was gradually given more and more responsibilities. At this point it was decided he should gain a suitable qualification; the degree-equivalent NEBOSH National Diploma in Occupational Health and Safety.

"The Diploma is a degree-level qualification and is hugely important in terms of practical application," said Lee. "It's not just textbook. It works perfectly when you

are developing your experience. You pick up so much from the Diploma as an apprentice. It's the backbone to a health and safety career really."

Lee completed his Diploma in July 2016 and went on to apply for Grad IOSH status (membership of The Institution of Occupational Safety and Health). He has progressed to the position of full-time Health and Safety Advisor and is destined for bigger things. Not bad for someone aged just 22! He is already effectively leading a stress management programme at Calderdale MBC and is sharing his experiences with other young people wanting to enter the profession.

"It's difficult as a young person applying for jobs, because employers want experience," Lee says. "But how can you get experience if nobody will offer you a job? My apprenticeship has given me a lot of practical experience and through my NEBOSH Diploma I already have a strong CV. I hope more employers open their eyes to the benefits of taking on a health and safety apprentice and give more young people a chance. If they support them like I have been supported, they might be



pleasantly surprised!"

To find out more about occupational health and safety qualifications, contact NEBOSH at [info@nebosh.org.uk](mailto:info@nebosh.org.uk) or call +44 (0)116 263 4700.

[www.nebosh.org.uk](http://www.nebosh.org.uk)

## 'Fighter Jets' of Warehouse Protection

**B**ollards are the essential sentinels of damage prevention in the workplace – and thanks to McCue Corp, the humble protector is now armed with an array of features that makes your facility safety stronger, smarter and much more economical.

A finalist in 'Best Innovation on an Existing Product' at the illustrious MODEX expo, the McCue FlexCore Bollard's flexible, shock absorbing properties help it deflect impacts – and its durable, high-visibility plastic shell is rust, scratch and dirt resistant.

Like many McCue products, the company's designers stepped into the shoes of customers when creating the FlexCore Bollard. Traditional core-drilled or plate-mounted bollards can withstand impacts, but cracked concrete, permanent deformation and unsightly erosion through rust, flaking paint or general wear-and-tear create a multitude of maintenance costs and problems.

With the Flexcore Bollard, these issues are greatly diminished.

Utilising similar technology to high-performance aircraft and military vehicles, McCue's innovators implemented a high-strength spring-steel post attached to an industrial shock absorber for the Bollard's core. For the exterior, the steel post carries a rubber load ring that allows the cover to rotate on impact, flex and reform.

This triple-pronged protective process not only saves the bollard, it protects the vehicle or piece of equipment that comes into contact with it.

On top of this, installation is simple and fast, with no trip hazards and fully hidden hardware.

This, combined with the ultra-low maintenance properties of the bollard, adds up to a whole lot of savings over an extended period of time.

To view McCue's Flexcore Bollards and the full range of safety products and solutions please visit [www.mccue.com/uk](http://www.mccue.com/uk) or call 01908 365511



# Particles Plus Technology

Connect 2 Cleanrooms Evolves Validations



**S**ince Connect 2 Cleanrooms' Installation & Validation team has started using Particles Plus particle counters to provide particle counts for

cleanroom validations, Mark Jackson, Installation & Validation Manager, reports increased efficiency during validations.

"The handheld Particles Plus units are easy to use, intuitive and robust", says

Jackson. "Our technicians are confident in programming them to perform the most efficient validation route".

He gives the example of a cleanroom which needs counts at 9 validation



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▲ locations. Usually locations are numbered consecutively in rows, for example, locations: 1-3 (row 1), 4-6 (row 2), 7-9 (row 3). Particles Plus handheld particle counters allow you to change the location order to provide the quickest route through the cleanroom – increasing efficiency and reducing turbulence.

Auto advance allows the Validation Technician to progress automatically to the next programmed location and a delay can be configured to allow them time to move away from the unit once it is in position to prevent them contaminating the counts.

"Our technicians demonstrate these best practice methods to our clients, as ideally, organisations should use a particle counter to perform regular checks to ensure the cleanroom is performing to its ISO class parameters."

Graphs are generated as a visual indication of the history of particles per second in a graph with p/s (y axis) against time (x axis). Spikes can be annotated and comments saved, i.e. 'door opened' or 'identified broken seal' for full transparency.

"If an unprecedented event occurs which causes counts to spike" continues Jackson, "operators can exclude data if they require. However in accordance with the ISO 14644 standard, only one exclusion can be made or the test will be validated to protect its integrity".

It is the technology contained inside the Particles Plus units that really set them apart in the market. Upon entering a cleanroom's cubic volume, the unit will calculate how many locations and the sample size which is required, to meet ISO 14644 requirements (GMP or Federal Standard can also be calculated), as well as suggesting the particle sizes to be considered.

Up to 50 user-defined recipes can be set, with different sample sizes, delays, location times, etc. For Connect 2 Cleanrooms, these are used for saving different locations for clients for whom validations are performed regularly. There is also the choice of metric or imperial measurements for the raw data to be extrapolated to, giving them international appeal.

With a number of data extraction options, the data flow can be driven by organisation's desired communication protocol, rather than limited to the capabilities of the device.

Modbus TCP/IP is available as standard, (Modbus 485 and 232 are optional extras), whereas only Particles Plus units offer wireless transfer through Wi-Fi (optional),

as well as offering USB to PC or to USB memory stick.

The particle counters can hold 45,000 recorded data records simultaneously, which is enough for continuous particle counts (series of 1 minute samples taken with no break in between) to be run for 33 days without having to download data.

For its busy installation and validation team, this capacity means Connect 2 Cleanrooms' client data is protected and not in danger of being over-written prior to it being downloaded. Data is time stamped to allow full traceability following extraction.

Patented technology offers concurrent interface sessions through the use of multi-core processors, which safeguards data logging, so there are no interruptions to sampling.

Also patented is the remote diagnostics and configuration technology, giving the option to provide quick fixes - such as machine data, pump data, laser run time, etc. - without the need to send the unit off. The performance of the smart batteries can also be analysed through the remote diagnose tool, right down to individual cells and battery temperature.

Jackson says the Li-ion battery provides enough power for Technicians to confidently use the units all week without having to recharge. In fact, after a full charge, they can take 10.5 hours of continuous sampling. That is with the screen at full brightness, so with some power saving tactics, such as dimming the screen, it could run even longer. The unit illustrates how much additional battery life can be gained by making these changes. Welcome news for operatives reliant on battery power performance to prevent them from requiring a mid-validation power break.

The counters feature icon driven menus and a large colour 4.3" display with a touch screen interface that today's users expect from devices. Jackson likes the way the icons are grouped intuitively and how items such as graphs can be expanded with a single click. The calibration date is also displayed at a touch, so Technicians can quickly check their unit is calibrated.

The comfortable handle, allows ergonomic control and the durable case features laser cut foam to protect the unit during frequent transit. It houses accessories such as the purge filter, which allows for the unit to be cleaned following use in dirty or toxic environments, and the temperature and humidity sensor. An integrated HEPA filter

on the extract ensures no particles are introduced back into the cleanroom during sampling.

Spot monitoring is facilitated through the Real-Time Meter™ feature, meaning if a broken seal or perforated filter is allowing contamination to be introduced into a cleanroom, the units help users to pinpoint contamination sources through a visual real-time graph with selectable sensitivity adjustment showing peaks of particle counts per second during sampling.

The handheld units can also be used as a continuous monitoring system, as you can connect them to a network and give them an IP address, which allows live data to be streamed to the PC desktop application or viewed remotely from any internet browser.

"This gives organisations the reassurance that its cleanrooms are still achieving the standards they are built to meet, in between validation visits" concludes Jackson.

Particles Plus Handheld Particle Counters start at just £2128 and can be purchased online through [www.cleanroomshop.com](http://www.cleanroomshop.com).

### About Connect 2 Cleanrooms

**Connect 2 Cleanrooms is an award winning industry leaders, creating modular cleanroom solutions for critical environments, both in the UK and internationally. The company designs and manufactures modular cleanrooms in-house and delivers quality cleanroom solutions to meet the ISO 14644-1:2015 standard required. Its consumables division, Cleanroomshop.com, supplies a full range of consumables, equipment and furniture to the cleanroom industry worldwide.**

**Connect 2 Cleanrooms & Cleanroomshop.com are committed to providing engineered or supply solutions for mission critical environments. With 15 years of history, over 1000 cleanrooms installed and over 5,000 customers, they are innovators, hard workers and team players.**



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# Globus group launches Riley®

RX prescription safety glasses service

## RX PRESCRIPTION SAFETY EYEWEAR



**W**orker safety specialist Globus Group has extended its high-performance range of protective eyewear with the launch of the new Riley® RX prescription eyewear service.

The new service offers a full range of prescription models and styles including single-vision, bifocal and varifocal options all expertly manufactured within the company's UK-based in-house eye care laboratory.

It also includes a new Riley® Online Ordering (ROO) portal enabling safety managers to stay fully in control of all workers' safety prescription requirements.

All models in the range come with VISION EASE® impact and scratch resistant polycarbonate lenses as standard, certified to EN166 Grade F. This makes them 10 times more impact resistant than plastic or glass lenses whilst also offering 100% protection against UV such as sunlight.

The bifocal and varifocal options are created using state-of-the-art Digital Inner Surface Technology, which compared to

traditional production methods, results in heightened optical quality and enhanced vision and comfort for the wearer.

As a result, wearers benefit from great-fitting, comfortable eyewear which not only protects from hazards in accordance with EN166, but enables them to wear prescription lenses without having to wear an additional safety goggle over the top.

Backing up the range is the new easy to use Riley® Online Ordering (ROO) portal which allows safety managers to:

- Manage all workforce prescription orders from one place, regardless of how many sites they are responsible for
- Authorise colleagues to place orders easily and add or upload employee data into the system, check status of individual orders at a glance, run reports and download to MS Excel
- Manage re-orders with ease
- Receive alerts when re-tests are advisable

"The Riley® RX prescription eyewear service brings a wealth of benefits to safety managers across the UK and Ireland.

With an estimated 59% of adults requiring eyewear with a prescription lens, that equates to many thousands of workers needing prescription safety eyewear," said Steve Shale, Globus Group marketing manager.

"Having our UK-based manufacturing and service facility means we are in total control of the prescription eyewear process, which means quality and performance are delivered quickly and efficiently.

"All Riley® RX lenses are expertly manufactured in-house by highly experienced optical technicians in facilities certified to ISO 9000 and with the addition of the new on-line ordering system, the Riley® RX service is designed to provide a simple, seamless offer that meets the safety and optical needs of workers requiring prescription eyewear," added Steve.

To find out more about the new service and to download a copy of the new Riley® RX Prescription brochure visit [www.riley-eyewear.com/roo](http://www.riley-eyewear.com/roo), email [info@riley-eyewear.com](mailto:info@riley-eyewear.com) or call +44 (0)161 877 4747 and our customer service team can assist.



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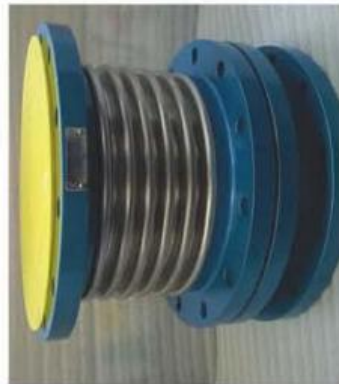
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## Swivel Joints

**A** rotary union, or 'Swivel Joint' is used to transfer fluid across a rotating interface. At Rotaflow we have produced Swivel Joints for many applications within all areas of engineering and all over the world: From Brewery, Food and Drink, Process, Drilling & Mining, Oil & Gas to Nuclear, Chemical and Subsea. With bores ranging from 0.25" to 40", pressures from Vacuum duty to 20,000PSI, and multi passaged designs allowing multiple flows of fluid through a single unit. With our dual roller and ball bearing race design our bespoke designs boast a long life, reliable service, and high capacity for axial and radial loading.



We design and make our Swivels here on-site in the UK with our team of highly trained professional machinists, to ensure a high quality, and low lead times. We are proud of the craftsmanship that goes into making our swivels. The attached shows a swivel joint which incorporated bellows into the design to enable greater flexibility.

To find out more visit our website:

[www.rotaflo.com](http://www.rotaflo.com)

## Kemo DIN Rail filters

**K**emo DIN Rail filters are an easy solution to a wide range of problems caused by small noisy signals. Kemo DIN Rail filters are used worldwide in a wide range of applications, used with temperature, pressure, load, position, vibration, acoustic, magnetic, and electrical signals. Versions include 4-20mA input and output. Available from an extensive stock, usually for delivery within a few days. A quick easy solution for noisy signals.



Kemo is a privately-owned company that has successfully been solving filtering and signal conditioning problems around the world since 1965. Started in South east England by mathematicians and electronic engineers, we are specialists in high quality analogue filters, an area where sophisticated mathematical techniques and state-of-the-art circuit design converge.

[www.kemo.com](http://www.kemo.com)

## Correct Hose Specification

**I**ndustrial hose, in general, is capable of many uses. They convey air, steam, water, beverages, chemicals and an almost unlimited assortment of other products from A to B. Sometimes transported substances move under great pressure and travel great distances.

When industrial hose and couplings are properly specified for the task, these assemblies perform their function flawlessly. However the potential hazards of hose assemblies are very real. When we try to get them to do things they were never designed to do, such as running steam through a chemical hose or using cam and groove couplings for air, they fail miserably with sometimes catastrophic results. To avoid potential harm to personnel, site and equipment; and to prevent product loss, Dixon stresses the importance of inspecting all hose assemblies prior to each use.

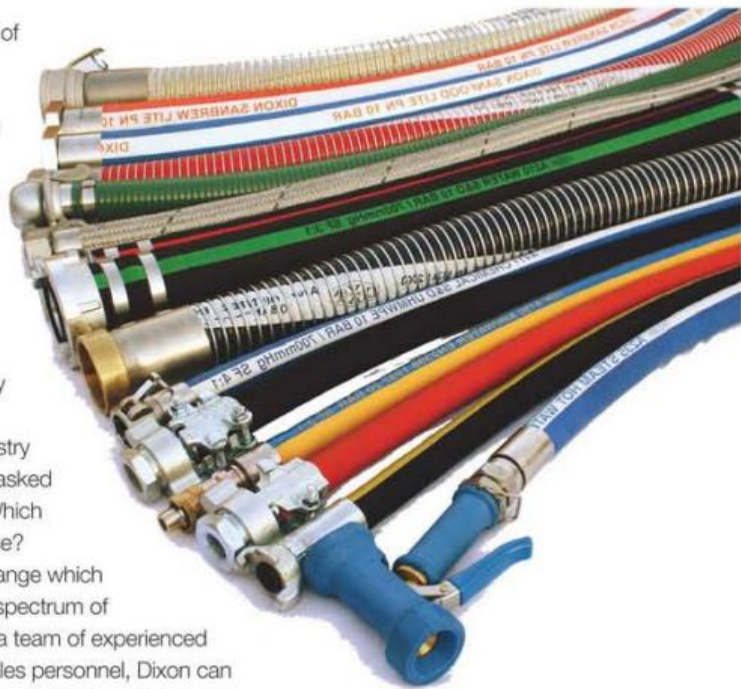
Hose failures, damaged end fittings and correct hose specification are just a few of the factors an onsite maintenance engineer might have to address on a day to day basis. Whether it's the correct hose required

or the right type of coupling for the application, it is often a minefield when it comes to finding a solutions provider with the correct experience you can trust.

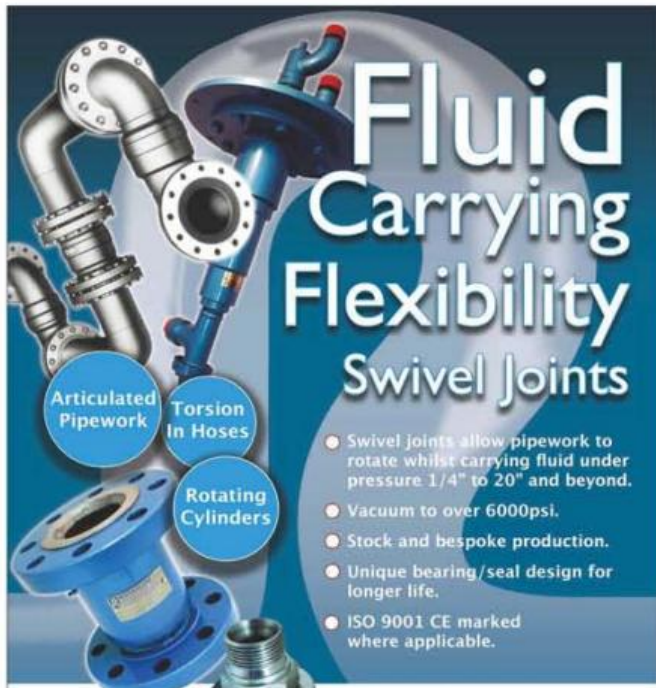
As a company with 100 years in the hose industry Dixon are often asked the question; "Which hose should I use?"

With a hose range which covers a broad spectrum of application and a team of experienced and technical sales personnel, Dixon can offer you a complete service advising on the most appropriate solutions for your application.

[www.dixoneurope.co.uk](http://www.dixoneurope.co.uk)



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# Time to acknowledge our engineers

The prestigious Pump Industry Awards Dinner, which is produced annually by Touchwave Media on behalf of the BPMA, is the ideal opportunity to recognise the exceptional engineering talent that our industry currently enjoys.

**T**he skill, innovation, and dogged determination shown by this sector's engineering staff ensure the delivery of effective and efficient pumping systems, time and again.

From pump manufacturers and distributors, through to sector specific end users and system integrators, the depth of technical knowledge and application know-how is really first class. But this high level of engineering excellence doesn't just happen of course! It takes a great deal of support and encouragement by the employers, and of course hard work, dedication and ongoing training by the individuals themselves.

The BPMA is extremely proud of the training programmes that it has been able to offer the pump sector over the years, and remains committed to the ongoing progression of all those opting for an engineering career within the pump sector.

This commitment to providing high calibre training modules (all of which are now CPD accredited), along with the constant drive to help pump companies and their engineers to improve their technical and operational knowledge of pump systems, also supports and underpins a healthy and robust industry.

Additionally, it helps to encourage new engineers into the sector, by demonstrating the opportunity for personal ongoing development and career progression – something which is key to any industry, in helping address whatever skills gap might exist!

However, this individual commitment to engineering excellence often goes unnoticed outside of the specific projects or companies with which these individuals are engaged. That is why the 'Engineer of the Year' category within the annual Pump Industry Awards programme is crucial to this endeavour. It provides the ideal platform



through which to honour their achievements.

Again sponsored by World Pumps, and open to any pump engineer who has made a positive contribution to an interesting product or project, this important category allows you to nominate an engineer who you believe has gone the extra mile, either for his company, or for his customers. So go on, what have you got to lose? Submit an entry, and allow your employee or colleague to gain the accolade that they rightly deserve.

Alan Burrows, Editor, World Pumps, commented, "Bringing new talent into the pump industry and keeping our young engineers motivated to stay there is a major challenge for all manufacturers. Without the support and incentive to grow, there will be no technical innovations within either product development or the all-important project and applications arena. Today's young engineers will be at the heart of

environmental contributions of the future and form the core talent of the top pump manufacturers of tomorrow; reason enough therefore to acknowledge and reward their efforts through this awards programme."

The online entry process couldn't be easier, so if you want to play your part in bringing engineering excellence to the fore, please do visit the PIA website - <http://pumpindustryawards.com>. The 'Online Entry' Forms will be available for completion until 5.00pm on Monday 15th January 2018, providing ample time in which to submit an entry. So if you want industry-wide recognition for a job well done, be it for technical innovation, application know-how, or environmental consideration, please make a note of this key date.

The 2018 Pump Industry Awards Ceremony will take place on 22nd March at the Heythrop Park Hotel in Oxfordshire.



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# Power-Gen

Sulzer bringing latest maintenance solutions for Power Generation sector to Las Vegas

**T**his year Sulzer will be exhibiting a range of maintenance services available to customers such as the rewinding of generators, 3D printing of new components and the application of specialist coatings. In addition to its conventional manufacturing capabilities, Sulzer also offers a wide range of pumps that offer reliability, performance and efficiency, all of which are essential in the power generation sector.

The latest updates from Sulzer and news about the show are available on social media, which this year is being proudly sponsored by Sulzer.

As a global industry, power generation requires equipment and service support that can be delivered anywhere in the world. Sulzer provides an industry-leading portfolio of electromechanical, turbine and pumping services for rotating equipment. Details of the complete range of services from component supply to turnkey refurbishment projects will be available from Sulzer's experienced staff at Booth #8611

The POWER-GEN International show, which is being held December 5-7th in the Las Vegas convention center, attracts visitors from over 100 countries who will have the opportunity to discover more about the latest products and innovations from Sulzer. As a leading independent repair specialist, Sulzer offers a comprehensive service through its global network of service centers.

Sulzer has experienced personnel that is able to support the F class gas turbine market, including the GE, Siemens and Alstom fleets. World class, in-house design and manufacturing facilities can deliver



products such as turbine and compressor blades to the highest specification. Together with its experienced field service teams, Sulzer supports refurbishment and overhaul projects on a global scale.

As an OEM pump manufacturer, Sulzer engineers design and produce a broad range of pumps that offer high performance

and efficient operation within fossil-fired, nuclear and renewable power generating plants. Utilizing this knowledge, Sulzer can also refurbish and remanufacture any brand and size of pump that operates in the industry.

See Sulzer at Booth #8611 – POWER-GEN International 2017 at the Las Vegas

# AC-DC Battery Backed Power System 1U 19" Rack Mounting up to 300 Watts

The PFD Series is a no break system to provide constant DC power without interruption in the event of an AC mains failure. Available in 150W and 300W versions and nominal DC outputs of 12V, 24V or 48V



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## Features

- AC Input 180-264VAC 50/60Hz
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- With external batteries can provide constant power without interruption
- Can power your load and charge batteries simultaneously
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- Front panel LED display monitoring
- Dry contacts, RS232, USB and optional SNMP output monitoring
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▲ Convention Center from Dec. 5th – 7th.

For the latest updates on Sulzer at POWER-GEN follow @SulzerEvents

Further information on POWER-GEN is also available on:

[twitter.com/PwrEngineering](https://twitter.com/PwrEngineering)

[www.facebook.com/PwrEngineering](https://www.facebook.com/PwrEngineering)

### About Sulzer:

Sulzer is the leading worldwide, independent service provider for the repair and maintenance of rotating machines including turbomachinery, pumps and electro-mechanical equipment. With a global network of over 180 technically advanced manufacturing and test facilities, Sulzer offers a collaborative advantage that delivers high-quality, cost-effective, customized and turnkey solutions, providing its customers with the peace of mind to focus on their core operations.

Sulzer Rotating Equipment Services, a division of Sulzer, can accommodate all brands of rotating equipment including turbines, compressors, generators, motors and pumps. With an enviable track record, dedicated teams of on-site engineers provide best-in-class solutions to ensure that the most effective service is delivered.



Sulzer is dedicated to providing superior service solutions to a range of industries including power generation, oil and gas, hydrocarbon and chemical processing, water and air separation. Every solution is customized to suit the business needs of each application – whenever or wherever that may be.

With a long history of providing engineering service support, Sulzer is

headquartered in Winterthur, Switzerland where it began in 1834. Today, with sales over US\$ 3 billion and with approximately 14,000 employees, the Sulzer footprint spans across the globe. The core aim is to deliver a flexible and cost-effective service that optimizes customer operational efficiency and minimizes downtime.

For more information on Sulzer, visit [www.sulzer.com](http://www.sulzer.com)

## Trench MOSFETs with Ultra-Compact 40V Device for Low EMI Designs

**N**-channel U-MOS-IX-H MOSFET with integrated SRD is ideal for power supplies and motor drives

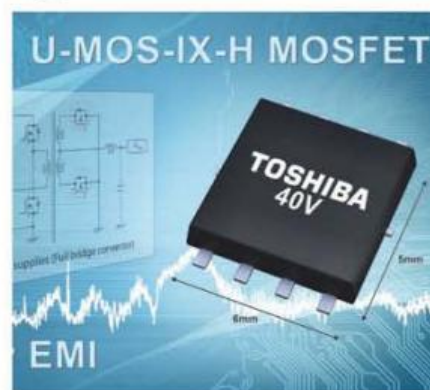
Toshiba Electronics Europe has expanded its line-up of MOSFETs based on its latest generation U-MOS-IX-H trench semiconductor process with a new, ultra-compact 40V device featuring an integrated soft recovery diode (SRD).

Thanks to the integrated SRD, the TPH1R204PB is able to keep the spike voltages generated between the drain and source during switching very low. This makes the MOSFET suitable for synchronous rectification in the secondary side of switching power supplies that require low EMI. Target applications include high-efficiency AC-DC and DC-DC converters as well as motor drives, for example in cordless tools.

The TPH1R204PB is an N-channel device with a maximum on resistance ( $R_{DS(ON)}$ ) of only  $1.2m\Omega$  (@  $V_{GS} = 10V$ ). Rated output charge (QOSS) is just 56nC. The device is supplied in a SOP advance package measuring just 5mm x 6mm x 0.95mm.

About Toshiba Electronics Europe  
Toshiba Electronics Europe GmbH (TEE) is the European electronic components business of Toshiba Electronic Devices and Storage Corporation. TEE offers European consumers and businesses a wide variety of innovative hard disk drive (HDD) products plus semiconductor solutions for automotive, industrial, IoT, motion control, telecoms, networking, consumer and white goods applications. The company's broad portfolio encompasses integrated wireless ICs, power semiconductors, microcontrollers, optical semiconductors, ASICs, ASSPs and discrete devices ranging from diodes to logic ICs.

Formed in 1973 in Neuss, Germany, TEE



has headquarters in Düsseldorf, Germany, with branch offices in Germany, France, Italy, Spain, Sweden and the United Kingdom providing design, manufacturing, marketing and sales. Company president is Mr. Akira Morinaga.

For more company information visit TEE's web site at

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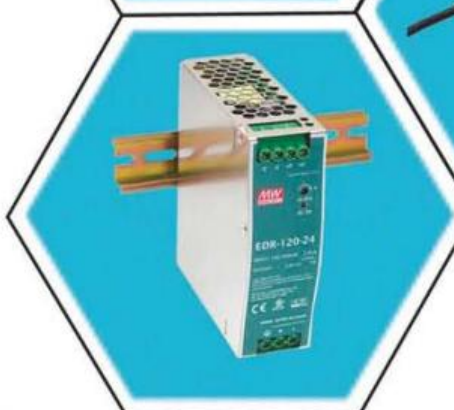
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# Airedale International wins CIBSE Yorkshire Region Manufacturers Award

**1** 0 November 2017 was a chance to entertain, reward and highlight the excellent work by Yorkshire-based organisations. Nearly 400 people from all parts of the construction industry gathered at the New Dock entertainment suite, Royal Armouries, Leeds.

The evening featured three fantastic speakers. These included, Kayley Lockhead, (From NG Bailey) who spoke about STEER Group mentoring, resulting in over 40 offers of support on the night. Martin Brown (from Fairsnape) then identified the different ways in which we can all develop sustainability within the built environment, going beyond energy efficiency. Finally, Prof Peter Head CBE FREng FRSA shared projects that he is involved with to achieve sustainable development around the world.

Following on from the guest speakers, awarding took place in 12 categories. These

ranged from Yorkshire Region Project of the Year to the CIBSE Yorkshire Region Student Award, where their college or University nominated students.

Airedale is humbled and proud to have won the CIBSE Yorkshire Region Manufacturers Award category for its multiple-award-winning Artus™ – hybrid low energy fan coil unit. A system conceptualised, designed and manufactured in partnership with Arup consultancy.

Artus™ has already won two awards in 2017 and continues to impress judges with its potential, challenging existing solutions and meeting industry needs.

Available now, Artus™ will solve the biggest complaints in comfort cooling, including; energy efficiency, draughts and dead spots, space claim of secondary ductwork, unit footprint, cluttered ceiling void services, and restrictive access for maintenance and installation.

To discover more about Artus™, please visit [www.airedale.com/Artus](http://www.airedale.com/Artus)



## IP56 Flexible Heating Jackets for use outside or in wet environments

**L** MK Thermosafe Ltd have been manufacturing Flexible Heating Jackets for over 15 years and we are proud to introduce our new range of IP56 outdoor Jackets.

These Flexible Heating Jackets are designed to heat typical 25L, 50L, 100L or 205L drums positioned outside, open to weather conditions or in wet factory environments.

They simply wrap around the drum, clip together and connect to the power. A fixed internal thermostat set to 50°C ensures the contents of the drum are heated and maintained at approximately 35-40°C. Other temperatures are available on request.

These units have been sealed and protected against liquid ingress. This allows LMK Flexible Heating Jackets to be used in new ways, helping in applications where drums need to be

positioned outside or where factory conditions lead to constant exposure to liquids.

Of course, in some applications, an even harsher environment might require IP66 rating. In this case, consider our THERMOSAFE Induction Heaters or FARATHERM Base Heaters. These high power products have a proven history of long-term maintenance free reliability in the worst of environments.

Contact us for further details.  
[www.lmkthermosafe.co.uk](http://www.lmkthermosafe.co.uk)

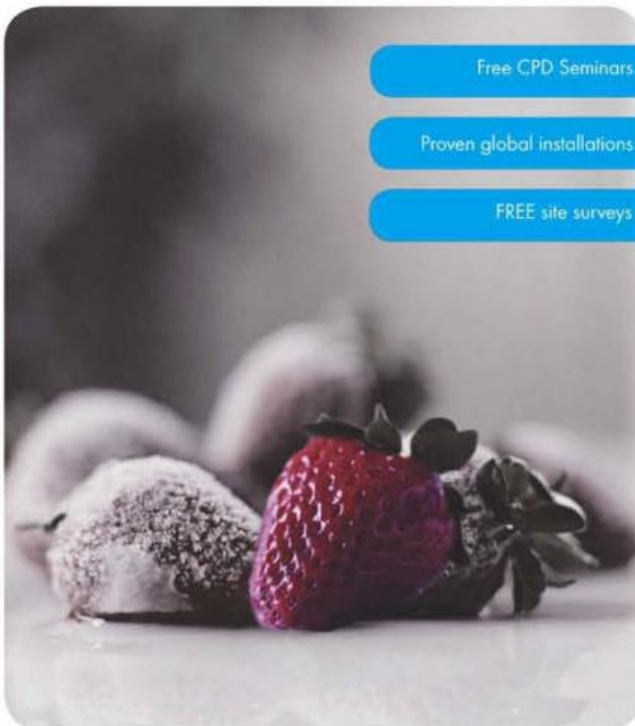


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## Improve safety in cold stores

Ice, frost and fog in cold stores can create slippery, dangerous conditions for staff. While many accept that ice is simply part of the cold store, it doesn't need to be so.

Munters IceDry® is a specially designed dehumidifier that targets moisture in manufacturing facilities, cold rooms, cold stores and process freezers to:

- Reduce & prevent ice, frost and fog build up on floors, walls and ceilings
- Reduce defrosts by up to 1/3 - case studies available
- Lower maintenance costs
- Improve safety for staff & forklifts
- Increase productivity
- Improve evaporator efficiency



"The cold store is the best it's ever been for excessive ice & snow"  
- Kitchen Range Foods

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# Valve plugs

## More variety, less effort

20 years ago, Murrelektronik developed and produced the first prewired and molded valve plug. It was a revolution! And because Murrelektronik has continuously improved the valve plugs, they have enjoyed long-running success, today more than ever.

**M**urrelektronik's new range of valve plugs offer you efficient, decentralised IP67 protection, in fact you will be hard pushed to find a more complete connection solution.

### What makes a Murrelektronik valve plug?

Murrelektronik's innovative new valve plug range offers an array of distinctive and innovative features. Available in a choice of colours (yellow, grey black) and M8 or M12 cable types – including flame and chemical resistant PVC, PUR/PVC or simply PUR – Murrelektronik valve plugs include a handy wire diagram, IP67 sealed captured gasket, label plate and LED suppression indicator. The fully potted design also makes them resistant to shock and vibration.

### Features and benefits:

- IP67 Protection.
- Factory Tested Connections.
- LED Indicators for Diagnostics.
- Reduced size for Compact Installations.
- Reduced Number of Components.
- Label Plates.
- Quick/Easy Installation.

### Why we use interference suppression

Even in today's modern world, inductive loads are still governed by the rules of physics. Just like gravity, Ohm's law and Lenz's law will never change. They state that when an inductive load is switched off, current wants to keep flowing in the same direction and with the same strength as before. The voltage comes from the inductive load and, since the inductive loads can be much higher than the nominal voltage, voltage peaks can occur.



This causes the following problems, which can result in expensive downtime:

- Powering down can cause coil short circuits.
- Coil lifespan is shortened.
- Data transfer via the bus system is cut off.
- Control sequence is interrupted.

However, the interference suppression technology inherent in Murrelektronik valve plugs, helps to reduce voltage peaks during shut down. As a result, you will benefit from reduced material and maintenance costs, increased interference protection, improved system availability and reliable run-time.

### Contact Murrelektronik today

For more information about Murrelektronik's complete range of valve plugs, speak to our experienced advisers today by calling 0161 728 3133, or email [sales@murrelektronik.co.uk](mailto:sales@murrelektronik.co.uk).

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# Kemo®

The **Kemo** range of DIN rail mounting filters are a fast, easy to install, solution for many, small noisy signal problems. The combination of configurable input, gain, plus a flexible range of signal filters, make the **Kemo** DIN rail filters an ideal choice for many signal filtering applications.

**Kemo** manufacture a wide range of signal conditioning filters, small noisy signals are our speciality. The **Kemo** range includes filter modules through to multi-channel computer controlled signal filter systems.



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THE RELIABLE EXPERT

# Acoustic cleaners solve the problem

Primasonics® Acoustic Cleaners are widely employed wherever ash, dust and powders are generated, processed, stored or transported.

**T**his range of acoustic cleaners has been of tremendous benefit in both preventing material hang-up and ensuring maximum, continuous material flow in silos and hoppers. Indeed some of Primasonics most challenging but successful applications were within silos which contained dry materials such as cement. Primasonics have solved cement storage silo problems in over 40 countries worldwide. The two main problem areas within hoppers and silos are:-

- Ratholing – where the material builds up on the sidewalls causing severely reduced “funnel flow”, which also restricts the silo being used to its full storage capacity.
- Bridging – where the material bridges over the outlet area either severely restricting flow or stopping it completely.

Irrespective as to whether the cement bulk storage facility is under 500 kg or over 30,000 kg capacity Primasonics® Audiosonic™ Acoustic Cleaners have eliminated both of these problems and can even help in preventing material cross contamination.

It is important to note and understand several main advantages that Acoustic Cleaners have over alternative methods, which have been employed to try and aid material flow. Primasonics Acoustic Cleaners operate at frequencies very much higher than the resonance frequency of steel, ceramic lining, concrete etc. Therefore Primasonics Acoustic Cleaners are guaranteed not to cause vibrational damage to any vessel or structure. This is quite unlike vibrators, which by their very nature and method of installation, cause vibration and stress weaknesses within the vessel or structure to which they are attached. The vibration resonances first have to pass through the vessel wall before reaching the material. With the Acoustic Cleaner, the

higher frequencies are directly absorbed into material giving 100% efficiency.

Air cannons/blasters seek to effect a very localised cure for a blockage problem, which has already occurred. In many cases the air cannon simply “blows” a localised hole through the blockage, necessitating the installation of many air cannons within the general problem area. It is generally true to say that one very rarely finds a single air cannon in effective operation. This is totally the opposite with Primasonics Acoustic Cleaners but then we approach the problem with a totally different philosophy - by preventing the build up from occurring in the first place.

Acoustic cleaners are extremely simple in their operation, requiring only normal plant compressed air for their initial energy source. Compressed air enters the Wave Generator and forces the only moving part, the ultra high-grade titanium diaphragm to oscillate very rapidly within its specially designed housing. These rapid oscillations create the base tone and the various different bell sections convert, amplify and distribute this base tone into a range of different key fundamental frequencies.



Primasonics® Audiosonic™ Acoustic Cleaners are aiding material flow from hoppers and silos in such diverse industries as Cement, Gypsum, Flour, MDF Wood Products, Ceramics, Chemicals, Petrochemicals and Power Plant. They are also employed in a range of ancillary plant such as filters, cyclones, fans, ductwork and steam/power generation plants.

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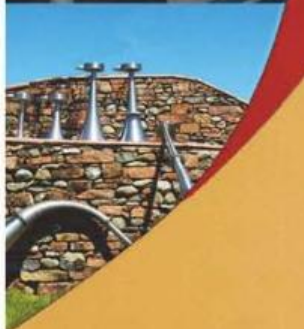
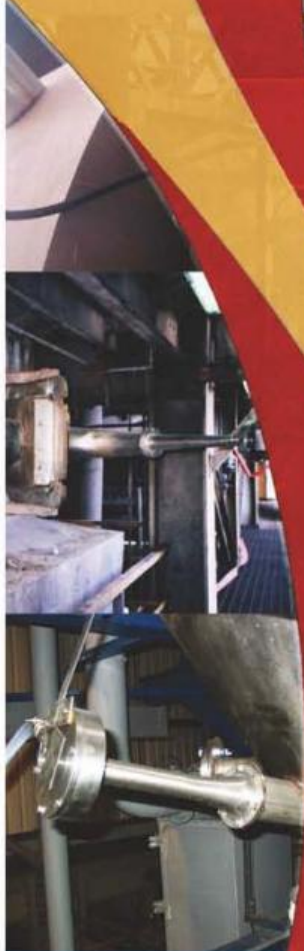
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# Are you COOL about your enclosure climate?

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Excessive temperature or overheating in an electrical enclosure means that enclosure cooling is very important for a number of reasons:

- Unplanned interruptions to production due to tripping or failing control components are costly
- Excessive temperature affects the correct operation and service life of electrical equipment
- High temperatures that lead to tripping or failing control components are avoidable
- 80 per cent of control component failures may be addressed with a suitable cooling solution

Marketing Director Simon Kelemen says, "The costs of downtime, loss of production and system shut-down due to equipment running over temperature can easily exceed £10,000 per hour. I don't know any businesses that would be happy to right that off, particularly as it's entirely avoidable."

## Inspection by Rittal experts

For businesses with Rittal enclosure cooling equipment installed the process will involve an engineer conducting the review which will provide:

- Confirmation as to the condition of the devices
- An assessment of their cleanliness, function and serviceability
- An asset list documenting status of

each enclosure

- A quotation (if required) based on the most appropriate solution for moving forward
- On-going service suggestions and offers, tailored to the site itself

To book a survey, users can contact the Rittal team via [information@rittal.co.uk](mailto:information@rittal.co.uk) or call 01709 704105 to book their survey.

## About Rittal

Rittal, headquartered in Herborn, Hessen, Germany, is a leading global provider of solutions for industrial enclosures, power distribution, climate control and IT infrastructure, as well as software and services. Systems made by Rittal are deployed across a variety of industrial and IT applications, including vertical sectors such as the transport industry, power generation, mechanical and plant engineering, IT and telecommunications. Rittal is active worldwide with 10,000 employees and 58 subsidiaries.

Its broad product

range includes infrastructure solutions for modular and energy-efficient data centres with innovative concepts for the security of physical data and systems. Leading software providers Eplan and Cideon complement the value chain, providing interdisciplinary engineering solutions, while Rittal Automation Systems offers automation systems for switchgear construction.

Founded in Herborn in 1961 and still run by its owner, Rittal is the largest company in the Friedhelm Loh Group. The Friedhelm Loh Group operates worldwide with 18 production sites and 78 international subsidiaries. The entire group employs more than 11,500 people and generated revenues of around €2.2 billion in 2014. For the seventh time in succession, the family business has won the accolade "Top German Employer" in 2015.

Further information on climate control solutions at [www.rittal.co.uk](http://www.rittal.co.uk) and [www.friedhelm-loh-group.com](http://www.friedhelm-loh-group.com) or on twitter [@rittal ltd](https://twitter.com/rittal ltd).





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# Adding value through bespoke design

Liam Marriott, Technical Manager of Optimas Solutions' Components Division, explains how customers can add value through bespoke component design.

**S**uccessful design engineering is all about creating something that is greater than the sum of its parts. To do this you need to understand every nut, bolt and cable tie; and trust that it's the best option for your application. While leading distributors offer hundreds of thousands of standard parts, sometimes that's not enough. This is why the Optimas Bespoke Parts and Manufacture Service helps customers to specify the perfect solution.

Whether you're designing lighting solutions, medical equipment or the latest executive saloon, fasteners and c-class components will play a vital role in the reliability and quality of your product. In the majority of cases a simple standard part will be the best solution, offering the desired performance along with simple convenience. However, there are times when an application requires such specific capabilities that an obvious solution can't be found in a catalogue. In fact, almost 35% of the business we process comes from customers who have requested specialised solutions.

This statistic comes as a surprise to a lot of people who assume that, as a distributor, we won't have the flexibility to offer



customised services. In reality the reverse is true. We have a team of engineers, CAD designers, application experts and product managers who work with a global network of manufacturers and suppliers – meaning that if you can imagine it, we can deliver it.

So, what's the process for a bespoke component service, and how can it benefit your design?

The process normally begins with a customer enquiry: asking one of our product experts for specification support. When a special request comes in our first priority is always to try and source an existing product, which is the most efficient solution if possible. Once all avenues have been exhausted, if a suitable component hasn't been found, we will meet the customer face-to-face for a design briefing and create a Product Design Specification document.

From here the team compiles a series of concept solutions which can include line drawings, 3D CAD models and initial prototypes created using 3D printing and

other rapid prototyping technologies. Once the final design has been tested and approved, we will work with a trusted supplier to produce the necessary tooling and start preparing the delivery of the first batch; a unique part number will then be created and kept on record to facilitate simple re-orders in the future. Of course, to guarantee excellence, the whole process is controlled by our ISO 9001 quality systems.

It stands to reason that the result of every project we undertake is unique, but we can broadly fit our solutions into two categories: customised or bespoke. Very often we discover that we can customise an existing part or combine standard components to deliver the performance the customer demands. Where this isn't possible we will build the part 'from the ground up' and identify the right manufacturer to reliably deliver it.

For one customer, a successful manufacturer of industrial LED lighting solutions, we were able to develop an

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▲ elegant, customised LED rivet design that helped to increase installation speed and create flexibility in the production line. The industry standard tapping screw that's used to fix the LED circuit board to the panel required a manual process for installation which demanded specialised tooling. Our team was able to modify an existing push fit rivet to retain to a standard LED PCB; adjust its material construction to improve UV resistance; and also design in a solution to enable disassembly with a single screw driver in the event of maintenance.

As a result, the customer was not only able to speed up the production line, but during busy periods it was possible to move the process to 'overflow workstations' that weren't equipped with any additional tooling.

In another example, we worked with a designer of high-end car conversions. Here we created a number of truly bespoke parts which were able to support them in creating ergonomical solutions that were in keeping with the superior finish and aesthetics of luxury vehicles. One such example was a 'snap-on' hand knob, used to aid with steering. We employed an overmoulding finishing process to make sure the part had a long lasting, quality finish and that it would



be comfortable in the hand.

Because we operate a personal service based on product expertise and an understanding of our customers' industries, we are always keen to offer support throughout all stages of specification. Only when we are sure that our design service is the best option for a customer will we suggest it. This means that when we do

begin the process we are able to show the customer how the end result will provide tangible advantages to their product, to their business and to their customer. The benefits of bespoke component design differ from application to application, but to learn how you might gain a performance enhancement it's always worth getting in touch with our team to see how we can help.

## Ket-Bee 200X series of angular gears

**W**e are proud to introduce the new series of Ketterer angular gears – the Ket-Bee 200X series, available now from SD Products. High-performing mechanics within the smallest possible installation space, plus easy power transmission, an extended service life cycle and a positive price-performance ratio are the stand-out features of this new series.

The leg length in the most compact of the new angular gears is shorter than a matchstick. Ketterer offers seven sizes, featuring legs from 32 to 60 mm long. The angular gear meets many needs in installation, assembly and automation engineering. Further potential areas of application include shading and building engineering, as well as mechanical engineering.

The applicable areas of deployment in plant construction or handling systems particularly include driving conveyor belts, adjusting the width of conveyor belts or

swivel arms as well as adjusting positioning units and pallet systems. The Ket-Bee 200X is used in shading technology applications to adjust slats and other shading elements.

The quality of the Ket-Bee 200X is reflected in its long service life and high power density. The angular gears comprise surface-hardened steel bevel gears and top-quality ball bearings for input and output drive. All of which makes them ideal to withstand the high stresses imposed by mechanical engineering. The precision-manufactured steel bevel gears have a radial clearance of just  $3^\circ \pm 1^\circ$ . This means the gear operates virtually noiselessly as well as being low-wear and maintenance-free. The



gear ratio is 1 for all versions: 1, with torques and a power spectrum – depending on size – ranging from 0.1 to 10.0 Nm.

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# Advanced Engineering attendance grows

Exhibitor bookings for next year up over a third

If you're working within the advanced manufacturing sector, the chances are you saw for yourself just how busy Advanced Engineering was at the NEC on 1&2 November.

Representatives spanning a huge breadth of engineering & manufacturing applications came together, not only to create a record 2-day attendance for the event, but also sparking off an exhibitor booking frenzy for its 2018 edition, 35% higher than that the previous year.

The UK's largest meeting place for advanced engineers attracted some of the industry's biggest names including Airbus; Boeing; Jaguar Land Rover; Hexcel; and Dassault Systèmes, who met and did business across the supply chain, with visitors from a range of engineering specialisms including: automation, design & test engineering, process control, machining and many more.

The two-day open conference, which was newly 'Continuing Professional Development (CPD)' - accredited for this year, by the CPD Certification Service, had a raft of speakers and topics, including talks from the Department of International Trade, Composites UK, GKN, Siemens, Nissan and more.

Visitors saw a variety of cutting edge technology and materials from exhibitors as well as show floor features. It was the only place in the world where you could find, in the one place, a hydrogen powered car, the latest in aircraft landing gear, a battery made 100% from recycled materials, a ground based test rig for electric contra rotating propulsion, and a Libralato hybrid engine to name but a few.

In addition the Enabling Innovation showcase, sponsored by Magna and supported by Innovate UK, significantly expanded and provided a unique opportunity for 50 start-ups & researchers to showcase the next generation of exciting new technologies.



Alison Willis, industrial divisional director at Easyfairs, organisers of the show, said: "This year was outstanding. The visitors, the conference speakers, the companies who supplied the show floor features and the exhibitors have all contributed to making Advanced Engineering 2017 a success!

"Our new zone, Connected Manufacturing, was hugely popular, with a particularly well-attended open forum, demonstrating the importance of Industry 4.0 to companies of all sizes. Watch this space for an expanded Connected Manufacturing in 2018!

"And now, we are looking to even more areas of expansion for Advanced Engineering, with the addition of our new Nuclear Engineering zone, addressing nuclear energy build, operation and supply chain. We will be in touch with all exhibitors and visitors in the next few months. We'll be pulling the stops out even further next year as 2018 is the Show's 10th birthday, and it's set to be bigger and better than ever!"

What did some of the exhibitors have to say?

Tom Hammond, Mindsphere product &

partner Manager, Siemens, said: "Fantastic two days where we saw a real diverse set of visitors from students to start-ups to SMEs to enterprises, all with really exciting business cases and solutions which can be enabled by Mindsphere."

Julia Moore, GTMA, said: "Excellent show, it is the best 2 days! It's great, don't change the format!"

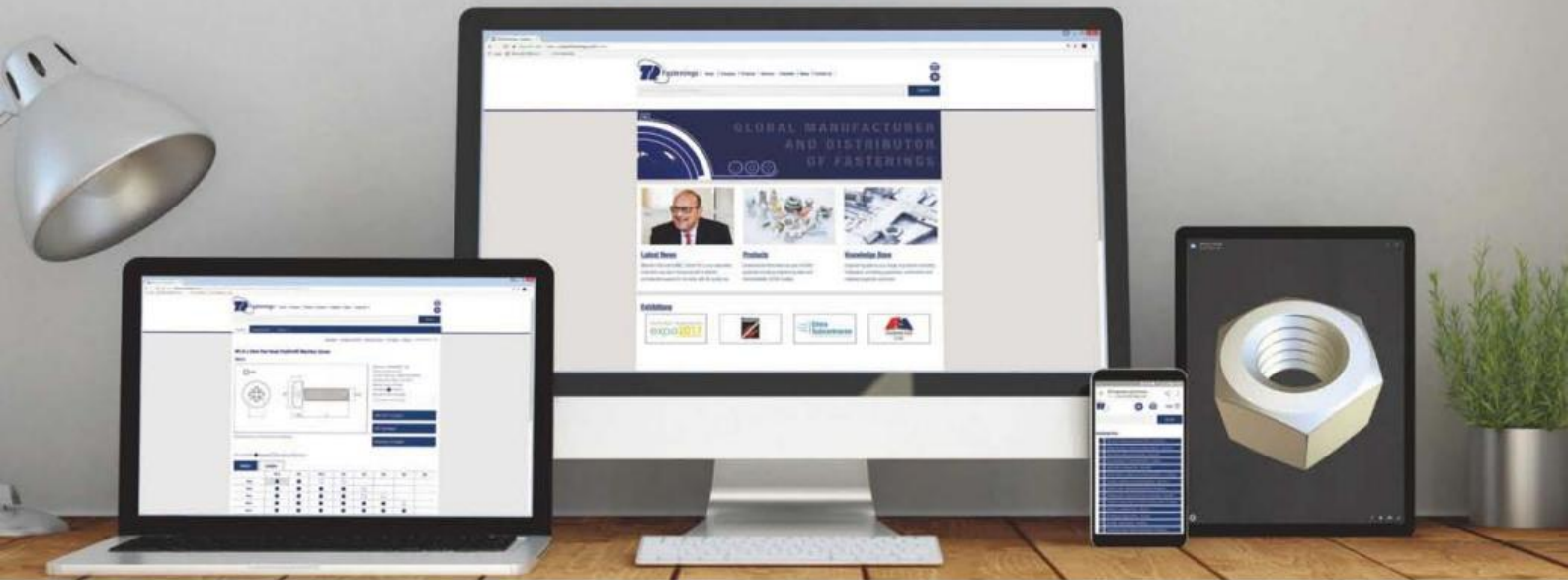
Iain Wallace, RAR UK Ltd, said: "An excellent platform to connect with new potential businesses. The quality of visitor was excellent in terms of beneficial understanding and inquisitive questions of our products."

The show consisted of four other co-locating zones which were: Aero Engineering; Composites Engineering; Automotive Engineering; and Performance Metals Engineering. Next year's show will see the addition to these co-locating zones of Nuclear Engineering.

Thinking of exhibiting at next year's show on the 31st Oct & 1st Nov? Visit [www.advancedengineeringuk.com](http://www.advancedengineeringuk.com) for more information.



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# MTA welcomes the Made Smarter Report

November saw the long-awaited release of the Government's Industrial Digitalisation Review – Made Smarter – which was chaired by Professor Juergen Maier, CEO of Manufacturing Technologies Association (MTA) member Siemens UK.

**T**he review outlines proposals to boost the economy using advanced digital technologies including robotics, 3D printing, augmented and virtual reality, as well as artificial intelligence.

The MTA and some of its members, notably Marcus Burton, Director of Yamazaki Mazak, have worked closely with Professor Maier and his team to ensure the voice of the UK's advanced manufacturing technologies sector is represented in the report. The MTA were thanked for their contribution to the review in the foreword of the publication.

The Review brings together input and recommendations from over 200 stakeholders, including companies such as Rolls Royce, GKN, IBM, Yamazaki Mazak and Accenture, as well as academic institutions including the University of Newcastle and the University of Cambridge. R&D centres of excellence, the Digital Catapult and High Value Manufacturing Catapult co-designed the proposals.

Over ten years, industrial digitalisation could boost UK manufacturing by £455bn, increasing sector growth up to 3% per year; creating a net gain of 175,000 jobs whilst reducing CO2 emissions by 4.5%. Proposals include the establishment of a 'Made Smarter Commission' to support a national plan to put Britain's small businesses at the forefront of a 'fourth industrial revolution.'

The review followed the Government's Industrial Strategy Green Paper, launched in January, which identified industrial digitalisation as one of five potential early sector deals. It has kickstarted work with stakeholders to identify opportunities for government and industry to work together.

Business Secretary Greg Clark MP said, "The UK manufacturing sector has the potential to be a global leader in the industrial digital technology revolution.

Government and industry must work together to seize the opportunities that exist in this sector and promote the benefits of adopting emerging digital technologies, as well as cutting-edge business models.

"I welcome the Made Smarter report that has been published today and thank Juergen and the reviewers for their work in outlining the huge potential digitalisation offers to this important sector. I look forward to working closely with industry to secure an Industrial Digitalisation Sector Deal."

MTA CEO James Selka said of the report, "The UK's advanced manufacturing sector has huge potential and we welcome this Review. It is essential to have a joined-up approach to implementing it to sustain growth, improve productivity, secure jobs and harness the innovative thinking that the UK is renowned for."

He continued, "This is a good first step, now we must see how the Government plans to translate it into action. The UK needs to remain competitive with its international peers and push forward with plans to embrace digitalisation. The MTA will be at-hand to work alongside government to support companies in the adoption of new



technologies and business models."

You can download the report here:  
<https://www.gov.uk/government/publications/made-smarter-review>



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**W:** www.monitran.com

## Stainless Steel Fittings



**Nero**  
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**F:** 0121 665 3903  
**W:** www.nero.co.uk

## Thermal Imaging Cameras



**FLIR Systems  
Limited,**  
2 Kings Hill Avenue,  
Kings Hill, West  
Malling, Kent, United  
Kingdom ME19 4AQ.  
**T:** +44 1732 220011  
**E:** flir@flir.com  
**W:** www.flir.com

## Valves - Actuated & Manual



**Dixon**  
**T:** +44 (0)1772 323529  
**E:** sales@dixoneurope.  
co.uk  
**W:** www.dixoneurope.  
co.uk

## Water & Chemical Storage



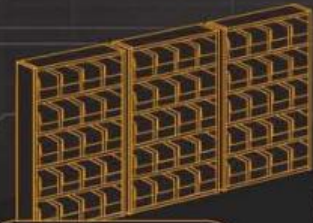
**Drayton Tank &  
Accessories Ltd**  
**T:** 0871 288 4213  
**E:** enquiries@  
draytontank.co.uk  
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## ELECTRONICS IN THE CONTROL CABINET

## INTERFACES

## CONNECTION TECHNOLOGY

## I/O SYSTEMS

- POWER SUPPLIES
- TRANSFORMERS
- POWER MONITORING
- SUPPRESSION & FILTERS

- RELAYS
- SIGNAL CONDITIONING
- INTERFACE MODULES
- LIGHT TOWERS

- M8, M12 & M23 ROUND PLUG CONNECTORS
- FLANGE CONNECTORS
- FIELDBUS CONNECTORS
- VALVE CONNECTORS

- M8, M12 DISTRIBUTION SYSTEMS
- MODULAR FIELDBUS SYSTEMS
- ROBUST METAL I/O MODULES
- COMPACT I/O MODULES