

October 2022

PROCESS & CONTROL

www.processandcontrolmag.co.uk

Sponsored by:

FESTO

festo.com/process



**THE BENEFITS OF
SILVERSON HIGH
SHEAR MIXERS**



LIVE ONLINE



ON-DEMAND



FACE-TO-FACE



IN-COMPANY

Quality-assured training from IChemE

The Institution of Chemical Engineers (IChemE) offers quality-assured training on a variety of topics to help you develop your knowledge and learn new skills. All our courses are peer-reviewed to reflect best practice and current thinking. Here is what we offer, as either online, face-to-face or in-company training.

Book your place and get
20% off, simply quote **courses20***

Scale-up of Chemical Processes

From 1 November, online

Successful chemical process scale-up can be a formidable challenge due to a combination of several phenomena that only become manifest at a change of process scale. The aim of this course is to provide an understanding of the fundamentals and a practical guide to predicting and avoiding common problems, thereby minimising the risk of unforeseen scale-up problems.

www.icheme.org/live-scale-up



Upcoming training October – November

HAZOP Leadership and Management

From 25 October, online

Explore best practice in HAZOP leadership and management.

www.icheme.org/live-hazop-leadership

Layer of Protection Analysis (LOPA)

From 31 October, online | 23–24 November, Manchester, UK

Learn about the LOPA methodology and how to apply it.

www.icheme.org/live-lopa

www.icheme.org/lopa

Quantified Risk Analysis

From 31 October, online

Develop your understanding of different types of risk and how they are calculated.

www.icheme.org/live-qra

Chemical Engineering for Scientists and Other Engineers

From 2 November, online

Learn more about chemical engineering and its key concepts.

www.icheme.org/live-chemical-engineering

Process Risk Assessment

From 10 November, online

Develop the skills and knowledge needed to identify, assess and communicate process risks.

www.icheme.org/live-risk-assessment

Fundamentals of Process Safety

From 14 November, online

Learn about the key principles of process safety and its management.

www.icheme.org/live-fundamentals

Engineering Project Management

From 15 November, online

Review best practice when managing engineering projects.

www.icheme.org/live-project-management

What Engineers Need to Know About Contracts

From 28 November, online

Develop your understanding of contract law for engineering and construction contracts.

www.icheme.org/live-contracts

Troubleshooting Distillation Controls

From 29 November, online

Learn how to get the best performance from a distillation column control system with 'tower doctor' Henry Kister.

www.icheme.org/live-distillation

For more training options, visit www.icheme.org/training.

If you have a team of people to train, we offer in-company training, virtually or in-person.

Visit www.icheme.org/incompany to request a quote.

* This discount code applies to both member and non-member prices but cannot be used in conjunction with any other offers. It only applies to live online and face-to-face training (UK time zone) but cannot be used on on-demand or in-company training courses.

IChemE ADVANCING
CHEMICAL
ENGINEERING
WORLDWIDE



THE BENEFITS OF HIGH SHEAR MIXERS

Dispersing powders into liquids and creating a consistent, homogeneous product is one of the most difficult of all mixing tasks. And gums and thickeners used in the food industry such as alginates, guar gum, CMC, etc., are no exception.

Time and again Silverson Machines have helped customers to improve their mixing processes by overcoming the challenges associated with these ingredients. Find out more on **page 14-15**.
Silverson Machines
www.silverson.co.uk

To ensure that you continue to receive your free personal copy of this magazine, please fill in the reader registration card, or register online at www.processandcontrolmag.co.uk

Process & Control is sent free of charge to individuals who meet the publisher's strict terms of control. Annual subscription rates are:

UK - £103
Overseas - £137

ISSN 1472-1309
Datateam Business Media Ltd., London Road, Maidstone, Kent ME16 8LY.

Tel: 01622 687031
Fax: 01622 757646
www.datateam.co.uk

Registered in England No 1771113

datateam
Business Media

© 2022 Datateam Business Media Ltd
London Road, Maidstone, Kent ME16 8LY

recycle
When you have finished with this magazine please recycle it.
The paper used in this magazine is obtained from manufacturers who operate within internationally recognised standards. The paper is made from Elementary Chlorine Free (ECF) pulp, which is sourced from sustainable, properly managed forestation.

The statements and opinions expressed in Process & Control magazine are not those of the editor or Datateam Business Media, unless described as such.

CIRCULATION ENQUIRIES:

Curwood CMS
Tel: 01580 883884
datateam@c-cms.com

NEWS

4 T Levels could deliver our future workforce

FEATURES

Hazardous areas & safety

8 The Tiger and the Cub keep workers safe

Mixing, weighing & conveying

17 Combining longevity and efficiency

Pumps, valves & actuators

19 Guidance on optimising pump performance

Flow & level control

21 Three steps to fast and simple valve selection

Calibration

22 Be confident in density measurement

Food processing & packaging

24 Minimise risk by making the right choice

31 AI gets to the root of the problem

Advanced Engineering preview

48 Advanced Engineering UK returns to the NEC

INDUSTRY FOCUS

Oil & gas

41 Meeting ESG targets using intelligent automation

42 Five digital trends to help you succeed

44 A new dawn in energy transformation

RADAR IS THE BETTER ULTRASONIC



Compact 80 GHz level sensor with in-head display

www.vega.com/vegapuls



moneo

The IIoT Platform
Try for free at moneo.ifm

Digitisation can be so quick and simple. With moneo.

EDITOR

Michelle Lea
Tel: 01622 687031
mlea@datateam.co.uk

ADVERTISING MANAGER

Charlie Curd
Tel: 01622 699193
ccurd@datateam.co.uk

JUNIOR SALES EXECUTIVE

Joshua Thompson
Tel: 01622 699163
www.joshua.thompson@datateam.co.uk

MEDIA DIRECTOR

Louise Tiller
Tel: 01622 699104
ltiller@datateam.co.uk

ARTWORK EDITOR

Kirsty Hood
Tel: 01622 607967
khood@datateam.co.uk

OMEX ENVIRONMENTAL



Nutrients & Neutralisers

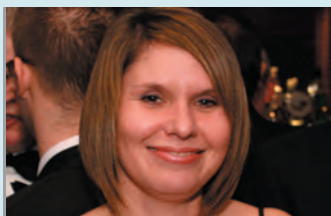
For all types of wastewater treatment

- Reduce operational costs
- Comply with trade effluent discharge regulations
- Improve overall plant performance

www.omexenvironmental.com

Email: environmental@omex.com Tel: 01553 770092

COMMENT



Automation has long been an enabler of more efficient, accurate and reliable production, and it is now playing an ever more important role in climate protection, resource efficiency, sustainability and the circular economy.

For example, Festo will use automation technology to reduce its on carbon footprint over the next two years, with the goal of being CO₂-neutral from the beginning of 2023. It has aligned its own Sustainability Strategy with the Strategic Development Goals of the United Nations.

"We want to express how automation technology can balance the supply of the world's population and protect natural resources via climate-neutral production at the same time," explained Festo CEO Dr Oliver Jung. "Festo is striving to transform industrial production into an efficient and more climate-friendly way of manufacturing."

Yet more reasons to explore the benefits of automation.

Michelle Lea – Editor

T LEVELS COULD DELIVER OUR FUTURE WORKFORCE

With a chronic shortage of skilled technicians to power Britain's industry, it is critical that more employers get on board with T Levels and offer industry placements, to plug the gap and give UK business the power it needs to compete on the international stage, says Make UK.

To coincide with National T Levels Week, Make UK and EngineeringUK have published new research highlighting the benefits of T levels for businesses who are desperate for more young skilled people. However, the report – *Unlocking talent: Ensuring T Levels deliver the workforce of the future* also draws attention to the challenges that T levels face, particularly with industry placements.

The research found:

- 43,500 placements will need to be provided by employers to ensure the success of T levels in manufacturing and engineering
- Only one in ten (9%) of employers currently hosts a T level placement and just a further 12% plan to in the next year
- 55% of manufacturers are open to doing so,
- A third said financial constraints are holding them

back as the cost of doing business continues to grow, while 44% say internal capacity constraints are a barrier.

- Over half (57%) said reinstating the financial incentive of £1,000 to take on a placement would make a notable difference
- Almost 2 in 5 said that clearer integrating T levels with apprenticeships would enable them to offer more placements

Make UK and EngineeringUK are calling on Government to:

- Restore the £1,000 incentive for SMEs to make it easier for employers to offer a T level placement
- Work with sector bodies and organisations to run an awareness raising campaign to get more employers on board
- Develop clear progression maps that demonstrate how T levels work within the current education landscape
- Establish a T level industry placement taskforce to support the delivery of placements and be ambassadors for the wider T level programme

www.makeuk.org

THE IMPORTANCE OF A FULL OBSOLESCENCE MANAGEMENT PLAN

Obso Global has launched a new guide, highlighting the importance of having a full obsolescence management plan for spare parts, to ensure equipment uptime in mission-critical applications.

Available to download for free, it guides operators through the key steps to take when implementing an action plan and provides recommendations for outsourcing obsolescence management to a supply partner.

In the current economic climate, longer lead times and rising costs are a primary concern for many plant managers. Often, this equipment may not have reached the end of its lifecycle, and still have many years of useful service remaining, but sourcing the genuine spare parts is challenging.

The non-availability of one part cannot be

allowed to be the cause of a complete production line or assembly failure, so a methodology for purchasing replacement parts needs to be considered.

The new guide, entitled 'Obsolescence management and the role of third-party sourcing partners', provides practical advice on mitigating for these issues, with methodologies for the purchase and stocking of genuine spare parts and the management of equipment lifecycles.

Alongside a 10-point plan for creating an obsolescence management strategy, the guide also outlines a systematic approach for handling substitute or replacement parts, using the risk assessment defined in the BS EN IEC 62402:2019 standard as a useful starting point.

obsoglobal.com/uk/about/obsolescence



LAMONDE

CLICK PLUS

- Built-in Option Module Slot(s)
- RJ45 Ethernet and Micro-USB Ports
- RS-232 and RS-485 Serial Comms
- Built-in Micro SD Port
- Built-in WLAN/Bluetooth
- IIoT Ready



Lamonde Automation Limited
Quality Products: Expert Advice

sales@lamonde.com | www.lamonde.com | +44 (0)20 3026 2670

A LOOK INTO THE FUTURE OF AUTOMATION



The 31st edition of SPS, the trade fair for smart and digital automation, is expected to attract 1,100 exhibitors from across the globe. The event will take place from 8 to 10 November 2022 in Nuremberg and will showcase the latest products, solutions and pioneering future technologies in the field of industrial automation.

This year once again, visitors will be treated to an array of products and services from national and international suppliers of automation and digitalisation solutions. They will also have the chance to get a comprehensive overview of the market via the complementary digital event platform "SPS on air", which will be available before, during and after the three-day physical event.

SPS keeps you informed with an extensive program of lectures on current topics from the automation industry. Even in the week before the event starts, SPS ticket holders have an opportunity to participate in a digital "pre-heat event" with numerous technical presentations and product previews on the "SPS on air" platform. During the exhibition itself, the supplementary programme will run at the VDMA/ZVEI Forum in Hall 3 on the exhibition grounds and from the SPS Live Studio in Nuremberg on the "SPS on air" digital supplement. The main topics this year include:

- Digital transformation/Industry 4.0
- New logistic methods and robotic integration
- Use cases for AI
- Sustainability in automation

In addition, participants can use the digital platform to initiate contacts and arrange appointments both on-site and digitally. "SPS on air", including its interaction options, will remain online until November 11; and the on-demand media library and a large part of the recorded lecture programme will be available until November 15, 2022.

SPS 2023 will be held in Nuremberg from November 14 - 16, 2023, and will retain this November time-slot in subsequent years.

sps-exhibition.com

CALCULATING A MOBILE ROBOT'S ROI

A new ROI calculator from OMRON has been launched to support the process of evaluating an investment in collaborative and mobile robots, including easy and affordable leasing opportunities that are ideal for small and medium enterprises (SMEs).

The ROI calculator gives companies who are considering investing in collaborative or mobile robots a quick and easy overview of the return on investment based on actual data. It allows users to estimate the number of months it will take for an investment to break even, whilst accounting inflation and interest rates adjustments according to the market conditions.

Many small and medium-sized enterprises (SMEs) cannot afford the upfront capital investment of robot and cobot technologies. OMRON provides leasing options that are designed to make life easier for manufacturers who want to develop their fleets of mobile robots or collaborative robots (cobots) whilst keeping their initial capital investment costs low.

A key decision for the customer is how to finance a new investment. The ROI calculator from OMRON gives two typical options: the traditional Capex option with full payment at the beginning and an Opex option with leasing, with payments spread between 3-5 years.

<https://industrial.omron.eu/en/misc/forms/roi-calculator>

straub® 

the right connection
whatever the pipe
material or OD



MV Fluids Handling
 Marven House · 1 Field Road · Reading RG1 6AP UK
 Tel: 0118-9503707 Intern'l Dialling: +44-118+No.
 Email: info@mvfh.co.uk www.straub.co.uk

CLAMP-ON BENEFITS

Non-invasive clamp-on ultrasonic flow measurement is proving to be the answer to the problem of unreliable measurement values from outdated measuring orifices on demineralisation lines, says FLEXIM.

Working independently of the conductivity of the medium flowing inside, the acoustic method is not sensitive to vibration, and because clamp-on transducers are mounted on the outside of the pipe, there's no need to disrupt operation during installation.

The non-invasive measurement works, regardless of the conductivity of the medium, and there is no risk of contamination or leakage. What's more, plant operation is optimised thanks to reliable monitoring of the ion exchangers.

FLEXIM was called in to assist a German chemical manufacturer with flow measurement of demineralised water and an aqueous hydrochloric acid solution (<3%) on the cation exchanger. As production facilities were expanding, the amount of steam required was rising. The raw material for steam is demineralised water, and non-desalinated water would lead to calcification of the boiler in no time. To deal with rising demand, a new demineralised water treatment line was installed and put into operation.

Measuring orifices from the original 1980s demineralisation lines were installed for flow measurement, but a more contemporary vortex flowmeter was used on the new one. Unfortunately, this proved sensitive to vibration and often provided erratic measurement values. This is where non-invasive flow measurement proved to be the perfect solution.

FLEXIM also helped the same German chemical manufacturer with flow measurement of process water on a DN500 cast pipe in the inflow to a DI water system. For reasons of economy, the pressures and flows of 900 pumps and drives must be brought to a desired level, consuming ~240,000 megawatt hours of electricity per year. The operating engineers of the water supply at the Dormagen site needed a reliable measuring method to record the quantity of process water in the feed to a DI water plant.

Following successful test measurements, a permanent clamp-on ultrasonic flowmeter was installed, which has been delivering reliable and trouble-free measurements ever since.

www.flexim.co.uk



CALIBRATION FACILITY AND SERVICE HUB OPENS

Electroserv has invested £250,000 in a flagship calibration facility and service hub in the south of England. The service hub is designed to meet the needs of process industry customers throughout the country, and comprises a wet flow calibration rig and electrical, temperature and pressure calibration facilities, as well as meeting and office space.

The new facility is Electroserv's second dedicated calibration centre in the UK. Simon Fisher, Electroserv Managing Director commented: "The new hub houses our flagship flowrig which is part of our collaboration with Endress+Hauser. The flagship rig is the most accurate calibration system in the UK, and the state-of-the-art facility will ensure compliance with marginal process interruption for our customers."

"We're committed to integrating sustainable, agile processes to our operations. Expanding into the south of England will mean our customers' instruments will spend less time in transit, and therefore reduce the amount of travel and ultimately the associated carbon footprint."



He continued: "In just half an hour, instruments can be fitted, tested and removed. The system is also fully programmable to accommodate the vast range of requirements our customers expect from a flagship facility." This includes:

- Flowmeter sizes up to 3-inch diameter
- Flow rates from 0.001m³/hr to 80m³/hr
- Measurement uncertainty of ±0.1% o.r.
- Pressure ranges from -1bar to 100bar
- Temperature ranges from -30°C to 1600°C
- UKAS accreditation to ISO 17025
- Certificate of calibration supplied

The Bramley calibration facility has also provided opportunities for employment in Basingstoke and beyond, with six jobs created, covering a variety of roles including technicians, engineers, marketing and sales. www.electroserv.co.uk/calibration

ALL ELECTRIC FLOW-WRAPPER USES 37% LESS POWER

The IMA ZERO project has yielded a significant innovation: the world's first all-electric flow wrapper, says IMA ILAPAK. By replacing energy-intensive pneumatic applications with efficient linear actuators on the new Delta WW OF-HSX, the flow wrapper uses on average 37% less power than a conventional machine. Users can expect to see a return on investment within 18 months (at today's prices) due to energy savings and improved performance.

Sustainability has long been a priority and fundamental value at IMA, prompting the launch of the IMA ZERO sustainable development programme in 2019.

Tony McDonald, Sales and Marketing Director at ILAPAK UK, said: "All manufacturing sectors are facing crippling input costs and pressure to reduce their environmental footprint. Our new all-electric flow wrapper responds directly to both of these challenges. The beauty of this proposition is that the savings and payback can be projected with a high degree of accuracy. And for the majority of mid to high-speed flow wrapping applications, the calculations provide a very compelling case for investing in this platform."

On the new Delta WW OF-HSX, the most energy-intensive pneumatically driven functions - pressing, gusseting and cutting - are electrically driven. This has eliminated the use of compressed air from these applications, resulting in 94.5% reduction in

the amount of energy required for air usage. As an example, on a 170ppm line operating two-shifts per day for 300 days a year, the Delta WW OF-HSX consumes just 1500kWh compared with 27,400kWh for a conventional flow wrapper to perform these applications.

Non-energy intensive functions remain pneumatically actuated, as the cost of replacing the pneumatic cylinders with electric components would not be justified by the minimal energy savings accrued. To this end, the Delta WW OF-HSX has a small on-board high efficiency compressor, eliminating the need for an external compressed air source.

The full-electric platform also makes a difference to the machine's overall performance and efficiency - the speed limitations of a standard flow wrapper stem from the pneumatic response, which starts to become unreliable at speeds of above 120 cycles per minute. The Delta WW OF-HSX, by contrast, runs comfortably at 170ppm, which is over 40% faster than its conventional counterpart. Changeover times are also reduced as no mechanical or manual adjustment is needed.

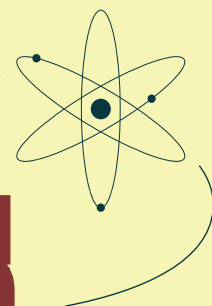
The flow wrapper's performance is also enhanced in terms of the quality of the pack that is produced. Thanks to the electrical actuators, the machine's movements are precision controlled - giving greater repeatability and accuracy over operations. www.ilapak.com

LABTEX™

The UK's Laboratory Equipment Experts



SCALE-UP TO NEW HORIZONS



Labtex scale-up equipment, sourced from European and US manufacturers with international reputations, is amongst the highest quality available.

- > AUTOMOTIVE
- > BIO-MANUFACTURING
- > AEROSPACE
- > PHARMACEUTICAL
- > CHEMICAL MANUFACTURING
- > DEFENCE

FOR INNOVATIVE SCALE-UP LAB EQUIPMENT, CONTACT LABTEX TODAY!

01484 600 200 >> info@labtex.co.uk >> www.labtex.co.uk

THE TIGER AND THE CUB KEEP WORKERS SAFE

ION Science explains how personal and portable monitors using photoionisation detection technology help protect workers from harmful VOC exposure

Worker health and safety laws have come a long way in recent years. Even in the last few decades introductions of PPE (personal protective equipment), safer working conditions, and limits on exposure to dangerous chemicals and gases have become commonplace. A key part of being able to ensure these safety regulations are being met is through accurate and regular gas monitoring. ION Science offer VOC gas instruments that help

keep workers safe and healthy during their working life and long after.

Effective management of VOC (volatile organic compound) exposure on workers is critical for any business where there is a short-term or long-term risk to health (in some cases, both). Monitoring through STEL (short term exposure limit) and TWA (time weighted average) is a good way of ensuring workers are not being exposed unnecessarily. It's also important to provide employees with personal gas detection so they are safe in the event of an unregistered leak or industrial accident. This is particularly important for lone workers, or in those operating in confined spaces where it's harder to call for help.

Using PID (photoionisation detection) technology in personal and portable gas monitors is the most effective way to help protect workers from harmful VOC exposure. As experts in the development and manufacture of PID solutions, ION Science offer a range of personal and portable gas detectors.

A fast and accurate response

Depending on the industry application and the type of VOC to be monitored, the legally permitted workplace exposure limit (WEL) will vary. Having a fast and accurate response factor time is critical to ensure workers are not exposed more than necessary. ION Science's Tiger handheld portable gas detector offers the fastest response factor time on the market, able to detect and respond to VOCs in 2 seconds. It is suitable for use in laboratories, clean rooms, leak detection and land contamination.

The Tiger is available with a 10.6 eV sensor or 11.7 eV option and has a dynamic detection range of PPM and PPB. It is also available as the Tiger Select (benzene specific monitoring) and the Tiger LT (an essentials-only version of

the Tiger). All versions of the Tiger have a 24-hour battery life and are fully rechargeable. With its anti-contamination and humidity resistant design, the PID sensor in the Tiger can operate at maximum capacity with no interference. It is also designed to be operated one handed and has a large keypad and back-lit screen for use in low-light. All these user interface features have been added to make the Tiger suitable for VOC detection, but also easy to use in multiple environments and applications to promote improved safety monitoring.

Long-term protection

For protecting long-term worker health, PID gas detectors are much more sensitive than LEL (lower explosive limit) alternatives. Many VOCs can cause serious long term health issues (including cancers) even if exposure at the time was only minor. Protecting people against small exposures over a long period of time is more effective than only protecting them in the event of a large-scale leak or accident, as an LEL would.

Personal gas detection devices that use PID, such as ION Science's Cub, are an ideal way of protecting staff against VOC exposure. The Cub is designed to be worn on the person within the breathing zone to deliver maximum protection against VOCs. It is available in 10.0 eV, 10.6 eV and 11.7 eV options, allowing for a wide range of VOC detection. The 10.0 and 10.6 versions have a rapid response time of sub 13 seconds, while the 11.7 is even quicker, at sub 11 seconds. All versions are lightweight, have a 12-hour continuous use battery life, and are certified to ATEX and IECEx. Three alarms (audio, light and vibration) alert the wearer in the event of VOC limits being exceeded, and the Cub can operate in 0 – 55°C.

ION Science
<https://bit.ly/3QA163t>



The distributed one cable servo system: AMP8000



EtherCAT[®] P

www.beckhoff.co.uk/amp8000

As a specialist for PC-based control technology and one cable automation, Beckhoff enables substantial control cabinet minimization with the distributed servo drive system AMP8000. With a servo drive directly integrated into the servomotor, AMP8000 allows the supply of several distributed servo drives with virtually unchanged power ratings* and installation sizes via the one cable solution EtherCAT P, which combines communication and power supply on one standard cable. Space requirements, installation effort, material costs and footprint are significantly reduced.

- sizes remain almost identical to the AM8000 servomotors
- no changes in existing machine designs required
- same high power ratings as before despite power integration*

*Compared with a combination of servo drive and servomotor

COMPREHENSIVE FIRE PROTECTION

Custom INTERTEC FIRE SHELTERS meet conventional fire standards to protect critical equipment like analyzers, electronics or ESD valves in the event of a fire.



Protective enclosures are key for analyzers and process instrumentation. Proven INTERTEC solutions provide the best fit for your equipment – space-saving, wear resistant and hazard proof.

Website: www.intertec.info
E-Mail: info@intertec.info



HOW BEST TO PROTECT LONE WORKERS

Chris Potts, Marketing Director, ANT Telecom explains the important role that effective communication plays in protecting lone workers, and shows how to put a robust supporting process in place

Across many manufacturing and production sites there is often a need for employees to work alone. What happens if – or when – an employee accidentally becomes stuck in a piece of machinery that is part of the production process, and is subsequently dragged along the line? This person could potentially be crushed and lose their life unless appropriate health and safety, and communication processes, are put in place for their protection.

For example, during paper and packaging production – when a solo cleaning operator has to clean out a waste paper clippings tunnel, they could accidentally access a piece of equipment and become trapped. Also, within energy production and water supply facilities, service engineers often have to access dark or very steep tunnels, or perform tasks on top of wind turbines. The list and opportunity for accidents across manufacturing and production is almost limitless.

In many of these situations employees – although part of wider teams – function as lone workers, and their health and lives are often at risk. This raises a key question about how best to protect solo workers?

To guide organisations, the UK's Health and Safety Executive (HSE) has compiled a useful booklet about the issue. Titled – Protecting lone workers, INDG73 – it explains how to keep lone workers healthy and safe, saying the onus is on employers to protect staff and keep them safe, by providing training, supervision, monitoring and support for lone workers. This includes views on how managers should keep in touch with lone workers, focusing on the role of communication – which is especially key if/when an accident and emergency might occur.

In critical lone worker situations, automated processes and communication technology plays a vital role. It can help protect staff and ensure they can get the support they require. For a lot of incidents, lone workers can simply walk to the nearest phone in their workplace to contact their first aid team if the problem is not too severe. But, if landline phones are not present, like in many manufacturing or outdoor plants, smartphones or radio handsets can be a simple and effective lifesaver. The problem, though, is that in several cases, some incidents can happen so quickly that people do not have the time to call for help.



Chris Potts,
marketing
director, ANT
Telecom

In those particular moments, where there is zero time to contact someone for aid – such as when an employee becomes attached or trapped in a piece of equipment and could lose a limb or worse, their life – it becomes vital to ensure that employees' devices are fitted with man-down/tilt sensors that are instantly activated when an accident occurs. The alerts they capture and send need to be integrated into manufacturing and production equipment; so that when the accident takes place, an alert is automatically triggered and sent to machinery, forcing the line and equipment to stop production.

This is also where dual purpose communication handsets can come into their own. These include smartphones with lone worker apps that work perfectly where mobile reception or WiFi is good and reliable. However, if mobile reception can't be relied on, companies should consider Digital Radio or IP DECT handsets. These comms devices can be used daily for normal operations, and also as a critical safety device when a major incident occurs. Such incidents include when a lone worker is hit by a falling object, falls from height or tumbles down stairs in a remote location and is rendered unconscious.

Many of today's handsets come with integrated panic buttons and man-down sensors too, but in some situations, these features will not be enough to solve the emergency. Extra measures will need to be taken to integrate and automate alerts and machinery stops into some equipment and production processes – raising an alert almost instantly increases the awareness of an incident rapidly, providing teams with time to deal with the problem. Similar to when a fire starts in a building – the work of tackling the fire and minimising risk to life is yet to come. In any



scenario, it is important that response teams are capable of receiving the alert information quickly, and once establishing the seriousness of the incident, they have the means to collaborate with others quickly, to coordinate a response. Communication technology and automation can play a big role in this process.

For instance, not all response teams are medically trained. So the first thing a 1st responder might do to help a colleague – who is critically ill and unresponsive – is to call the first aid team to get medically trained personnel on the scene as quickly as possible. This call may also be followed by a call to emergency services, the gatehouse – to keep access to the location of the accident open – and a colleague, who can escort paramedics quickly through the building or site to access the patient.

Another key question here is about how the alarms reach the response team in the first place? This can be done via an automated platform that distributes alerts directly to the response team on their PC and/or Comms Device. There are other methods, however, an automated system provides key information – such as lone worker's name, number and location – first hand, directly on response teams' screens so they don't need to write it down. These applications also ensure alerts are accepted by a member of a team, which is then communicated, so the rest of the team know who is dealing with it.

To look after lone workers and meet HSE requirements, manufacturers must ensure that they have the right technology and appropriate supporting communication processes in place. Implementing this is crucial. In some cases, the difference between severe injury and/or life or death.

ANT Telecom
www.anttelecom.co.uk



A complete one-stop solution from OMRON has ensured the safety upgrade of a folder-gluer machine at Smurfit Kappa Zedek

SAFETY UPGRADE ON FOLDER-GLUER MACHINE

When manufacturing companies need to automate and streamline their operations, it makes sense to partner with another company that can provide a wide range of products and services. However, it's important that the chosen partner has all the resources, technical expertise, and experience to fulfil any needs. When Smurfit Kappa Zedek, a producer of corrugated packaging material and high-quality displays, needed to upgrade the safety aspects of one of its key machines, it found the perfect fit with OMRON Industrial Automation.

Smurfit Kappa Zedek is part of the Smurfit Kappa group, a leader in paper-based packaging. The Smurfit Kappa Zedek's manufacturing operations are based in Deventer, the Netherlands. The company specialises in the design and production of corrugated cardboard packaging and point-of-sale displays. The packaging can be printed in full colour using either offset or digital printing.

One of the key machines at Smurfit Kappa Zedek's production facility folds and glues the corrugated cardboard packages. This machine is over 22 years old, so needed upgrading to comply with current safety standards. Huib van de Made, Manager of Safety and Quality at Smurfit Kappa Zedek, explained: "In line with our philosophy of continuous improvement, we wanted to ensure that we're using the latest, state-of-the-art technology that can provide the

highest levels of safety for our operators. At a seminar at Smurfit Kappa Benelux, OMRON spoke about functional safety. Their ideas exactly matched what we had in mind."

Following this, the company carried out a safety upgrade review of the folder-gluer machine. This was completed in conjunction with OMRON, who were invited to see how the machine could be modified and upgraded to meet the latest regulations. The different legal requirements, CE approval and the validation of the machine were key priorities for the company. Following the review, OMRON helped Smurfit Kappa Zedek to develop a completely new safety concept.

OMRON's total safety services solution included machine risk assessment analyses and the design of the safety solution. The latter involved analysing the work of operators using

the machine and taking into account the maintenance plans, in order to maintain production efficiency throughout. OMRON also arranged for the remediation of the solution through the delivery and installation of all the required electrical and mechanical components. Finally, OMRON provided full validation of the installation and training, including all of the relevant technical documents and reports.

The key components of the new safety solution included the safety control solution; a trapped key system; the manual control, including position detection; and various safety items for the different production zones and the delivery belts (including emergency stop buttons and sensors).

While OMRON was the main contractor for all aspects of the project, the installation of the electrical elements of the safety solution was carried out by OMRON's partner, MDE Automation. Smurfit Kappa Zedek's Technical Services team undertook the mechanical part of the installation. The entire implementation was completed in four days, including the validation of the solution by OMRON on the final day.

Huib van der Made continued: "One of the main challenges involved ensuring that people would be able to do their jobs safely, effectively and quickly. This meant that our workforce needed to be open to new developments." OMRON's safety services ensure that maintenance and production are



One of the important safety aspects of the new solution was the incorporation of safety fencing

part of the project team, and machine operators and technical engineers from Smurfit Kappa Zedek were involved from the start. This ensures that people can work safely and well within the new framework.

One of the important safety aspects of the new solution was the incorporation of safety fencing, and the smart automated safety system that was designed around it ensuring that the doors cannot open while the machine is running and the machine cannot start when two doors in two different zones are open. This ensures that if people are working together in the same section, no-one can enter another section at the same time. The safety fence around the folder-gluer machine is operated by individual control buttons in each sector that open and close the doors. The machine is started by pressing two buttons, which involves using both hands – so the operators can't come into contact with the machine during the adjustment process.

John Spa, Smurfit Kappa Zedek's Lead Operator, commented: "The users of this solution now have more confidence in all of



the machine's safety components. They can see each other, and the operations that can and can't be done with the machine are now carefully regulated."

One of the reasons that Smurfit Kappa Zedek chose OMRON was because it was able to act as a one-stop solution partner. Huib van de Made said: "OMRON's team have proved to be the perfect partner for us, as they have a strong knowledge of the regulations and an in-depth understanding of the technology. This enabled them to design this safety solution. It meant that we were

able to work with a single vendor that has a strong grasp of both safety laws and automation technology and could execute the full machine safety cycle."

Huib van de Made continued: "This was the first project we've evaluated in this way. With this collaboration – including the analysis reports and the ability to build an action plan on how to make changes – we'll be able to adapt other machines in the future to enhance the safety of their operations."

Omron
industrial.omron.co.uk

Complete Safety Solutions from Turck Banner

Safety Light Curtains

Lighting and Indication

Safety Grid Systems

Safety Controllers, Bus, I/O and Relays

Emergency Stop and Stop Control

Safety Switches

In-Series Diagnostics

Safety Laser Scanners

TURCK | BANNER

Turck Banner Ltd.
Blenheim House, Blenheim Court,
Wickford, Essex SS11 8YT
Tel: 01268 578888 safety@turckbanner.co.uk

www.turckbanner.co.uk

ACHIEVING AN AGGLOMERATE-FREE MIX

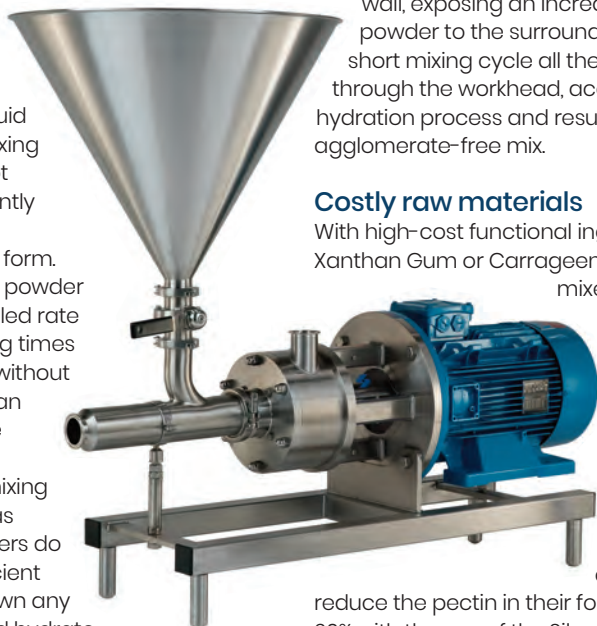
Silverson explains how High Shear Mixers can be beneficial when processing gums and thickening agents

Dispersing powders into liquids and creating a consistent, homogeneous product is one of the most difficult of all mixing tasks. And gums and thickeners used in the food industry such as alginates, guar gum, CMC, etc. are no exception. These ingredients are difficult to disperse without forming lumps or "fish eyes" – agglomerations of partially hydrated material with a core of dry powder. Time and again Silverson Machines have helped customers to improve their mixing processes by overcoming the challenges associated with these ingredients.

The formation of agglomerates

When adding powder ingredients into water, most powders have a tendency to float or raft on the liquid surface and agglomerates can easily form. The formation of these agglomerates can be exacerbated by operator error, as powder addition must be carried out with great care. If the powder is added into the liquid too quickly, the mixing equipment cannot quickly and efficiently disperse it, and agglomerates will form. Having to add the powder slowly at a controlled rate adds to processing times and labour costs without the guarantee of an agglomerate-free end product.

Conventional mixing equipment such as agitators and stirrers do not produce sufficient shear to break down any agglomerates and hydrate the dry powder within the lump, resulting in poor yield. Many formulations contain unnecessarily high levels of gum to compensate for this and so a filtration stage is often required, adding to costs. If left in the mixture, unhydrated gum can gradually hydrate during storage or subsequent processing, leading to undesired change in the product – this can also affect shelf life.



Some manufacturers try to overcome the formation of agglomerates by premixing functional ingredients with other powdered ingredients or non-aqueous phase liquids. But this doesn't always work and continues to add to process times and costs.

A high speed, high shear rotor/stator mixer can easily overcome these problems. The high speed rotation of the rotor blades creates a powerful suction which draws the powdered ingredient from the liquid surface and into the workhead. The materials are subjected to intense shear in the confined area of the workhead. Agglomerates are broken down in the gap between the rotor blades and stator wall, exposing an increasing area of powder to the surrounding liquid. In a short mixing cycle all the material passes through the workhead, accelerating the hydration process and resulting in an agglomerate-free mix.

Costly raw materials

With high-cost functional ingredients such as Xanthan Gum or Carrageenan, Silverson

mixers can help you to achieve the best yield from these ingredients, making your process much more cost effective. For example, we recently helped a customer to

reduce the pectin in their formulation by over 20% with the use of the Silverson Flashmix.

The company had previously been using conventional agitators to mix the pectin at temperatures in excess of 55°C. They were incorporating around 20% more pectin than they actually needed for their formulation to account for what they were losing due to agglomerates and partially hydrated pectin sticking to the agitator shaft, blades and the walls of the mixing vessel. This wastage was

costing a considerable amount of money and after the mixing process they had to put the mixture through a filtration stage to filter out the un-hydrated pectin, further lengthening the process time. After around 40 minutes they were left with a low quality 5% pectin solution, wasting 20% of the material they had added as the agitator was unable to break down the agglomerates.

Trials were arranged at Silverson using a Flashmix FMX50 to incorporate the pectin. The trials were run at ambient temperature and after around 10 minutes the 5% of pectin that had been added was fully incorporated and mixed. Using the FMX50 there were no agglomerates and no partially hydrated powder sticking to the vessel wall, so the mixture no longer needed to be filtered after mixing.

Using the FMX50 the consistency and quality of the mix was much better even after a shorter period of time. The company would be saving a huge amount of money on pectin by being able to use 20% less pectin for each batch and by not having to heat the vessel before adding the pectin.


What Silverson can offer

With a range of mixers suitable for a different batch sizes, Silverson mixers can:

- Produce an agglomerate-free mix.
- Maximise yield/functionality of raw materials, allowing products to be formulated with reduced gum content, cutting raw material costs.
- Achieve consistent product quality.
- Reduce mixing times by eliminating the need for controlled powder addition and premixing of powders.

To find out more, or watch one of our many 'how to' videos on processing different types of gums and thickeners, visit:

www.silverson.co.uk. Or for advice on your mixing process contact: sales@silverson.co.uk

 Silverson Machines
www.silverson.co.uk

Powder/Liquid Mixers

From Laboratory to Production Scale

Introducing the **new**
Silverson FMX5
Laboratory Scale
Powder/Liquid mixer.

Silverson can now offer
Powder/Liquid mixing
solutions to customers
mixing at Laboratory
through to full scale
production.

The FMX5 provides a
simple, effective and
hygienic means of
powder/liquid mixing on
a laboratory scale and
provides an accurate and
easy means of predicting
the performance of the
Flashmix in the laboratory.



IBC Mixers 100% Satisfaction Guaranteed



Please email or call - it's our pleasure to help



Tel: 0161 486 5099
Email: sales@euromixers.co.uk
Web: www.euromixers.co.uk

LEISTER

NEW AIR HEATER SERIES LHS 210 / 410 COMPACT & POWERFUL



- EASY CONNECTION
- COMPATIBLE NOZZLES
- HOT AIR RECYCLING
- HIGH AIR VOLUME
- ECONOMICAL
- OVERHEATING PROTECTION



Tel: +44 (0)1707 331111
info@welwyntoolgroup.co.uk | www.welwyntoolgroup.com



Supplying quality products & service since 1975

Pumps & Pumping Equipment

Cleaning Equipment

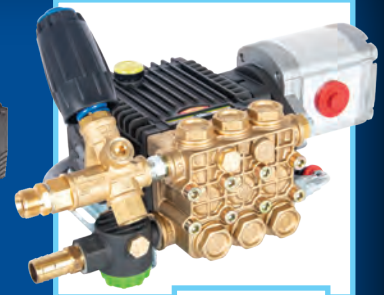
Hose & Hose Reels

Fluid Handling Components

Fittings, Connectors & Filters

Spraying & Watering

Engines, Motors & Generators



- Trusted by over **2,500** customers in over **40** Countries
- **99%** of those surveyed rated as **Good** or **Excellent**
- B2B Online Ordering & Account Management
- Over **8,500** Active Product Lines
- More than **£4 million** of Stock



www.dualpumps.co.uk

Call 01664 567226 for more information



COMBINING LONGEVITY AND EFFICIENCY

Landia mixers may not be the cheapest option, but their product quality is proving to be the most economic solution for a WWTP in Kansas

At Valley Center Wastewater Treatment Plant, and at an increasing number of facilities across Kansas, the decision to buy the more expensive equipment at the outset is proving to be the most economic. Savings in long-term maintenance are important, but in the shorter term, energy savings are fundamental.

"Total cost of ownership is what we at the plant and our city council are interested in", said Valley Center's Utility Manager, Wade Gaylord.

"There's always a cheap, short-term solution, but it is our duty to act in the best interests of the city and our residents to spend our budget as wisely as we can, which to me it just plain common sense".

Situated about 12 miles north of Wichita, the 0.5 MGD (million gallon per day) wastewater treatment plant serves 2,700 homes. It includes an extended aeration treatment plant, plus ultraviolet disinfection treatment. Solids removal prior to discharge into the Little Arkansas River typically ranges from an impressive 97.5%-99%.

The recent failure of a mixer at Valley Center demonstrated how top quality, long-lasting equipment represents the best value for money.

"To be honest", said Wade, "I didn't really understand why the design of the existing mixer's impeller was the way it was, but what I knew for sure was that it wasn't very reliable – and that the cost of having it assessed and



repaired was prohibitive. The mixer (7.5HP) had been in use for 10 years, but had a seal-system that was just not user-friendly".

Wade spoke with multiple equipment representatives, including Fluid Equipment of Wichita. After listening to how Valley Center approached its purchasing, Jeff Ubben at Fluid Equipment recommended a Landia submersible mixer from its portfolio that sat at the top of their price bracket, but one that is set to last for 20-25 years.

"I immediately liked the Landia design", added Wade, especially the sealing system, which protects the most important part of the mixer. We have great cohesion in our team here at Valley Center, including our Infrastructure Manager, Ron Ekstrom, who has worked here for over 20 years. When we thoroughly weighed out all the pros and cons, we saw that Landia was the most expensive purchase. However, when I presented the total cost of ownership to the city, they could see that it made by far the most sense. Our administration definitely looks for longevity, as well as best efficiency, and in 10 years' time or less, I don't want an operator to have to deal with the same problems that I've had".

Ubben commented: "For the wastewater industry, it is very encouraging to see a young utility manager and a city push hard for better quality equipment that will stand the test of time. With a Landia mixer, Valley Center can see that they won't have the annoying maintenance issues that lesser designed mixers will create. And as well as lasting much longer, the mixer we recommended will also do a better job, even though it uses much less energy".

With its backward sweeping propellers, the design of the Landia mixer ensures that rags can't cling on and damage the seals. The protective grease hub in the propeller guards the seals, and is hard to wash away. It acts as an important first line of defence against all types of debris. The Landia seal system is well proven and eliminates immediate and expensive seal fail condition.

Ubben pointed out that Landia can very often reuse an existing mixer manufacturer's guiderail, so that installation can proceed without the tank having to be emptied.

So again, despite Landia appearing to initially be at the high end of the price list, a retrofit doesn't incur anywhere near the additional costs of other designs.

"Previously", said Wade, "we knew that the old 7.5 HP mixer was working and mixing – to some extent – but when the Landia mixer was installed, we turned it on and hadn't seen the basin ever mixed like that before! The volume that the Landia mixer put through, mixing the basin from the bottom up, was pleasantly surprising; changing the dynamics for a much better process all round. All of this, too, with just a 4.9 HP motor! The amp draw of the Landia gear-driven mixer is lower than what we saw with other manufacturers (7 amps compared to the 10 and 12 amps of the others). On just this one mixer, running two hours on, two hours off, we are making an energy saving of \$58 per week, which is over \$3,000 per year. The return on investment is a no brainer".

Landia
www.landiaworld.com

BENEFITS OF SWITCH TO AUTOMATED POWDER WEIGHING

OAL announces the successful deployment of its APRIL robotic powder technology at fruit preparation company, Agrana Fruit. The original weighing process was manual. Two operators per shift were responsible for carrying out powder weighing. Manual handling and RSI were two key pain points, and cross-contamination was a key quality risk.

Agrana needed a system capable of handling over 100 ingredients that can be dosed to an accuracy of +/-1% with a weighing range lower than 1kg.

The APRIL Weighing system weighs powders from 250g to 25kg, reducing the labour required. Over 95% of manual weighments have been automated with only additions under 250g completed manually. For most powders, an accuracy of +/-0.5% has been achieved. The project includes real-time ingredient traceability and tracking between Agrana's ERP system, SAP and the APRIL Weighing System. The system was built and tested at OAL's HQ in Peterborough, including integration testing. The system had been fully debugged upon on-site delivery, enabling a fast start-up.

www.oalgroup.com



GENTLY does it with your mixers' ENERGY COSTS



With Landia Mixers, you get:
MUCH LESS ENERGY USAGE

And:

- Better Performance
- Less Maintenance required
- Better Health & Safety

Check at landia.co.uk

- Pumps
- Mixers
- Landia GasMix
- Aerators



Tel. 01948 661 200 · landia.co.uk

Landia®

GUIDANCE ON OPTIMISING PUMP PERFORMANCE

BGEN offers some pump optimisation tips to help water companies reduce energy consumption and leakages

BGEN, a specialist, multi-discipline engineering solutions business, has issued guidance to help water companies to optimise pump performance to reduce energy consumption and leakages. The advice comes at a time when energy prices are at a record high and UK consumers have been faced with hosepipe bans due to the challenges of another warm summer.

"Rising energy costs and warmer summers as a result of climate change are significant challenges facing the water industry," said Andy O'Rourke, senior engineer at BGEN. "While there is no silver bullet to addressing these issues, water companies can make energy savings and reduce leakages by following the below guidance."

Tip #1 – It's a marathon, not a sprint

Pumps are fundamental to the water industry. They regulate the pressure in pumping mains to ensure water reaches its final destination, while also removing and enabling treatment of wastewater. The key to optimising pumps is to implement consistent flow rates to meet

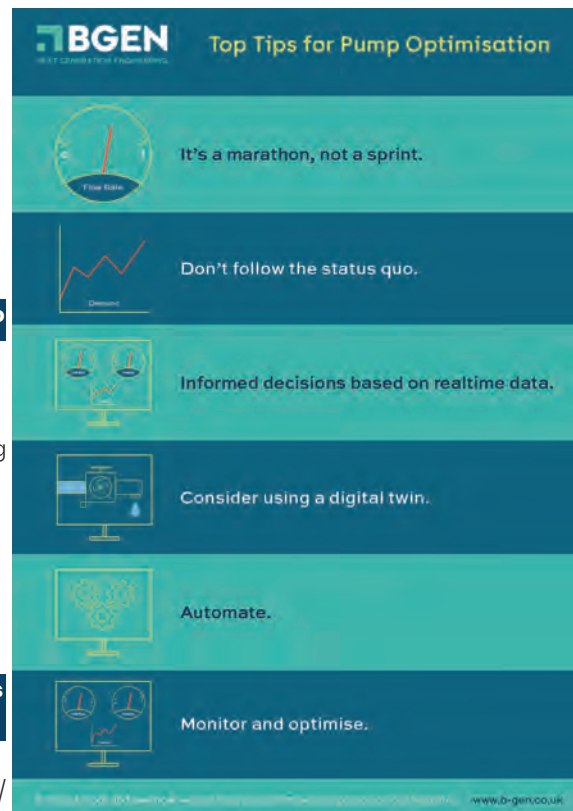
demand and avoid excessive peaks and troughs which often results in more energy being consumed.

Tip #2 – Don't follow the status quo

While providing a supply of clean water is the number one priority of a water company, in today's day and age the focus needs to be on working smarter. Implementing a dynamic control solution to meet customer demand with minimal excessive pressure is one example. Needlessly pumping water or generating excessive pressure equals more energy and could be hiding a leak.

Tip #3 – Make informed decisions based on real-time data

Embracing a real-time operating philosophy to include pressure / flow / tariff profiles is key to optimising performance. This will determine the most cost-effective way to produce water on a minute-by-minute basis.



Tip #4 – Consider a digital twin

A digital twin is a real-time virtual simulation of a physical process or system. Using a digital twin when assessing operational changes to improve performance, enables operators to see the impact of any updates in 'real terms' before they go live. This methodology also enhances the design and commissioning phase and minimises disruption.

Tip #5 – Automate

Like other industries, automation can play a significant role in helping water companies to optimise operations through efficiency and cost improvements. In addition, it can free up precious resources to be diverted to proactive work to strengthen resilience.

Tip #6 – Monitor and optimise

Technology is now available to truly support water companies in enhancing their operations. In addition to traditional process alarms, effective monitoring will use real-time data to flag efficiency and cost concerns.

"The above guidance provides a steer on how water companies can look to optimise their pump operations," concluded Andy O'Rourke. "For companies with more complex needs we have a team of specialists on hand to provide bespoke support."

BGEN
b-gen.co.uk

NON-METALLIC AODD PUMP ADDED TO RANGE

The range of Finish Thompson FTI Air-Operated Double Diaphragm pumps (AODD) has recently been expanded with the addition of a new 1/4" non-metallic model, available in polypropylene, PVDF and also conductive polypropylene for use in ATEX areas.

Available in the UK from MICHAEL SMITH ENGINEERS, the FT025 model delivers a maximum flow rate of 22l/min (5.8 gpm) at a maximum air supply pressure of 120 psi (8.3 bar). The FT025 extends the minimum flow capabilities of these rugged and reliable pumps and brings the important benefits of using AODD pumps to a wider range of pumping applications.

For example, as with all FTI AODD pumps, they are simple to install, easy to operate, require less maintenance resulting in lower running costs and are self-priming so can be dry-run. Furthermore, they are suited to handling abrasive, viscous and shear-sensitive liquids and even 'dirty' liquids with particles up to 1.8 mm (0.06") for the FT025 model.

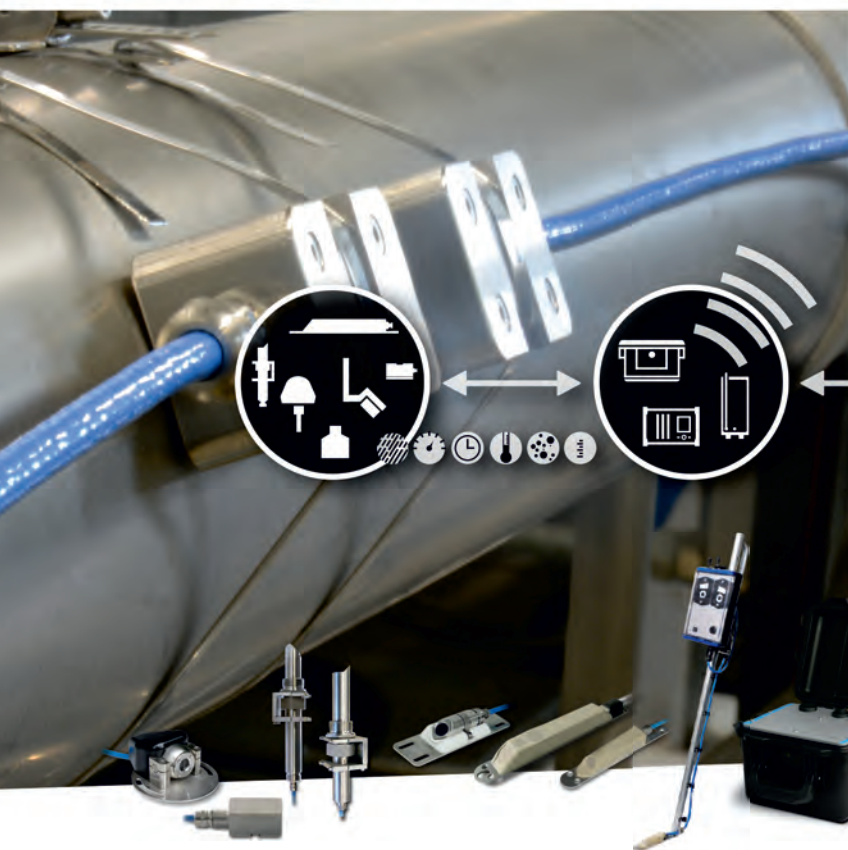
Typical applications will include handling acids, bases, plating solutions, wastewater, paints, inks, solvents, ceramic slip and glaze, lubricants and oils. This would include industries such as mining, painting, finishing, ceramics, electroplating and anodising, pulp and paper, wastewater and marine, chemical manufacturing and distribution.

In common with the other FTI Air models, the FT025 includes a lube-free air valve design which represents simple, rugged and reliable design. This means fewer components compared to other air valves, resulting in reduced servicing time and the associated maintenance costs and downtime. The air valve components include a low friction slide valve on a ceramic plate to allow for long-life and superior sealing, and a moulded Buna gasket which ensures total sealing and eliminates flat gasket tearing.

FTI Air's modular construction results in simplified maintenance with individually replaceable, lower cost wearing parts which do not require special tools for fitting.

www.michael-smith-engineers.co.uk





Flow Measurements in Clean Water and Waste Water

We are one of the technology leaders in the flow measurement; a worldwide developer, producer and supplier of measurement equipment for water industry. Our product portfolio includes accurate systems for flow measurement, flow velocity detection, level measurement, pressure measurement and the measurement of water quality.

We also provide software for acquisition and logging of data and for the analysis of measurement results. A comprehensive process control system completes our program. Contact us to find out more on how we can help you with our solutions to your applications.

www.nivus.com

measure analyse optimise

NIVUS Ltd. Phone: +44(0)1926 632470, E-mail: info-uk@nivus.com
Furzen Hill Farm, Coventry Road, Cubbington, Royal Leamington Spa, Warwickshire, CV32 7UJ



THREE STEPS TO FAST AND SIMPLE VALVE SELECTION



Kieran Bennett, Industry Manager – Food & Bev at Bürkert, explains how to specify a control valve using the company's calculator tool

Specifying a replacement control valve can be a challenge. Making the right choice ensures optimum system control and accuracy, but sizing requires time, and a certain level of expertise. To help resolve these challenges, Bürkert has released a new tool that makes sizing and specifying a control valve for most applications a fast and simple process.

When a replacement control valve is required, it's often the case that the user isn't aware of the full specification detail or the application's parameters. This can make what should be a simple, like-for-like swap, a complex and onerous task for the plant engineer. Even if involving a third-party supplier, it can extend procurement time and still require the provision of a detailed specification. Otherwise, it can mean assumptions made by the supplier in specification that might not ensure optimum control valve accuracy.

In many cases, the extent of the end-user's knowledge is that they require a particular size of modulating control valve. However, to ensure that it's correctly specified, the valve supplier might ask for details that the engineer probably doesn't have easy access to, such as flow rate or the viscosity of the media. In reality, for the vast majority of applications it's fast and simple to specify the right control valve, based on three simple criteria, readily available to the end user.

The first question is: what does the valve primarily control? The answer is a choice between flow, temperature, or pressure. Secondly, what media is the valve controlling

and what is the application type? Is a liquid, steam or gas is involved, and is the media is aggressive? Understanding the application type also confirms aspects such as the specific hygienic requirements of the design, as well as the control type required, for example, modulating or isolation. Thirdly, inlet line size should be confirmed.

Calculating valve size easily

To quickly specify a complete package with part numbers, including the right control valve with process controller, sensor, and cables, Bürkert has developed a Valve Sizing Calculator, based on the three selection steps.

Selecting for flow control, for example, specifying a valve with a wide range, makes it suitable for almost any purpose. In the case of a water application and a 1 inch/25 mm line, the specified device can operate effectively from a minimum flow of 900l/h up to as much as 16,070l/h. Alternatively, to ensure compatibility of specified valves for temperature control and pressure control applications, the sizing tool provides minimum and maximum ratings for these attributes, as well as the Kv value.

Sizing components on an individually tailored basis achieves the highest performance. However, for the vast majority of applications, using the Valve Sizing Calculator, will not only prove faster and easier to specify a replacement control valve, but the performance difference would be negligible

compared to tailored calculation.

Taking the case of flow control, 20 years ago, control valve technology demanded that the accurate valve range was between 60 and 80% open. While these values still serve as a guide, valve accuracy has improved to the extent that individual sizing is no longer required in most cases. Bürkert's pneumatic valves are accurate to within 0.5% across nearly the entire range of motion, and if required, electromotive valves are accurate to within 0.1%.

Providing that the pressure drop across the valve is an absolute maximum of 50% of the incoming pressure, and that the temperature and pressure do not exceed or fall below the given values, the control valves specified by the Simple Sizing Tool will fit the requirements. This approach covers nearly all applications, except for those with extreme limits and fluctuations, such as steam control in a power station.

For ease of procurement across the system, the Valve Sizing Calculator also specifies control technology type, ranging from angle seat valves for standard liquid flow control, to globe control for pressure modulation. Valve seal design materials are also specified, such as EPDM for aggressive liquids. For hygienic applications, PTFE seals are provided, as well as crevice-free valve clamp ends instead of threaded variants.

Control valve specification doesn't have to be challenging. Using the basic steps provided by the Valve Sizing Calculator, it's fast and simple to specify a control valve that provides the right fit and performance.

Try the Valve Sizing Calculator here:
www.burkert.co.uk/en/more-about/valve-configuration-and-valve-sizing-of-process-valves

Bürkert Fluid Control Systems
www.burkert.co.uk



Norman Glen, Service Leader for densitometers and physical properties of fluids at TÜV SÜD National Engineering Laboratory, looks at mitigating the health & safety and fiscal risks of densitometer calibration

The accurate measurement of the density of fluids at the correct conditions of temperature and pressure is critical for many applications. These include where the fluid density is required for product quality assessment, process control (including safety aspects) and for inter-conversion between mass and volume flow rate. Fluid flow in pipelines is largely measured by volume, and conversions involving density are necessary for accurate financial reporting, fair trade and taxation when reporting by mass or by volume at standard conditions.

Density measurement is therefore a key element of both mass and volume flow rate measurement in many industrial sectors and is fundamental to the commercial operation of facilities. Whilst the use of Coriolis flow meters to provide direct measurement of mass flow rates is becoming more common, the most widely implemented approach for mass flow measurement is to use a volumetric flow meter and a densitometer. Both of these require periodic calibration.

Whilst the need for periodic calibration of flow meters is widely recognised, the corresponding requirement for density measuring devices is not. One area where this has been recognised for some time is oil production in the UK. The regulatory body responsible for this, the UK North Sea Transition Authority (formerly known as the UK

Oil and Gas Authority), requires the traceable calibration of densitometers where they form part of fiscal flow metering systems.

“ The performance of a suitably calibrated densitometer or Coriolis meter is more than sufficient ”

The UK's approach to densitometer calibration, developed by TÜV SÜD National Engineering Laboratory, is based on the off-line calibration of densitometers using traceable reference fluids and has been in operation for ten years. Based on the original work, further research and inter-comparison activities with device manufacturers and hundreds of calibrations of customer densitometers, the sector has strong confidence in this approach.

We believe that this approach could be more widely used. For example, a master densitometer calibrated in the laboratory could be installed on a bypass line onsite, either to provide real-time density data or to prove the installed density measurement system. In addition to providing real-time data, this approach offers a reduction in the health and safety risks associated with

sampling using pressure pycnometry. Pressure pycnometry is still widely used, particularly in the USA, when dealing with flammable liquids at high temperature and pressure.

Density is a derived quantity but pycnometry has the advantage of being as close as possible to its direct measurement. Density is the ratio of mass to volume, so in SI units it is reported in kg m^{-3} and in US customary units in g cm^{-3} . A pycnometer provides a measurement of the mass of a known volume of fluid. Careful calibration of the volume of the pycnometer is required and appropriate corrections must be applied to account for changes in volume if it is used at temperatures or pressures different from its calibration conditions.

For liquid applications, pycnometers are usually calibrated with water, to determine their internal volume, since the density of water is known with very low uncertainty across a wide temperature and pressure range. Thus, in principle, pycnometry can achieve very low measurement uncertainty. However, in addition to the careful calibration of the pycnometer in the laboratory, considerable operator skill is required when using the device in the field, particularly for fluids at elevated temperatures and pressures. As a result, the measurement process is often time-consuming and does not provide continuous data output.

The use of an oscillatory technique to measure density, either by a dedicated densitometer or via the secondary output of a Coriolis flow meter, has the advantage of providing a continuous output signal. Furthermore, once installed, no further operator intervention is required, eliminating the impact of operator skill and limiting their exposure to potentially hazardous conditions.

A densitometer in the NEL calibration facility

Dr Norman Glen, service leader at TÜV SÜD National Engineering Laboratory (below)

The density measurement performance of dedicated, flow-through oscillatory densitometers and modern Coriolis flow meters is generally very good, provided they are appropriately calibrated and all necessary temperature and pressure corrections applied. This is important if the device is to be used at non-ambient conditions.

Dedicated densitometers and modern Coriolis flow meters typically have two or three integrated temperature sensors, to measure the case and tube temperatures. This enables the on-board electronics to apply corrections to account for the effect of temperature difference between operating and calibration conditions on the density output. Most manufacturers provide correction coefficients for each individual instrument.

However, these devices do not usually have integrated pressure transducers. So, if a unit is to be used at elevated pressure, it is necessary to supply a separate pressure transducer to enable the pressure corrections to be applied.



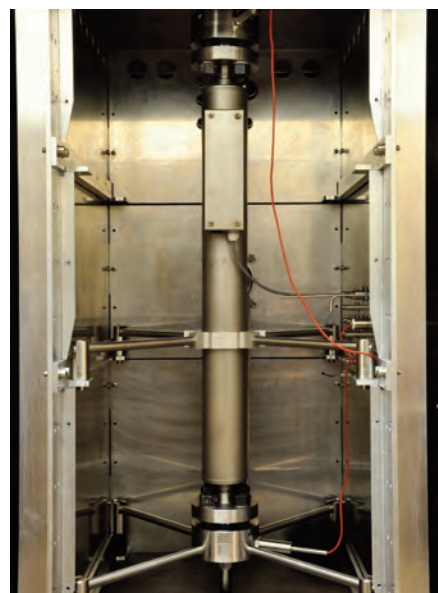
Some devices enable the signal from an external pressure transducer to be fed into the meter, allowing the on-board electronics to apply the corrections directly, thus providing pressure-corrected outputs for flow rate and density. For other units the pressure signal is

fed into the flow computer and the corrections applied there.

Calibration of oscillatory density measurement devices requires the use of traceable reference fluids covering the required density range, whose densities are known as functions of temperature and pressure across the required temperature and pressure ranges of the calibration.

When used in an appropriate calibration facility, this approach can provide low uncertainty ($\sim 0.02\%$) across a wide range of temperatures and pressures, resulting in low uncertainty in the density output of the device being calibrated.

The uncertainty achievable from this approach may not be as low as the best theoretically available from a pycnometer. However, for many real-world applications the



performance of a suitably calibrated densitometer or Coriolis meter is more than sufficient, offering advantages in terms of ease of use and safety.

Based on these advantages and the experience in the UK so far, TÜV SÜD believes that this approach not only could, but should, be more widely used.

TÜV SÜD National Engineering Laboratory
www.tuvsud.com/en-gb/nel

FLOW OPTIMIZATION SECOND TO NONE

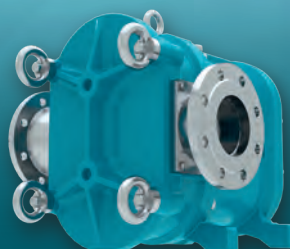
BÖRGER®
EXCELLENCE – MADE TO LAST



THE NEW BLUELINE NOVA ROTARY LOBE PUMP

The BLUEline Nova sets new standards in pump technology. With or completely without casing protection – the BLUEline Nova achieves unrivaled volumetric efficiencies.

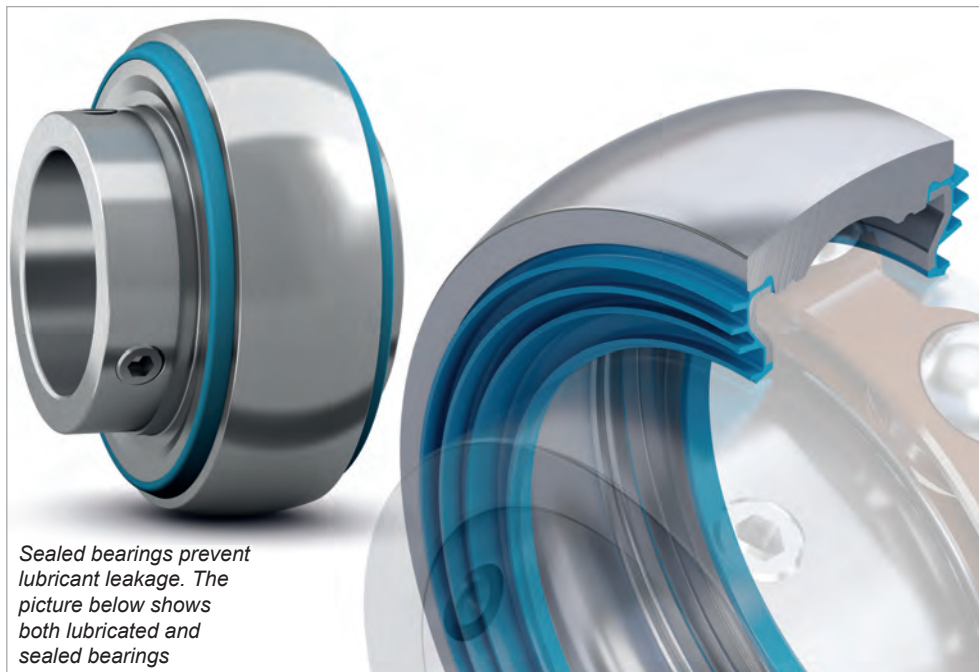
Made for one another – the newly developed DIUS rotors in combination with the flow-optimized pump chamber ensure perfectly smooth running at pressures of up to 12 bar.



**BLUEline
NOVA**

www.newblueline.com

MINIMISE RISK BY MAKING THE RIGHT CHOICE



Sealed bearings prevent lubricant leakage. The picture below shows both lubricated and sealed bearings

Alan Stewart, Rubix Bearing Product Manager – SKF Products, looks at some of the challenges bearings face in the food and drink industry, and what can be done to overcome them

Safety is a key issue in most manufacturing and industrial processes, but when it comes to food and drink, safety concerns go far beyond just staff, covering the safety of every aspect of the food item, with contamination prevention being a top priority.

The good news is that contamination can be controlled by proper cleaning and sanitisation so, for processing plants, ensuring machinery is not a potential cause of contamination is a must. In the food and drink industry, factors such as the design of bearings should be chosen carefully to avoid giving places for microorganisms to grow.

Regulations and standards

Bearings have a core mechanical role to play in the food and drink sector. Yet, they also have a significant part to play when it comes to complying with strict regulations and hygiene standards, which have recently been put in the spotlight following a spate of food safety scares that have dominated the headlines.

Food product recalls are a real concern for businesses and consumers alike. Last year, the UK's Food Standards Agency (FSA) reported around 150 food recalls for reasons including undeclared allergens, metal contamination, and the presence of harmful pathogens. More recently, Salmonella

contamination sparked concern.

Food safety hazards typically fall under three categories: chemical, physical, and biological contamination, with the latter involving microorganisms such as viruses and bacteria which can cause "food poisoning" and pose a threat to human health. With possible disease hazards including Salmonella, E.coli, Clostridium botulinum and Listeria monocytogenes, to name but a few, prevention of biological contamination is essential to limit food-borne diseases.

Researching the key issues

To get closer to the key issues surrounding bearing contamination SKF, a bearings supplier to the food and drink sector, recently

undertook an extensive test that involved investigating behind and round mounted bearing units in a typical food processing setting.

This was to identify levels of contaminants and where they are typically found. Results revealed contaminant levels to be high, even after washdown; in some cases, contaminant levels increased after washdown. Similar results were found in bearing end covers. The independent test results revealed food residue trapped behind the bearing mounted unit and inside the cavity through the shaft gap during processing and pressure cleaning; as it doesn't fully dry post cleaning, it can foster the growth of bacteria. These bacteria can spread in multiple ways, lingering in the air for several hours and then settling on equipment post disinfectant stage; getting stuck in the bearings grease; and, being distributed by the washing process itself.

Preventing contamination

All bearings need lubrication but with that comes potential risk. Lubrication contamination can occur regardless of facility size, operating procedures, and the training and experience of maintenance staff on-site. All it takes is one microorganism particle to penetrate the bearing lubricant. This makes the margin of error for preventing lubrication contamination very small. However, there are some steps to minimise the risk.

When it comes to bearings, the main source of concern in terms of contamination lies in the lubricant used within. To address this issue, high-quality food-safe lubricants, that are NSF, Halal, Kosher and CFUA approved, should be used. Greases that are free from allergens as listed by the EC are also very important. Where there is potential for incidental food contact, NSF category HI lubricants are essential. Applying the correct amount of lubrication, at the right time, is also a major consideration; you want to ensure the bearing is lubricated sufficiently to perform to its best capacity, but not so much that it risks contaminating the product or dripping on the floor and becoming a slip hazard.

To combat these issues, there are options other than manual lubrication available. The use of an automatic lubrication system can deliver accurate lubricant quantities for increased HACCP (Hazard Analysis and Critical Control Points) compliance. However, for the ultimate safety solution, relubrication-free bearings dramatically reduce the risk of potential food contamination both from the lubricant itself and from the bacteria growing on the lubricant. SKF Food Line Blue Range bearings, for example, are lubricated for life and are designed to withstand the use of penetrative caustic-based cleaning fluids



SKF bearings that are suitable for the food and drink industry

and high-pressure rinsing which can force itself through traditional bearing seals, and result in grease breakdown, leakage, and food contamination.

Another issue to address relates to possible contamination from behind and around mounted bearing units and in end covers, which washdowns are not always able to remove. Here, prevention is better than cure, so a unit that has been designed with hygienic geometry of the housings can help to reduce potential contamination traps. The back seal should seal statically against the housing and dynamically against the shaft, and the end cover should fully seal against the housing on the front side, preventing process material from entering the bearing. In terms of materials used, high-grade stainless-steel bearing rings, cage, rolling elements, and seal backing plates are ideal for the food and drink sector, along with ceramic rolling elements.

Food-safe seals

Bearing seals are also another consideration. Bearing seals prevent contaminants from entering the bearing unit, reducing bearing life expectancy, whilst keeping lubricants from



leaking out. No matter how well made a component is, ultimately it will start to suffer from wear and tear. The risk here is if pieces of the rubber seal break off a moving part, they can migrate through the system and into the product, which could result in a costly and time-consuming process requiring x-ray equipment, manual observation, and an extensive maintenance programme. However, failure to locate missing parts can have an even costlier outcome! To avoid this and comply with FDA and EC recommendations, seals should be manufactured from food-safe sealing materials and, where possible, coloured blue for optical detectability.

Bearings have an endless list of challenges



to contend with. Alongside the obvious challenges that include extreme temperatures, excessive moisture due to continuous cleaning, and exposure to chemicals, food manufacturers and processors also need to adhere to stringent hygiene standards and regulations as contamination is an extremely serious issue, both in terms of consumer health and brand reputation. Selecting the right bearing technology is key when it comes to achieving maximum effectiveness in preventing contamination without compromising on production efficiency.

Rubix
uk.rubix.com

BUILDING ON OUR 70-YEAR BOILER MANUFACTURING HISTORY



INTRODUCING CLASSIC

With outputs from 160 to 480 kg/h, our all-new Classic builds on the successes of Fulton's 70-year boiler manufacturing history to deliver a steam boiler that is engineered to meet our customers' requirements.

Classic boilers use proven technology to deliver steam economically and with full output from a cold start within 20 minutes, while maintaining the rugged, robust and reliable operation expected from a Fulton heat transfer solution.

Scan me



To find out more about our all-new Classic steam boiler visit www.fulton.co.uk, email sales@fulton.co.uk or call +44 (0)117 972 3322.

Fulton
Improving life through heat transfer solutions

PICKING CUSTOMISED PORK ORDERS

A meat processing company is using an ABB automated order picking system to speed up delivery times and extend product shelf-life

Belgium's largest pork producer has installed ABB robots as part of a Just-in-Time order fulfilment system that delivers customised products to supermarkets more quickly.

With food producers and retailers both keen to maximise the choices on offer to customers whilst minimising wastage due to food going out of date, the ability to get products onto shelves as quickly as possible for as long as possible is becoming increasingly important.

A large continental supermarket chain wanted Belgian meat product supplier Westvlees NV to take on the logistics and distribution of products to stores and reduce delivery time. To achieve this, Westvlees needed to reduce lead time from customised order to delivery from 48 hours to same day delivery, while labelling and sorting orders for individual stores.

Westvlees' solution was to build an automated order fulfilment centre that has increased the shelf life of products by 20 per cent and reduced the lead-time from order to delivery by 50 per cent. Delivered to the supermarket chain's stores, the prepacked pork products are individually labelled for each shop, cutting the time needed to get products onto the shelf.

Previously, Westvlees would deliver products pallet-by-pallet to the supermarket chain's warehouse where order picking was done for shipment to supermarkets. This process was time consuming – taking up to a day to complete. This reduced the time the product was available on the shelf before it exceeded its maximum life span.

To improve efficiency and reduce the time needed to get products in front of customers, the supermarket chain asked Westvlees to develop an order picking system that would produce labelled meat packages for each supermarket.

Manuel Goderis, Product Manager at Westvlees said: "Our customers are demanding more flexibility and Just-in-Time delivery, which is why we worked with ABB to have the entire system automated."

The products are loaded onto trays by



seven IRB660 robots. These trays are placed by automated shuttles into an intermediate buffer using the white stock principle, in which generic stock is held temporarily until required to fulfil a customised order. The storage system has a capacity of 72,000 trays and can take in 16,000 trays/hr and take out 12,000/hr.

If products are needed immediately for a supermarket, the system will automatically take out a crate and transport it to the unpacking station. Products that aren't needed go back into the system.

Customers can order until midday. On receipt of a customised order, a crate of trays is taken from the white stock buffer store and sent to the unloading station.

Customised labelling

Three ABB FlexPickers unload products from the storage crates and place them on a conveyor to be sent to the labelling station. The selected products are then automatically labelled with a customised format for each supermarket, which often require different labels with different pricing. Following the labelling stage, the products go to the order picking stations, where four robot cells place



them into reusable plastic crates. These are then manually palletised for delivery to the supermarket.

The system brings flexibility by disconnecting production from delivery – instead of a simple pallet of products, the customer receives pre-sorted, pre-labelled products ready to go to individual destinations. By pushing the order picking back to the supplier, delivery time is reduced by 50 per cent, giving products an increased shelf life and making them available for longer to supermarket customers.

By separating the placing of products in trays from the labelling, Westvlees has also increased its machinery utilisation by 30 to 50 per cent.

The flexibility provided by the automated system enables Westvlees to respond quickly to customised orders, picking and labelling products and ensuring that they are delivered to the right destinations.

Goderis feels the robot-based packing system has prepared the company for the future, including processing orders placed via the internet: "The system has given us the ability to process complete orders in much less time. With this improved performance we are now ready for e-commerce."

By ensuring that each product is correctly picked, labelled and dispatched, the system will also help Westvlees to deliver a high-quality service to its customers.

Goderis concluded: "The robotic solution offers high quality, it's impeccable – that's what we want, to deliver high quality products at all times. Customers demand top quality labelling and thanks to ABB we can offer that service to our clients."

ABB
www.abb.com/robotics



An unbeatable team!

Enhanced security for your food production



With ifm you can monitor and control your hygienic production processes in a precise and, thanks to IO-Link, even more comprehensive and convenient way: The new TCC temperature sensor with integrated Calibration Check Technology continuously validates the measured value and protects the production process and product quality in equal measure. The LMT level switch works reliably even in highly viscous, sticky and foaming products. It simply ignores build-up. The full metal pressure sensor PM15 is the world's first hygienically approved (3A and EHEDG) sensor with G1/2" process connection and ceramic-capacitive measuring cell. This enables greatly simplified and cost effective connection to small diameter pipework. The compact LDL conductivity sensors help you to establish efficient CIP- cleaning and increase the availability of your system.
ifm - close to you!



Go ifmonline
ifm.com/uk

'MILKING' THE BENEFITS OF DIRECT STEAM INJECTION

Direct Steam Injection (DSI) from HRS Heat Exchangers is playing a key role in the pasteurisation of plant-based drinks

A leading Israeli dairy producer has expanded its production capacity for plant-based drinks with the installation of an HRS DSI Series pasteuriser as part of a new production facility to process raw ingredients. Before this the company had to import part-processed products from an associated facility in Europe.

The client is one of the largest dairy and food companies in Israel and having previously brought in plant-based drinks in bulk from an associated European company for bottling, in 2021 they invested in a new production line to allow them to process raw materials (such as oats, soybeans, coconut

and hazelnut) in-house as part of an expansion of their dairy alternatives business. Consequently, the new production facility includes many elements including grinding, extraction and bulk supply for bottling elsewhere. The HRS DSI (Direct Steam Injection) forms part of a complete UHT (ultra-heat treatment) system supplied by HRS for integration into the new production facility.

One of the challenges was the space available for the UHT portion of the production facility. HRS was able to design a complete, cost-competitive heat treatment solution based around the HRS DSI and other heating and cooling technologies which was skid-mounted for installation and commissioning in the available space.

Direct steam injection provides a number of advantages over traditional UHT systems based on heat exchangers, particularly when it comes to the viscous nature of plant-based 'milk' drinks. The biggest advantage is in terms of speed, with direct injection taking a fraction of the time to heat (and then cool) the product compared to other methods of pasteurisation such as indirect heating using heat exchangers. The faster the product is heated and cooled, the less impact the heat has on the product – in the case of plant-

based drinks this can include discolouration, caramelisation and the introduction of off-tastes.

"With direct steam injection you get a sudden and immediate increase in temperature," explained Francisco Hernández Ortiz (pictured), food business development director at HRS Heat Exchangers. "We have standard pre-heating phase using an HRS MI Series heat exchanger which takes the product to 80°C, and we then inject the steam which immediately increases the product temperature to 140°C. A flash cooler is then used to return the product to 80°C within a few seconds, so the heat has time to pasteurise the product, but other heat effects, such as caramelisation, do not have time to occur." After this chilled water and a glycol solution are used to cool the product to the final temperature of 4°C.

A second advantage of using steam injection rather than traditional heat exchanger technology is that it avoids issues with fouling of the heat exchanger, which can be a problem with the viscous nature of some plant-based drink products. "As there is no heat exchanger, there is no surface and so there is no fouling," said Hernández Ortiz.

The HRS equipment was delivered in early September 2021, although delays with other parts of the line meant that it was not installed immediately. HRS pre-commissioned the unit on site from late November, but before final commissioning using actual product could take place, a Covid outbreak closed the Israeli border to all travellers.

"The way the HRS DSI Series and associated equipment is designed meant that we could undertake the necessary commissioning work remotely, so that the unit was operational by January 2022," explained Hernández Ortiz. "I then visited in person in March to carry out a few final pieces of commissioning and since then the unit has been running without any issues."



An HRS MI Series heat exchanger is used to cool the processed material after direct steam injection



SUPPLY CHAIN PLANNING IS DOWN TO A 'TEA'

Kinaxis has announced that it has been selected by ekaterra to break down silos, and introduce concurrent planning to enable a more agile, and accurate supply chain.

The company is the largest tea business in the world, with brands such as Lipton, PG tips, T2, TAZO and Pukka. Based in Rotterdam, Netherlands, ekaterra will use the Kinaxis RapidResponse platform to gain full transparency across its entire supply chain, helping it to better manage disruption and make smarter decisions, faster.

"Our supply chains begin with a tea leaf then become products for some of the biggest tea brands, enjoyed by people all over the world," said Abhisek Biyani, IT Enterprise Application Director, ekaterra. "To be able to plan accurately on such a large scale, while also remaining agile to global disruption was very important both for us as a company and to our planners. Kinaxis' platform aligned with our business' needs, and we are excited to work with them as our business changes and evolves, as does our approach to supply chain planning."

With Kinaxis, ekaterra has the ability to run multiple simulations and collaborate in real-time and leverage a full suite of applications to give the agility and flexibility needed to react to market volatility and changes in demand.

www.kinaxis.com

HRS Heat Exchangers
www.hrs-heatexchangers.com

THE **HOME** OF VISCOUS PUMPING SOLUTIONS

Kecol have over 25 years of experience in handling all types of viscous products in the food, pharmaceutical and cosmetics markets, as well as general industrial applications.

A sample of products we already pump...

- ✓ Honey
- ✓ Petroleum Jelly
- ✓ Mascara
- ✓ Sauces
- ✓ Lanolin
- ✓ Lip Gloss
- ✓ Essences
- ✓ Eye Ointment
- ✓ Meat Paste
- ✓ Paraffin Wax
- ✓ Face Scrub
- ✓ Teething Gel
- ✓ Tomato Puree
- ✓ Medical Adhesives
- ✓ Veterinary Creams
- ✓ Fruit Paste
- ✓ Toothpaste
- ✓ Malt
- ✓ Jam
- ✓ Wax

T: +44 (0)1746 764311

E: sales@kecol.co.uk

W: www.kecol.co.uk





Consultancy • Innovation • Technology

Start Your Digital Transformation Journey Today

Ripley Solutions works with businesses of all sizes to design, develop and deploy future-ready IT and OT solutions. We help drive digital transformation programmes, control costs and prepare businesses to meet the challenges of increased competition, customer demands and changing operational priorities.

What problem can we help you solve?

- ▶ OT and IT integration
- ▶ Cloud migration
- ▶ Obsolescence management
- ▶ Cyber security
- ▶ Remote operations
- ▶ Asset visibility & control
- ▶ Data collection & management
- ▶ Industrial automation



info@ripleysolutions.com | www.ripleysolutions.com

AI GETS TO THE ROOT OF THE PROBLEM

Paul Wilson, MD, Scorpion Vision, explains how AI helps reduce waste in veg trimming

Artificial Intelligence (AI) has arrived in the fresh produce industry and the results are astounding: waste associated with inaccurate trimming of vegetables is being slashed to zero and flawless product presentation is now a reality.

Topping and tailing vegetables such as leeks, sprouts, carrots, parsnips and swedes is dirty work. Somebody has to do it but, increasingly, nobody wants to. This situation has been exacerbated in recent years as labour availability has plummeted, prompting the vegetable processing industry to look to automation.

Optical trimming systems guided by classic 3D machine vision technology have, to date, presented the best available option for automating this operation. However, they represent a compromise rather than a solution.

Classic 3D machine vision can only look for features that conform to a pattern or shape that is expected: the tip of a carrot or the stem plate on a leek, for example. However, vegetables don't come in a fixed size, shape or colour, and this inherent variability translates to compromised cutting performance.

Taking leeks as an example, with an automation platform that relies on classic machine vision, just 60% of processed leeks will be cut at exactly the correct point. The rest will either be cut roughly, at a poor angle or slightly too short or long. Some may be written off altogether or not cut at all. This level of waste is unacceptable from a commercial and an environmental standpoint.



The arrival of AI has introduced a new world of opportunity for revolutionising the performance and efficiency of camera-driven cutting systems. In the leek trimming example, it can be difficult to determine the stem plate when it is obscured by roots or other debris. A camera with AI can look at and analyse each individual vegetable before making a decision on how to process it. The machine simply needs to be shown some examples of the stem plate in a variety of conditions and it will learn what to look for, enabling it to formulate its own conclusion about what it is seeing.

AI does this by augmenting classic computer vision algorithms with models called neural networks. When a computer receives an image, machine vision software compares that image data with a neural network model. This process, called deep learning inference, allows computers to recognise very subtle differences.

The net result is much more robust image processing. Stereo vision will enable the

dimensions of the product to be detected in the X, Y and Z axes, but overlaying AI enables the camera to recognise features that it wouldn't normally. A machine vision system that utilises AI can achieve repeatability of 99%, yielding a return on investment in a matter of months through waste reduction and yield improvement alone.

Off-the-shelf cameras with built in AI are widely available and attractive from a cost perspective, but won't match the levels of repeatability that we can guarantee with our bespoke systems. For Scorpion Vision, the starting point is the conception of a stereo camera array that can be used by the system's software to create an electronic 3D model of the vegetable. This 3D image processing is then combined with AI to power intelligent objective decision making and incorporated into Scorpion's proven automation platform.

Besides leek trimming, these are some of the applications in which Scorpion excels:

- Lettuce decoring: a 3D lettuce decorer analyses the lettuce in real time, calculates the position of the heart and directs a robot to extract it with an ultrasonic blade.
- Carrot batoning: using 3D vision in tandem with AI allows the carrot to be measured up before it is batoned to eliminate any margin for error and waste.

Scorpion Vision's advanced stereo vision and neural network solution, the Scorpion 3D Neural Camera, can achieve repeatable precision when trimming vegetables. Combining 3D imaging with AI translates directly to bottom line benefits for farmers, processors and packers through higher yields and reduced reliance on manual labour. It also improves product presentation and reduces waste, as inaccurate cutting is slashed to virtually zero.



Scorpion Vision
www.scorpionvision.co.uk

EXPLORING REUSE AND REFILL

Reusable & Refillable

Which model is right for your brand?

REFILL AT HOME

the consumer keeps a container that is refilled with a new product as and when needed



REFILL ON THE GO

includes any model where consumers can bring their container into store to refill it

PRE-FILL



the brand retains ownership of the product packaging, which is designed to be returned for cleaning and refill

Read our blog to find out more about refillable packaging solutions

Lee Metters, Group Business Development Director, Domino Printing Sciences (Domino), explores the coding solutions that can help improve the uptake of reusable and refillable packaging solutions

In recent years, governments worldwide have emphasised the need to shift towards a circular economy for packaging, with a particular focus on phasing out single-use, virgin, and unrecyclable plastics and exploring options for reusable products and refillable packaging.

Many brands have also established ambitious commitments to make their packaging more sustainable by 2025. More than 500 organisations have signed up to the Ellen MacArthur Foundation's New Plastics Economy Global Commitment, which recognises that reuse models should be explored to reduce the need for single-use plastic packaging.

However, while the drivers for adopting refill and reuse models are clear, the fundamentals of implementing such packaging solutions, while ensuring regulatory compliance, connecting with consumers, and gathering data for business insight are not necessarily straightforward. Particularly in coding and marking, different models may require different approaches to product labelling.

The Ellen MacArthur Foundation suggests that, globally, replacing just 20% of single-use plastic packaging with reusable alternatives offers an opportunity worth at least \$10 billion.

The benefits include the obvious cost

reductions associated with reduced packaging and transportation yet reuse and refill models can also help to improve the overall consumer experience, build brand loyalty, and generate valuable data and insight to help inform business decisions.

However, the various consumer-facing reuse and refill models will demand different product labelling information and methods.

Refill-at-home: With a refill-at-home model, the consumer keeps a container that is refilled with a new product as and when needed. Refill-at-home is typically suited to the soft beverage and home and personal care sectors.

Refill-at-home models can work for both online and traditional brick-and-mortar retail – though there are significant benefits for brands operating in the e-commerce space. When unrestrained by shelf space, brands can take the opportunity to provide more options and greater customisation and can offer products on a subscription service to build brand loyalty and encourage repeat sales.

Refill packs will be subject to the same coding and marking requirements as traditional consumer products – though with compact size refills, the code may need to be printed at a fraction of the size of the original packaging. Brands exploring refill-at-home

models could consider utilising 2D codes, such as QR codes. 2D codes could provide further information to consumers, including instructions for use or refill or personalised waste reduction statistics.

Refill-on-the-go: These solutions include any model where consumers can bring their container into store to refill it – this includes in-store dispensing platforms and packaging-free 'buy by weight' retailers.

Refill-on-the-go models can be used for fast-moving consumer goods – from food and beverage to home and personal care. Customers have the option to 'only buy what they need', helping to avoid product waste.

As with concentrates, refill-on-the-go solutions can help tap into consumers' desire for greater personalisation – offering a practical option for consumers to 'pick and mix' their ideal combination of flavours. In addition, brands can use refill-on-the-go to gather user insight through dispensing systems that recognise the user and collect data on preferences.

Refill-on-the-go solutions may also be subject to coding and marking requirements – for example, allergen labelling for food and beverage products. This requirement can best be achieved using a printed label applied to the packaging after filling. Brands could use

Any reuse or refill model needs to be developed with the end consumer in mind to make purchasing, refilling, and returning or recycling as easy as possible

these labels to provide an additional touchpoint with consumers after they leave the store or dispenser – for example, with consumer-facing QR codes, for promotions, or loyalty schemes.

Some refill-on-the-go models may necessitate having a consumer buy an initial container which is designed for reuse. Brands that create their own refillable packaging can utilise permanent coding, such as that afforded by laser coders to create container tracking marks. These can be used to ensure that containers are refilled with the correct products and to deliver premeasured quantities of products to avoid overfilling.

Pre-fill: With a pre-fill model, the brand retains ownership of the product packaging, which is designed to be returned for cleaning and refill. Pre-fill models include traditional retail, also known as 'return on the go'; and e-commerce solutions which are known as 'return from home'. In both systems, consumers will typically be charged a refundable deposit to cover the cost of the packaging, which will be returned to the brand for cleaning and refill.

Specific codes, such as best before and use by dates, and batch codes, will need to last the entire shelf-life of the packaging, and be removed once the product is returned for cleaning and reuse. Potential solutions include stick-on labels, which can be removed once a piece of packaging is returned, or removable inks, which can be removed during the final washing process.

Brands can use permanent, unique 2D codes to facilitate customer returns, track items throughout their lifecycle, and gather insight on consumer preferences. The information can be updated, so a permanent code could also include batch-specific data, including allergens and use by dates.

There is no 'one size fits all' solution for sustainable packaging. The ideal solution will vary depending on sector, products, supply chain capabilities, and standard retail outlets.

Consumers are willing – but they also crave convenience. The ease of single-use packaging is a huge barrier to widespread refill adoption. Any model needs to be developed with the end consumer in mind to make purchasing, refilling, and returning or



recycling as easy as possible.

Consumer-facing variable 2D codes, such as QR codes, can benefit brands exploring refill and reuse. Consider linking to a brand-specific app to allow consumers to track purchases, refills, and packaging saved, or provide personalised nutritional information, product suggestions, and loyalty rewards.

Adopting a reusable packaging model requires careful consideration. Choosing the most appropriate packaging and associated product labelling system for individual products is essential. Brands should work with their coding and marking suppliers to find the best solution for their specific requirements.

Domino Printing Sciences
www.domino-printing.com

High-Performance Pressure Testing

HTU
Hydrostatic Pressure Test Unit

The HTU from Cat Pumps is a compact mobile high-pressure system utilising the highly-reliable and long-lived Cat Pumps high-pressure plunger pump.

Typical Features:

- Cat Pumps high-pressure plunger pump
- Pressures ranges up to 689 bar
- Choice of three-phase or single-phase motor
- Pressure regulating valve
- Pressure relief valve
- Calibrated pressure gauge
- Pressure release valve
- 25 or 50 litre plastic water tank

Benefits:

- Highly reliable, low energy consuming, easy to service pump
- Corrosion resistant wetted components and hoses
- Low noise operation
- Mobile and compact design
- Robust frame design
- Sturdy wheels



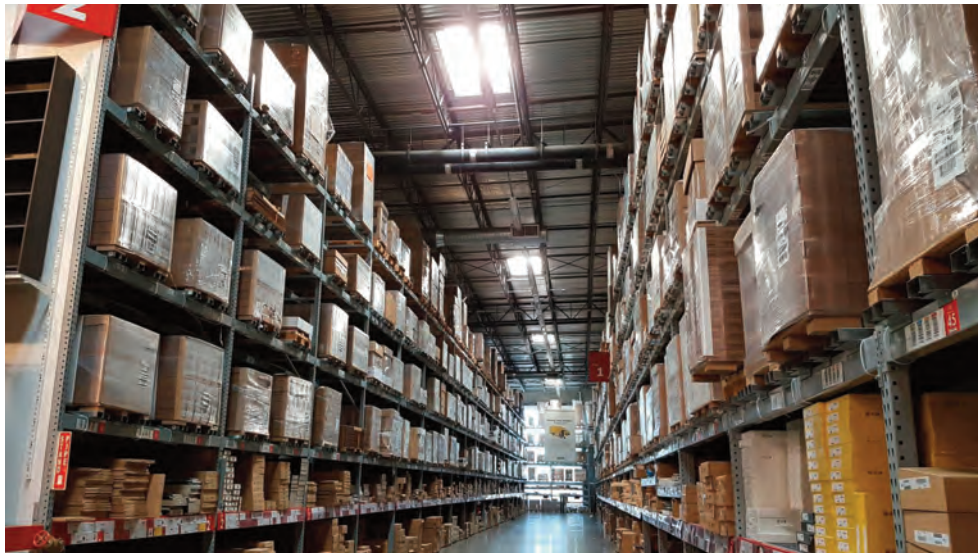
Model shown is for illustrative purposes only.
Actual unit may vary significantly depending
on customer specification.



Cat Pumps – Protecting Your Pumping Systems

UK: +44 01252 622031 | sales@catpumps.co.uk | www.catpumps.co.uk

©2022 Cat Pumps (U.K.) Ltd. All Rights Reserved. 22116 5/22



SCALABILITY AND FLEXIBILITY MEET DTC NEEDS

The rise of Direct-to-Consumer (DTC) – Will Lovatt, General Manager and Vice President, Deposco, outlines how fulfilment technology can measure up to meet the demands of warehousing's omnichannel era

Direct-to-Consumer (DTC) is the business model of selling products directly to customers and thereby bypassing any retailers, wholesalers, or any other middlemen. DTC is rapidly becoming a major part of global ecommerce sales. In the US alone, according to eMarketer, DTC ecommerce sales have more than tripled in the past six years. The market has grown from \$36.08 billion in 2016 to \$128.33 billion in 2021. The research indicates it will add almost another \$100 billion in the 2021-2024 period, reaching \$212.90 billion by the end of 2024.

The challenge is that many warehouse facilities have not caught up with this trend as yet. Look at the design of many large warehouses today and you'll see large racks of pallets, automated forklift trucks whizzing around dropping off pallets at staging points. The operation is focused on efficiency and moving inventory in bulk. It is pretty much a 'lights off' undertaking, with as much of the operation fully automated as possible.

Imagine then if one individual orders a single packet of Oreo cookies from the middle of this hive of activity. It should be simple but how do warehouses change their approach to facilitate it? That is a key question now with the move to DTC business models picking up pace.

Many warehouses are simply not configured or ready to operate in that way. If working practices and flows through the warehouse are configured for a retail business to business (B2B) approach, then looking after DTC is a challenge. It is not possible to pick a single pack with a forklift truck, for instance. Ultimately many of these warehouse

businesses are running DTC options alongside retail B2B product deliveries, of course. They might have bulk operations well under control but at the same time be running a rudimentary DTC operation in a corner of the facility or squeezed onto a mezzanine floor.

Critically too, the introduction of DTC workflows into the process mix within the warehouse makes it even more important that the business has the right inventory identified for each separate channel. Processes that were traditionally set up primarily for manufacturing efficiency or wholesale-centric operations must now be re-examined to handle DTC workflows.

Maintaining and segmenting available inventory across different channels is difficult because each channel's inventory needs to be considered individually. Legacy order fulfilment and ERP workflows have the potential to keep your staff in spreadsheets all day, joining up the dots, while still turning up errors and poor decisions. Also, these traditional processes typically only offer visibility at a case or pallet level, while today's consumers needs are satisfied at a single-unit (EACH) level.

Orchestrating orders with a manual, user-driven, non real time process will breed inaccuracies, risk overselling (the same inventory sold simultaneously in multiple channels), backorders and customer frustration. When you consider a recent BRP report, which found that 63% of consumers are likely to stop shopping a brand after just ONE unsatisfactory experience, the risk is too costly.

The best way ecommerce companies can provide a positive experience across the whole DTC cycle, especially when it is running

alongside other distribution and fulfilment processes, is through optimising warehouse operations. That means choosing a Warehouse Management System (WMS) that has the functionality to fulfil the organisation's current needs but also the flexibility to scale and grow as the business expands.

Retailers, wholesalers and ecommerce organisations alike, together with their 3PL service providers, will all need the agility to fulfil through pick and pack processes with accuracy and speed whatever the nature of the order. Optimising customer direct shipping using a system that directly integrates with parcel carriers and calculates dimensional weights, and rate shops from available carriers, will save time and money and offer additional service options to the customer.


It is equally important that Warehouse Management and Order Fulfilment Systems support operational efficiency and enhanced productivity. In this context, scanning technology with system directives, validation, across all warehouse processes creates a clear fulfilment process for teams to work efficiently. Organisations can improve productivity and efficiency gains by integrating in real-time to automation systems such as fulfilment robotics, pick-to-light, and sortation systems. This allows them to process higher volumes of orders per day.

Once again, having absolute network-wide inventory visibility is very important here. Organisations need systems that enable them to manage all inventory processes inside their warehouse, including cycle and physical counting, tracking, and replenishment. To drive efficiencies across their modern warehouse and store operations, they need 100% visibility and an understanding of where all inventory is located at all times across all locations.

These kinds of Warehouse Management Solution and Order Management capabilities are increasingly important today, with high service fulfilment now more than ever an essential part of the brand experience for ecommerce organisations and retailers alike. Today, best-in-class organisations need to serve their customers in real-time, from any available source of inventory, at the warehouse, from a retail store or stock located at 3rd party locations.

This need will only become ever more urgent as the move to Direct-to-Consumer models plays out. In this new DTC environment, organisations need to find new ways to drive operational efficiencies across increasingly complex warehouse environments.

Furthermore, to be able to scale to embrace the new DTC model, it is key that the business ensures it is running high-quality Warehouse Management and Order Management Systems that are flexible, scalable and capable of bringing in added functionality as and when required.

 Deposco
deposco.com

INSTRUMENTATION EXCELLENCE AWARDS

Thursday 27 October 2022
Grand Connaught Rooms, London

VEGA



 **metasphere**
make data count

 **DISPLAY
TECHNOLOGY**
A FORTEC GROUP MEMBER

 **IndySoft**

www.instrumentationawards.co.uk

INSTRUMENTATION EXCELLENCE AWARDS

The Instrumentation Excellence Awards, organised by *Instrumentation Monthly* publisher Datateam Business Media, is a new event celebrating the very best professionals, products, projects and companies from across the test, measurement, sensing and control sectors.

The Awards are a first-of-its kind event in the UK, created to acknowledge the important work that takes place in the test, measurement, monitoring, sensing and control sectors. The organisers look forward to giving professionals in these booming sectors a chance to celebrate their collective achievements - an award from the event will separate winners from their competitors and open up doors for new business opportunities.

The inaugural awards ceremony will take place on 27 October 2022 at the Grand Connaught Rooms, London and will take place in conjunction with the illustrious Electronics Industry Awards making it *the* night of the year for networking.

Thursday 27 October 2022
Grand Connaught Rooms
London

VEGA



metasphere
make data count

**DISPLAY
TECHNOLOGY**
A FORTEC GROUP MEMBER

IndySoft

Sponsorship Opportunities

Headline Sponsorship - £8,000 (excluding VAT)

This includes 45 minutes – 1 hour exclusive sponsorship of the drinks reception.

This package includes:

- Exclusive branding on photo backdrop in drinks reception area
- Exclusive branding on drinks reception glasses
- Exclusive branding on poseur tables in drinks reception
- Company profile on IEA website
- Branding on all awards promotion
- Extra-large AV on the day and during the sponsored category
- The option to pick a category to sponsor, with a representative being invited to the stage to present the trophy to the winner
- Company logo on table plan
- Credit during the editor's speech
- A table of 10 on the night

Category Sponsorship - £4,000 (excluding VAT)

This package includes:

- Branding on all awards promotion
- Company profile on IEA website
- Extra-large AV on the day and during the sponsored category
- Company representative to present the award
- Company logo on table plan
- A mention by the event host during the ceremony
- A table of 10 on the night

Alternative Sponsorship Opportunities (excluding VAT)

- Seat covers £3,500
- Wine collars £795
- Belly band on brochure £695
- Table chocolates £595
- Gift on the table £400

For more information contact Louise Tiller:
01622 699104 | ltiller@datateam.co.uk



Meet the 2022 IEA Finalists

INSTRUMENTATION
EXCELLENCE
AWARDS

CABLES & CONNECTORS PRODUCT OF THE YEAR

binder, M8 series 818

Fischer Connectors, MiniMax Series

HARTING, Han-Modular Domino modules

Molex, Brad Micro-Change M12 Cat6a connector

CALIBRATION PRODUCT OF THE YEAR

Beamex, MC6-Ex

Fluke Calibration, 8588A

IndySoft, Calibration Management Software

Keysight Technologies, U9361 RCal

Rohde & Schwarz, R&S FSMR3000

TÜV SÜD National Engineering Laboratory, NEL-SURE

CASES & ENCLOSURES PRODUCT OF THE YEAR

Hylec-APL, DEDSS Stainless Steel Series

Protechnic, EXOcase

Rittal, VX SE

ROLEC, profiPANEL

Spelsberg els UK, GEOS

DAQ PRODUCT OF THE YEAR

ADLINK Technology Inc., MCM-216/218 ultra-compact edge DAQ solution

Analog Devices, AD7768-I

Chell Instruments, nanoDAQ-LTR-32

Dewesoft, SIRIUS XHS

Kistler, KiDAQ Data Acquisition System

Yokogawa, DL950 ScopeCorder

PRODUCT AWARDS

FLOW, LEVEL & CONTROL PRODUCT OF THE YEAR

Bronkhorst, FLEXI-FLOW

Bürkert Fluid Control Systems, FLOWave

Endress + Hauser, Proline Promag W 800 electromagnetic flowmeter

ifm electronic, LW2720 radar level sensor

Magnetrol-AMETEK, Genesis - Multiphase Detector

Swagelok Gas Distribution Program

Titan Enterprises, Process Atrato

VEGA Controls Ltd, VEGAPULS 10 20 30 Low-Cost Compact 80 GHz Radar Level sensors

GAS DETECTION PRODUCT OF THE YEAR

ABB Measurement & Analytics, Hoverguard ABB Ability UAV-based gas leak detection

Edinburgh Sensors, Guardian NG Gas Monitor

Emerson, Rosemount 936 Open Path Toxic Gas Detector

ION Science, ARA H2S single gas detector

Teledyne Oldham Simtronics, MX 256

Vaisala, CARBOCAP MGP261 Multigas Probe

IIOT PRODUCT OF THE YEAR

ABB, SRV500 ABB Ability Verification for measurement devices

ifm electronic, edgeGateway

JR Dynamics Limited, Trains with Brains

Metasphere Ltd, ART Sewer- IoT Wastewater Level Monitoring solution

Powelectrics, Metron4

VEGA Controls Ltd, VEGAPULS AIR IIoT Stand alone radar level sensors

MONITORING & METERING PRODUCT OF THE YEAR

Casella, dBadge2

Dewesoft, IOLITEdi 3xMEMS-ACC

Fluke, 1770 series three-Phase Power Quality Analyzer

Metasphere Ltd, ART Sewer- IoT Wastewater Level Monitoring solution

Proteus Instruments Limited, The Proteus

SENSOR PRODUCT OF THE YEAR

ABB Measurement & Analytics, ADS420 dissolved oxygen sensor

Baumer, PFMH hygienic pressure transmitters

ESI Technology Limited, The GD4200-USB Digital Pressure Transducer

ifm electronic, LDLI01 conductivity sensor

Kistler, 9132CD piezoelectric force transducer

Rolls-Royce.com, Novel Nuclear Reactor Rod Position Sensor

VEGA Controls, VEGAPOINT

VEGA



metasphere
PERFORM. EMBLEM. COLLECT.

DISPLAY TECHNOLOGY
A PORTEC GROUP MEMBER

IndySoft

SIGNAL CONDITIONING PRODUCT OF THE YEAR

Dewesoft, SIRIUS UNI

HBM, ClipX

Kemo, DR PRT

NewTek Sensor Solutions, NTC-
6000 Qwik-Cal LVDT Signal
Conditioner

Precision Filters, SCB-32CC-100µA

Turck Banner, SNAP SIGNAL

TEST & MEASUREMENT PRODUCT OF THE YEAR

ABB Measurement & Analytics,
AquaMaster4 Mobile Comms

Fluke, ii910 Precision Acoustic Imager

Keysight Technologies, M9484C VXG
Signal Generator

Sensory Analytix, SpecMetrix

Tektronix, 2 Series Mixed Signal
Oscilloscope

Yokogawa, WT5000 Precision Power
Analyzer - Transformer Version

THERMAL IMAGING & VISION SYSTEMS PRODUCT OF THE YEAR

AMETEK Land, NIR-B-2K-Glass
imaging camera

Analog Devices Inc., ADTF3175

INSPEKTO, S70 Gen.2

Scorpion 3D Neural Camera

Teledyne FLIR, E52 Handheld
Thermal Imaging Camera

BUSINESS AWARDS

DIGITAL TRANSFORMATION AWARD

ABB

Analog Devices Inc.

AVEVA

COPA-DATA

Metasphere Ltd

SUSTAINABILITY AWARD

Watlow Electric Manufacturing
Company

Metasphere Ltd

ABB Measurement & Analytics

Vaisala

ION Science

TE Connectivity

BEST MARKETING CAMPAIGN

Analog Devices Inc.

Anglia Components

Bronkhorst UK

ifm electronic

Tektronix

VEGA Controls

EXCELLENCE IN INNOVATION

5GoreConn Pvt Ltd & Excel3D
Healthcare

Display Technology

Magnetrol-AMETEK

Metasphere Ltd

Reotech Process Equipment Pvt. Ltd.

VEGA Controls

MANUFACTURER OF THE YEAR

Bronkhorst High-Tech

Kistler Group

Renishaw

Sensor Technology

VEGA

Vision Engineering

PR AGENCY OF THE YEAR AWARD

514 Media

Fresh B2B

MEPAX

Napier

Neesham Public relations

Publitek

DISTRIBUTOR OF THE YEAR

Arrow Electronics

Digi-Key

Farnell

Mouser Electronics

RS Components

TTI, Inc.

INDUSTRY PERSONALITY OF THE YEAR

James Walton , Bronkhorst UK

Emma Claridge, Display Technology

Jon Morris, ifm electronic

Chris Fox, Rotronic

Tony Ingham, Sensor Technology



ESI Technology
Limited

HYDROGEN
COMPATIBLE
PRESSURE
MEASUREMENT
SOLUTIONS



Compatible with Hydrogen based
environments



Pass tested to ISO11114-4:2017



Superior Silicon on Sapphire sensing
technology



Made from specialist titanium alloy
and stainless steel material



www.esi-tec.com

HOW **RELIABLE** IS YOUR PROCESS
AIR SOLUTION REALLY?



LET'S TALK

Onder Karaca, Internal Sales Engineer

+44 0208 502 8112 | onder.karaca@aerzen.com



As a partner to the cement industry, AERZEN knows the high demands when it comes to the pneumatic transport of demanding bulk materials. AERZEN is able to guarantee maximum reliability: with an extensive product portfolio of robust, durable compressors and blowers, AERZEN offers the decisive components for every individual application, ensuring completely process reliability in production.

www.aerzen.com



AERZEN
EXPECT PERFORMANCE

MEETING ESG TARGETS USING INTELLIGENT AUTOMATION



Saranjit Singh, VP Telecommunications and Utilities APAC, SS&C Blue Prism, discusses how intelligent automation is helping the oil and gas industry drive sustainability goals

The oil and gas (O&G) industry is in a state of flux, facing all-time-high energy prices and pressures for less carbon intensive-energy systems, demands for clean energy to address the climate crisis, tight margins and talent shortages. The industry is seeking ways to reduce CO₂ and methane emissions as well as source alternatives. But effective change will require substantial investment, innovation and research and development at a much faster pace than we are currently seeing.

Intelligent automation (IA) has a role to play in bringing this reality to life. An astonishing 81% of oil and gas executives agree a digital-first workforce needs to be developed over the next 10 years. Regulations and societal demands for reducing fossil-fuel dependency will only continue. IA can help by driving innovation, filling some of the skills gap for engineers, and enhancing data usage and operational efficiency. Much of this sector is process-driven, yet many of these tasks are still operated manually and with legacy systems. This creates value-obstructing data siloes, which IA can help break down, offering insights and analysis to inform progress promoting decision-making. Together, these outcomes enhance cash flows while helping meet emerging sustainability objectives and requirements.

What is the role of oil and gas in today's global economy?

This year, oil and gas will make up over half of the world's energy supply, which shows our continued dependence on these commodities. Alternative energy sources have not yet advanced to the point where we can effectively

use them to replace all the world's oil and gas demands. Also, we must remember, developing economies are going to struggle to facilitate their industrial needs without oil and gas as they have not had the capacity of developed countries to invest in clean energies and technologies.

Although we are not at the point where we can say goodbye to oil and gas, this does not absolve us of the responsibility to transition to a renewable energy supply. The O&G industry has a large role to play in bringing forward a global net-zero economy, which is estimated to need US\$3.5 trillion in annual investment through 2050. Fossil fuels – coal, oil and gas – are the largest contributors to climate change, accounting for more than 75% of global greenhouse gas emissions.

The industry is working to make progress when it comes to environmental, social and governance (ESG) issues, as doing so has become an economic, moral and reputational imperative. A number of oil and gas companies have established net-zero-emissions targets and are persevering with decarbonisation efforts despite the economic volatility of the past few years. For example, Occidental Petroleum has partnered with Carbon Engineering, a Canadian-based clean energy company, to build a plant intended to capture half a million metric tons of CO₂ every year. And in January 2022, ExxonMobil announced its target to achieve net-zero greenhouse gas emissions by 2050.

How is IA helping the industry reach its ESG targets?

The sector's efforts to mitigate the effects of climate change centre around three primary areas: reducing CO₂ emissions, reducing methane emissions and recycling CO₂. An intelligent automation formula can support forward movement on these goals: replace manual tasks with automation, relieving people to focus on value-adding transformative work.

Any movement in this space will require substantial research and development, combined with innovation. This requires effective and complete data usage, which is impossible with outdated IT infrastructures and siloed information. Intelligent automation can connect these legacy systems and consolidate the reams of structured and unstructured data, and process it to provide insightful and innovation-driving analytics. Free-moving data facilitates IA and maximises its use and impact across the organisation. Actionable insights sourced from this data speed up decision-making, promote fast problem-solving and assist with meeting future compliance and regulatory standards.

Employing intelligent automation can free workers to focus on experimentation, innovation and processes for detecting, measuring and mitigating emissions levels. It can be used to measure progress and success on reaching emissions targets through impact analytics, and help businesses ensure they're operating in line with regulations.

We don't know what the solutions are going to be in 20 years, but the faster we test and adapt different solutions – whether hydrogen, electric or something else entirely – the closer we'll be to a long-term answer.

As the oil and gas industry works to bring this reality to the fore, we're seeing lines between this sector, the energy sector and the telecommunications sector begin to blur. The business model is evolving – O&G businesses are diversifying and expanding to adjacent areas, such as hydrogen and carbon capture, utilisation and storage (CCUS).

It is easy to scapegoat the O&G industry, but we all have a role to play – landfills, agriculture, transportation etc, are all contributors to global emissions. For the most part, the oil and gas industry recognises its role, but this transformation will take time. It takes time to uncover equally capable alternatives to what we are used to and view as essential. However, it is a necessary transformation if we are to leave the world a good place for our children and grandchildren.

SS&C Blue Prism
www.blueprism.com

FIVE DIGITAL TRENDS TO HELP YOU SUCCEED

Here, according to Joanne O'Donnell, HR manager, HTL Group, are the latest digital trends that will drive the future of the oil and gas sector

Increasing oil and gas prices are raising concern amongst consumers. However, that's putting a lot of pressure on oil and gas companies, which are faced with shortages and new demands.

In order for the industry to resist the pressure and succeed, it needs to adopt a digital-first approach. Digital innovation is key for mitigating the oil and gas crisis and working more efficiently. Here are the digital drivers:

Robotics & automation – In order to promote safety while working under pressure at an oil and gas site, it's important to reduce manpower and make use of robotics and automation. Additionally, this will increase efficiency and the speed of operations, and lower the risk of human errors.

According to Frost & Sullivan, the global gas and oil automation market is growing exponentially in attempts to recover from COVID-19 and meet the increasing demands for efficiency, safety, and sustainability. It is expected to reach £18.69 billion by 2025, which is a 43% increase since 2020. It is also growing at a compound annual growth rate of 7.5%.



Safety first – digital equipment testing – Oil and gas sites can pose a significant safety threat to workers. While there might be certain safety procedures, such as eliminating hazards and providing Personal Protective Equipment (PPE), they're not the most robust safety solutions.

Quality analysis that adopts quick and efficient solutions is best suited for providing regular safety examinations of systems and preventing incidents. For example, Enerpac's Safe T Torque Checker validates and tests the exact torque equipment used on-site, such as pump, wrench, and hose, to give an accurate digital read-out. In that way, it instantly validates the performance and safety of the entire system, minimising errors and incidents.

Big data analytics tools – Large volumes of data generated every day are a major part of the daily operations in the gas and oil industry. Data is extremely important as it provides great insight into both production and performance, which then feeds into optimisation processes and the development of AI-driven algorithms and models.

Nevertheless, this data often tends to be unstructured. That's where big data analytics tools can help structure and analyse data, in order to streamline complex operational processes and reduce costs.

Laser scanning and 3D printing – One of

the major issues oil and gas companies are facing is the extended downtime associated with the sourcing of complex, customised stand-alone parts, which is causing losses of revenue.

Laser scanning of every part of the impeller 3D models, accompanied by 3D printing metal fabrication can reduce the downtime by months and help optimise operations. 3D printing doesn't require tooling and can replicate lightweight structures with complex internal components.

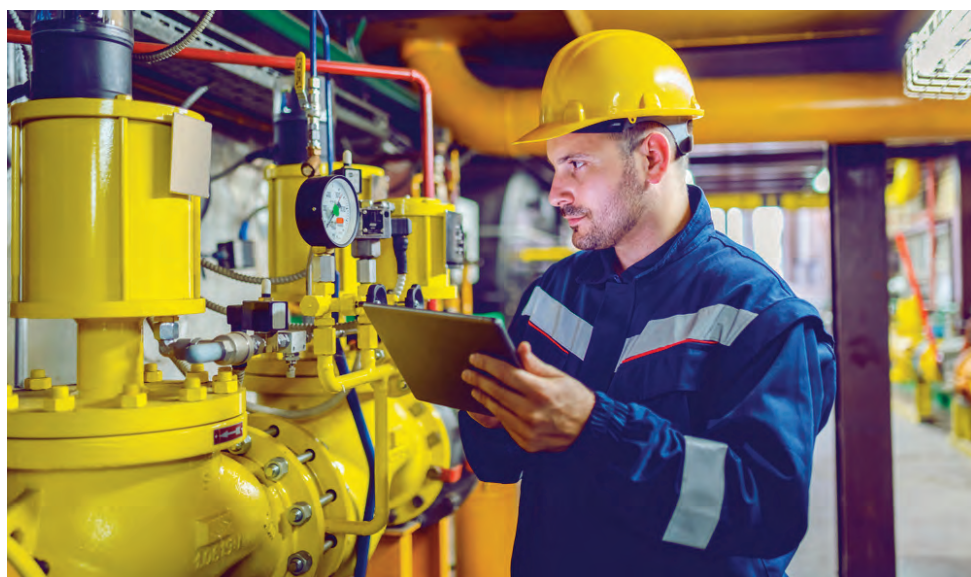
Substructural simulations – Companies often have difficulties monitoring the structural integrity of offshore assets and subsurface.

3D modelling and substructural simulations can provide real-time data and visualisations. This offers greater accuracy, information about potential issues, and ways to minimise planning time. Data is collected through sensors on the ring and analysed using cloud-based solvers. This can help establish reservoir safety risks, and provide a new perspective on structural design.

Jumping on the digital innovation wagon can help oil and gas companies mitigate the current challenges and stay afloat in a competitive market. Current digital trends can help improve efficiency and safety, while innovating processes and technology.

Sources:

<https://uk.news.yahoo.com/gas-and-oil-may-be-rationed-warns-expert-173658512.html>
<https://www.prnewswire.co.uk/news-releases/global-oil-and-gas-automation-market-to-see-positive-growth-with-digitalization-and-new-disruptive-technologies-845171383.html>
<https://cablesafe.com/top-safety-tips-for-the-oil-and-gas-industry/>
<https://addepto.com/data-analytics-in-the-oil-and-gas-industry/>
<https://www2.deloitte.com/global/en/pages/energy-and-resources/articles/digital-transformation-in-oil-and-gas.html>
<https://www.stratasysdirect.com/industries/energy/energy-oil-gas>
<https://www.landpoint.net/3-reasons-to-get-3d-models-of-your-oil-and-gas-facilities-2/>



HTL Group
www.htlgroup.com

Not your typical reaction
when you tell the boss
numbers are down 16%



Cut your CO₂ emissions by up to 16% versus oil,
by fuelling your manufacturing operations
with Calor LPG.* Switching can also help you
stay compliant with environmental legislation.
Find out more at calor.co.uk/manufacturing



As of June 2021.

*Atlantic Consulting, 2017



The North Sea is set to become Europe's largest climate-neutral energy system by 2050 and Siemens Energy is determined to turn that potential into reality.

The region is in pole position to play a globally leading role in the energy transformation. For decades, the North Sea has had a key role in supplying energy to Europe through its oil and gas fields. Now it can help deliver net zero, by modernising existing assets, becoming a test bed for new technology and by enabling a new level of energy connectivity between European countries.

Siemens Energy cannot do it alone. No one company or organisation can. Steve Scrimshaw says the company believes in collaboration between countries, governments, partners, customers, and supply chains to make sure the North Sea energy potential becomes a reality. There is a long journey to decarbonisation ahead, but the United Nation's recent IPCC reports on climate change highlight the time to act is now.

The North Sea has significant potential and particular geological characteristics that we can exploit in our drive to clean up energy. Shallow waters and raging winds make it one of the best locations for offshore wind, and the geology that kept natural gas in place for millions of years is the perfect place to bury carbon dioxide.

There are, of course, challenges. The windiness of the North Sea means it has some of the harshest weather. Seabed conditions and tides create difficult infrastructure issues meaning energy systems need a robust and sophisticated operation.

However, the potential is enormous. Overcoming these obstacles could see the North Sea become a beacon for change,

IN ENERGY TRANSFORMATION

Steve Scrimshaw, VP at Siemens Energy UK & Ireland, says ambitions to decarbonise the North Sea into a climate neutral energy system by 2050 demand new ways of thinking...

showcasing how to deliver complex energy transition technology in difficult conditions.

The energy transformation in the North Sea demands scale and coordination. If an interconnected, low-carbon energy system can be developed in the North Sea, then technically it can be delivered anywhere. If we get it right, it will attract new industries, secure jobs, reduce reliance on fossil fuels and help ensure a better world for future generations. It also offers an opportunity for growth and energy security.

Recent events mean decarbonisation is not the only driver. The tumultuous geopolitical situation with the war in Ukraine has left many countries seeking increased energy independence. The North Sea is critical to enabling this independence by reducing reliance on Russian oil and gas.

Since the early 2000s offshore wind has grown at an increasing rate. The cost of offshore wind has reduced faster than expected and can now feasibly and affordably become the backbone of clean energy production for the future.

Already Siemens Energy has connected about 4000MW of offshore wind to the UK grid. That is enough clean energy to power four million homes, and around 35% of the UK's current offshore wind production. But we need to do a lot more to meet the UK target to deliver up to 50GW of operating offshore

wind capacity by 2030, increasing current capacity by two-thirds. For Europe, to reach climate neutrality by 2050, offshore wind needs to grow from today's 29GW capacity to well over 300GW.

Green hydrogen, created by wind power, will play a vital role in the long-term energy storage of the future. There is much wind potential in the North Sea, but we also need to be able to store it, transport it, and use hydrogen and its derivatives for things like shipping and aviation.

Building renewable infrastructure and a hydrogen economy takes time. Planning, consent and viable operating models require investment of both time and capital.

We need to continue to use some fossil fuels in this interim period, so it is vital we minimise emissions from production. These days, most offshore platforms use fossil fuelled gas turbines to provide power and drive compressors that pump our energy ashore. However, we can make immediate changes today that can reduce emissions significantly.

But we must not stop there. The UK's North Sea Transition Deal sets a target to reduce 25% of offshore production emissions by 2025 and achieve net zero by 2050.

While the target is and must be net zero, we cannot switch off fossil fuels overnight. The UK today still relies on about 40% natural gas for

a secure electricity supply. But we can still take action, such as replacing gas turbines with electric alternatives. This is where offshore wind and oil and gas industries can collaborate and combine their expertise to electrify offshore platforms, as we are doing with the Hywind Tampen project in Norway.

The natural gas we bring ashore can also be cleaned up through carbon capture and storage technologies. Heavy industry in ports, like Rotterdam in Netherlands and Teesside in the UK, have plans for shared networks to transport and store captured carbon dioxide so it never reaches the atmosphere. Existing oil and gas infrastructure is also being repurposed for carbon capture.

Networks will increasingly save costs and bring greater resilience, as the number of interconnectors between countries grows. We will see the rise of multi-purpose interconnectors where the same assets are shared by wind farms, platforms and national power networks. There are even plans for man-made energy islands to act as hubs in the sea. Some will have electrolyzers to make clean hydrogen from seawater.

The good news is that history shows fast

transitions can happen, even in capital-intensive industries like energy. Across Europe we can see examples where parts of the economy are already rapidly decarbonising. In the UK we can see this with electricity. Ten years ago, coal provided 45% of its electricity. Now it is less than 2%, with the last coal-fired power stations set to close in less than two years. The electricity industry, once the biggest carbon-emitting sector, has now been overtaken by transport as the biggest polluter, thanks to reductions made through gas and wind.

Strategic sector coupling and low-carbon energy developments will enable and accelerate the energy transition. To do this we need a mix of skills and experience from different backgrounds. The people and companies who succeed in the North Sea will do so through closer collaboration and partnerships. The North Sea Transition Deal for example sets out ambitious plans for how the UK Government will work

with industry to decarbonise. This includes support for up to 40,000 direct and indirect supply chain jobs.

The region can be as important for our clean energy future as it was for the era of fossil fuels, but we cannot afford to leave it another moment. At Siemens Energy, we have the know-how and mindset alongside a technology portfolio that supports the entire energy value chain.



Siemens Energy UK & Ireland
www.siemens-energy.com

ECO PHYSICS nCLD "Facelift" boxed solutions

nCLD AL³



- Compact analyzer with integrated pump
- Simultaneous NO, NO₂, NO_x and NH₃ measurement
- Intuitive graphical user interface
- Internal data logger and status recorder
- Remote operation/control, Power DOWN/UP
- USB, HDMI, LAN/WLAN, Bluetooth, RS-232, Analog I/O

Measurement of:
NO • NO₂ • NO_x • NH₃

The three-channel chemiluminescence based NO_x/NH₃ analyzers of the nCLD "Facelift" box-solution analyzers detect NO, NO₂, NO_x and NH₃ at concentration ranges from 0 - 50ppb to 0 - 50ppm with a minimal detection limit from 0.4 ppb. The three-channel nCLD AL³ includes an internal pump and comes as a fixed and pre-configured analyzer. The slightly modified front panel has been equipped with an additional Power-button and a new internal PC. Additionally, are all nCLD-models capable of a remote power down/up including a failsafe feature. The nCLD AL³ is the ideal instrument for ambient air monitoring, either installed in racks, fixed monitoring stations or mobile laboratories. The instrument's inlet operates at ambient pressure. Calibration of the unit runs quick and automatic while all necessary data is continuously stored and readily available anywhere and at any time. According to ISO EN 14211.



ECO PHYSICS AG · POB · CH-8635 DUERNTEN · TEL. +41 55 220 22 22 · FAX +41 55 220 22 55 · E-MAIL INFO@ECOPHYSICS.COM · WWW.ECOPHYSICS.COM



WE DON'T MAKE A HUNDRED THINGS.
WE MAKE ONE RADAR LEVEL SENSOR
(FOR EVERYTHING).
THE 6X®. AVAILABLE NOW!

Whatever you want to measure, whatever frequency you use – VEGAPULS 6X can handle it. Tell us your requirements, and we'll configure our newest radar sensor to suit your purpose. With VEGAPULS 6X, »Which radar sensor is the right one?« becomes irrelevant ... and your life just got so much simpler.

VEGA. HOME OF VALUES.

www.vega.com/radar

VEGA

VEGA RADAR LEVEL SENSOR: SIMPLICITY, SAFETY & SECURITY



VEGA outlines the innovations in the VEGAPULS 6X level radar, which include SIL 2/3 approval and IEC Cyber security standard protection

As well as offering one of the simplest methods for model selection and ordering, whether for liquids or for bulk solids, the VEGAPULS 6X level radar provides 1mm accuracy performance and measuring ranges up to 120m. It also features extended temperature and pressure capabilities, along with a dedicated second generation 80 GHz radar chip that affords greater diagnostic functions and optimal signal processing. If we had to make a list of the most important innovations in VEGAPULS 6X, the radar chip would be right at the top. At the sensor's heart, it is the pulsating technology that empowers it to fulfil the highest expectations in terms of precision and reliability. And this is mainly due to its ability to self-monitor during operation, which makes it possible to seamlessly and continually diagnose the sensor performance and its accuracy as a system.

This technology means it operates in virtually any level application you can think of - from measuring very light hydrocarbons in a storage sphere, high security floating-roof tank

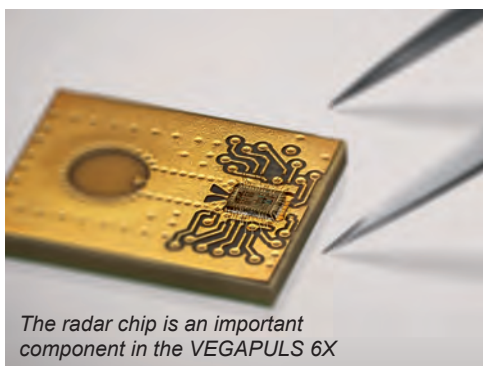
levels, to large rocks in a primary crusher. But some critical applications demand more than just 'a reliable measurement', they demand a high degree of safety too.

In light of this, THE 6X has now expanded its capabilities to SIL 2/3 conformance based on its highly comprehensive diagnostic coverage, while also adding in a new level of IT security too. For SIL applications it has new test options to make verification easier, with the SIL-by-design architecture enabling it to

utilise its full internal diagnostics for function testing. And, depending on the method chosen, it can attain a diagnostic coverage of up to 99.1% - a market-leading figure for a non-contact radar level sensor.

In view of the increasing digitalisation in industry, another extremely important factor is ensuring effective protection against cyber-attacks. That's why it also offers an I.T. security standard IEC 62443-4-2, which means on your critical safety systems, you can combine both the highest cyber-protection currently established for the process industry with SIL 2/3. As one of the first field devices to do so, you can choose THE 6X when you need safety and security in your level measurement application.

If you want to know more, arrange a training session on this product, or get more information on these latest features contact info.uk@vega.com



The radar chip is an important component in the VEGAPULS 6X

VEGA
www.vega.com



a position to bring along a scaled prototype, complete with pressurised vessels designed to function in space.

Two innovations born out of the Formula Student competition will also be on show, with Oxford Brookes Racing and Warwick Racing both demonstrating the power of electric in the formula circuit. A recent survey conducted by Advanced Engineering in conjunction with YouGov found that 54 per cent of respondents were unlikely to own an EV by 2030. Both Warwick and Oxford Brookes' aim is to show that electric vehicles can succeed not only on the roads, but also on the track.

In line with its ambition to enable cross-industry collaboration, Advanced Engineering is excited to announce that Bcomp, a leading solutions provider for natural fibre

ADVANCED ENGINEERING UK RETURNS TO THE NEC

Advanced Engineering prepares to open its doors at the NEC, Birmingham, for this year's show

There's just a few weeks to go until the doors open for Advanced Engineering 2022, the UK's largest gathering of engineering and manufacturing professionals. Taking place at the NEC, Birmingham on November 2 and 3, the event will bring together professionals from aerospace, marine, automotive, defence, advanced metals, connected manufacturing and more.

There are already several speakers confirmed for the show's four forums – aerospace, automotive, connected manufacturing and composites. At the automotive forum, visitors can meet experts from Siemens, Britishvolt, the Aluminium Federation, the University of Strathclyde, IDTechEx, Ford, Jaguar Land Rover and Xi Engineering, who will cover topics ranging from electrification to the digitalisation of vehicle development.

At the composites forum, Composites UK CEO David Bailey will return along with the National Composites Centre's chief technology officer, Enrique Garcia. Prodrive Composites and B&M Longworth will also take to the stage. Visitors to the event will also find Alan Banks, innovations manager at Ford, presenting on both days, covering topics such as the future of the UK's composite sector and

the UK's automotive materials strategy for a net-zero circular economy.

At the aerospace forum, there will be presentations on sustainability, supply chains, digitalisation and automation from Rolls-Royce and Airbus. Finally, the connected manufacturing forum will be open on day one with a talk from Stephen Phipson, CEO of Make UK, followed by a day full of sustainability, digitalisation, artificial intelligence and cybersecurity. On day two, the forum will include talks on the supply chain, additive manufacturing and there will be an eye-opening presentation on the role of UK manufacturing in levelling up by keynote Bhavina Bharkhada, Head of Policy and Campaigns at Make UK.

This year, Advanced Engineering will showcase a new range of features across the show floor. Advanced manufacturing experts from the University of Manchester will give attendees a glimpse into what human life in space could look like, with a graphene-enhanced space habitat that has been developed to meet anticipated demand for human settlements beyond Earth.

The university has teamed up with Skidmore, Owings & Merrill to research the design and manufacturing of the habitats, and are now in

reinforcements in high performance applications, will also showcase a range of components. These components are regularly used in sports, motorsports, but also automotive interiors, luxury sailing yachts, bridges and satellite panels.

Grain storage operator, Crover, has also secured a feature slot at this year's exhibition, thanks to the creation of the world's first granular drone, which is able to move through bulk solids and powders. Crover's method of movement in granular materials is made possible by a ground-breaking physical discovery, enabling locomotion in bulk solids.

Spacecraft propulsion pioneer, Plastron, will feature in the Space & Satellite zone, which returns following a successful launch in 2021. Plastron will host a combined partial physical mock-up and virtual reality environment of its own facility. This will provide visitors with an understanding of a typical in-situ application of the facility against a backdrop of how the UK space industry is developing. Plastron has over 40 years of experience in spacecraft propulsion system design, test and launch-site operations across scientific and communication satellite programmes.

Finally, keynote speaker and Industry 4.0 Solutions Architect at IBM, Ian Gardner will showcase the Attentional Machines Cat, which was first prototyped in 2019. The autonomous robot uses attention to learn about and explore the world, and can be taught by its owner through adaptive artificial intelligence.

With this year's show set to unite the UK's leading engineering and supply chain professionals to drive and discover innovation, discuss meeting net zero targets, and come together to share ideas and best practice, tickets are already being secured. Register to attend Advanced Engineering 2022 on November 2 and 3 on the Advanced Engineering website.

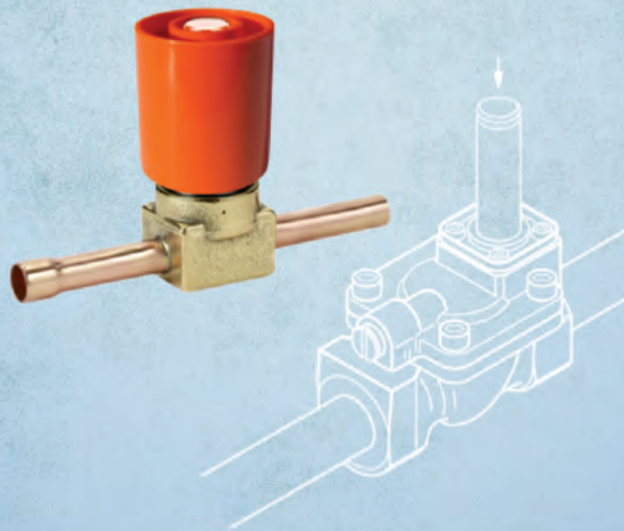
Advanced Engineering UK
www.advancedengineeringuk.com





www.fridgenius.co.uk

SOLENOID VALVE OPERATING MAGNETS



*If you need to operate a solenoid valve manually,
you need a Solenoid Valve Operating Magnet!*

enquiries@fridgenius.co.uk

THE ROLE OF DATA IN SUPPLY CHAIN PLANNING

Jim Bralsford, Industry & Solutions Marketing at Kinaxis, says data is playing an increasingly important role in supply chain scenario planning



Nobody knows for sure what the next big global supply chain disruption will be, nor when it will happen. But what is beyond doubt is the key role that data-driven, technology-enabled scenario planning will play in helping to build agility and resilience. Image source: Pixabay

Supply chain scenario-planning has rocketed in almost all industries since the Covid-19 pandemic, continuing a trend that started before the viral outbreak. With China, the workshop of the world, adopting a zero-Covid policy, the ability to plan for a range of scenarios remains an important capability, further emphasised by the Suez Canal blockage. Recently, the Russian invasion of Ukraine has added another far-reaching set of disruptions, including the imposition of stringent sanctions by the EU and US. Energy price volatility and shortages of commodities and skilled labour add to the complications of running a future-proof supply chain.

So, where does this leave the chemical industry? The Chemical Business Association's most recent Supply Chain Trends Survey revealed that the UK chemical supply chain is continuing to encounter serious issues, jeopardising future sales and margins. While there is no magic bullet to fix the challenges, planners can benefit from building more meaningful scenarios for the short, medium and long-term, based on a robust, real-time view of data.

While Covid did have a major impact on economies worldwide, the rate of disruption across supply chains has been growing exponentially for decades. As businesses become much more reliant on a greater scope of global suppliers and manufacturers, scenario-focused supply chain planning has come to the fore as the best (or only) means of having full transparency over what is happening outside of an organisation. The pandemic only catalysed this trend away from silos and towards the need to leverage concurrent scenario planning across the

supply chain.

In the face of persistently volatile market conditions, current labour shortages represent yet another complicating factor. Figures from the national Labour Force Survey show that nearly all companies across the industrial sciences sector currently have vacancies that are difficult to fill due to skills shortages. The need for more advanced scenario planning solutions to provide a single source of truth for more accurate evaluations across the supply chain is more pressing than ever.

To balance the need to optimise costs in the short term with the need to create more resilient and agile supply chains to respond to future uncertainties, many businesses are turning to scenario planning to exercise more control over their destinies. And there are two approaches when it comes to scenario planning: known and expected challenges and completely unknown disruptions.

For the known and expected challenges, effective scenarios are created with multiple potential options and well-defined KPIs to ensure that the chosen solution still meets the minimum requirements. Combining these options with dashboards and scorecards that clearly articulate the expected outcomes of each choice can enhance decision-making, giving businesses a clear understanding of the impact of successive changes.

But in the case of completely unknown disruptions, easily identifiable options do not exist. With so many tweaks and variables needing to be considered, supply chain planners need the ability to quickly eliminate those choices that are not going to meet the KPIs. The faster scenarios can be run, the more options can be attempted, piece-by-piece, to

give businesses the best chance of finding a solution that works.

This is why speed is of the essence when it comes to global supply chain disruptions. The longer a disruption is allowed to run across a chemical supply chain, the more detrimental its impact on customer satisfaction, delivery speeds, and – ultimately – a business's overall revenues. For supply chain planners, the pressure is on to quickly get ahead of problems.

In the past, supply chain design was excessively focused on optimisation – both in terms of costs and efficiency. The race to chase down the perfect plan, or flawless 100% forecast accuracy, meant many practitioners failed to build enough agility and resilience into their supply chain. It would take hours or even days to calculate a plan, causing them to completely miss the boat when fast-moving disruptions such as Covid occurred.

Fortunately, this is changing, as the chemical industry realises the need to achieve deep visibility to improve speed, agility, and efficiency in complex global supply chains. The sector is now turning to technology to ensure the right balance is struck between agility and optimisation – and advanced analytic techniques are offering a way forward.

Data plays an increasingly pivotal role in effective supply chain scenario planning. It provides businesses with an end-to-end picture of their supply chain – not just within their own four walls but across any partners, third-party suppliers, and even the changing needs and orders of customers. Data insights are crucial in giving planners the visibility and transparency needed to run effective scenarios.

But it is not enough to just collect data and have "visibility". The data needs to be of a high enough quality to help, rather than hinder, decision-making across the supply chain. Without consistent, correct, and up-to-date data, the outcome of a scenario will be fundamentally wrong. Therefore, an effective scenario must be founded on a solid understanding of exposure, inventory, and the true nature of demand – whether it is driven by panic or longer-term trends, for example.

Recent advances in artificial intelligence (AI) and machine learning (ML) are helping to drive the trend towards more data-driven scenario planning. These technologies augment the work of humans by offering up insights that they perhaps would not have found on their own. AI, in particular, can efficiently process data and pass on key insights to human supply chain planners, allowing them to review the insights and formulate the strongest possible "what-if" scenarios.

Kinaxis
www.kinaxis.com

Process Key

in conjunction with
Process & Control



The Process Key gives Engineers easy access to key process industry suppliers via our new directory site.

Users are just a **click away** from accessing and contacting **suppliers** and **organisations** when most needed.

To get your company featured contact **Charlie Curd** on 01622 699193 | ccurd@datateam.co.uk



STORAGE PROBLEMS?

We've heard it all. Better yet, we've solved it all.
Get in touch with our Business Services team today
to book your **FREE** consultation.



BiGDUG®

WWW.BiGDUG.CO.UK 0800 141 3380

LANEMARK Gas Process Burners



FD-C high turndown oven/
dryer air heating burners.



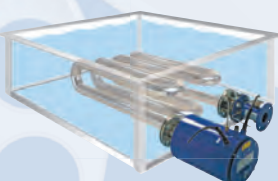
FD-GA modulating gas + air
process air heating burners.



FD-E low cost high turndown
oven/dryer air heating burners.



Midco HMA high efficiency,
high turndown, air replacement
or "make-up" air heating burners.



TX high efficiency small diameter
immersion tube tank heating
systems.

Lanemark gas burner systems offer users reliable, high efficiency, process heating solutions.

FD Series Packaged Oven/Dryer Burners

- Specifically designed for process air heating applications in convection ovens and dryers
- High turndown/short flame lengths providing accurate process temperature control
- High efficiency gas + air modulation, gas only modulation and simple high/low control options
- Heat Input Range: 9 kW – 1550 kW

TX Series Gas Fired Process Tank Heating Systems

- High efficiency (80%+) heating of all types of spray and dip process tanks
- Compact high efficiency small diameter immersion tube heat exchangers occupying minimum tank space
- Accurate performance modelling using Lanemark TxCalc design software
- Heat Input Range: 15 kW (1½") – 1150 kW (8")

Midco HMA Series Air Replacement or "Make-Up" Air Heating Burners

- Direct fired, high efficiency burner systems, for high volume air heating applications such as paint spray booths, ovens and dryers.
- Supplied either as Midco burner heads for OEM system integration or as Lanemark DB or FDB complete packaged systems including modulating gas valve trains and controls
- Wide range of firing rates to suit alternative temperature rise and air velocity system requirements
- DbCalc system design software

Lanemark Combustion Engineering Limited

Lanemark House, Whitacre Road, Nuneaton, Warwickshire CV11 6BW United Kingdom
Tel: +44 (0) 24 7635 2000 Fax: +44 (0) 24 7634 1166 E-mail: info@lanemark.com
www.lanemark.com

LANEMARK
COMBUSTION ENGINEERING

WHERE DIGITAL AND HUMAN TALENT MEET

The manufacturing industry is suffering from labour shortages and a lack of skilled workers. Steve Tonks, SVP EMEA at WorkForce Software, outlines three trends that are helping tackle these challenges

Labour shortages are a perennial problem in manufacturing. By 2030 estimates point to a shortage of 8 million workers. To recruit and retain vital talent, manufacturers must adapt or risk becoming obsolete. Just as other industries have embraced new ways of working, so must manufacturing. And, in today's digital landscape, this means exploring technological innovation through data and connectivity, to better support the changing needs of workers.

Manufacturers are increasingly exploring digitalisation in the form of smart factories, and the same digital innovation must be applied to workforce management. Here, we explore three emerging trends which will ensure manufacturing keeps apace with employee expectations, attracting talent back to the production line.

Trend #1: Accelerating Smart Factory initiatives to power people-focused outcomes

The vision of Industry 4.0, enabled and empowered by AI, rich data analytics and digital automation, is already being realised. Smart factory approaches have been shown to deliver an average of 10-12% improvement in labour productivity, factory capacity utilisation, and manufacturing output. However, this misses one vital thread that could pull people, technology and processes together to deliver beyond productivity. Such digital technologies can also be harnessed to dramatically improve the whole employee experience. Teams must have access to the information necessary for them to perform in their roles, as well as just-in-time training and scheduling reminders, to ensure they feel supported and engaged, as valued colleagues, not just as another set of machines.

A modern workforce management system analyses everyday employee data to better understand the workforce's productivity, needs, and challenges. Workforce management technologies empowers manufacturers to have better visibility of their employees and respond to them in timely and impactful ways. For example, it facilitates an easier way for workers to communicate with their employers, allowing them to monitor their employee data, request



The opportunities digitalisation can bring to workers must be integrated as part of a strategy of holistic innovation

time-off, receive to-do checklists and many other role-supportive functions.

It all comes back to using all means possible to create a positive employee experience, not only to retain existing employees but to attract prospective workers.

Trend #2: Adjusting Operations and Supply Chains

The aftermath of the COVID-19 pandemic has disrupted the usual cycles of supply and demand, production, and distribution. In addition, fluctuating numbers of key workers due to illness and the so-called Great Resignation have made it difficult to keep production and transport on schedule. In response, 75% of manufacturers worldwide plan to fight this by reshoring (bringing operations closer together geographically) and localising supply lines.

This points to the need for organisations to be agile and responsive to changing demands and global environments. Such agility can only be achieved when teams are ready and supported to pivot at a moment's notice. For today's employees it is essential that, when they are asked to adapt, employers offer quid pro quo in terms of enhanced scheduling and communication channels.

Manufacturers can adapt to change and battle short staffing with enhanced scheduling abilities to assure shifts are filled with qualified workers. At the same time, these tools can enable greater flexibility for employees. Digital communication abilities allow for real-time process changes and streamlined two-way dialogue with workers who are often deskless. Advanced analytics in labour forecasting can optimise the use of labour to meet demand.

Trend #3: Brain Drain and Skill Deficits

It is not just people willing to work in manufacturing who are in short supply. Those that do are increasingly lacking the skills the industry needs most, and closing the skills gap

is a constant challenge. As the talent pools shrink, 57% of manufacturing leaders say they lack skilled workers to support plans to implement smart manufacturing.

Part of the issue is that training is seen as a costly process, both in terms of time and money. Moreover, many standard training methods are inefficient, with many employees forgetting most of the content within six months of undertaking training.

With digital workforce management tools, new training materials can be provided at any time to employees and sent directly to their personal devices. Whether brand new workers or seasoned professionals looking to fine tune their skills, these in-the-moment, micro-training opportunities provide workers with the tools to troubleshoot any obstacles that may interfere with their work.

This won't solve the whole skills issue, but can go a long way in ensuring that your employees are supported, in the moment, to be effective, safe, and productive, with access to resources they need.

Another obstacle to delivering heightened employee experiences to manufacturing workers is that they are often dispersed and deskless. There is an experience gap between those in office roles and those providing vital deskless services. Deskless workers need a more creative approach to ensure they are engaged.

This is where digital technologies are closing the experience gap. The opportunities digitalisation can bring to workers must be integrated as part of a strategy of holistic innovation. Where digital technologies meet human talent, the future is created - no matter the industry or workplace.

Workforce Software
www.workforcesoftware.com

A BETTER PLAN FOR MAINTENANCE



WEG explains the success of its digital predictive maintenance platform, WEG Motion Fleet Management (MFM), at its own facilities

Fuelled by fierce demand for faster and more efficient production, growth in Industry 4.0 spend is predicted to reach \$300 billion USD by 2023. This data comes from IoT Analytic's *Industry 4.0 and Smart Manufacturing* report, which states predictive maintenance technologies are among the top Industry 4.0 use cases. For the last five years, WEG has been developing its own digitalisation portfolio to fulfil this growing demand.

Prior to launching the WEG Digital business unit in 2019, WEG was exclusively focused on the manufacture of industrial hardware. WEG boasts 1,200 product lines including motors, drives, generators, transformers and automation products. In fact, WEG has the world's largest electric motor manufacturing plant and produces a colossal 70,000 electric motors every day across the world.

As a global manufacturer, WEG understands the needs and demands of its customers and their industrial facilities. Among the biggest challenges has been deploying technology to optimise maintenance.

Like many industrial sites, WEG had previously applied a preventive maintenance methodology. As the name suggests, this is the regular, routine maintenance of equipment. Usually, for instance, the bearings in a motor might be relubricated on a six-monthly basis and entirely replaced every five years – regardless of genuine wear and tear.

"At our own plant, we were spending a huge amount of time and money on preventative maintenance," explained Trenton Roncato

Juraszek, mechanical project analyst at WEG. "However, we were still experiencing some unexpected breakdowns and subsequent downtime, forcing us to perform costly corrective maintenance. We knew our customers must be experiencing the same problems too, and we knew that better data was the solution."

WEG began to delve into digitalisation in 2017 with the development of WEG Motor Scan. This is a physical sensor that can be attached to a motor – or a peripheral drive, compressor or fan – to monitor its vibration, temperature and performance. The sensor is fixed by screw on the motor fin, so there is no electrical connection needed.

The flexibility of the sensor was imperative for WEG to source data from legacy equipment. Like most manufacturers, the equipment in the plant varied in age, original equipment manufacturer (OEM) and communication protocol, meaning acquiring data directly was not always possible. This level of scalability was crucial for WEG's ultimate goal of achieving total asset management through digital technologies.

WEG Motor Scan was launched with WEG Motor Scan Gateway, the technology for sending autonomous motor data to the cloud, either through WiFi, Ethernet or 3G or 4G connection. WEG Motor Scan Gateway was crucial for unlocking remote monitoring of electric motors embedded with sensors. Ultimately, this formed the launch pad for the next phase of WEG's digital portfolio, the WEG Motion Fleet Management (MFM).

MFM uses data fed through the WEG Motor

Scan Gateway to generate real-time insights of asset performance, providing maintenance teams with a holistic view of the entire facility and its respective assets.

"Through periodic data collection, MFM generates valuable insights to inform maintenance teams on the actual state of plant assets," explained Juraszek. "Ultimately, this reduces the need for preventative maintenance schedules and allows maintenance engineers to easily see which assets are showing signs of wear or abnormal behaviour, allowing them to identify critical problems and act accordingly."

The entire platform is designed around usability. It includes customised layouts for navigation for different stakeholders, as well as numerous reports and dashboards with indicators, graphics and historical data. For maintenance engineers, it creates an optimal way to manage workflow, and for plant managers it provides a plant-wide overview of performance.

Following its development, MFM was deployed at one of WEG's facilities for electric motors, based in Jaraguá do Sul, Brazil. The site is responsible for the production of 8,000 motors each day and MFM has been imperative in improving the maintenance for this site. Following its success, there have been over 1,378 sensors deployed in only one of WEG's factory plants to enable MFM.

"The scalability of WEG's digital portfolio allows us to use MFM to integrate performance data across numerous assets and numerous plants," continued Juraszek. "At the WEG compressor centre at our Jaraguá

Industry 4.0 is a growing market, and as predictive maintenance technologies drive this expansion, WEG will continue to develop new digital tools to support its customers – and its own – needs

do Sul factory, we integrate data from every single asset, including motors, frequency inverters, pressure sensors, PLCs and gateways. This is allowing us to bring autonomous maintenance operation to this installation."

Part of this autonomy is enabled through another of WEG's digital tool, WEG Motor Specialist. This tool brings artificial intelligence (AI) and machine learning into the mix to improve predictive maintenance.

WEG Motor Specialist intelligently learns about the operating patterns of a motor during its operation, noting any indicators of unbalance, misalignment, load and consumption. Rather than relying on an engineer to input the tolerances of a motor or industrial asset, the technology uses historical data to determine when it is performing unusually.

A good example of how this works is coil temperature. The system can provide a prediction of a motor's internal coil temperature by making calculations based on surface temperature measurement. Should it determine that the coil is at risk of

overheating, it automatically advises an engineer to physically inspect the motor and determines exactly what they need to do.

The deployment of MFM and WEG's digital portfolio at its own facilities has been overwhelmingly positive. "Following the installation of MFM at WEG's wire factory based in Brazil, we achieved an annual saving of around US\$4 million per year," explained Juraszek. "This was thanks to a 33 per cent reduction of overall losses that we were previously experiencing due to unplanned downtime. Interestingly, we were also able to postpone some planned investment in new machinery, which benefited the business's

bottom line. Thanks to an improved maintenance plan – repairing and replacing only when we need to – we could make better use of the machinery we already had and extend its lifespan," concluded Juraszek.

With the creation of the WEG Digital business unit, WEG has demonstrated its commitment to developing and advancing its digital offerings. As with all of its technologies and equipment, WEG follows a vertical approach – using its own motors, drives, technologies and software wherever possible.

WEG
www.weg.net



pulsar MEASUREMENT

Excellence in flow & level measurement.

PULSARGUARD 2010 SERIES

- Maintenance-free, Non-intrusive, Solids Flow Detection
- Acoustic Sensor Range that Reacts Instantly to Changes in Solids Flow
- Warns of Blockages
- Compact Design for Tight Positions and Harsh Conditions
- ATEX and Flammable Atmosphere Approved



For your FREE quote, email europa@pulsarmeasurement.com or call us at +44 (0) 1684 891371.



NAVIGATING THE ENERGY MARKET

Michael Dugdale, managing director at Trident Utilities, explains ways of taking control of energy during these challenging times

Today's energy market is volatile to say the least. Small and medium sized businesses – particularly those in energy intensive sectors such as manufacturing – have seen their gas bills rise by anything from 250% to 500% in the last year and it's getting more challenging for organisations to know how to best procure energy.

Although the Government recently announced support for businesses with its Energy Bill Relief Scheme – which will help limit the impact of rising wholesale energy prices this winter – there are still ways organisations can navigate today's market and mitigate the pressures they face through managing risk, saving money and reducing carbon.

While it's impossible to predict every eventuality, energy market signals suggest that wholesale price volatility could be around for a further 12-24 months, which is why the Government's recent intervention should go some way to easing the pressure.

However, through being proactive, businesses can manage their risk and make a positive difference to their energy costs.

Making the right energy choices

It's vital all businesses make sure they're on the right energy contract. Unlike consumers, businesses aren't protected by Ofgem's energy price cap, so if your contract is coming

to an end, it's time to take action so you don't roll over onto an expensive standard variable rate tariff. While the government has stepped in and provided some support this winter, it is unlikely the support will continue post April 2023 for the majority of businesses.



When choosing an energy contract try and balance short-term needs with long-term benefits. The most effective approach is to look at your likely consumption profile over a three year period and break it down by the various elements that make up your bill. For example, can you reduce non-commodity charges?

Don't overlook non-commodity costs

In fact, non-commodity costs are one area that is often overlooked. These costs are all charges aside from wholesale energy costs, such as Transmission Use of System (TUoS) charges, Distribution Use of System (DUoS) charges and Capacity Market (CM) charges. There is the potential to make thousands of pounds of savings every year through negotiating fixed or pass through terms and taking advantage of energy policy incentives and subsidies available to your business.

Finally, when it comes to energy contracts, have you considered whether you are better off on a fixed or flexible contract? Many SMEs

are likely to have opted for fixed contracts for budget certainty, but with the help of the right partner, and innovative purchasing framework solutions, flexible contracts and the benefits of increased purchasing power aren't just for bigger businesses.

A proactive energy partner will be able to group businesses with a similar level of energy demand and risk approach into a single purchasing framework, allowing them to negotiate contract terms with suppliers as if they were one single larger consumer. An expert will be able to help with all of this and advise which is the best solution for an individual organisation for today and for the longer-term.

You should also regularly – at least annually – revisit your energy contract terms to check they meet your current usage profile, business plans, working patterns and approach to energy efficiency. You don't have to wait until it's about to expire.

Embracing the benefits of net zero

While it may feel like there are bigger energy related topics to tackle, decarbonisation makes commercial sense now and is one way businesses can help manage overall energy costs. If businesses can optimise their energy costs, not only is this going to put them in the best possible position today, when we do see energy prices settle, it will help their business thrive.

Many organisations have embraced basic energy efficiency measures but there's almost always more that can be done to cut consumption. A good place to start is with an energy audit, so you have a clear picture of where you're using energy and then how you can reduce it. Organisations can then look at whether they can lower their energy use from the grid further and increase energy resilience with on-site generation. This includes measures such as solar PV, air source heat pumps, LED lighting and combined heat & power.

While energy market volatility is set to continue, what I can say with certainty, is that it is possible to make a difference to how your business is impacted through embracing measures to take control of energy. To reap the most benefits in terms of reducing energy risk, businesses should take a more holistic approach to energy management that aligns to broader business objectives. Make sure your organisation's energy strategy is a board level concern and that everyone is engaged. Then measures such as getting the right energy contract, reducing consumption and installing on-site generation will have the maximum impact when it comes to reducing energy costs and helping weather the current energy market storm. The future is a bright, more energy efficient one.

Trident Utilities
www.tridentutilities.co.uk



Accurate distance measurement
for every application



DIMETIX D-SERIES

- 100m range on natural surface (no reflectors needed)
- Fast measurements up to 250Hz with 1kHz output
- 1mm absolute accuracy, independent of colour, texture and distance
- Outdoor and indoor use
- Shock and vibration certified

www.dimetix-uk.com

TEL: + 44 (0)1727 85 93 73 EMAIL: sales@sensorsuk.com

Protecting Your Plant

Instant Shutdown **Before** Things Go Wrong



**Motion Sensor's
for all industries**

Rotech Motion Sensors can be used whenever information or monitoring of shaft rotation, position, direction, speed, slip etc, is required, for indication, control, interlocking, protection, sequencing, alarm initiation, and many more functions.

Wherever materials are transported or processed by Conveyors, Elevators, Screws, Crushers, Mixers, Etc, there are applications for Rotech Motion Sensors

ROTECH FOR RELIABILITY!

ROTECHSYSTEMS

Web: rotechsystems.co.uk

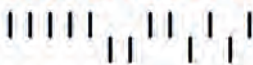
Email: sales@rotechsystems.co.uk

Tel: +44 (0)151 356 2322



food
textiles
glass
coal
steel mills
fertilisers
utilities
coal
ore
water treatment
glass
grain
ash
cement
roadstone
gravel
offshore
power generators
aggregate
fertilisers
food
dock installations
sand
stone... ..and many more!

katronic



KATflow 200 Handheld clamp-on flowmeter

Non-invasive ultrasonic flow
measurement
from the clamp-on
specialists



+44 (0) 2476 714 111 • info@katronic.co.uk • www.katronic.com



The LHS 210 / 410 Air Heater Series

Leister's new series of compact and powerful LHS 210 / 410 air heaters are suitable for installation in industrial plants where space is limited or tubular air systems such as furnaces for heat curing processes, due to their compact design and ease of integration. With a choice of eight air heaters with single (SF) or dual flanges (DF), the innovative design allows for easy electrical connection, with connection housing separated from the airstream, which allows unhindered air flows through the air heater with minimal loss in pressure. The connection housing is also protected against overheating, making it possible to work with an air inlet temperature up to 350 degrees Celsius. The SF-R and DF-R air heaters are equipped with an extension on the housing connection. The ceramic inside this extension ensures that the electrical connection on the tubular air heaters is sealed off and protected from high temperatures or backflowing hot air.

Welwyn Tool Group
0800 856 0057
www.welwyntoolgroup.com

C.K TOOLS LIGHTS THE WAY WITH NEW HEAD TORCH

CK Tools, the trusted choice for trade professionals, has launched a brand-new Wide Field Head Light (T9630) to ensure greater visibility and safety when accessing wires or cables in dark and confined spaces.

The COB LED head light comes with an RRP of £39.00 and four modes of operation – spotlight, wide field, full beam, and dipped beam – providing the versatility needed to suit all manner of environments electricians find themselves in.

More importantly, the head light performs at a high CRI (Colour Rendering Index) rating of 80, which when optimised with a combination of 400 lumens of brightness (equivalent to a 40w LED bulb) and 5,700 kelvins of colour temperature (similar to natural light) means it can more closely project the true colour of the object it is shining on – critical when working with coloured electrical wires in dark spaces.

For extra portability, the head light is charged via USB, with six hours of runtime, three hours of charge time, and a charging indicator. To withstand the variety of environments and spaces it will be used in, the head light also comes with an IK-07 impact rating and IP-54 ingress protection from limited dust and water spray, for extra durability.

Paul Pugh, Head of Marketing at CK Tools, said: "Accessing wires in dark and confined spaces is a necessity for every electrical engineer, and it becomes that little bit harder in the winter months when brighter, natural light is less abundant.

"What many don't consider is that the source of light is just as important as the tools being used on the wires – if not more so; it can make the difference in cutting or connecting the right wires. This is where electrical engineers should be looking beyond just practical elements, such as the portability and price, and placing more importance on the CRI and Kelvin capabilities of their light choices."

C.K Tools
01758 701070
www.carlkammerling.com



CSI chemical service pump range expands to meet demands of global ISO market



With the introduction of additional models to our CSI chemical service pump range, we are expanding our ISO sealless magnetic drive pump offering and meeting the needs of an even wider range of chemical pump applications. The CSI chemical service sealless magnetic drive pump range has been expanded to include additional models, providing comprehensive hydraulic coverage with a total of 13 Frame 1 and 16 Frame 2 sizes. Meeting ISO dimensional and construction standards 2858 and 15783, the

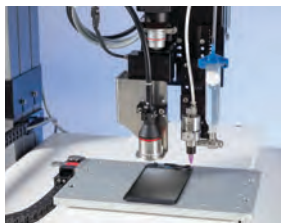
expansion of the CSI range has focused primarily on additional hydraulics and a feature set which allows greater variation in the inlet and outlet sizes, allowing a wider range of flow rates of up to 120 m³/h and heads up to 62m, all optimised for high performance.

HMD KONTRO +44(0)1323 452 000 www.hmdkontro.com/csa-csi

Automated Optical Inspection from Nordson EFD Verifies Fluid Deposit Placement and Accuracy

OptiSure AOI add-ons provide optical assurance of fluid deposit accuracy and integrate seamlessly with Nordson EFD's proprietary DispenseMotion™ software. Using robots' existing vision systems to verify fluid deposit widths and diameters, the AOI software determines if dispense requirements have been met. Constant closed-loop feedback provides automated. When paired with the OptiSure confocal laser, the AOI software measures the height of a fluid deposit in addition to the width and diameter – providing 3D deposit verification. Instant quality feedback eliminates the need to purchase additional QC equipment while increasing customer confidence and trust. In addition, the confocal laser detects deposit height measurements regardless of the transparency of the fluid, which can sometimes distort quality data. The intuitive, user-friendly interface of the DispenseMotion software greatly reduces operator training time – offering a huge time savings when compared to standard AOI stations that require extensive training and programming.

Nordson EFD uk@nordsonefd.com www.nordsonefd.com



Hart's completes its largest Speedor Storms' order

Hart Door Systems has completed its largest order for its Speedor Storm door, the high-performance exterior roller door designed for frequent use in high traffic situations and constructed to withstand harsh environments including 90mph for wind class 5. Brian Woodcock, Hart's regional sales manager for the Midlands and South West, says the rapid roll door, with its robustness, low maintenance and exceptional wind resistance was required for Fruehauf's Grantham factory, Lincolnshire.

"With half a dozen major storms so far this year and more to come there is a noticeable increase in enquiries for a high speed door which can withstand exceptional weather," says Mr Woodcock. The order for 15 'Storms' is for a pre-World War I building which has been undergoing phased redevelopment to create new space and streamline production. The high-speed Storms will help to reduce energy consumption, keep the building warmer and more efficient. Mr Woodcock adds: "While its high-speed opening and closing action improve efficiency, the energy-saving potential of this rapid roll door is high, controlling internal temperatures as well as reducing escaping dirt, odours and noise."

Hart Doors
0191 214 0404
www.hartdoors.com



How High Shear mixing can improve your Pharmaceutical Emulsions

In the pharmaceutical industry, emulsions are a key component in many formulations and products. Emulsions are used in the manufacture of pharmaceutical creams and lotions through to more complex applications such as adjuvants to improve the immune response to the antigens used in vaccinations. Whether it is a Water-In-Oil (W/O) emulsion or an Oil-In-Water (O/W) emulsion, getting the emulsion to remain stable in order to deliver the desired results – e.g. improved immune response – can be a challenging task.

Whichever type of emulsion you are manufacturing, and for whichever product, the goal is the same: The globule size needs to be reduced sufficiently enough so that the oil and water phases are finely and uniformly dispersed into one another, ensuring that when the mixer is stopped, the phases remain combined and don't begin to separate.

Some types of mixing equipment, such as stirrers and agitators, simply move the two phases around and don't have any significant effect on the droplet size. So even though it may appear visually that the two phases have been combined, after time they will begin to separate. Separation of the emulsion is to be avoided as this can affect the shelf-stability, product quality and can even make products such as adjuvants unusable due to inconsistencies between batches.

So while conventional mixing equipment like stirrers and agitators have their uses and are sufficient for simple blending tasks, a high degree of shear energy is required in order to obtain the finest possible droplet size. The more shear energy introduced into the mix, the smaller the droplets will become. As such, high shear rotor/stator mixers are advantageous for creating stable emulsions.

Silverson high shear mixers can easily achieve emulsions with a globule size of 2 to 5 microns. Finer emulsions down to 0.5 microns can be obtained, depending on the formulation. This is achieved as follows:

the large globules from both phases are drawn by the high speed rotation of the rotor blades into the centre of the workhead. The globules are driven towards the workhead periphery by centrifugal force where they are subjected to a milling action in the narrow gap between the rotor blades and the inner wall of the stator. The globules are then subjected to additional high shear energy by being forced at high velocity through the stator perforations – in this case an emulsor screen, an interchangeable workhead which is available for all Silverson mixers. The smaller droplets are expelled radially from the workhead into the bulk of the emulsion, where the mixing cycle continues until the targeted droplet size and stability are achieved.

Silverson
sales@silverson.co.uk
www.silverson.co.uk



Dual Pumps is the official UK distributor for Interpump

Established in 1975, Dual Pumps Ltd is a leading supplier of pumps, fluid handling components, agricultural & industrial spraying products, pressure washers, pressure wash accessories & cleaning equipment.

Our expertise and levels of customer service make us a preferred supplier for many leading manufacturers, distributors, hire shops and service centres across a broad range of industries in both the UK and export markets.

We offer thousands of products and spare parts, all available to order via our customer service centre or online and mobile platforms.

In 2021, we were trusted to serve over 2,500 customers and 99% of customers surveyed, rated our service as good or excellent. Our substantial stock holding ensured we despatched over 94% of more than 110,000 order lines on request and on time from our modern 35,000 sq.ft distribution centre in rural Leicestershire.

Dual Pumps is the official UK distributor for Interpump

Interpump is the largest and most innovative manufacturer of high-pressure plunger pumps in the world. They have revolutionised the industry by producing pumps of exceptional quality that are universally acknowledged as technological masterpieces.

We pride ourselves on our long-lasting relationships with our customers and suppliers built on trust and excellent service.

- Customer Care & Sales team are ready to take your orders and help with any enquiries.
- Technical experts to offer advice.
- Dual Pumps have a proud tradition of long-serving staff.



Dual Pumps
<https://www.dualpumps.co.uk/>
<https://www.dualpumps.co.uk/catalogue-request>



SEPURA's World Class Filtration

Since filtration specialist Bowman Stor developed its first separator in 2004, the reputation of its unique range of SEPURA™ oil/water condensate-filtering equipment has continued to grow, driven by smart design, excellent service and game-changing filtration media.

At the heart of SEPURA's outstanding performance (with condensate output levels as low as 5 mg/ml (5ppm) oil content) and exceptional service life is SILEXA™ filtration media; a patented sustainable, oil-adsorbing material developed in Bowmans' own R&D facilities.

A proud UK manufacturer, Bowman has wasted no time in sharing its SEPURA products with the rest of the world, helping industries on almost every continent to meet their environmental targets. Having forged strong international partnerships, the Walsall-based company has now established a network of highly-dependable distributors, strategically-located around the globe.

Multi Factor Europe Ltd.,
t: 01978 855995
sepura-technologies.com

Springpacks Carbon Neutral Changes

You might recall the Carbon Neutral Pledge that Springpack announced in September 2021.

In short, Springpack wanted to make some changes to how they ran the business, making it even more environmentally friendly. They weren't small changes either. They were big changes. And that's just what they've done! Possibly the biggest change they have made to reduce their carbon emissions was launched in March 2022.



Following vital feedback from their customers, they simplified their delivery offer, moving to 2 delivery zones. Springpacks customers asked them to help them reduce their impact on the environment, and their new offering does just that. More orders are now being consolidated, with fewer deliveries being made to their regular customers.

The impact of this change was felt straight away, and the company will see the benefit when they analyse their carbon footprint for 2022.

Springpacks Carbon Neutral Changes – E-Cargo Bike Delivery Trial

In August 2022, Springpack wanted to reduce their Carbon Emissions even further, so they jumped on 2 wheels (well, 3 actually) to make some deliveries by bike!

Working with Raleigh on this project, Springpack are currently trialling completing some local deliveries using one of their e-cargo bikes.

Keep your eyes peeled for the Springpack team riding around Worcester, and give them a wave if you see them!

SpringPack Ltd
01905 457 000
springpack.co.uk

THREE MAJOR ACCREDITATIONS CONFIRM LANEMARK COMBUSTION ENGINEERING'S QUALITY, ENVIRONMENTAL AND MANUFACTURING PERFORMANCE

Process gas heating specialists Lanemark Combustion Engineering Ltd. are delighted to announce the achievement of three major industrial international accreditations which, simultaneously, define the company's management, environmental and health and safety commitment.

"By being able to hold ISO 14001 Environmental Accreditation, ISO 45001 Health and Safety Accreditation and ISO 9001 Quality Accreditation at the same time reflects well on both our organisation and, of course, the people within it," says Alan Thompson, Lanemark's Operations Director.

ISO 14001 certification demonstrates Lanemark's commitment to controlling environmental impact, meeting relevant legal obligations and its focus on continuous improvement. Alongside this, ISO 45001 shows specific compliance with Health and Safety law and reflects on the methods and procedures across a wide range of company activities. Similarly, ISO 9001 demonstrates Lanemark's focus on delivering consistent, high quality products and services.

"The fact that recent audits have confirmed that, in each case, our methods and performance comply with these major global standards has a direct impact from both an internal and external perspective," comments Jeff Foster, Sales Director.

"Increasingly, our customers are looking to their suppliers to deliver fully in these key areas so, apart from helping to ensure that we are meeting clearly structured goals, these certifications underpin our



sales efforts and ongoing work with customers across all markets," he adds.

Having been heavily involved in the approval processes, Lanemark's Joanne Topp, Integrated Management System (IMS) Administration Officer, and Lee Carroll, Health & Safety/IMS Training Coordinator, are now responsible for the ongoing implementation of the three standards – each of which will be subject to periodic assessment and audit in the future to ensure the high standards defined are being fully maintained.

"Since our formation in the 1980's, we have always been very conscience of the three disciplines that these awards define," adds Jeff Foster.

"As a specialist manufacturing organisation, with customers ranging from brewing and surface finishing to petrochemical processing, and working in the highly controlled field of gas engineering, we have long been aware of our own and

our customers' requirements. Now, being able to hold all three certifications concurrently demonstrates the performance and gains that can be achieved by our approach – to the benefit of all concerned," he concludes.

Lanemark Combustion Engineering Ltd.
(024) 7635 2000
info@lanemark.com
www.lanemark.com



Kardex Vertical Buffer Module a Mini-load alternative

Church Pharmacy one of the largest pharmacies in the UK were facing problems in keeping up with the number of orders they were able to process. With a manual picking process, they required a lot of space, working areas were tight and staff spent time locating and identifying products. Management considered moving premises to secure more space, working with UpSTEAM.uk and Kardex Remstar they were able to modernise processes enabling them to stay in their current premises and manage continued growth and future-proof the business. Kardex Remstar's Vertical Buffer Module (VBM) (effectively a small Miniload in a box) combined accuracy, fast picking, and enhanced security. The VBM delivered the exact product to the picker for a good ergonomic experience. The VBM stores the bulk of their stock in a small footprint, which meant that Church Pharmacy were able to stay in their current premises enabling enough space for 5x more order volume growth.

Kardex
+44 (1992) 557237
www.kardex.com

Free trial of moneo software

ifm electronic is now offering a 30-day free trial of its moneo software. This has been developed specifically to provide users of automation systems with a fast, easy and convenient way collecting the data and then visualising key metrics such as cost of energy used. The clarity of the information drives actions to typically reduce downtime, optimised efficiency and lower costs. The free trial software has no functional restrictions, so users can fully evaluate its performance in relation to their own specific applications.

Those taking advantage of the moneo free trial offer can choose from two versions of the software: moneo configure and moneo RTM.

moneo configure is a parameter-setting package that allows IO-Link networks to be configured and monitored with just a few mouse clicks. It features a scan function that provides fast detection and display of even complex IO-Link networks with multiple masters, and also offers invaluable diagnostic functions. An integrated connection to the IODD database facilitates use with third-party devices.

moneo RTM is a powerful condition monitoring tool that makes it easy for users to set up application-specific dashboards so that they can see key plant information at a glance. The software also includes flexible alarm functionality that instantly alerts the user in the event of a plant malfunction, either directly or by automatically sending an email to a designated address. Additionally, moneo RTM incorporates the parameter setting features of moneo configure.

Both of ifm's free trial moneo software packages can be run under Microsoft Windows on most modern computers. Users who decide to purchase moneo software after the trial can instantly transfer all of their configuration information and data to the paid-for version.



IFM ELECTRONIC LTD
020 8213 0000
ifm.com/gb/en

ABB's Robot Podcast is back for Season Three

The first Podcast will explore the role of robotics in driving sustainability. Weekly panel of experts from industry, media and academia look at the cutting edge of robotics, analysing how advances in automation are benefitting society and business, and what the future holds.

With seasons one and two ranking in the top five per cent of all podcasts globally in terms of listenership, The Robot Podcast from ABB returns for Season Three. Continuing to explore the world of robotics and automation in-depth, the series focuses on their benefits to society, industry and the environment.

The new season kicks off with Episode One on October 5th and looks at how robotics and automation is making production and processes more sustainable. From food production and takeaway packaging, to construction and retail – robots are already making a big difference and have the potential to do even more in the transformative decade to come. Each of the five episodes will focus on a particular theme, with a panel of experts and commentators discussing the role of robotics in making production and processes safer, more efficient and more sustainable. Fran Scott, a regular contributor to the BBC and Channel 4 in the UK, returns as host.

Subscribe now to The Robot Podcast wherever you get your podcasts, or via <http://smarturl.it/therobotpodcast>

ABB Robotics
01908 350300
<https://new.abb.com/products/robotics>



Genesis – The Birth Of A New Type Of Multiphase Detector

Magnetrol's revolutionary multiphase detector, Genesis, is a Time Domain Reflectometry Device (TDR) based level detector designed to accurately define and quantify the various layers in multiple interface level measurement.

Encompassing a number of significant engineering developments from Magnetrol's progressive engineering team, this innovative level detector can deliver a full interface profile of a vessel with performance which surpasses many of the more traditional technologies. Utilizing patented "Top-Down" and "Bottom-Up" signals, along with advanced level detection algorithms, Genesis can be deployed in a wide variety of interface applications ranging from very light hydrocarbons to water-based media.

For example, Genesis can be used to define the multiple interfaces (Sand – water – emulsion – oil – gas) with exceptional precision and can even identify the magnitude of any emulsion layer.



ABLE
0118 9311188
info@able.co.uk

KECOL

PUMPING SYSTEMS



Drum Unloading Pumps & Systems for Viscous Products



ANTI-VIBRATION MOUNTS

Manufacturers of High Quality Anti Vibration Products

FIBET



Email: sales@fibet.co.uk
Visit: www.fibet.co.uk
Tel: 01282 878200

BATTERIES

MDS

the battery specialists

MDS supply all types of batteries and are the UK distributors for CSB VRLA batteries, holding good stock of all lines and sizes.

MDS Battery Ltd
1 Riverwalk Business Park
Jeffreys Road
Enfield
EN3 7QN
Tel: 0800 310 2100
Fax: 01992 70703
Email: sales@mdsbattery.co.uk
Web: www.mdsbattery.co.uk

CONDENSATION FILTRATION

The Specialists in Condensate Filtration



Email: sales@mfeuk.co.uk
Web: www.sepura-technologies.com

FLUID DISPENSING



FLUID DISPENSING SYSTEMS

Nordson EFD
Unit 14, Apex Business Centre
Boscombe Road,
LU5 4SB Dunstable, U.K.
Tel: 01582 666334
E-mail: europa@nordsonefd.com
Web: www.nordsonefd.com
Twitter: @NordsonEFD
Video Gallery:
<http://videos.nordsonefd.com/>

ENCLOSURES


PROCESS CHILLERS

- Process Chillers, Machine Chillers, Computer Room Chillers
- Local Support & Global Service
- 1 to 480kw Chillers



T: 01709 704000
E: info@rittal.co.uk
W: www.rittal.co.uk

FLOW METERS



Micronics are specialists in the design manufacture and application of Ultrasonic "Clamp-on" non-invasive - Liquid Flow, Level and Open Channel Meters. We have Fixed Meters and Portable Instruments suitable for clean and contaminated liquids in closed pipe or open channel applications throughout the process, chemical, food, water and building services industries. Our Products are available for Sale or Hire and as an alternative we offer a Specialist Metering Service. Contact us for an on-site demonstration of your application.

Micronics Ltd
Knives Beech Business Centre Davies Way, Loudwater, High Wycombe, Buckinghamshire HP10 9QR
Tel: 01628 810456
Fax: 01628 531540
Email: sales@micronicsltd.co.uk
Web: www.micronicsflowmeters.com

FORCE MEASUREMENT



Load Cell, Torque and Pressure Sensor Specialist

Interface's new Global Standard product line - The G Series

- Three load cell types – the load button, mini S-beam & threaded In-Line.
- Capacities ranging from 200 Newtons to 50kN.
- Stainless steel with an environmental protection rating of IP64 or better.

www.interfaceforce.co.uk

FORCE MATERIALS & TORQUE TESTING SOLUTIONS



Mecmesin

Mecmesin Ltd
Newton House,
Spring Copse Business Park,
Slinfold, West Sussex. RH13 0SZ
Tel: +44 (0) 1403 799979
Fax: +44 (0) 1403 799975
Email: info@mecmesin.com
Web: www.mecmesin.com

FLOW MEASUREMENT



Innovative liquid flow measurement solutions

• Ultrasonic • Turbine • Oval Gear Flowmeters



TITAN ENTERPRISES LTD www.flowmeters.co.uk tel: +44 (0)1935 812790

HIGH SHEAR MIXERS



High Speed, High Shear Mixers
for Laboratory to Full Scale Production

www.silverson.co.uk • sales@silverson.co.uk



LSM-A
Laboratory
Mixer



In-tank
Batch
Mixer



High Shear
In-Line Mixer



Flashmix
Powder/Liquid
Mixer

MIXERS

IBC Mixers 100% Satisfaction Guaranteed



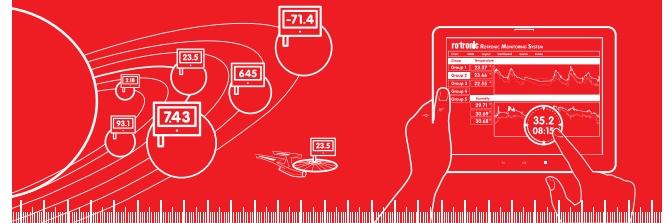
Please email or call - it's our pleasure to help



Tel: 0161 486 5099
Email: sales@euromixers.co.uk
Web: www.euromixers.co.uk

MEASUREMENT SOLUTIONS

The Rotronic Universal Monitoring System – RMS



Monitoring environmental conditions in any industry requires a fully integrated monitoring system. The modular Rotronic Monitoring System – RMS is the perfect solution. It provides installation flexibility and full data availability, anywhere, and on a variety of devices. Rotronic can meet your requirements, incorporating multiple sensors for all parameters on a secure network. We can service the entire system.

Visit www.rotrotronic.co.uk/rms
for more information

rotronic
MEASUREMENT SOLUTIONS
A PST BRAND

ROTRONIC Instruments (UK) Ltd, Crompton Fields, Crompton Way,
Crawley, West Sussex RH10 9EE
T: 01293 571000

MACHINE SAFETY



Schmersal

E: uksupport@schmersal.com

W: www.schmersal.co.uk

MONITORING SOLUTIONS

ROTECH SYSTEMS

FOR ALL YOUR INDUSTRIAL
MONITORING SOLUTIONS

Why Accept Anything Less?

- ENCODERS
- CONTROL MODULES
- VIBRATION SENSORS



www.rotechsystems.co.uk

Sales@rotechsystems.co.uk Tel: +44 (0)151 356 2322

PUMPS

BÖRGER

FLOW OPTIMIZATION SECOND TO NONE
The New BLUEline **Nova** Rotary Lobe Pump



BLUEline
NOVA

www.newblueline.com

Börger UK Limited • East Wing • Old School • Watling St. Gailey • Staffordshire • +44 1902 798977 • uk@boerger.com • www.boerger.com

Materials Handling Solutions Designed for you

Vacuum Lifters
Customised solutions
GMP equipment



OEM AND SYSTEMS INTEGRATION



Tel: +44 (0)1489 780144
Email: info@bvmltd.co.uk
Web: www.bvm.co.uk

PUMPS



The widest range of pumps available

Tel: 01283 523000
Email: sales@wilo.co.uk
Web: www.wilo.co.uk

PROCESS SENSORS



Products include:

- Pressure sensors
- Temperature sensors
- Level sensors
- Flow sensors
- Condition monitoring
- Valve control

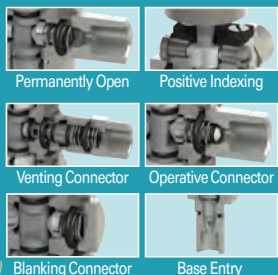
ifm electronic Ltd
Web: www.ifm.com/uk
Email: Orders.gb@ifm.com

VALVES

Rotary Selector Valve

Multiple configurations
for a Multitude
of applications

Available in 4 and 6
Port Versions



Tel: +44(0)1424 205140 | sales@drallim.com | www.drallim.com

PROCESS WATER TREATMENT



Drastically reduce the
cost, footprint and energy
consumption for industrial
and process water.

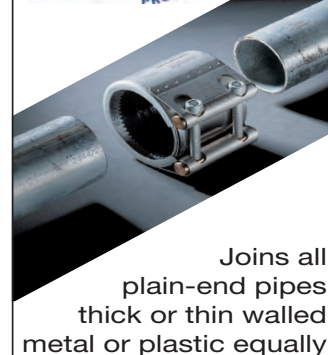
The Hydro MicroScreen™ is
a low-energy, small-footprint
rotating belt screen that delivers
exceptional solids removal from
process water and wastewater.

Learn more at:
hydro-int.com/microscreen
or call: 01275 878371

PIPEWORK



The Pipe Joint
"With STRAUB, pipe joining
and repairs are carried out
quickly and economically
with total reliability"



Joins all
plain-end pipes
thick or thin walled
metal or plastic equally

**the original
Swiss Innovation**

Tel: 0118 9503 707
Fax: 0118 950 4066
www.straub.co.uk

PIPEWORK



jacob-group.com/uk
sales@jacob-uk.com
Tel: 01694 722841

PROCESS INSTRUMENTATION



Part of your business

Valves and manifolds
... for process instrumentation

- Needle valves/manifolds
- Monoflanges/monoblocks
- Double block and bleeds
- High pressure valves

Tel: 01737 644008 · www.wika.co.uk

CONDITION MONITORING



9085 - Intelligent Vibration & Bearing Condition
Analyser with **Instantaneous Temperature**
& subscription FREE powerful Trending Software

tpieurope.com cbmsales@tpieurope.com +44 (0) 1293 530196



PROCESS INSTRUMENTATION
AND CONTROL SPECIALISTS

We want our customers to benefit from our experience, expertise and independence. The depth of instrumentation knowledge and our ability to apply a diverse range of technologies has established ABLE as a leader in providing the right solution, whatever the requirement. In short, being able to make your measurement is more than what we do, it's who we are.

ABLE Instruments & Controls Ltd

Cutbush Park,
Danehill, Lower Earley,
Reading,
Berkshire.

RG6 4UT. UK

Tel. +44 (0) 118 9311188 |

Fax. +44 (0) 118 9312161

Email: info@able.co.uk

Web: www.able.co.uk

ROBOTICS

KUKA

Hygiene at a high level
_ KUKA DELTA robots
designed for use in highly
sensitive conditions



Thanks to its stainless steel
body, the KR DELTA is ideally
equipped for hygienically
sensitive areas, such as direct
contact with food

www.kuka.com

TELEMETRY & CONTROL



Churchill Controls Ltd. is a
manufacturer of a range of
telemetry products. Our
flagship product *Mega_Link*
is a versatile telemetry
system for communicating
instrumentation & control
data between industrial
processes, remote
equipment and across
multiple sites.

Mega_Link uses de-
regulated unlicensed UHF
radio and/or the national
GSM/GPRS networks and
removes the dependency
for cables and is the ideal
solution for all your remote
sensing, instrumentation,
M2M, telemetry and control
applications.

- Digital: 8 inputs, 8 outputs
- 4-20mA: 2 inputs, 2 outputs
- Expansion module options
- RS232/485 serial; Modbus,
Allen Bradley and Mitsubishi

For a brochure contact:

Churchill Controls Ltd.

01344 750233

sales@churchill-controls.co.uk

www.churchill-controls.co.uk

SENSORS



Manufacturers of
Process Instrumentation
Since 1911

FLOW
MASS
DENSITY
LEVEL
PRESSURE
TEMPERATURE
ANALYTICAL

Tel: 01623 427701
info.uk@kobold.com
www.kobold-direct.co.uk

PRESSURE TRANSMITTERS

**ESI Technology Ltd**

Sensor House, Wrexham Technology
Park, Wrexham LL13 7YP
Tel: +44 1978 262255
Email: sales@esi-tec.com
Web: www.esi-tec.com

VALVES & STEAM TRAPS

ARI-Armaturen UK Ltd
Energy House, Fomal Industrial Park, Northway Lane,
Tewkesbury, GL20 8GY
Tel: 01684 275752
Email: marketing@ari-armaturen.co.uk
Web: www.ari-armaturen.com

PUMPS

www.dualpumps.co.uk

SPRINGS

**Simpson Springs**

Simpson Springs is a precision
manufacturer of high Quality parts
with almost 50 years of experience.

- Springs
- Pressings
- Wireforms

Simpson Springs & Pressings Ltd

T: 01189786573

E: sales@simpsonsprings.co.uk

W: www.simpsonsprings.co.uk

SURFACE TREATMENT

BLACKFAST
So simple to do in-house
for the best BLACK finish

BLACKFAST CHEMICALS
Unit 5 Russell House, Molesey Road
Wotton-on-Thames, Surrey KT12 3PE
Tel: 0208 339 7370 Fax: 0208 339 7371
Email: sales@blackfast.com
www.blackfast.com

SPRINGS

Lee Spring
leespring.co.uk

**25,000+
Stock Springs**

Call: +44 (0)118 978 1800
Visit: leespring.co.uk

SEALS AND BEARINGS



Supplier to
maintenance
engineers since 1980.

Visit our web shop or contact us direct.

Tel.: 01242 241 022 Fax: 01242 253 214

info@maydayseals.co.uk
Buy online at www.maydayseals.co.uk

SWIVEL JOINTS



- Swivel joints allow
pipework to rotate
whilst carrying fluid
under pressure
1/4" to 40" and
beyond
- Vacuum to over
20,000psi
- Stock and bespoke production
- Unique bearing/seal
design for longer life
- ISO 9001 & CE
marked where
applicable
- In-house
hyperbaric testing

ROTAFLW
THE SWIVEL JOINT SPECIALISTS



tel: 44(0)1663 735003
sales@rotaflow.com
www.rotaflow.com

Rotaflow FV Limited
Rotech House, Blingswood Trading Estate,
Whaley Bridge, High Peak SK23 7LY

STEAM AND THERMAL ENERGY SOLUTIONS



Charlton House, 15 Circencester Road, Cheltenham, Gloucestershire GL53 8ER
Tel: 01242 521361 Email: uk.enquiries@uk.spiraxsarco.com
Web: sxscom.uk/SpiraxHome

ROTARY VALVES



GO FOR FUTURE-PROOF VALVES, SERVICE AND MAINTENANCE

BECAUSE THERE IS ALWAYS A NEW FUTURE AROUND THE CORNER.

Call DMN-WESTINGHOUSE for a free survey:
+44 1249 818 400.

DMNWESTINGHOUSE.COM

DISPLAYS AND SENSORS



MMS Electronics is a supplier of:

- Intelligent displays with I2C, SPI, Serial or USB
- Colour TFT, LCD, OLED
- Display-on-Glass Technology
- ePaper / e-INK products
- Arduino display shields
- Displays with Android OS
- Touch-screens & Bezels



- Digital Temperature sensors
- Infra-red temperature modules
- Frequency Measurement
- Pressure sensors
- Capacitive Measurement

MMS Electronics
Tel: 01943 877668
Email: sales@mmselectronics.co.uk

TEMPERATURE



- Temperature Sensors - thermocouple & Pt100
- Thermocouple Connectors
- Thermocouple & PRT Cables
- Digital Thermometers & Loggers
- Component Parts for Sensor Manufacturers
- Dry Block Calibrators
- Temperature Handbook

Labfacility Ltd
Tel: +44(0)1243 871280
Tel: +44(0)1909 569446
Fax: +44(0)1909 550632
Email: info@labfacility.com
Web: www.labfacility.com

PUMPS

FLOW OPTIMIZATION SECOND TO NONE

The new BLUEline Nova Rotary Lobe Pump



Börger UK Ltd • T: +44 1902 798977 • uk@boerger.com • www.boerger.com

TELEMETRY & CONTROL



Mega_Link is a cost effective and versatile radio telemetry system for passing two-way instrumentation, measurement and control data between industrial plant and site locations. Our equipment is used by all UK water companies for fresh water supply, wastewater, land drainage and other applications include industrial, chemical works, landfill and boiler monitoring.

TELEMETRY & CONTROL

- POINT to POINT and POINT to MULTI-POINT
- LONG DISTANCE via REPEATER SITE(S)



FLEXIBLE COMMUNICATIONS

- Licence Exempt UHF Low Power Radio
- GPRS & 3G Mobile Networks
- Leased Line and Private Wire

SENSOR and DATA INTERFACES

- Volt-free DIGITAL I/O and 4 - 20 mA ANALOGUE I/O
- RS232/RS485 Serial Modbus, Allen Bradley DF1 and Mitsubishi

- FULLY CONFIGURABLE and EASY TO USE with BUILT-IN DISPLAY
- EXCELLENT TECHNICAL SUPPORT and SPARES/REPAIR BACKUP
- RADIO PATH SITE SURVEY and COMMISSIONING SERVICE

Contact us: 01344 750233

sales@churchill-controls.co.uk

www.churchill-controls.co.uk

VALVES



Advanced Valve Solutions have a long standing proven track record of the design, engineering and delivery of custom high-end valve systems for a wide range of sectors, including the power, oil & gas, petrochemical, paper and food/beverage industries.

From our offices in the Netherlands, Great Britain and United States, we work closely with long established high quality manufacturers to provide a wide range of products including: steam attenuators, control valves, isolation valves and bypass valves.

AVS also provides additional offerings such as spares management and site solutions. Striving to build long standing working relationships, built on trust, and to deliver reliable, quality solutions at a low cost with continued support over the entire life cycle of the product.

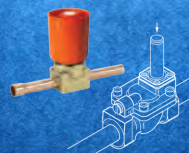


8 Solway Court, Coppicemere Drive, Crewe, Cheshire, CW1 6LD, 01270 586944

www.advancedvalvesolutions.nl/en • info@advancedvalvesolutions.co.uk



www.fridgenius.co.uk



Solenoid Valve Operating Magnets

If you need to operate a solenoid valve manually, you need a Solenoid Valve Operating Magnet!

enquiries@fridgenius.co.uk

WEATHER STATIONS



Campbell Scientific equipment, including dataloggers, sensors and complete measurements solutions, are the trusted heart of critical systems globally, transforming accurate and reliable measurement data into actionable insight.

Tel: 01509 828888

Email: sales@campbellsci.co.uk

Web: www.campbellsci.eu

BLOWERS, COMPRESSORS



AERZEN
sales-uk@aerzen.com
www.aerzen.com

CABLES



ELAND CABLES
sales@elandcables.com
www.elandcables.com

COMPRESSORS



WILKINSON STAR
Air Compressors
Spray Guns
Accessories
fiac.sales@wilkinsonstar.com
www.wilkinsonstar.com

CALIBRATION



WIKAL
info@wika.co.uk
www.wika.co.uk

CONTROLS, HEATERS & THERMAL SYSTEMS



WATLOW
Powered by Possibility
watlowleads@watlowleads.com
www.watlow.com

DRIVE SYSTEMS



NORD
info@nord.com
www.nord.com
DRIVESYSTEMS

ELECTRONIC SIGNAL FILTERS



Kemo
technical@kemo.com
www.kemo.com

ETHERNET FOR PROCESS PLANT



PROFIBUS
uk@profibus.com
www.profibusgroup.com

FLOW METERS



11tan
sales@flowmeters.co.uk
www.flowmeters.co.uk

FORCE, MATERIALS & TORQUE TESTING EQUIPMENT



Mecmesin
info@mecmesin.com
www.mecmesin.com

FORCE MEASUREMENT



WIKAL
info@wika.co.uk
www.wika.co.uk

HIGH SHEAR MIXING EQUIPMENT



SILVERSON
High Speed High Shear Mixers
sales@silverson.co.uk
www.silverson.co.uk

HOSE & FLUID COMPONENTS



HYDROSCAND
info@hydroscand.co.uk
www.hydroscand.co.uk

IOT



WIKAL
info@wika.co.uk
www.wika.co.uk

LONE WORKER ALARMS



SBES
The Lone Worker Alarm Company
info@sbes.co.uk
www.sbes.co.uk

MACHINE COMPONENTS



elesa
sales@elesa.co.uk
www.elesa.com

MACHINE SAFETY



SCHMERSAL
THE DNA OF SAFETY
uksupport@schmersal.com
www.schmersal.co.uk

MEASUREMENT INSTRUMENTS & ANALYSERS



ABB
enquiries.mp.uk@gb.abb.com
www.abb.com/measurement

MEASUREMENT SOLUTIONS & UKAS 0766 CALIBRATION



rotronic
MEASUREMENT SOLUTIONS
A PST BRAND
instruments@rotronic.co.uk
www.rotronic.co.uk

PACKAGING



springpack
www.springpack.co.uk
enquiries@springpack.co.uk

PIPES



JACOB
www.jacob-group.com/uk
sales@jacob-uk.com

PRECISION MEASUREMENT AND CONTROL



Quantum Design
UK AND IRELAND
info@qd-uki.co.uk
www.qd-uki.co.uk

PRESSURE, TEMPERATURE & LEVEL MEASUREMENT TECHNOLOGY



WIKAL
info@wika.co.uk
www.wika.co.uk

PRESSURE TRANSMITTERS



ESI
sales@esi-tec.com
www.esi-tec.com

PRESSURE TRANSMITTERS, TRANSDUCERS & SENSORS



Huba Control
FOR FINE PRESSURE AND FLOW MEASUREMENT
info.uk@hubacontrol.com
www.hubacontrol.com

PROCESS ANALYTICS AND CONTROL SOLUTIONS



METTLER TOLEDO
www.mt.com/pro
enquire.mt.uk@mt.com

PROCESS INSTRUMENTATION & CONTROL SPECIALISTS



ABLE
Instruments & Controls
info@able.co.uk
www.able.co.uk

PROCESS HEAT



LEISTER
info@welwyntoolgroup.co.uk
www.welwyntoolgroup.co.uk/industrial/

PUMPS



dual pumps
www.dualpumps.co.uk info@
dualpumps.co.uk

PUMPS



FAT PUMPS
Cat Pumps (U.K.) Limited
sales@catpumps.co.uk
www.catpumps.co.uk

PUMPS



TCS Micropumps
tcs@micropumps.co.uk
www.micropumps.co.uk

PUMPS



WANNER HYDRA-CELL
Seal-less and packing-free
design for a lower lifetime
cost of ownership.
www.hydra-cell.co.uk

QUALITY INSTRUMENT SOLUTIONS FROM KOBOLD



KOBOLD
info.uk@kobold.com
www.kobold.com

ROTATION MONITORING EQUIPMENT



ROTECHSYSTEMS
sales@rotechsystems.co.uk
www.rotechsystems.co.uk

SENSING TECHNOLOGIES



PST MICHELL
PROCESS SENSING
TECHNOLOGIES
info@processsensing.com
www.ProcessSensing.com/dewpoint/

SENSORS



Ixthus
Instrumentation
info@ixthus.co.uk
www.ixthus.co.uk

SENSORS



Variohm
Eurosensar
sales@variohm.com
www.variohm.com

SENSORS FOR AUTOMATION



EGE
info@ege-elektronik.com
www.ege-elektronik.com

STEAM AND THERMAL ENERGY SOLUTIONS



spirax sarco
uk.enquiries@uk.spiraxsarco.com
sxscom.uk/SpiraxHome

TELEMETRY & CONTROL



CHURCHILL CONTROLS
www.churchill-controls.co.uk
sales@churchill-controls.co.uk
www.churchill-controls.co.uk

TEMPERATURE SENSING AND MEASUREMENT



LABFACILITY
TEMPERATURE & PROCESS TECHNOLOGY
info@labfacility.com
www.labfacility.com

THESES BOWTIE™ RISK MANAGEMENT SOFTWARE



ABS Group
thesis@abs-group.com
www.abs-group.com/thesis

VALVES



ARMATUREN
marketing@ari-armaturen.co.uk
www.ari-armaturen.co.uk

VALVES



COAX
leading valve technology™
John.osborn@coaxvalves.co.uk
https://www.coaxvalves.com/

VISION INSPECTION



Averna
sales@averna.com
www.averna.com

Measurement & Control

www.bellflowsystems.co.uk



- Flow Meters
- Pressure Sensors
- Level Sensors
- Instrumentation
- Water Quality
- Telemetry

BELL
Flow Systems



01280 817304