

# ENGINEERING solutions MAINTENANCE

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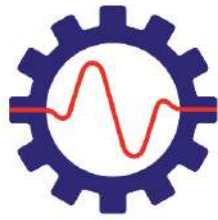
## New Adash Vibrio M - Perfection In Its Best Shape!

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Condition Monitoring  
Is Getting Easier –  
**But Which System Is  
Best For You?**

Page 24



# FARADAY PREDICTIVE

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# New Adash Vibrio M - Perfection In Its Best Shape! Vibration Meter, Analyser and Data Collector in One

Evolution takes time, and it's not easy to improve what is already great, but we like challenges, and we did it. Adash's bestselling vibration data collector, the A4900 Vibrio M, has been relaunched with significant improvements.

Supplied in kit format, in a small yet robust protective transport case, with all required components; it's ideal for operators, engineers, consultants and analysts alike. Fully integrating into the Adash DDS software suite, the device retains its simple 3-button control, standard vibration measurement(s) and outstanding FASIT evaluation tool, enabling auto diagnosis of potential failures and problems which are presented clearly to the user with visual waveforms and traffic light alarms. This allows equipment breakdowns to be avoided by non-professional users.

**Plug and play, don't bother with settings, just measure!**

This pocket sized vibration analyser and data collector has been upgraded with a larger TFT display (240x320 pixels) which ensures the screen is always visible, even in direct sunlight. The larger display further enhances the user experience when viewing FFT and time waveforms, improving front line and visual analysis and problem identification.

Replacement of the standard AA battery chamber with Li-Ion battery technology, provides a rechargeable power pack capable of providing 15 hours of continuous operation. The additional comfort of charge indication means there is no requirement for the user to carry replacement batteries or return to the office to recharge, during longer route data collection activity.

The rubber protection bumper case bolsters an already rugged industrial package, improving the overall mechanical protection and integrity, whilst covering the bottom panel has

increased the overall ingress protection from duct and moisture, ensuring this device can be utilised in the most aggressive and oppressive environments.

If you want to identify faults, prevent equipment breakdowns and save money, don't settle for second best, choose Adash and the New Vibrio M.....Perfection in its best shape!

Just like any Adash product, the Vibrio M is a one off procurement, including a free edition of the DDS2022 software. Post procurement all our customers enjoy the security and comfort of the following Adash commitments.

## 5-YEAR WARRANTY

Adash products are delivered to all customers with a standard 12-month warranty. This is extendable to 5 years when the products are bought through Adash UK.

## FREE PRODUCT SUPPORT

Product support (hardware and software) Adash offer free product support for all hardware and software at zero cost and no annual fees. This extends to the life of the product.

## FREE UPGRADES FOR LIFE

Purchasing Adash hardware and software products is a one-time payment. There are no additional costs relating to hardware and software support or upgrades. All firmware and software upgrades are available for free from the Adash web page and can be downloaded freely at any time.

Adash UK is proud to offer the new Vibrio M to all UK customers from August 2022. Our commitment to the global Adash brand is

unrelenting, offering the best pricing and of course free support and upgrades for the life of the product.

From our office in Lymm, near Manchester we offer technical and product support to all our UK customers.

We are also pleased to offer any UK customer our free extended 5-year warranty when the product is registered.

We provide product and software training, general vibration training and consultancy, providing our customers with complete sales and after service requirements.

## To find out more contact ADASH UK

**Call** +44 (0)1925 940566

**Email** [sales@adashuk.com](mailto:sales@adashuk.com)

**Visit** [www.adashuk.com](http://www.adashuk.com)



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## Snickers Workwear Trousers – More Than Fit For Purpose

Six Work Trousers families to satisfy every need on site - sustainably.

**S**nickers Workwear's trouser families are suited to any kind of work on site. Delivering maximum functionality, comfort, protection and mobility they're the products of choice among discerning professional tradesmen and women. For them, sustainable, street-smart, body-mapping clothing are key parts of their product choices. Hi-tech fabrics, functionality and fit are the hallmarks of these market-leading products. The AllroundWork trousers are ready for any kind of work in any trade. FlexiWork trousers deliver superior freedom of movement. While LiteWork trousers keep you cool, dry and ventilated.

Then there's RuffWork trousers, reinforced and tough for the roughest work on site. ProtecWork protective wear for hazardous environments and certified High-Vis trousers when personal visibility on site is a priority. work environments.

Snickers Workwear Trousers also deliver certified protection with the patented KneeGuard System for greater flexibility, comfort and durability. It's what makes them the optimal choice for craftsmen and women who need to get every job done comfortably and sustainably on site.

Getting information on the Snickers Workwear trouser families is easy.

**You can call the Snickers Helpline on 01484 854788, checkout the website at**

**[www.snickersworkwear.co.uk](http://www.snickersworkwear.co.uk)**

**or email [sales@hultaforsgroup.co.uk](mailto:sales@hultaforsgroup.co.uk)**



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# SICK Launches Cost-Cutting Real-Time Energy Monitoring of Compressed Air

**A**s manufacturers face rising energy bills, SICK has launched the FTMg with Monitoring App, an Industry 4.0 solution that helps them see the data they need to reduce energy consumption through better control of compressed air.

The SICK FTMg with Monitoring App enables production and maintenance teams to monitor compressed air continuously so they can reduce leaks, improve operating efficiency, and cut costs.

Compressed air is the 'fourth utility' of manufacturing. According to the British Compressed Air Society, it accounts for 10% of energy use in a typical operation and rises to 30% in heavy use industries.

Using data from strategically-positioned SICK FTMg flow meters, the cloud-based SICK FTMg Monitoring App visualises a wealth of both real-time and historic data about compressed air usage. It enables continuous energy management, condition monitoring and predictive maintenance of compressed air systems from any internet-enabled device.

## Targeted Energy Reduction

The SICK FTMg with Monitoring App is a scalable system that can target the compressed air energy use of individual machine cells through to entire production or logistics halls. With no programming needed, it can quickly start visualising continuous compressed air data in a way that is easy to use and interpret. As well as enabling more sustainable use of resources, the data insights support better operational efficiency and help achieve reduced carbon targets, contribute towards ISO50001 Energy Management certification or compliance with the UK Government's Energy Saving Opportunity Scheme (ESOS).

Darren Pratt, SICK's UK Product Manager for Industrial Instrumentation explains:

"Compressed air is one of the biggest consumers of energy in manufacturing and logistics, and costs are skyrocketing. Many production teams are currently restricted to conducting periodic spot checks, and all too-often, not enough is known about where leaks are, or which machines are the biggest

consumers.

"We are already seeing how early adopters of the FTMg Monitoring App are gaining remarkable, and sometimes unexpected, insights. They have been able, for example, to make start-up and shutdown management of processes and machines more efficient, improve compressor control and manage peak loads."

## Continuous Compressed Air Monitoring

The SICK FTMg is a multifunctional flow sensor that enables the measurement of live values for compressed air energy in kWh. Data from the FTMg flow meter is presented via the SICK FTMg Monitoring App, which has been developed from SICK's proven Industry 4.0 Monitoring Box condition monitoring platform. As well as values for pressure, temperature, flow velocity, mass flow rate and volumetric flow rate in real time, it provides totals for energy use, volume and mass over a pre-defined period.

The user-friendly dashboard makes it easy to interpret data to detect leaks or overconsumption and to look for changes and trends. Email alerts can be set up for maintenance reminders or to give pre-defined warnings with job recommendations, for example when data strays beyond pre-defined limits. Users can drill down to identify costs, for example for individual production centres or by shift.

## Secure Connectivity

Up to eight FTMg flow meters can be configured via each SICK Smart Services Gateway, which collects data, aggregates and encrypts it before sending it securely via the customer's own IT infrastructure through a firewall to the SICK cloud. Alternatively, it is possible to by-pass the IT infrastructure by using mobile communications over 3G or 4G. Individuals then have access through a personal SICK ID from any device with a web browser.

The SICK FTMg, which stands for Flow Thermal Meter for inert gases, uses the dynamic calorimetric principle for precision measurement, enabling it to detect even the smallest changes reliably. Its straight measurement channel design ensures highly-accurate measurement with almost zero pressure loss as gases flow through the sensor during measurement.

SICK also offers alternatives for customers who do not require the FTMg Monitoring App. For customers wishing to integrate SICK FTMg flow meters into their own IT systems, one or more devices can be used with an IIoT gateway, such as the TDC-E from SICK, for data pre-processing and integration into customer-specific MES, cloud or energy management systems. The FTMg flow sensor also features an onboard web server or a variety of Industrial communication outputs. This flexibility in communication technology enables easy integration into existing control or data acquisition architectures.

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



## Hart Makes Assault On Car Battery Market

**M**uch is being debated about the electrification of transport with a particular focus on the motorcar. This deliberation has accelerated thanks to increasing evidence of Climate Change with a growing focus on carbon emissions from vehicles.

The arrival of battery manufacturers to the British market such as Britishvolt, with its huge battery plant being built at Blyth, Northumberland, illustrates the level of change underway led by Nissan, at nearby Sunderland, where the manufacture of electric cars and as a consequence batteries started some 10 years ago.

As Nick Hart, managing director, Hart Doors, Newcastle upon Tyne, explains. "We were asked to work with the design team at the initial design stages of the battery facility to manufacture a bespoke door system that would integrate with Nissan's own systems. There are now some 100 Hart doors now in the battery part of the plant.

"We developed a unique door capable of giving 60-minute fire resistance and also be capable of completing up to 400,000 open/close cycles a year. Further, the doors met strict air leakage criteria and resistance to sudden air-pressure increases.

"The doors also interfaced with third-party equipment such as conveyor belt controls and fire alarms. Each had an LCD display control panel that provided a quick and easy diagnosis of what each door was doing at any point in time.

"Quite clearly this was a complex challenge for a new door system that had to perform in a demanding manufacturing environment and importantly comply with British, European and American standards," says Mr Hart.

"The oven doors were by far the most sophisticated with each requiring a self-supporting fire rated frame. Every door required two curtains, one that provided 60 minute fire resistance while the other one allowed the door to comply with the air leakage rates on the ovens.

"An additional benefit of the twin curtain design was the increased thermal performance of the door system as a result of the cavity created between the two door skins."

Hart also supplied Cleanroom doors to control the environment which was an essential part of the manufacturing process where environmental control was down to the smallest detail to ensure zero contamination.

Where fire protection was essential Hart fitted 60 minute fire screens at entry and exits points enabling them to close under a fire condition but also comply with the requirements of the Clean Room standard as well as being assessed against releasing fine particles in static and moving conditions.

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# Snap-on's Level 5 Tool Management System Guards Against FOD

**F**or engineers and technicians working in many industrial sectors foreign object damage (FOD) will always be a real and present danger.

Keeping track of every tool and piece of equipment, especially when several storage cabinets are in simultaneous use, can be challenging.

Snap-on Industrial's Level 5™ automated total asset management system minimises the risk of FOD by constantly tracking every tool, advising when tools have been removed or returned using voice announcements.

It also enables engineers and technicians to find every tool they need, when they need it, saving time and easing stress.

Engineered to track individual tools by user, without bar codes, scanners, RFID tags or other add-ons, the system works at the speed its users demand.

Level 5™ boxes are network ready, using either Ethernet or wireless connection. Powerful software enables users to review activity at all boxes in their location from one central computer, avoiding the need to inspect each box. Major benefits of the system include:

- No individual tool scanning required;
- No RFID tags to install or replace;
- No limitations on tool size;
- Intuitive interface, via touchscreen;
- Audible voice confirmation of tool removal and replacement;
- Automatic locking for maximum security;
- Errors announced and displayed to indicate incorrect tool position or advise when a drawer is not closed.

Level 5™ boxes are equipped with Keyless Access Control, giving users the access they need but with security built in. The control system can be configured with magnetic cards,

barcodes, PIN numbers and proximity cards.

Says Richard Packham, Director UK & Europe for Snap-on Industrial: "Snap-on's automated system takes tool management to an entirely new level, giving workshop managers and other authorised users easy access to the tools they need while protecting against foreign object damage.

"The ability to monitor several boxes from one central computer offers managers and supervisors a huge time saving advantage."

For technical details visit: [snapon-industrial.co.uk](http://snapon-industrial.co.uk); call (01536) 413904 or e-mail: [ukindustrialmarketing@snapon.com](mailto:ukindustrialmarketing@snapon.com)



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## Wolf's ATEX Certified Installed LED Lighting Is Safe To Use In Hazardous Areas

**W**olf Safety's new range of powerful, ATEX certified LED installed lighting is ideal for indefinite use in hazardous areas, including potentially explosive atmospheres.

As the leading manufacturer of portable and temporary ATEX and IECEx certified hazardous area safety lighting, Wolf have been keeping people safe for more than 110 years.

The company's designers and production engineers have now used their knowledge and expertise to create a new range of highly effective LED installed lighting, which is safe to use in Zones 1 and 21 hazardous areas.

The range includes:

- Linear luminaires featuring revolutionary Directional Linear Optics (DLO) or standard Forward Facing Array LED configurations, with battery back-up emergency versions also available;
- Floodlights with a market leading maximum light output of up to 25,932 lumens;
- Bulkhead lighting, also featuring DLO (with battery back-up emergency versions available);
- High bay lighting.

DLO directs light exactly where it's needed so it is ideal for use in specific, close-up workspaces, reducing glare to avoid people being blinded by the emitted light, while its superior colour definition facilitates safety critical hazardous area tasks.

Forward Facing Array (FFA) technology can be preferable for safely illuminating large hazardous areas which need wide, even and bright light coverage, where lights are mounted away from people or at heights where glare and intensity can't have an adverse effect on the working environment.

Says Miles Jackson, Wolf Safety's Sales and Marketing Director: "We know that users of Wolf products trust us to keep them safe, especially when they need to work in highly volatile atmospheres and other hazardous workplaces.

"All the values people expect from Wolf, seen in our portable and temporary lighting ranges, can now be found in our new installed lighting range, which we are proud to introduce."

For detailed technical information visit:

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



# **Wolf®**

## **NEW ATEX INSTALLED LED LIGHTING FROM WOLF SAFETY**

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## New Electric And Diesel-Powered Hydraulic Power Packs For Portable Machine Tools

**E**nerpac announces the new PP-Series electric and diesel-powered power packs to supply hydraulic flow to Enerpac portable machine tools, including flange facing machines, clamshell cutters, hot tapping machines and decommissioning tools. The hydraulic power packs are also compatible with other brands of portable machine tools.

The Enerpac PP-Series includes a total of four hydraulic power packs comprising two electric and two diesel powered models. Variable pumps within the power packs allow pressure and flow to be adjusted for specific applications.

### Electric PP-Series Power Pack

Portable machine tool operators with access to an electric power supply can choose between the electric powered hydraulic power pack 11 or 15 kW models - each available with a choice of voltage options for use throughout the world.

### Machine Specific Control Pendants

Many manufacturers of hydraulic power packs provide a simple general-purpose control pendant as standard with each unit. Although this is adequate for simple machining tools, it is of little use to control other machine types such as gantry mills, or 3-axis milling machines.

To meet these different applications, customers buying an Enerpac Electric PP-Series Power Pack can get exactly what they need. The range of pendant options offered provides a perfect match to suit the specific machine tool. In addition, for operator safety emergency stop buttons are provided on the power pack and the control pendant.

### Diesel PP-Series Power Packs

For working in remote locations, customers have a choice of 19 and 44 kW units. These more powerful power packs are the optimum choice for larger machine tools used for operations such as hot tapping and decommissioning.

Both the Enerpac Diesel PP-Series PP19 and PP44 units are diesel powered and meet the EU Stage V and EPA tier 4 final regulations for emissions. Each includes a 50-liter diesel tank, which, in the case of the PP44, can provide up to 12 hours run time at maximum torque. Also included in the diesel power packs is a spark arrester for added safety in explosive environments.

Unlike the electric units which work with pendants to provide control, the PP19 and PP44 power packs require a separate hydraulic control panel and machine specific hose kits. The hydraulic control is connected to both the machine tool and the hydraulic power pack. The control panel houses all the controls needed for a specific machine's requirement. In addition, the Diesel PP-Series power pack features a pressure-less switch to remove pressure and flow.

### Choice of Hose Kits

A 10-meter hose kit is supplied as standard and longer hose kits are available as accessories for single-supply, dual-supply and triple-supply applications. Triple supply hose kits allow three hydraulic motors to be connected to the power pack simultaneously, along with spindle control the operator can also select the required axis (x or y) from the pendant.

Machine operators choosing an Enerpac Electric PP-Series Power Pack can also benefit from an optional cart to enable easy positioning and storage within a workshop environment.

### Site Ready

For ease of handling and deployment, the Enerpac PP-Series electric and diesel-powered power packs are enclosed within a protective frame and Forklift truck and vertical lift points

For more information on the Enerpac PP-Series electric and diesel-powered power packs, visit [www.enerpac.com](http://www.enerpac.com).



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# Do More To Protect Against Floods – There Is ‘Noah Alternative’

**M**anufacturers should urgently review the condition of their drainage systems to guard against

the risk of flooding, advises Kevin Moon, Managing Director of drainage and wastewater specialist Lanes Group plc.

The summer heatwave and subsequent warnings about flash floods demonstrates there is no room for complacency when it comes to factory site drainage as climate change takes hold.

Kevin Moon added: “We recommend that manufacturers review their flooding risks and the condition of their site drainage systems, as a key part of business continuity planning, as we head into autumn.

“Climate change is likely to put greater strain on site drainage systems. If they fail, the commercial consequences could be catastrophic.

“Making sure site drainage is in as good condition as possible, in terms of being free of debris that can disrupt water flows and reduce capacity and in good repair, should be a priority in situations like this.”

Lanes Group is the UK’s largest drainage and wastewater specialist. It helps thousands of businesses across the UK protect their properties through planned and reactive site drainage cleaning and maintenance services. The company also delivers sewer unblocking, repair and rehabilitation services for many water companies, including Thames Water, Severn Trent, Northumbrian Water and Scottish Water.

Lanes has put together a 7-step check list to support a site drainage resilience review:

1. Is your property location at particular risk of localised flooding?
2. Do you have an accurate and up to date map of your site drainage system and

assessments of its condition and capacity? These can only be obtained by a drainage specialist carrying out a full site CCTV drainage survey.

3. Is the planned preventative maintenance schedule for the property’s drainage system up to date? Has the drainage system been cleaned in the last 12 months?

4. Are you already experiencing any problems with your drainage system? Does water pool on surfaces around your property after it rains? Do sinks drain and toilets flush properly?

5. Are water courses around your property in optimum condition? Are storm culverts serving your site regularly inspected and cleaned?

6. Has there been any extensive building carried out recently that might affect your site drainage system?

7. Do you have emergency preparations in place if a flood occurs? This may include access to an emergency response service from a reputable drainage specialist and plans to protect assets and deliver services from a different location.

Just like clean water pipes, surface water drains and sewers can be affected by the seasonal contraction and expansion of clay soils, resulting in pipe joints being displaced, pipes cracking or even collapsing.

This problem is expected to become more

commonplace due to climate change, with northern areas of the UK increasingly affected for the first time due to changing weather patterns.

During prolonged periods of dry weather, tree root systems grow more aggressively as they search for water and nutrients, increasing the risk of root infestation of drainage pipes.

Low flow rates in sewers and surface water drains during dry weather allow heavier solid material and debris washed into the system to build up, compromising its capacity, increasing the risk of flooding.

Kevin Moon said: “Climate change is creating more volatile, more unpredictable weather. This, in turn, means the condition of site drainage systems can change more rapidly than in previous times.

“The only answer is to tighten planned preventative maintenance systems, with more frequent and thorough inspection and drain cleaning regimes, beginning with asking the questions detailed in our drainage resilience checklist.

“The alternative may be to expose business sites to greater risk of serious flooding events and the far greater costs they incur.”

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





# Brammer Buck & Hickman Launches New Bore And Keyway Machining Service

Buck & Hickman, the UK's leading supplier of industrial maintenance, repair and overhaul (MRO) products and services, has launched a new fast and flexible Bore and Keyway Machining Service.

**T**his latest addition to the company's range of engineering services has seen new bore, keyway and grubscrew machinery installed, operated by experienced in-house engineers. Now, Brammer Buck & Hickman can rework products to suit customers' specific requirements and within a short time frame.

The new Bore and Keyway Machining Service encompasses horizontal and vertical adaptations. The service that is expected to have the greatest demand is machining customer bore and keyways into pilot bored products such as sprockets and couplings.

Sprockets are stocked either pre-bored to receive a taper lock bush, or as pilot bored versions that can be machined with multiple bore sizes. In addition, a bespoke service is offered enabling modification to off the shelf products.

Darren Smart, Category Director - MRO at Brammer Buck & Hickman, commented: "Whilst we have been providing a basic Bore and Keyway Machining Service to customers, up until now this has been outsourced. By investing in state-of-the-art machinery, and staff training, we are delighted to bring this service in-house, for a far more flexible service and a considerably faster turnaround. We can now meet customers' bespoke requirements

and specific tolerances, regardless of whether it is non-standard or has a slightly different fit."

The new Bore and Keyway Machining Service joins Brammer Buck & Hickman's range of engineering services which include specialist workshop, gearbox repair and other engineering services geared towards saving customers money.

Brammer Buck & Hickman is part of the Rubix group, Europe's largest supplier of industrial MRO products and services. For more information, please go to

[uk.rubix.com/en/service/engineering-services](https://uk.rubix.com/en/service/engineering-services)



**Brammer  
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Hickman**

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**NEW Bore and Keyway  
Machining Service**





## Denso P1 System™ protection selected for Kempton Park Water Treatment Works

**T**he benefits of protecting our nation's water distribution networks from corrosion far outweigh the problems faced by those featuring inadequately applied, or even missing, protection. Selecting and applying the right system can help to prevent the need for costly and time-consuming remedial works in the future.

At Winn & Coales (Denso) Ltd, we recommend our Denso P1 System™ for the

protection of

ferrous pipes, joints, and fittings. Fully compliant with P1 Civil Engineering Specifications for the Water Industry (7th Edition), our easy-to-apply system consists of a primer (Denso Paste™); mastic (Denso™ Profiling Mastic), to fill any voids and create a smooth profile; and petrolatum tape (Denso Tape™), wrapped with a 55% overlap.

When administered correctly, the system

offers long-term, effective protection from corrosion and can be applied on site before assets are buried.

This method was recently utilised by Morrison Water Services on behalf of Thames Water at Kempton Park Water Treatment Works where

the team protected 32 flanges, joints, and 4 x 1000 mm valves with the Denso P1 System.

[www.denso.net](http://www.denso.net)

## Airbench Releases New Welding And Grinding Extraction System

**A**irBench have released a new model in their range of VertEx Cross-Draught Extraction Systems designed specifically for extraction of welding fume and grinding dust.

The new VAW range uses AirBench's proven spark protection system to protect a high-grade final filter. VAW units, like all VertEx models, can be combined into a full booth configuration alongside the VB modular booth system; or used as stand-alone systems to create a filter wall.

Working within a filtered booth provides

a significantly more effective method of capture for dust and fumes when compared to flexible arms and similar systems which rely on continuous operator adjustment to work effectively.

The VertEx modular approach allows for reconfigurable production and units can even be reconfigured for different dust or fume extraction issues.

Visit :

[www.airbench.com/vaw](http://www.airbench.com/vaw)



# The Energy Crisis Is Set To Impact Industries Across All Sectors

With energy prices at an all-time high, reducing energy consumption is a key priority for most companies. Yet opportunities exist to make immediate energy savings, says Mark Yates, of air and fluid power specialist Thorite. Here, he outlines some of the solutions which can help prevent waste and keep energy use under control.

**T**he energy crisis is set to impact industries across all sectors and the pressure is on to optimise energy use and rein in costs.

For companies looking to combat rising fuel bills, a comprehensive energy audit will help identify waste, highlight where savings can be made and suggest solutions to reduce energy use in the long term.

In most instances, the solutions will also improve reliability and extend asset lifespan.

An ISO 11011 certified energy audit can be tailored to individual plant requirements.

It will investigate every opportunity to eliminate energy waste and ensure assets are operating at optimum productivity levels, providing a sound foundation for ongoing maintenance routines.

Audit assessments might include:

- Air leak detection
- Compressed air generation and preparation analysis
- Compressed air consumption analysis
- Pressure drop measurement
- Compressed air quality analysis
- A quick machine analysis check for energy efficiency

Where energy saving opportunities are identified – and it is rare they are not – bespoke energy efficiency options will be recommended, with detailed analysis of what savings and efficiencies they can offer.

## Flow rate sensors

A flow rate sensor projects acoustic sounds into the media and measures the sound waves to determine a speed or flow rate. It can also detect the content of the media, for example the gas content in fizzy drinks, pulp content in fruit juice and any solid content in CIP systems.

The CIP analysis is particularly valuable as it can assess the content to determine if the water is clean. One food company was able to significantly reduce its CIP process time after

installing a FLOWave SAW (Surface Acoustic Waves) flowmeter.

The CIP process had been set to one hour, but the sensor identified that the water was clear in around 30 minutes. This not only reduced the required cleaning time, saving energy, but also dramatically reduced water consumption, which provided a six-month payback period and future cost savings.

## Data logging systems

Recording and analysing your equipment's air usage identifies patterns and anomalies in the system's performance, indicating how and where energy savings can be made.

## Electric automation integration

Not all compressors work best on pneumatic systems. If analysis of your compressor indicates that electric automation would improve energy efficiency, this can be integrated into your existing machines and systems.

## Pneumatic system efficiency

A number of high and low tech solutions are available which can conserve compressed air and reduce energy use:





- **Optimise component size** – some companies are using components which are twice the size required. This means the air cylinder is also too big, exhausting air unnecessarily. Ensuring components are optimised to the specific application will save energy and money.

- **Identify working strokes** – Dependent on the application, an air cylinder might require six bars of pressure to push a packaged product weighing 50kg off a conveyor belt, but only 1kg of pressure to return the cylinder. Your application can be programmed to ensure the pressure is customised to operational need, preventing 'non-working' air consumption.

- **Regulate air supply** – Why pump air to a machine which is switched off? It sounds like a highly logical action but it is often overlooked. The solution can be as simple as installing a device which automatically shuts off the air supply when a machine isn't running; or a digital system can be programmed to respond to inactivity and avoid a waste of air.

- **Air Blowers** - Air Blowers are often left on 24/7, regardless of demand. However, a blower can be programmed, for example, to operate only when required or in pulse mode, if that is all that is required. One Thorite customer saved £100,000 a year in energy costs simply by installing a sensor and optimising the blowing process across all production lines.

- **Identify and isolate pressure needs** – By identifying the actual force required within the process actuators, it is often possible to isolate specific zones where pressures can be lowered to reduce energy consumption.

Voltage optimisation

Due to EU-wide voltage standardisation in

the 1990s, some factories are now being over-supplied with energy from the national grid. If your assets are operating on a higher voltage than required, not only can their reliability be impaired due to increased temperature and vibration levels, but you are also paying higher energy bills than necessary.

The audit will calculate whether your assets can operate more effectively on a lower voltage and determine whether installing a voltage optimiser to regulate input could save on both energy bills and maintenance costs.

A major food producer which installed a GWE Eco-Max Power voltage optimiser achieved a reduction in energy consumption of 463,176 KWh a year, reducing annual electricity costs by £40,226.84. It also achieved a reduction in CO2 emissions totalling 243 tonnes a year.

#### Smart systems

Customised smart systems control panels can be designed and installed. These offer specific optimisation to ensure high productivity and

efficiency for process-driven enterprises.

#### Air manager controllers

Simple software upgrades allow the master controller in your compressors to be expanded without the need for further hardware investment, making air generation more intelligent, dependable and efficient.

#### Cost benefits

Even when energy prices are not at peak levels, the cost of carrying out a comprehensive energy audit is marginal when compared to the immediate savings that can be made. The outlay can be quickly offset by reduced energy consumption and the return on investment is likely to be months rather than years.

Additional, less immediately calculable savings can be gained from improved asset reliability and lifespan, reduced downtime and a maintenance programme which can therefore be more proactive.

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





# WATER JETTING TRAINING FOR THE MAINTENANCE AND ENGINEERING INDUSTRY



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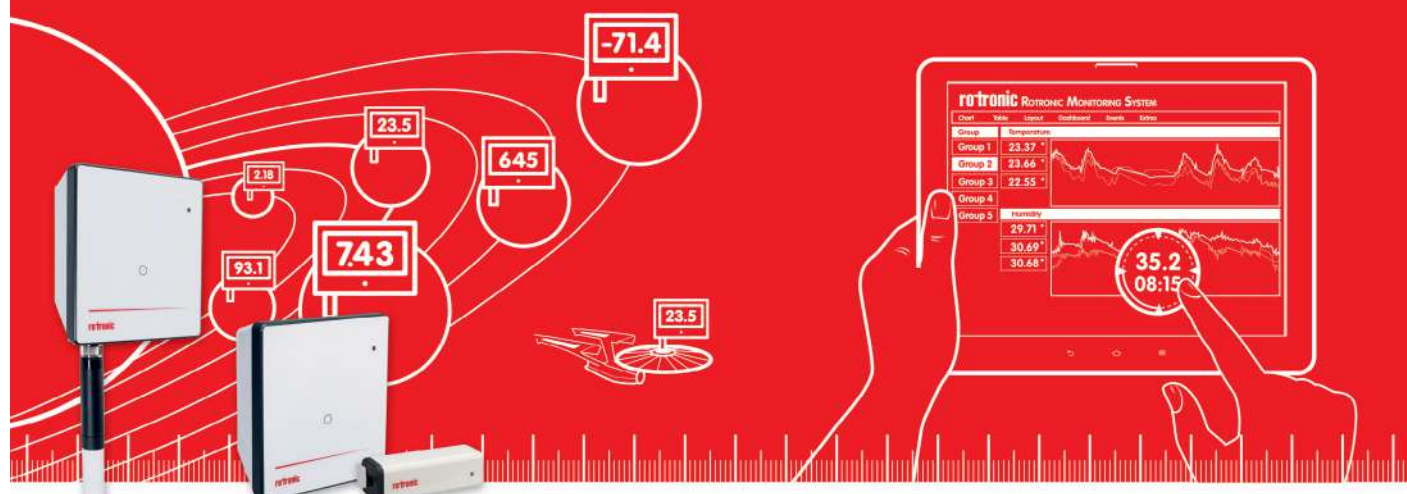
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# The Rotronic Universal Monitoring System – RMS



**Monitoring environmental conditions in any industry** requires a fully integrated continuous 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 all your requirements, incorporating multiple sensors for parameters on a secure network. We can service the entire system. [www.rotronic.co.uk/rms](http://www.rotronic.co.uk/rms)

ROTRONIC Instruments (UK) Ltd, Crompton Fields, Crawley, West Sussex RH10 9EE T: 01293 571000, [instruments@rotronic.co.uk](mailto:instruments@rotronic.co.uk)

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MEASUREMENT SOLUTIONS  
A PST BRAND

## Air Particle Measurement

A light scattering airborne particle counter determines the concentration of particles and is capable of counting and sizing single airborne particles and reporting size data in terms of the equivalent optical diameter.

The main sizes monitored are 0.5 µm and 5 µm and are reported as particles/m<sup>3</sup> or particles/ft<sup>3</sup>; the ISO 14664-2 standard specifies a flow rate of 1 cfm for counter particles that are equal or larger than 5 µm. Lighthouse, Particle Measuring Systems, Beckman Coulter and Climet are just a few manufacturers of precision measurement particle counters.

ISO 14664-2 states that continuous environmental monitoring provides significant benefits with a detailed overview of cleanroom performance; alerts and alarms must be defined. The Rotronic monitoring system is a continuous environmental

monitoring system that integrates all existing particles counters. The implementation of the Rotronic Monitoring System will help to achieve the ISO 14664-1. Continuous monitoring confirms consistent, high quality environmental conditions with any changes detected as soon as they happen.

### The Rotronic Monitoring System Solution

The Rotronic continuous environmental monitoring system (RMS) is a GAMP®5 category 4 software combined with category 1 hardware, helping users monitor their GxP compliant applications, looking



into the critical quality attributes and monitoring critical process parameters, focusing on patient safety, product quality and data integrity with compliance to EudraLex Annex 11 and FDA 21 CFR Part 11. RMS is a modular system, particle counters from several manufacturers can be integrated easily enabling measurements to be available on demand for authorised users, on any device, with alerts and alarms configured.

For more information visit  
[www.rotronic.com](http://www.rotronic.com)

## Rittal Blue e+ S cooling units

# Cool Successor With Sustainable DNA

**R**ittal is expanding its smart cooling unit solutions by adding the new Blue e+ S range. Our latest generation of cooling units with their lower output categories of 300, 500, and 1,000 W have been designed for efficiency, ensuring a smaller footprint and lower costs – just like their “bigger brothers.” So it’s a win-win both for users and for our future.

Solutions that reduce our carbon footprint during production are in high demand. But at the same time, these solutions need to be intelligent and communication-enabled so that they can be easily integrated into digitalised manufacturing environments. Seven years ago, Rittal responded to this demand with its Blue e+ range of cooling solutions and launched extremely efficient enclosure cooling units, which provided on

average energy savings of 75 percent. Now we have a new generation – the next generation – but still developed with that same design DNA. These new cooling units with their lower cooling outputs of 300, 500, and 1,000 watts called “Blue e+ S” add to the Blue e+ family and bring with them additional smart capabilities. And furthermore, this new generation offers innovative energy-saving features for the production process.

What’s behind this energy-saving and therefore cost reduction is the technology used, combining a heat pipe with inverter-controlled components. The heat pipe works without a compressor, expansion valve, or other regulating elements and so does not need any electrical energy except to operate the fan. Depending on the thermal energy generated in the enclosure and the current ambient temperature, cooling can be performed with

the heat pipe alone. The additional compressor cooling only operates if a large amount of heat has to be dissipated from the enclosure or if the ambient temperature is very high. And what’s more – when it does operate, it is far more energy-efficient than conventional units. This is because the compressor and fans possess an inverter-controlled drive, which automatically adjusts their speeds depending on the requirements. As a result, the temperature within the enclosure remains constant, and the energy efficiency is significantly higher than with other more conventional cooling units.

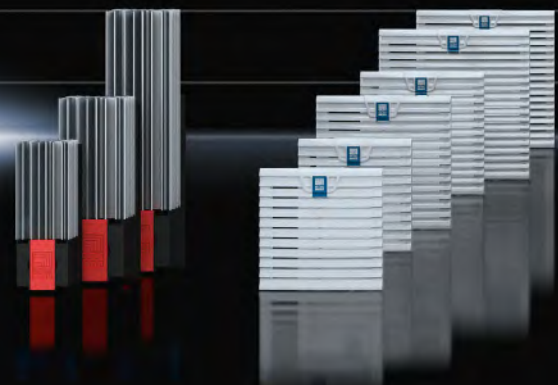
### Staying cool all the time

Alongside energy efficiency, another feature also reduces the carbon footprint: The new Blue e+ S series uses a refrigerant with a GWP (Global Warming Potential) that is 56 percent

## Rittal – The System.

Faster – better – everywhere.

**Enclosure Climate Control**  
**Whatever the scale.....**  
**.....we have the solution**



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lower than those used in comparable cooling units. Furthermore, instead of the R-134a previously used, the cooling circuit in the new generation of units now runs with R-513A refrigerant.

Smart communication-enabled capabilities  
With their additional smart functions, the new cooling units also help in the digitisation process. With a fully integrated IoT interface as standard, the cooling units can be intelligently monitored in digitalised environments and easily connected to Rittal's new Smart Service Portal.

This optimises the service processes and increases efficiency through predictive maintenance. As a result, fewer unplanned downtimes occur which all helps to manage the high cost of production, especially with Industry 4.0 processes.

#### Production-friendly facelift

These cooling units in the lower output classes

have also undergone a facelift. Their most striking feature is an integrated coloured LED light strip. This means that warning messages can be immediately seen, even from far away. A display on the front of the enclosure provides additional up-to-date information.

Moreover, the cooling units are equipped with the familiar NFC interface, which enables them

to communicate with mobile devices that have the Rittal Scan & Service app installed.

For further information on the entire Rittal range visit

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

or check out our linkedin page

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IT INFRASTRUCTURE

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## ICS Cool Energy Introduces ICS Protect Agreements, New Service Programmes For Temperature Control Equipment

**T**he new ICS Protect service packages offer customers a tailored, cost-efficient approach to their maintenance needs with different preventive and predictive coverage levels.

Southampton, July 18, 2022 – ICS Cool Energy, an international market leader specializing in complete temperature control solutions for manufacturing process and facilities applications, introduced ICS Protect Agreements, new extended and enhanced service plans offering for its i-Chiller range and other temperature control equipment.

The new ICS Protect Agreements offer three levels of coverage including preventive maintenance plans, delivering partial to fully comprehensive solutions. This approach allows customers to choose a package that is tailored to their applications and business needs, and ensure the temperature control equipment receives regular inspection, preventive maintenance, and proper calibration minimising the risks of equipment failures.

The longer the plan, the better the saving potential and reduction of downtime. In the case of the i-Chiller range of process-designed chillers, the ICS Protect offers customers the option to continue protecting their investment beyond the market leading 5-year parts and labour warranty coverage.

"Facility managers understand their organisation's dependence on the process temperature control systems to ensure continued manufacturing and business operations. Equipment that is improperly maintained can fail to provide the required level of efficiency," said Dave Palmer, general manager of ICS Cool Energy in the UK and Ireland.

"We have designed the ICS Protect Agreements to provide our customers

with operating efficiency, prolong their system's life and simply help them cut costs. Keeping the equipment in optimal shape minimises the energy consumption, helps limit downtime and eliminate operating losses. These are critical factors that all manufacturers pay attention to, and with ICS Protect Agreements we can ensure the constant performance of the equipment with no hassle for the customer," continued Palmer.

With ICS Protect Agreements customers can choose their level of coverage from Bronze, Silver and Gold packages offering different configurations of Individual Parts, All Parts, and Parts and Labour. Every level comes with complete market leading preventative maintenance visits (two per annum) and individual asset fluid analysis.

"With an ICS Protect Agreement, besides gaining priority response, proactive maintenance and parts coverage, our customers can decrease their administration-related expenses as well as in-house labour and outside maintenance expenses to save up to 25% in operating costs. The longer the agreement term, the larger the savings, leaving it up to ICS Cool Energy to support the aging equipment," concluded Palmer.

The ICS Protect agreement covers equipment up to 10 years of age.

ICS Cool Energy is headquartered in Southampton within 100,000 square feet of warehouse, office and yard space facilitating new stock storage and engineering spaces for service operations. The central location is backed up by the depot in Bradford and regional offices in London, Birmingham, Glasgow and Dublin, as well as by over 70 mobile service engineers with van stock, to ensure customer support and service across the U.K and Ireland.

**For more information on ICS Cool Energy complete process temperature control solutions, please visit [www.icscoolenergy.com/](http://www.icscoolenergy.com/).**



# Trane Expands Its Sintesis™ Balance Portfolio, Now Offering Multi-Pipe Units With R454b Refrigerant

The new CMAF units offer simultaneous cooling and heating with capacities increased up to 1,400 kW, better performance and improved operating maps, all with R-454B as the lowest-GWP alternative for R-410A

**B**russels, Belgium, June 16, 2022 - Trane®, a leading global provider of indoor comfort solutions and services and a brand of Trane Technologies, announced today it is expanding its Sintesis™ Balance CMAF portfolio of multi-pipe units for simultaneous cooling and heating. The new models are now available with R-454B refrigerant in capacities ranging from 150 to 1,400 kilowatts (kW). The units deliver better cooling and heating efficiencies, improved operating maps and lower environmental impact compared to equivalent models with R-410A.

Trane Sintesis™ Balance CMAF multi-pipe units offer building owners of multifunctional facilities like office buildings, hospitals, theatres and hotels reduced investment costs, better use of floor space and lower total operating expenses while significantly improving the sustainability of their operations. Using renewable and recovered energy to produce hot water, the Trane Sintesis™ Balance CMAF can replace the existing fossil-fuel boiler and chiller system to deliver both chilled and hot water for the entire building with no direct greenhouse gas emissions.

"With this new generation of air-sourced multi-pipe units, Trane is again raising the bar in sustainable, efficient and flexible delivery of cooling and heating in buildings," said Louis Rompre, portfolio manager at Trane in Europe, Middle East and Africa. "Our emission-free Sintesis™ Balance systems leverage renewable technology, full heat recovery and repurposing of that heat, clearing the pathway to reducing direct use of fossil fuels. By adding the R-454B refrigerant, we further increased the units' efficiencies and lowered annual operating costs, bringing significant savings to the building owners' bottom lines."

Trane offers the low global warming potential (GWP) R-454B refrigerant across its entire portfolio of scroll compressor chillers, heat

pumps, multi-pipe units and rooftops. The R-454B refrigerant, a non-ozone depleting HFO/HFC[1] blend, has a GWP level of 467, the lowest among the refrigerants available today for scroll compressor technology. R-454B offers 76% reduction in direct GWP impact against R-410A and 34% reduction against R-32 refrigerant. This answers customers' need for a sustainable, highly efficient refrigerant option that future proofs their investment and mitigates the increasing tax rates put on refrigerants across Europe.

The new Sintesis™ Balance CMAF models with R-454B are substantially more efficient when compared to R-410A models, offering:

- 3.5% better Energy Efficiency Ratio (EER) in cooling mode
- 4.5% better Total Efficiency Ratio (TER) in simultaneous cooling and heating mode
- 3% better Coefficient of Performance (COP) in pure heating mode.

The capacity range increased up to 1,400 kW and answers the needs of larger new and existing building owners wanting to eliminate separate boiler and chiller systems to fulfil their facilities' cooling requirements in the summer, heating in the winter or both throughout the year.

The 3°C wider heating operating map allows more buildings, even in colder regions in Europe, to move away from fossil-fuel based heating systems and benefit from the Sintesis™ Balance CMAF delivering:

- Up to 48°C hot water at ambient air temperatures as low as -18°C
- Up to 55°C hot water at ambient air temperatures as low as -10°C
- Up to 68°C of hot (sanitary) water when ambient air temperature is above +7°C.

Additional key features of the Trane Sintesis Balance CMAF systems include:

- Trane Adaptive Refrigerant System™, a proprietary technology, which

automatically optimizes refrigerant charge and sub-cooling in each operating mode and varying temperature conditions, delivering additional performance and efficiency gains.

- The fully electric driven CMAF multi-pipe unit doesn't generate any direct greenhouse gas emissions and offers up to 350 percent higher efficiency (in heat pump mode) compared to most gas boilers when delivering hot water for comfort heating systems.

- Configurability with three acoustic packages and efficiency levels to meet different buildings' application requirements.

- New generation of Trane controls technology – Tracer Symbio™800 controller - featuring advanced algorithms ensuring smooth, reliable operation with the low cost of ownership. In addition, it also offers six arbitration choices to optimize performances in each application.

Providing sustainable cooling and heating solutions is part of Trane's and Trane Technologies' overall approach to reducing carbon emissions in the industries and markets they serve. It helps advance the 2030 Sustainability Commitments, including the Gigaton Challenge to reduce customer greenhouse gas emissions by 1 billion metric tons.

For more details of on the complete Trane portfolio of solutions, please visit [www.Trane.eu](http://www.Trane.eu)





# Condition Monitoring Is Getting Easier – But Which System Is Best For You?

**“I’ve** heard a lot about condition monitoring recently – why should I be interested?”

Condition Monitoring is generally a good thing to do, helping you understand the behaviour and condition of your machines, with the key benefits being:

- You can be warned of developing faults in advance, to avoid unexpected breakdowns and optimise maintenance planning;
- You can diagnose what these faults are, so maintenance can be prepared and targeted at the right fix with the right spare

parts and tools organised in advance – to minimise downtime during the repair work;

- The biggest benefit comes if the condition information is good enough to allow you to adopt Condition Based Maintenance as a strategy – ie moving away from both Breakdown Maintenance and Planned Maintenance which can save your business up to 90% of the costs of maintenance and downtime.

Why am I hearing more about Condition Monitoring nowadays?

There has been something of a buzz about condition monitoring recently, with new

technologies being introduced, new companies being founded and other companies being acquired by larger firms, all keen to bring this technology to a wider customer base.

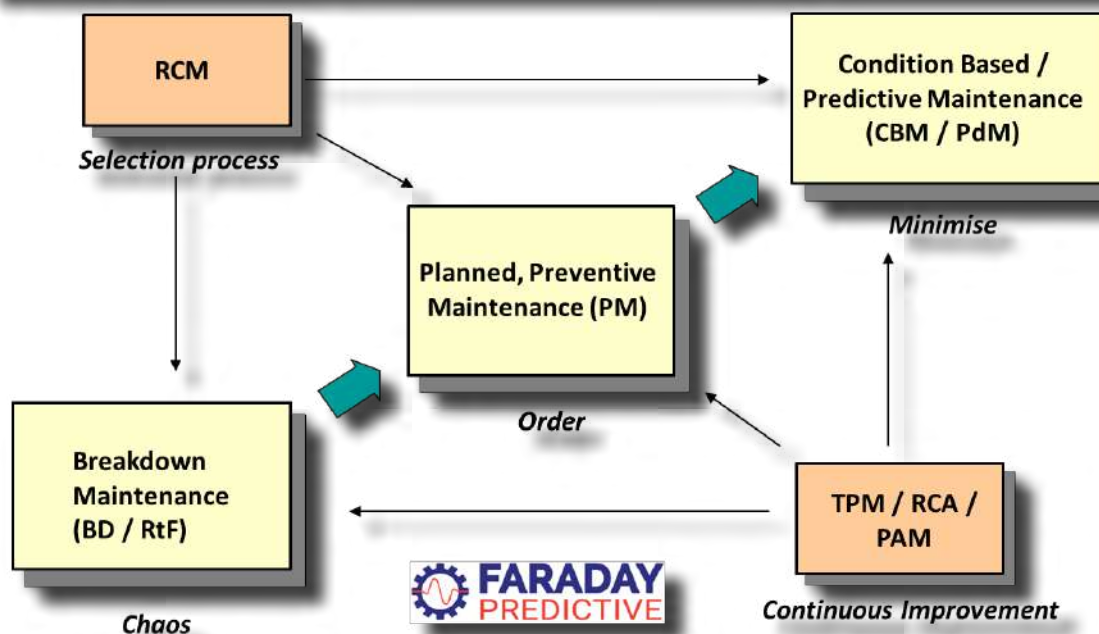
- There is a wide variety of technologies available for condition monitoring:

o Vibration Analysis (VA) – has been the most common technique up to now. Although this has been in use for 40 years or more, newer aspects include

Wireless sensors – avoiding the very high cost of connecting sensors on every bearing on every machine back to a central point; but battery life of these sensors can

## There are only three generic Maintenance Strategies – and a variety of tactics

**“If there is an effective and applicable Condition Based Maintenance approach possible, adopt it in preference to PM or BD” (RCM – MSG3)**



become an issue;

Energy Harvesting wireless sensors

– avoiding the need for batteries altogether;

o Other techniques including

Ultrasound

Motion Amplification

Thermography

Motor Current methods – which

in addition to condition monitoring can also bring an energy optimisation / carbon footprint angle

• “IoT” or “IIoT” aka “Industrie 4.0”.

There has been an enormous amount of hype around the Industrial Internet of things, based on low-cost sensors communicating data via the internet. Underneath this hype the key elements are:

o Connectivity to the cloud

allowing data from different systems to be viewed together to give a more complete picture;

permitting visibility wherever you are, on your phone / pc / tablet.

• These elements are all being brought together with Artificial Intelligence / Machine Learning (“AI / ML”) to make sense of large volumes of data and turn them into

simple conclusions and advice.

o Cloud processing runs the AI algorithms on a central server, with all the raw data communicated from sensors via internet connections – with possibly large data volumes required;

o Edge Processing does this locally, reducing data volumes and hence bandwidth requirement, but with potential battery life implications.

o Learning / Training the algorithms can require very large volumes of data, either using historic records or taking a significant time before good results are delivered.

Model-Based Voltage and Current Analysis (MBVI) – a technology that combines the best elements of all of these categories

MBVI systems such as those from Faraday Predictive provide comprehensive machine information including:

• Condition Monitoring –present and predicted status up to 3 months ahead;

• Of the entire machine – motor, transmission, driven machine, and sometimes process;

• Diagnosis of the widest range of

fault types – mechanical, electrical, load, speed;

• Information on energy consumption, energy cost and energy waste

• Flexible architecture - cloud based or local or stand-alone – avoiding comms bandwidth issues

• Installed in switchgear

o Single set of sensors

o Out of harms way

o Can monitor inaccessible machines

o Minimal cable runs

o No issues about battery life

How can I evaluate which system is going to work well on my equipment?

Each different manufacturer has their own approaches to this but for example Faraday Predictive offer a service using their portable kit, to assess the condition of a handful of customers machines. This provides a convincing demonstration of how well the system works on your particular machines.

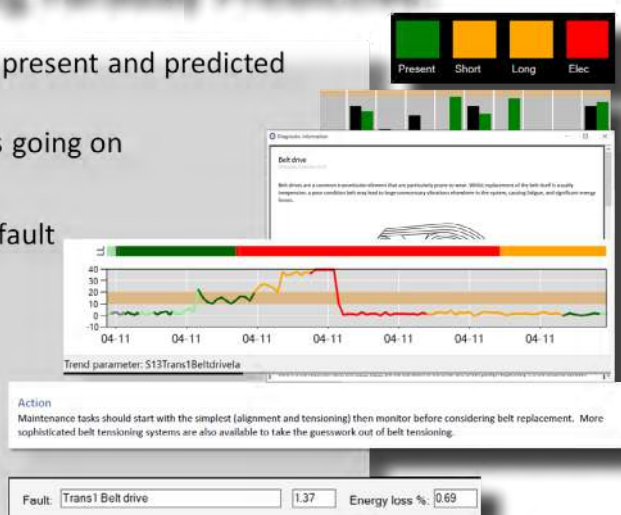
For more information contact

**info@faradaypredictive.com,**

**+44 333 772 0748**

## MBVI Outputs – eg Faraday Predictive:

- Provide overall summary of present and predicted condition
- Provide diagnostics – what’s going on
- Provide information on the fault
- Trend plots
- Advice on corrective action
- Info on energy and waste



# Emerson Condition Monitoring Software Expands Visibility to Asset Health

**A**USTIN, Texas (April 12, 2022) – Global software and technology leader Emerson is updating its machinery health platform to enable customers to migrate to a more holistic, modern interface for condition monitoring. New support brings data from edge analytics devices directly to key personnel inside and outside the control room to help them more quickly identify and address a wide range of common equipment faults before they impact plant availability. In some industries, Emerson estimates every 1% gain in availability is worth approximately \$8.4 million of additional profit margin per year.

Plants around the globe have faced increasing shortages of experienced personnel to monitor and manage equipment reliability. Today, 58% of multinational manufacturers are having difficulty acquiring skilled talent, according to a 2021 study from Workforce Institute at

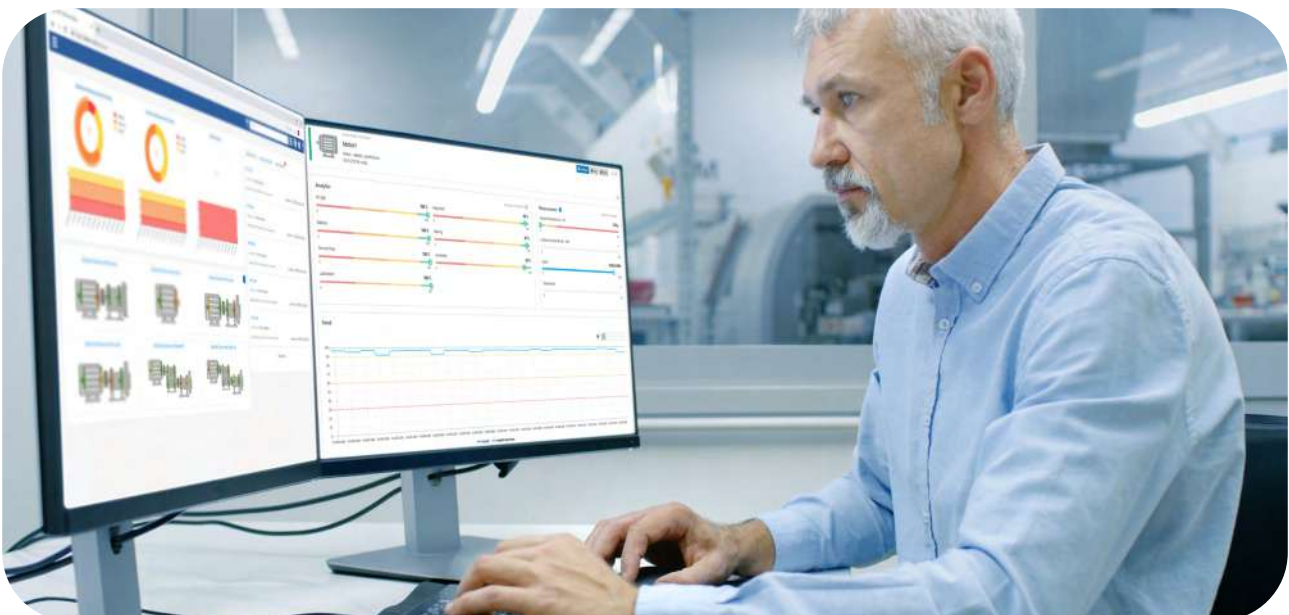
Ultimate Kronos Group. To help small teams make the most of limited resources, Emerson has continuously evolved AMS Machine Works' condition monitoring technologies for better diagnostics at the industrial edge. Increased connectivity to external systems provides personnel with an intuitive, holistic asset health score supported by maintenance recommendations to help reliability teams quickly see what is wrong and how to fix it. Intuitive information and alerts are delivered directly to workstations or mobile devices to provide decision support, helping maintenance personnel make the best use of their time.

"As smaller groups of experienced reliability personnel are tasked with supporting an increasing scope of work, they need access to immediate insights and faster, more comprehensive information to prevent downtime and keep plants running at peak performance," said Erik Lindhjem, vice president of reliability solutions at Emerson.

"The newest version of AMS Machine Works seamlessly interfaces with edge analytics devices to help teams of any size stay aware of the health of all plant production assets, from critical to balance-of-plant, no matter where they may be."

The newest version of AMS Machine Works adds support for Emerson's AMS Asset Monitor, which provides embedded, automatic analytics at the edge using patented PeakVue™ technology to alert personnel to the most common faults associated with a wide range of assets. AMS Machine Works also supports open connectivity using the OPC UA protocol to make it easier to connect to external systems such as historians, computerised maintenance management systems, and more to help close the loop on plant support from identification to repair and documentation.

**For more information on Emerson's machinery health prediction systems, please visit [Emerson.com/ConditionMonitoring](https://www.emerson.com/ConditionMonitoring).**





## DATAHONE and Ultimo announce partnership to help UK manufacturers reduce asset downtime

**L**eeds-based production and maintenance monitoring provider, DATAHONE Ltd, has announced a co-sell agreement with Ultimo, a leading provider of Enterprise Asset Management (EAM) solutions for the mid-market.

Both companies already work with UK manufacturers to enhance outputs and the reliability of manufacturing assets. Machinery and other assets that are optimised for performance and maintained for reliability deliver positive outcomes for profit margins.

With over 30 years of industry experience, Ultimo has grown to become the leading flexible EAM Cloud platform, rewarding manufacturers with maximum asset availability. The software enables businesses to gain better control over their assets, realise uptime, control costs, and create a safe and healthy working environment.

DATAHONE's Intelligent Factory provides production and condition monitoring applications to manufacturers across many different industry sectors and, like Ultimo, delivers a host of benefits regarding productivity.

Cliff Brereton, CEO of DATAHONE, said: "This partnership is great news for manufacturers who use DATAHONE's production and maintenance monitoring capabilities to manage their performance. By adding Ultimo's asset and maintenance management offering to our portfolio, we can expand our offering and add new value to our customers. Both solutions have demonstrated outstanding Return on Investment (ROI), and being able to monitor production process and assets around the business can truly make a difference to our customers."

Marcel Leeftang, Head of Channel Sales at Ultimo, commented: "We are delighted to be working with DATAHONE to improve productivity for manufacturers across the UK by reducing unplanned downtime and optimising planned maintenance activities. I am looking forward to supporting customers with our joint solution."

### About Ultimo Software Solutions

Ultimo supplies the number one flexible Enterprise Asset Management cloud platform for midsized enterprises. The software is

used by more than 2,200 customers globally in manufacturing, healthcare, logistics, infrastructure and utilities. It offers customers in these sectors many advantages such as increased uptime, the management of costs, increased equipment lifespan, ease of adherence to laws and regulations and the assurance of a safe working environment. Ultimo provides these advantages with an unparalleled return on investment due to fast implementation processes, seamless integrations and self-service application management. The company was formed in 1988, has offices in the Netherlands, Belgium, Germany and the UK, and is globally supported by an extensive open partner ecosystem. Ultimo is an IFS company.

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



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**Vibration Analysis (ISO 18436-2)**  
VCAT I, Stoke by Nayland Hotel, Essex - 27th Feb - 2nd Mar (H)  
VCAT II, 2023 dates and location to be confirmed (H)  
VCAT III, 2023 dates and location to be confirmed (H)

**Ultrasound Analysis (ISO 18436-8)**  
UCAT I, Novotel, Worsley, Manchester - 7th Nov - 10th Nov

**Asset Reliability Practitioner (ARP)**  
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**BINDT** **MOBIUS INSTITUTE**

**"Reliability services, technologies, support & training For more than 20 years RMS have provided a comprehensive range of reliability and condition-based maintenance (CBM) products, services, support, and professional training solutions. Our expertise encompasses: Vibration Analysis.**

**M**otion Amplification, Thermography, Oil, Balancing, Laser Alignment, Ultrasonic and Motor Analysis. Our partnership with industry OEM's highlights the commitment we make to showcasing innovative technologies. One such example is RDI Technologies. Their revolutionary technology, Motion Amplification, is a video-processing product and software package that detects subtle motion and amplifies it to a level visible with the naked eye. RMS is also a UK approved distributor of Emerson/CSI Machinery Health Manager products and solutions.

The Reliability Training Institute is a UK & Ireland accredited Training Organisation for both Mobius Institute (MIBOC) and The British Institute of Non-destructive Testing (BINDT). Professional training courses in Vibration Analysis, Ultrasound and Asset Reliability prepare students to take the ISO certified examination. We use the very latest computer-based simulations and animations to help make even the most complex subjects understandable. Study options include Onsite, Hotelbased, Hybrid, Virtual Instructor-led and Self-paced courses."

[www.rms-reliability.com](http://www.rms-reliability.com)



# Protecting A Key Power Station Transformer At Eneco

**A**s part of an initiative to safeguard reliable power output and reduce risk, a biomass power plant in the north of the Netherlands has installed a continuous transformer monitor. The Vaisala MHT410 continuously measures three key parameters in transformer oil – moisture, hydrogen and temperature. Owned and operated by the energy company Eneco, the Bio Golden Raand plant produces steam for local industry as well as power, with a capacity of approximately 135 MW thermal and 49.9 MW electrical.

## Background

Transformer materials can deteriorate over time, resulting in the potential for costly faults, repairs and downtime. However, the development of transformer faults results in the accumulation of dissolved gases in the transformer oil, so this oil is routinely tested as part of a preventative maintenance program. Eneco's transformer gas monitor was installed to provide continuous data and reduce the requirement for periodic oil sampling and laboratory analysis.

"We discussed our requirement for the early detection of potential issues with our local service provider, Flux Transformer Services," explains Laurens Freriksen, a project manager and maintenance specialist for Eneco. "They suggested that we should consider using one of Vaisala's online monitors to support the planning and optimization of preventive maintenance; to extend the lifespan of our transformer, and reduce the risk of unexpected and costly outages."

Vaisala's Andreas Hilgers then visited the

site to demonstrate two options; the MHT410 which monitors a single gas (hydrogen), and the OPT100 which is a multi-gas DGA (dissolved gas analysis) monitor. Subsequently, the MHT410 instrument was installed by Flux TS, and Laurens says: "We have benefited from online measurements for around one year now, and it has been very reassuring to see low hydrogen levels in the transformer oil, irrespective of the transformer load."

## Bio Golden Raand Power Station

Biomass is used as a feedstock at the Bio Golden Raand plant to generate energy from wood waste. This form of power generation helps to reduce the consumption of fossil fuels. The plant uses non-hazardous Grade B waste wood. This type of waste may contain Grade A wood (mainly from packaging waste, scrap pallets, packing cases and cable drums, and process off-cuts) together with other waste wood sourced from construction and demolition activities, transfer stations, civic amenity sites and the manufacture of furniture from solid wood.

Every year, the plant processes approximately 300,000 tons of waste wood that arrives in Delfzijl by ship and truck from the Netherlands and surrounding countries. The wood is passed to a boiler fitted with a circulating fluidized bed furnace operating at 900°C. Flue gases from the furnace pass through three heat exchangers to a water steam circuit, where steam at 90 bar with a temperature of 520°C is produced. This steam can be delivered directly to local industry, or it can be used to drive a steam turbine, which in turn drives a generator that produces electricity.

Generator step-up transformers provide the

critical link between a power station and the transmission network. These transformers step up the voltage from generator level to the transmission voltage level, which steps down the current and thereby reduces the loss of energy as heat and ensures efficient power transmission over long distances. Typically, generator transformers operate continuously 24/7 so they need to be extremely reliable.

## Transformer oil

Generator transformers are generally oil-filled to provide insulation and cooling. The transformer at Bio Golden Raand, for example, contains around 20 tonnes of oil. A special mineral oil is used for its chemical properties and dielectric strength, and this is routinely tested as part of an effective preventative maintenance program for the transformer.

Oil degradation occurs when its molecules break down under the influence of thermal and electrical stresses due to transformer faults such as discharges or hot spots, for example. This degradation raises the levels of hydrogen, carbon oxides and hydrocarbon gases in the oil. Hydrogen concentration increases with all fault types, but the ratio of hydrocarbons depends on the fault type.

## Testing and monitoring transformer oil

Traditionally, transformer oil samples are collected once or twice per year and sent for laboratory analysis to determine the level of gases. This spot sampling method provides an indication of dissolved gases and oil quality at one moment in time. The main advantages of continuous monitors therefore, are that they are able to reveal trends





so that users can correlate gas levels with transformer load, for example. Importantly, by measuring continuously, DGA monitors can provide early warnings of faults.

The levels and trends of dissolved gases can be used for fault identification, and this is the subject of a Cigré Technical Brochure (Ref.783) on DGA Monitoring Systems. This document describes the different types of DGA monitors, and includes an impressive performance evaluation of monitors including Vaisala's OPT100.

In addition to hydrogen, the MHT410 also measures temperature, which is a key indicator of faults. Moisture in oil is also measured by the device because moisture decreases the dielectric strength, accelerates cellulose (insulation) decomposition, and increases the risk of bubble formation at high temperatures.

DGA monitoring at Bio Golden Raand  
Explaining the reasoning behind the installation of the Vaisala MHT410, Laurens Freriksen says: "A power plant transformer is one of the most valuable assets in a power network - ours is around 10 years old and operates continuously. However, there is no redundancy so it is important for us to be able to monitor its condition and performance closely.

"We chose the MHT410 because it offered an opportunity for the early identification of potential problems, which is an important risk reduction measure. Early fault identification enables timely corrective measures such as transformer service, oil change, repairs and possibly transformer load management through customer engagement. If the transformer indicates a fault through increased hydrogen levels, it may also be necessary to

deploy a multigas monitor such as the OPT100, in order to obtain a full fault diagnosis."

Data from the MHT410 continuously feeds into the Eneco digital control system, which Laurens is able to access from his laptop. This means, for example, that he is able to track transformer load on the same screen as the MHT410 measurements. "The digitization of assets is an important issue for our industry, and this is a good example," Laurens adds.

"Remote access to live data informs decision making, lowers risk and was an enormous benefit during the Covid lockdown, because it meant that we could check the transformer at any time, from anywhere."

The MHT410 has been set to raise a high level alarm at 100ppm hydrogen and a very high level alarm at 150ppm. In addition, an alarm will be issued if there is a sudden increase in the readings for hydrogen, moisture or temperature. However, Laurens is pleased to confirm that during the first year of operation there have been no alarms, with hydrogen readings typically ranging between 2 and 15ppm, with no significant effects during periods of high load.

#### Vaisala MHT410

Designed for quick and easy installation with almost no maintenance requirement, the MHT410 has a low cost of ownership. "This is important," explains Andreas Hilgers. "However, the cost of DGA monitors is negligible in comparison with the value of the assets that they help protect, or in comparison with the cost of outages.

"One of the main advantages of digitization is a reduction in the need for unnecessary site

visits, so it makes sense to install a Vaisala monitor that does not incur an extra service requirement. "Frans van Hofwegen from Flux TS agrees. He says: "This is a good example of cooperation between Vaisala, Flux and the end-user; combining knowledge and experience to achieve the desired goals. As the first MHT410 that we have installed in the Netherlands, the device at Bio Golden Raand represents a great start to our relationship."

The MHT410 takes measurements with an in-situ probe, so there is no requirement for pumps or membranes. With no consumables or moving parts that could fail, the instrument is encased in an IP66-rated metal housing equipped with a weather shield. Every unit is individually tested for a pressure of at least 10 bar and also withstands vacuum conditions. Special attention has been given to EMC tolerance; for example, all electrical connections are isolated. In addition, the MHT410 has been designed to tolerate short-term power outages.

#### Summary

For Eneco, the installation of the Vaisala monitor is essentially a risk reduction measure, but as Laurens explains: "It is very reassuring to have constant visibility of the transformer's condition. However, the key advantage is that it buys us time - time to plan an effective strategy if oil conditions deteriorate - to optimize the performance of the transformer and to extend its working life.

"We are proud to be leading the way in the Netherlands with this form of digitization, and since the MHT410 was installed, we have received a great deal of interest from our colleagues in other sectors, such as wind power."



# Modern Methods Of Optimising Operations In Steam Boilers

In this article, Carl Knight – managing director of process steam and heat transfer specialist Fulton – looks at boiler sequencing control systems and how these intelligent controllers can optimise steam boiler installations to ensure energy efficient operation and improve boiler longevity.

**N**umerous processing facilities operate multiple steam boilers to meet the demands of their on-site

processing equipment. However, if the steam boilers in these facilities are not optimised for efficiency, then the potential for any energy savings is not itself being fully optimised.

The use of an intelligent sequencing system for steam boiler installations provides redundancy, builds reliability and offers significant energy savings by automating start-up and shut-down procedures; controlling and optimising main steam header pressure or temperature; ensuring steam supply is controlled precisely for the required process; and balancing the load

distribution across the boilers, all of which reduces extensive losses from repeated start/stop cycling of burners as much as is feasibly possible.

Steam boiler sequencing should be about more than simple on/off or start-up control. An intelligent sequencing system should also consider steam system load conditions and match this to the most efficient combination of boiler output according to process requirements.

Response to system loads and start-up times are also factors. For example, a boiler sequencing control system should be capable of monitoring when running too many or too few boilers is having a negative effect on

efficiency and productivity. It should be able to monitor and pre-emptively predict a sudden surge in demand and hence boiler use by monitoring existing boiler demands, system pressures and flow rates; therefore starting/stopping boilers appropriately depending on process demand.

Additional factors include what happens in the case of boiler failure, sudden high steam loads and even lack of boiler availability due to servicing. A good sequencing system should take all these factors into consideration and manage the boiler operation automatically. With the result being that, despite the machine they are working on having just started a high-steam demand stage during its production process, the end user doesn't notice that additional boilers had to be started.

Furthermore, benefits that can be achieved through the installation of an intelligent boiler sequencing system can include automation for start-up and shutdown of the boilers; better control of the main steam header pressure leading to more consistent pressure and therefore better steam quality (vital factors for sterilisation processes and accurate heat transfer rates); precisely-controlled process steam or hot water supplies; boilers operating at main header pressure or temperature and not maximum pressure or temperature; improved boiler longevity from



complete load sharing; and improved fuel savings through eliminating idle time at low fire.

Suitable for up to four steam boilers, SCOPE from Fulton is a PLC-based intelligent boiler sequencing control system that optimises installations. It can be retrofitted to existing vertical and horizontal fuel-fired boiler installations, including Fulton's own range of existing and planned products and those manufactured by other boiler OEMs.

But what about the future of boiler sequencing and the development of intelligent control systems using Cloud-based services?

Many processing facilities operate 24/7 so, to keep these facilities running consistently and efficiently, immediate action is often required

and/or expected from the boiler manufacturer. By accessing its SCOPE intelligent sequencing system via Cloud-based systems, Fulton is already looking to incorporate remote accessibility for diagnostic- and service-related issues; and providing remote data for system improvements, which can be accessed by specialist engineers for diagnostics and clients for data review.

Fulton is also looking at the ability to perform certain maintenance procedures or service steam boilers remotely, no matter where in the world they are installed. This would help to reduce the environmental impact and costs associated with travel to/from site, savings that can be passed onto the client.

The future will therefore offer simple sequencing control of multiple boiler installations or a full boiler-house energy management system, accessible remotely by the manufacturer and client alike, to provide an efficient solution for everyone.

For further information on SCOPE email [sales@fulton.co.uk](mailto:sales@fulton.co.uk), call +44 (0)117 972 3322 or click [www.fulton.co.uk](http://www.fulton.co.uk).



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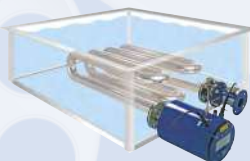
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- High efficiency (80%+) heating of all types of spray and dip process tanks
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- Accurate performance modelling using Lanemark TxCalc design software
- Heat Input Range: 15 kW (1½") – 730 kW (6")

### Midco DB 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 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

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**LANEMARK**  
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# Lanemark Launches New In-House Process Gas Burner Test Facility

**P**rocess gas burner specialists, Lanemark Combustion Engineering Ltd., has completed the development of a new in-house testing facility which is set to enhance services to its customers. The Nuneaton-based organisation, which supplies burner systems for applications ranging from brewing and metal treatment to automotive manufacturing and, through an associated division, the petrochemical industry, says the new resource will enable larger, more detailed equipment analysis to take place while also helping to optimise customers' emission controls.

"Our range is based on process tank, oven and duct heating systems through, respectively, our TX, FD, FDB and DB series," says Jeff Foster, Lanemark's Sales Director. "In all cases, our success is centred on supplying the optimum configuration for each customer's needs, so it is vital that our equipment undergoes the most rigorous testing and analysis procedures – both during product development and pre-installation phases. This new facility will make a major contribution in this context."

The announcement now of the company's enhanced capability in this area will build on the role played by Lanemark's longstanding testing installation. Jeff Foster is keen to highlight key areas in which the new installation will help optimise this important element of production.

"We can now test a greater range of both tank and oven burners in terms of size and output with specified configurations to match precise operating conditions," he says. He points out that this now includes the company's largest tank heating burner design, the TX80, using an 8" N.B. submersed tube heat exchanger.

"A wider range of emissions can also be monitored including NO<sub>x</sub>, SO<sub>2</sub>, CO<sub>2</sub>, CO and O<sub>2</sub> as a result of the new facility incorporating

a Horiba PG-350 flue gas analyser," Jeff Foster explains.

The new test furnace now offers a volume measuring six metres in length and 2.5 metres in diameter. No less than 25 viewing ports are available, each fitted with thermocouples to monitor temperatures of up to 1350°C, and pressure transmitters that can accommodate a range from -5 to +70 mbar. Alongside this, the TX test installation provides improved flue gas testing accuracy and is able to address common issues such as condensation.

"Both the FD and TX test facilities are fully fitted with duct work and dampers to accurately reflect precise operating conditions," adds Jeff

Foster. He explains that extensive plc control helps to optimise both set up and monitoring processes.

"We have always believed in working closely with our customers to ensure that the equipment we supply provides them with optimised usage in terms of performance, fuel consumption and emissions, and our investment in this new testing facility underlines this commitment," concludes Jeff Foster. "With the new service now up and running, we believe even greater benefits from our burner technology can be realised by users across our range of marketplaces."

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



## Riello Offers Premix Burners Up To 3MW

**R**iello RX premix packaged burners are available in outputs up to 3MW, offering NOx levels of less than 40mg/kWh, with high turndown ratios of up to 8:1, across a wide range of models.

Riello RX burners feature an exclusive design that includes a patented woven wire gauze 'sock' covering the combustion head cylinder. Gas and combustion air are mixed upstream of the combustion head and then pass through precision-located ports and the gauze 'sock' to ignite on the external surface of the combustion head. This arrangement enables a very compact flame with a diameter directly related to the burner firing rate, ensuring precise heat control and optimum efficiency at all loads.

The high turndown makes RX burners ideal

for systems with variable heat loads where low NOx levels are also required. These range from condensing boilers through to process applications such as spray booths and industrial ovens.

RX burners can be used in conjunction with variable speed drive motors to reduce electricity consumption and lower noise levels even further than the typical 30% noise reduction compared to many other combustion applications. Control options include progressive two-stage operation and fully modulating via 0-10V or 4-20 mA. Full electronic control with operational and diagnostic display is also available.

For further information visit

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



# New Babcock Wanson Horizontal E-VAP Rapid Steam Generator Provides Simple, Reliable Operation

**I**ndustrial process heating equipment and solutions specialist Babcock Wanson has launched the E-VAP horizontal Rapid Steam Generator, with steam outputs from 1700 to 5700 kg/h produced in 5-15 minutes from cold.

A multi-pass coil Steam Generator, E-VAP has been designed for simple, reliable, long-life operation. It comes with a fully integrated digital control panel including easy-to-use touchscreen operator interface, along with auto start and stop plus an option for full sequence control. A specialist low maintenance pump contributes to this simple operation, whilst E-VAP's horizontal configuration ensures easy access to all components for both operation and maintenance.

Safety is at the heart of E-VAP. Babcock Wanson has designed this latest Rapid Steam Generator to operate with low water content for safe operation and only simple water and chemical treatment are required. Safety is further enhanced through the use of a fully modulating burner and feed water pump control by variable speed drives which improves pressure control and reduces the electrical load, which also saves energy and improves performance.

Other efficiency features include an integral combustion air preheater as standard, plus the option for a flue gas/feedwater economiser. The E-VAP's small footprint for such a high output means low heat loss and fuel savings, further increasing plant efficiency. The high overall efficiency of the E-VAP also results in substantial environmental advantages and

low overall emissions. Flue Gas Recirculation ensures compliance with emissions regulations on all readily available fuels.

The E-VAP Rapid Steam Generator has been designed by Babcock Wanson for maximum flexibility, enabling it to be used across a multitude of industries. It has a wide range of operating pressures, with standard 12 barg working pressure, although higher steam pressures up to 100 barg are available on request. Most types of liquid or gaseous fuels can be used. Extended unattended operation is available to suit local operating requirements.

A wide range of ancillary services and equipment are readily available.

Comprehensive factory testing by Babcock Wanson enables easy site installation and quick and simple commissioning of the E-VAP Rapid Steam Generator.

The E-VAP Rapid Steam Generator is the latest addition to Babcock Wanson's range of coil type boilers, which are energy efficient, easy and safe to operate. In addition to these, Babcock Wanson offers a complete range of products and services for boiler houses and other process heating needs, including thermal fluid heaters, hot water boilers, VOC and odour treatment by thermal oxidation, water treatment and process air heating solutions. The company aims to help optimise customer's energy production with high quality products and efficient service.

**For more information, please contact Babcock Wanson on 020 8953 7111 or [info@babcock-wanson.com](mailto:info@babcock-wanson.com) or go to**

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# Meantime Brewing Replaces Boiler and Expands Capacity with Babcock Wanson

**A** Babcock Wanson BWD40 Fire Tube Boiler has been installed into Meantime Brewing's Greenwich, London site, which is used in multiple aspects of brewery operation, from wort production through to packaging line operations. The 4 tonne BWD40 is a replacement for the existing 2.5 tonne boiler, which had come to the end of its working life.

Established in 1999, and based in Greenwich, London, Meantime Brewing Company is part of Asahi UK and has earned a reputation as a modern pioneer of craft beer in the UK. It has an exciting line-up of core beers such as London Lager and Anytime IPA and innovative collaborations and seasonal beer releases throughout the year.

In a recent refurbishment of its Greenwich site, to both increase capacity and reduce its carbon footprint, Meantime Brewery appointed industrial process heating specialist Babcock Wanson to undertake the boiler replacement works. This included supplying the BWD40 Fire Tube Boiler and carrying out all the mechanical and electrical works as part of a turnkey solution. Babcock Wanson developed the plans in close consultation with chief engineers from across parent company, Asahi UK, and ensured the site meets BG01 Guidance on the Safe Operation of Boilers. BG01 advises on boiler control technology and how to achieve the safety standards laid out in the HSE's 'Safe management of industrial steam and hot water boilers' document (INDG436).

The Babcock Wanson BWD40 Fire Tube Boiler was chosen as the process heat source for this site due to its high efficiency, long life and low cost maintenance. Efficiency comes as a result of the optimised matching of the boiler shell and the burner, along with advanced burner head geometry which provides stable combustion with near constant efficiency throughout the complete burner modulating

range.

Longevity and reduced maintenance requirements are a direct result of the three pass design and use of a coaxially located furnace tube providing optimum distribution of mechanical stress in operation. This is an important feature for boilers that operate under variable steam load, such as at Meantime Brewing, and ensures long equipment life.

Further benefits of the BWD40 are lower total exhaust emissions. Using Babcock Wanson's latest Optimo burner, the BWD40 has emission rates of less than 100mg/Nm<sup>3</sup> NO<sub>x</sub> throughout the firing range when burning natural gas, making it one of the best performing burners on the market.

The new boiler in place, with its low NO<sub>x</sub> emission rates, readily meets the Medium Combustion Plant Directive (MCPD), which covers emissions of sulphur dioxide, nitrogen oxides and dust pollutants to the air. Babcock

Wanson assisted Meantime Brewing with the required application for a new MCPD environmental permit, working with a third party who conducted a detailed boiler house risk assessment covering all relevant aspects - including steam, electrics, operations - and produced a written report.

Babcock Wanson offers a complete range of products and services for boiler houses and other process heating needs, from steam boilers, thermal fluid heaters, rapid steam generators and hot water boilers to VOC and odour treatment by thermal oxidation, water treatment or process air heating solutions. The company has extensive experience in the brewing and distilling sectors.

**For more information, please contact Babcock Wanson on 020 8953 7111 or [info@babcock-wanson.com](mailto:info@babcock-wanson.com) or go to**

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# How To Prevent Corrosion Caused By Renewables Conversion

**M**any oil and gas companies are repurposing refineries to produce renewable diesel, sustainable aviation fuel, and other renewable biofuels and products. The replacement of fossil fuels will help to decrease greenhouse gas (GHG) and CO<sub>2</sub> emissions.

To incentivize the production of renewable fuels, the US Environmental Protection Agency's Renewable Fuel Standard (RFS) Program requires that 36 billion gallons of renewable fuel replace or reduce the quantity of petroleum-based transportation fuel, jet fuel or heating oil by 2022.

Process equipment designed to refine crude oil products will now be faced with new chemical compositions, pressures, and temperatures. This new processing environment leads to new corrosion mechanisms which can all detrimentally affect existing carbon steel, stainless steel or internally clad reactors, drums, and other process equipment.

## New Corrosion Mechanisms

Corrosion mechanisms in renewable diesel processing are unique. Conventional base materials of columns, towers, and reactors, as well as past corrosion mitigation strategies, are unsuitable in these new operating environments.

The processing of renewables, whether co-processing or switching to 100%, means that critical equipment, such as reactors, become susceptible to high temperature free fatty acids (FFAs).

These are a type of carboxylic acid and will contribute to the acidification of the feed, increasing the total acid number (TAN), leading to corrosion. Other types of corrosion include CO<sub>2</sub> corrosion, wet chloride corrosion, sulphidation and stress corrosion cracking.

differences between the old and new damage mechanisms, for both the asset base material and cladding (if installed). Depending on the process conditions, 3XX SS alloy overlays may not be resilient enough for these more aggressive service conditions.

Cladding materials based on alloys with a known tolerance (e.g. NiCrMo/W/XX), can provide the necessary corrosion resistance for renewable fuel processing.

**Damage Mechanism Concerns in Petroleum vs. Renewables vs. Co-processing**

100% Petroleum	100% Renewables	Co-processing
<ul style="list-style-type: none"> <li>Sulphur is the major concern in the feed along with lower amounts of naphthenic acids and nitrogen</li> <li>H<sub>2</sub>/H<sub>2</sub>S corrosion dominates in the hot section of the unit</li> <li>Sulphur-to-TAN ratios can be leveraged to control corrosion of some materials</li> <li>As the effluent cools, NH<sub>4</sub>Cl and NH<sub>4</sub>HS and wet H<sub>2</sub>S damage can occur</li> </ul>	<ul style="list-style-type: none"> <li>Fatty Acids are the major concern in the feed, resulting in Free Fatty Acid (FFA) corrosion</li> <li>Pre-treatment of feeds may be necessary to remove catalyst poisons and extend run length</li> <li>Pre-treating and lipid degradation can increase acid content; acids convert to CO<sub>2</sub> and water in the reactor</li> <li>As effluent cools, CO<sub>2</sub> corrosion (carbonic acid corrosion) can occur</li> </ul>	<ul style="list-style-type: none"> <li>Depending on the blend, H<sub>2</sub>/H<sub>2</sub>S corrosion and fatty acid corrosion could occur in hot sections of the feed</li> <li>In the effluent, alkaline aqueous species help to mitigate CO<sub>2</sub> corrosion</li> <li>Wet H<sub>2</sub>S damage and salting (from chloride contamination) are still relevant mechanisms</li> </ul>

Repurposed equipment is faced with risks to asset integrity due to new corrodents and damage mechanisms. The original equipment design and/or mitigation strategy may no longer be sufficient to deal with any combination of Free Fatty Acid (FFA), Naphthenic Acid, Carbonic Acid, Chlorides etc. in the effluent and associated streams. Revised mitigation strategies must account for the

To protect the existing equipment base material and pressure boundary, a metallurgy upgrade is required to prevent corrosion and potential asset integrity failure. There are several options available to achieve this.

## Available Solutions

- Replacement

This option involves replacing the existing assets with newly built equipment designed for the latest operating environment. Replacement of small items can be relatively quick and cost effective, but when operators consider medium/large processing equipment, such as pressure vessels, drums, reactors, columns etc., replacement becomes prohibitively expensive and slow, with lead times for the required high-nobility clad equipment often being many years.

#### • Field Applied Weld Metal Overlay (WMO)

Welding is a commonly used solution in the wider oil and gas industry, both for rebuilding degraded areas of wall thickness and for providing a corrosion-resistant alloy barrier.

However, welding carries some fundamental drawbacks. A common issue is the potential damage of the vessel shell or any existing internal cladding, due to the heat input required for the welding process (preheating, welding (Heat Affected Zones) and post weld heat treatment or bake out). The process also necessitates additional mechanical support for the equipment during the process to mitigate the structural integrity risks e.g., loosening any flanged connections, cranes or laying the column down horizontally. A high degree of stress gets added during welding, especially on thinner wall vessels, which can cause distortion or failure. Additionally, the weld procedure, code, or environmental conditions will typically require heat treatment prior to and after the application, adding further time and cost to the repair solution.

There is also the question of time and cost. Welding is a relatively slow process with an application time of 10 – 16 ft<sup>2</sup> (1 – 1.5m<sup>2</sup>) per weld head per shift and can cause additional

delays in bringing the asset back into service. Depending on the time frame available for converting to renewables, using the method of welding for corrosion protection can have a significant financial impact.

#### Field Applied High Velocity Thermal Spray (HVTS)

Developed by corrosion mitigation specialists Integrated Global Services (IGS) in the early 2000's following decades of field application experience, HVTS is designed to protect the base metal in high corrosion environments and involves the simple application of a non-porous high nobility metal alloy. This application upgrades the metallurgy of base materials, protecting them from new operating environments. Since the early 2000's HVTS has been successfully installed and the performance verified through inspection in hundreds of critical O&G process assets over thousands of square metres of internal surface. The application process is considerably faster than welding and there are no stresses imposed on the base material during the application process, effectively for the substrate the application is a cold process. Furthermore, HVTS application does not generate any dilution (the process does not require fusion or a metallurgical bond).

#### HVTS Features:

Application Speed	32-64 ft <sup>2</sup> / 3-6m <sup>2</sup> per shift per HVTS machine
Heat treatment before / after Application	Not required, no pre-heat or HAZ
Bond:	Mechanical and Chemical (>35 MPa)
Thermal resistance	Over 1000°F / 537°C

Top Tips for Upgrading Vessel Internal Metallurgy for Renewables Conversion

#### Prequalifying the Solution

When selecting a contractor to protect mission-critical equipment from new processing environments, there are several things to consider. Firstly, the contractor should work with the EPC, asset owner and the licensor to deliver a comprehensive pre-qualification engineering package to govern the quality of the applied surface technology solution and ensure that the protection solution is suitable for the new harsh corrosion mechanisms. Rigorous testing should be performed by the provider to verify the suitability of the selected solution in advance of the application.

#### Delivering a Technical Package

A good surface solutions provider should deliver a complete technical package of services ensuring a turnkey site application within agreed timescales, including:

- Project Plan
- Method Statement
- Project Safety Analysis
- Risk Assessment and Mitigation Plan
- Job Specific Safety Data Sheets
- Material Selection
- Surface Preparation
- Utilization of the Application

#### Process

- Critical QA/QC Controls
- Post Project Reports



### The Problem

### Introduction

A multinational Oil & Gas company is sharpening its focus on meeting the world's growing energy needs while reducing its carbon emissions intensity. As a result, it is converting one of its refineries to a renewable fuels manufacturing and terminal facility that will be able to produce approximately 730

A low-pressure separator with a minimum corrosion allowance remaining was being prepared for converting to renewable diesel.

The asset was at risk of carbonic acid attack if left untreated, so the metallurgy of the LP separator required an upgrade before commissioning. The plant considered welding internal cladding, but that option carried

### The Solution

The plant selected HVTS, an IGS Solution, to upgrade the metallurgy of the separator to a higher nobility alloy able to prevent carbonic acid corrosion.

References, operations excellence, and the ability to inspect the separator in between turnarounds without shutting it down were the key drivers of the plant's decision-making.

### To Weld or Not to Weld?

The Plant had weld overlay installed in the bottom of the separator already and was considering welding a higher nobility alloy above that area. Field welding is an expensive and time-consuming process and the plant elected to utilize HVTS alloy cladding that delivered numerous technological and commercial benefits.

### Cost and Time Savings

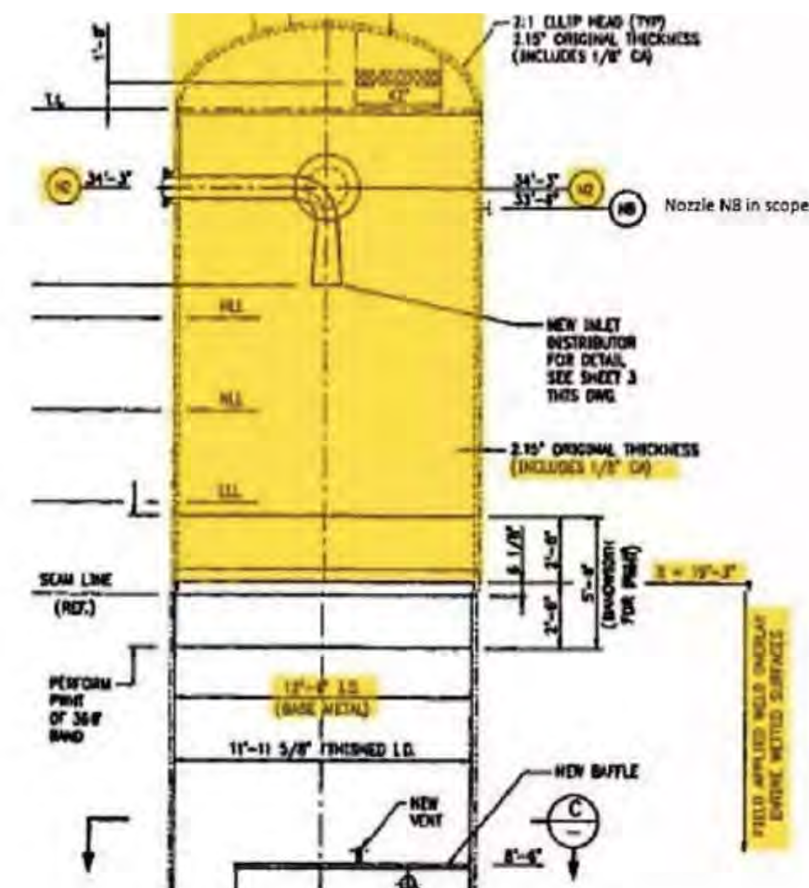
Field welding is significantly costlier compared to HVTS and requires 3X the time to apply the solution. This can be a problem if the asset is on a critical path.

### Guaranteed Performance

As the separator had minimum corrosion allowance left, the plant engineers had to be certain that the HVTS would not fail in service. Multiple references and performance qualifications completed in the IGS Technology



*The plant's LP separator with  
minimum corrosion allowance*



## Project Execution

IGS delivered an engineering package, including the project plan, method statement, inspection test plan, project safety analysis, risk mitigation plan and the job-specific safety data sheets. The whole project was completed in 9 shifts as planned.

## Summary

With the rise in renewable conversions, there is a multitude of issues to consider for oil and gas companies.

Corrosion protection is critical for long-term asset performance and a comprehensive mitigation strategy should be in place at the beginning of the conversion process.

A preventative maintenance plan will ensure that asset life is prolonged, the risk of costly unplanned outages is reduced, and performance and efficiency are maximized.

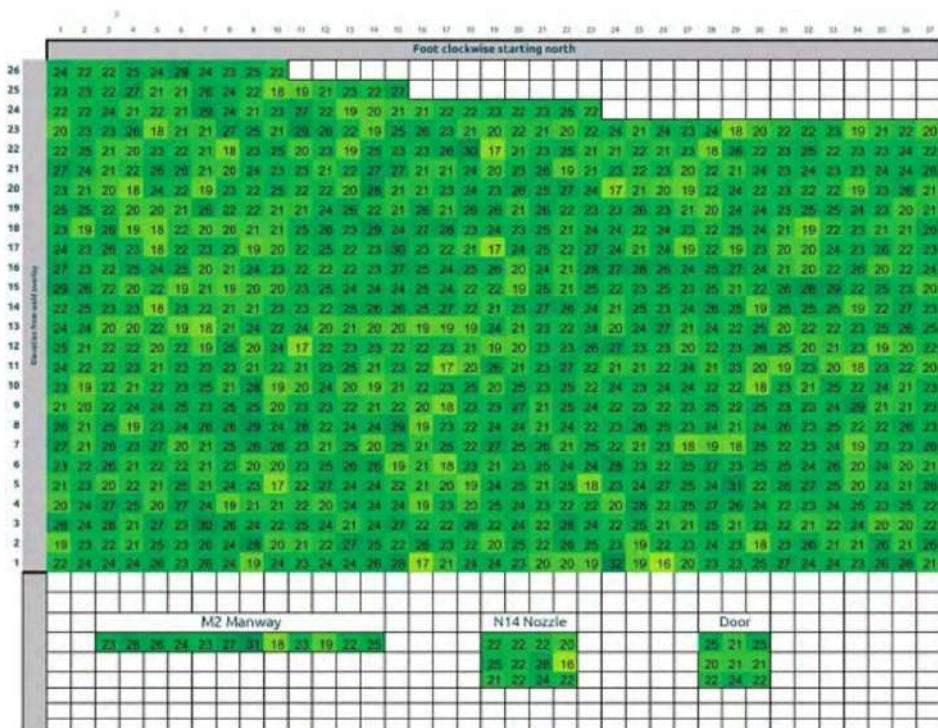
## The highlighted section illustrates where HVTs was applied inside the separator

Centre confirmed that HVTs delivers equivalent protection when compared with welding with added benefits:

- no heat treatment before and after application
- no heat affected zones (HAZ)
- no dilution
- no risk of metal distortion

### External Inspection

IGS designed a method to verify HVTs integrity during an asset's normal operation. This approach offers extra peace of mind as there is no need to wait until the next scheduled turnaround to ensure that the corrosion protection barrier is intact. The plant welcomed this addition to the service package.





## Mechan Answers Call For Space-Saving Servicing

**H**avy lifting and handling specialist, Mechan, has transformed the centre of a busy London rail depot into a multi-purpose maintenance space.

The Sheffield-based manufacturer has designed a bespoke wheel drop for the East Ham Train Depot, operated by South Essex and London rail operator, c2c Trenitalia, which enables roof components to be removed in the same location when it is not in use.

East Ham is located on c2c's London, Tilbury and Southend line and is currently seeing numerous upgrades in preparation for the arrival of a new fleet of Alstom Aventra trains.

Working with principal contractor, Spencer Group, a new wheel drop pit was added to East Ham's Road 10, which is also equipped with high level gantries and a jib crane. Mechan has modified its wheel drop to incorporate hydraulic trapdoors that cover the pit, enabling heating, ventilation and air conditioning units to be placed onto them for removal by forklift.

A wheel drop allows complete wheelsets to be removed or replaced without lifting the rail vehicle, helping to streamline the process. At East Ham, it will be used to change carriage wheelsets on c2c's new fleet of five-car Class 720 Aventra trains, due in service later this year. Mechan has also ensured the design is compatible with all other fleets maintained at the depot.

Lindsey Mills, Mechan's sales director, said: "When we received Spencer Group's specification, we knew East Ham's unique space constraints would prove challenging for our engineers. However, by working collaboratively with all parties involved, we have designed a bespoke solution to the potential congestion caused by undertaking two maintenance activities in one place and ensured the depot can work efficiently and effectively when the wheel drop is not in use."

Dan Barrett, c2c's interim engineering director, added: "This new Mechan wheel drop is an important addition to our depot facilities at East Ham. It will be essential for continued maintenance of our new Aventra units, in addition to being able to support maintenance of our existing Electrostar fleet. The introduction of this equipment will significantly increase our maintenance capability and efficiency."

For more information about Mechan's bespoke design and build services, telephone (0114) 257 0563, visit [www.mechan.co.uk](http://www.mechan.co.uk) or follow the firm on Twitter, @mechanuk.



# Cargotec, Has Received A Significant Repeat Order For MOFFETT

**H**iab, part of Cargotec, has received a significant repeat order for MOFFETT M8 55 NX truck mounted forklifts in the US. The EUR 16.8 million order was made by one of the country's largest building materials supply companies that also placed a significant order with Hiab in Q1 2022. This order was booked in Cargotec's 2022 Q2 order intake and the units are scheduled to be delivered in Q1 2023.

Our customer's focus on the consumer and professional contractor segments, and the development of new, efficient delivery models are increasing the demand for delivery capacity and fleet requirements. We are very proud that the reliability of MOFFETT has been a crucial part of the company's success in a competitive industry. The order is a statement of the continued trust and long-term partnership with Hiab," says Jani Koskinen, Senior Manager, Strategic Accounts, Hiab.

"We can now deliver MOFFETT truck mounted forklifts that are fully assembled in the USA at our Streetsboro facility. Soon, we will also introduce the eSeries in the US that offers the same performance without any emissions," says Jann Hansen, Vice President, Sales & Product Management, Truck Mounted Forklifts, Hiab.

The truck mounted forklift model ordered is the M8 55 NX with a moving mast and a lifting capacity of 5,500 lbs, some units will be delivered with 4-way steering for negotiating tight access areas with long loads. The MOFFETT M8 55 NX can transfer heavy loads quickly and safely, even across challenging terrain.

While it is incredibly powerful, it is still compact enough to be carried on a wide variety of truck and trailer classes. All MOFFETT truck mounted forklifts are compliant with Tier 4 emission standards in North America &

Canada and European Stage V regulations.

All MOFFETT M8 NXs are delivered with connectivity enabled and premium access to HiConnect™ for two years. HiConnect Premium provides real-time insights into equipment utilisation, operation, and condition that can be used to optimise performance, safety and avoid unnecessary downtime.

Further information:

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# Cementing The Benefits Of Specialist Services From Hoist & Winch

**T**he varied and specialist services available from Hoist & Winch Ltd have come to the rescue of a cement industry customer that was looking to replace a large rotor used in its production process. Thanks to the design, manufacturing, test, certification and installation services offered by Hoist & Winch, the cement works was able to avoid the long lead times associated with buying original OEM equipment, and successfully complete a highly complex and challenging lifting operation.

In essence, the objective was to lift and replace a large rotor fitted with pivot-mounted hammers that break down the media as part of the cement manufacturing process. Located at the base of a very large production enclosure, a pair of bearing journals provides support for each end of the rotor. Hoist & Winch had to design and arrange manufacture of

equipment that would help to lift the worn and replacement rotors in and out of position in a precise manner without damaging any adjacent equipment, including the main drive motor and gearbox.

The cement works last performed this particular maintenance lift to replace a worn rotor in 2010 using a pair of lifting lugs that had since been disposed of. New replacement lugs were only available from the original supplier of the cement production process equipment on a very long lead time, which did not meet the requirements of the customer's programme.

With a total design weight of 80T, rotor lifting was courtesy of a pair of tandem-controlled 41T SWL (safe working load) wire rope hoists located on monorail beams arranged at 90° to the rotor bearing journal stub shafts.

Kicking off the scope of work and working

closely with a long standing trusted Sub Contractor, Hoist & Winch set about designing two 41T SWL rotor lifting lugs. As the basis for this task, the company used the customer's drawing of the 600mm diameter rotor stub shaft profile and site photographs of the original lifting lugs. Other assignments here included accurate surveys of the existing hoist runway beam centres and the hoist unit hook profile. Hoist & Winch then produced general assembly drawings for a final dimensional check on site and customer approval of the design concept.

As well as manufacturing the rotor lifting lugs, the Hoist & Winch scope included design and manufacture of a special mandrel that would allow proof load testing of the lifting lugs prior to delivery to site. Each 41T SWL rotor lifting lug had to undergo a test rig mounted, 200% static proof load test. Hoist & Winch also performed non-destructive testing (NDT) involving visual, X-ray and magnetic particle inspection (MPI)





procedures, while dynamic load testing of the rotor lifting lugs took place at the customer's site using the new replacement rotor as the test load in advance of the lifting operation.

After passing all testing requirements, Hoist & Winch issued a LOLER (Lifting Operations and Lifting Equipment Regulations) Thorough Examination Report and Proof Load Test Certificate for the new rotor lifting lugs, along with 3.1b Material Certification for all materials used.

To see the project to its conclusion, Hoist & Winch witnessed the customer's use of the rotor lugs during a planned plant shutdown for the lifting operation to take place. In so doing, the company also provided standby breakdown cover for the pair of tandem-controlled 41T SWL wire rope hoists.

"This project demonstrates how our diverse

and comprehensive portfolio of services can come to the aid of almost any lifting requirement," says Andy Allen, Director of Hoist & Winch Ltd. "Our professional team has decades of experience in lifting equipment services, for all applications. If your plant has any kind of lifting demand that would benefit from the input of industry experts, our team can help, beginning with a no-obligation discussion about the task in hand."

...

Visit [www.hoistandwinch.co.uk](http://www.hoistandwinch.co.uk) for further information and to view recent case studies.

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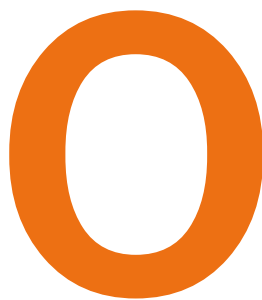
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web: [www.hoistandwinch.co.uk](http://www.hoistandwinch.co.uk)



# Rodriguez Bearings Assist Winds Of Change In Renewables Market

Crossflow Energy Company is utilising bearings supplied by R.A. Rodriguez (U.K.) Limited to help revolutionise the world of wind power. The KDM slewing ring with external gear is helping Crossflow to widen the adoption of 'small wind' technology and open up a wealth of market opportunities with the potential to be as commonplace as solar in everyday renewable applications.



ffering a unique way of bringing affordable, reliable power to many parts

However, in order to develop successful product solutions, the company relies on high-quality engineering components, including bearings.

incorporates a gear. Both rings typically feature an attachment hole, which allows for optimised power transmission between adjacent machine components.

of the world which rely on small-scale diesel generation to meet growing essential power needs, Crossflow's hybrid energy solutions leverage the company's know-how in maximising renewable energy capture from a combination of wind, solar and battery storage. Reducing reliance on fossil fuels and their damaging consequences, these solutions incorporate Crossflow's patented resilient wind generation and '2 in 1' Eco Tower system.

In its development process, Crossflow has addressed historical challenges associated with harnessing wind power, such as high turbulence and veering winds, plus past limitations with reliability, noise and vibration.

"We needed very large bearings to fit around our wind turbine towers," states Rebecca White, Commercial Director at Crossflow Energy. "Rodriguez was one of the few companies that had slewing rings in the required size. We also needed robust and resilient bearings to take the force of incredibly strong wind loads." Crossflow looked at three or four different vendors but, in the end, R.A. Rodriguez (U.K.) Limited was the only supplier which

had the right type of bearing – in the right specification – ready to go off-the-shelf: the KDM.H.A.1155.00.10 slewing ring with external gear. Slewing bearings consist of an inner ring and an outer ring, one of which usually

"The bearings we scrutinised from some other suppliers wouldn't have stood up to strong wind loads on a continuous basis," says Rebecca. "In contrast, the Rodriguez bearings are durable and match the characteristics of our low-maintenance turbines. Furthermore, we've received great support from Rodriguez since the outset. They've cleared up any issues right away; it's been a really helpful, consultative process."

The KDM slewing ring is now an important part of a new product design from Crossflow Energy.

"Previously, our turbines didn't fit around

towers, they sat on top," explains Rebecca. "In order to open up the potential of 'small wind' for the telecoms industry, given that telecoms equipment sits on top of telecoms towers, we needed to utilise bearings that would allow our turbines to fit around towers. We assembled the first KDM slewing rings to our new product in early 2022."

Crossflow's self-powered Eco Tower integrates the company's unique Transverse Axis Wind

Turbine and co-hosted telecoms equipment with conventional solar and battery technologies to create a 24/7, self-powered communication mast. Eco Towers provide reliable and affordable energy to the telecoms sector, facilitating 4G/5G connectivity in off-grid rural 'not spots' and delivering a far greener alternative to fossil fuel generation.

The KDM bearings, which rotate the blade system to allow the turbine to yaw around

the tower, fit all models in Crossflow's 3.6 kW rated Turbine range, offering both accurate positioning and smooth, efficient rotation.

Concludes Rebecca: "The bearings are a great fit. Tolerance can be a real issue in machine engineering, but we've faced no difficulties in that department. Most importantly of all, the bearing's high-quality material ensures it is sufficiently robust to offer a long service life."

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





# Contamination In The Food & Drink Sector: How To Minimise Risk By Choosing The Right Bearing

By Alan Stewart, Rubix Bearing Product Manager – SKF Products

**S**afety 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 sanitation so, for processing plants, ensuring machinery is not a potential cause of contamination is a must. Here, we look at some of the challenges bearings face in the food and drink industry and how factors such as the design of bearings should be chosen carefully to avoid giving places for microorganisms to grow.

When it comes to the food and drink sector, bearings have a core mechanical role, but 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 safety hazards

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 which can be a threat to human health and brand reputation.

## Researching the key issues

To get closer to the key issues surrounding bearing contamination SKF, a key 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, worryingly, actually 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 H1 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 and high-pressure rinsing which can force itself through traditional bearing seals, which can 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.

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.

### Conclusion

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. Given that the food and drink industry is the UK's largest manufacturing sector, with no signs of slowing down, selecting the right bearing technology is key when it comes to achieving maximum effectiveness in preventing contamination without compromising on production efficiency.

Rubix is Europe's largest supplier of industrial maintenance, repair and overhaul products and services, and is Europe's leading authorised bearings distributor, selling over 100 million bearings annually from the largest, most comprehensive bearings range and stock.

[uk.rubix.com](http://uk.rubix.com)



# Industry IoT Consortium and International Society of Automation Help Companies Secure Industrial Automation & Control Systems

## IoT Security Maturity Model: 62443 Mappings for Asset Owners, Product Suppliers, and Service Providers Published

**B**OSTON, MA – make further improvements. Eric Cosman, co-chair of the ISA99, said, "While AUGUST 16, 2022 The ISA99 committee developed the 62443 standards such as ISA/IEC 62443 are needed – The Industry IoT series of standards, which the International to codify proven and accepted engineering Consortium® (IIC™) Electrotechnical Commission (IEC) adopted. practices, they are seldom sufficient. Joint and the International The standards address current and future efforts such as this provide the practical Society of Automation announced the IoT vulnerabilities in Industrial Automation and guidance necessary to promote and support Security Maturity Model (SMM): 62443 Control Systems (IACS) and apply necessary their adoption." Mappings for Asset Owners, and Product mitigation systematically and defensibly. The Pierre Kobes, a member of both ISA99 and Suppliers, and Service Suppliers. ISA/IEC 62443 standards focus on maturity, but IEC Technical Committee 65, said, "It is not "This new guidance adds the service provider only on the maturity of security programs and about more security but about implementing role. It extends the previously published IoT processes. the appropriate security measures. IoT SMM: Security Maturity Model (SMM): Practitioner's "Achieving security maturity targets can be 62443 Mappings for Asset Owners and Product Guide to provide mappings to existing 62443 difficult to put into practice without concrete Suppliers helps companies select the adequate standards and specific guidance for the asset guidance," said Frederick Hirsch, co-chair of security levels commensurate with their owner, product supplier, and service provider the IIC ISA/IIC Contributing Group. "These expected level of risk." roles," said Ron Zahavi, Chief Strategist for IoT 62443 mappings enable practitioners to better You can download IoT SMM: 62443 Mappings standards at Microsoft and IoT SMM co-author. achieve security maturity by relating IIC IoT for Asset Owners, Product Suppliers and SMM practice comprehensiveness levels Service Providers from IIC and ISA websites. The IIC IoT SMM helps organizations choose to ISA/IEC 62443 requirements. In this way, You will find a complete list of the contributing their security target state and determine IACS asset owners and product suppliers can authors in the document. Work is underway to their current security state. By repeatedly achieve appropriate maturity targets more add the service provider role to the document comparing the target and current states, easily." in a future revision. organizations can identify where they can



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**SCHAEFFLER**



# Acromag Expands Their Line of Ethernet Remote I/O Modules with RTD Temperature Measurement Options

New high-density Ethernet I/O modules monitor RTD or resistance sensor types for industrial applications.

**W**ixom, MI: Acromag's newest addition to the Busworks® NT Series of expandable remote Ethernet I/O modules is the NT2620 Series RTD/resistance module. Designed to be a cost-effective modular solution, it supports four RTD/resistance inputs and two bidirectional discrete digital I/O channels to monitor temperature limits with conditional logic. NTE Ethernet I/O models have dual RJ45 ports and a webserver with Modbus TCP/IP or EtherNet/IP™ communication to monitor or control the internal I/O channels.

The Modbus TCP/IP or EtherNet/IP™ communication is field-selectable saving costs of additional modules. An integrated DIN rail bus allows a connection of up to three NTX expansion I/O modules. The space-saving design requires only 25mm of DIN rail per module. Ethernet I/O modules distribute 9-32V DC power along the DIN rail bus to expansion modules. Hazardous location approvals, high noise immunity, and -40 to 70°C operation make this I/O ideal for use in harsh environments.

"Now Acromag can interface a wider variety of temperature sensors and offer discrete signals to monitor threshold levels or control alarms," states Robert Greenfield, Acromag's Business Development Manager.

Profinet communication is planned for release soon. Each module will support all three protocols which are selectable using any web browser to configure the network settings and I/O operation. The modules typically function as a network slave, but also offer Acromag's i2o® peer-to-peer communication technology to transfer data between modules directly without a host or master in between. Multicast capability is included.

Acromag, a mid-sized international corporation, has been developing and manufacturing measurement and control

products for more than 60 years. They offer a complete line of industrial I/O products including process instruments, signal conditioning equipment, data acquisition boards, distributed I/O systems, and communication devices.

**For more information about Acromag products, call the Inside Sales Department at (248) 295-0880 or Marketing Communications at (248) 295-0866. You can also visit us online at [www.acromag.com](http://www.acromag.com), e-mail [sales@acromag.com](mailto:sales@acromag.com), or write Acromag at 30765 S. Wixom Rd., Wixom, MI 48393-2417 USA.**



# The World's First Atex Zone 1 Smartwatch

**IS-SW1.1 is the World's first ATEX & IECEx-certified smartwatch with all safety-relevant functions to enable use in Zone 1/21. The smartwatch can be paired with i.safe MOBILE devices via Bluetooth and functions as a complementary hands-free wrist display for devices such as the IS530.1 Zone 1 Smartphone.**

**T**he IS-SW1.1 can emulate various RFID smartcards for access control systems while simultaneously monitoring the user's vital signs pulse and oxygen saturation. i.safe MOBILE's new product development closes a crucial gap in the area of employee safety for Zones 1/21 in the oil & gas, chemical and pharmaceutical industries.

## **ATEX/IECEX Certified Smartwatch for Maximum Employee Safety**

With the IS-SW1.1 industrial smartwatch, it is now possible for the first time to use a "personal device" established in everyday life in ATEX/IECEX Zones 1/21 of the oil & gas, chemical and pharmaceutical industries. The smartwatch was developed by the i.safe MOBILE R&D team in Lauda-Koenigshofen/Germany and it displays all important messages, hazard messages and measured values directly on the user's wrist – "hands free". Since the smartphone no longer has to be picked up to read short messages, this feature represents a step-forward in employee safety. Furthermore, in an emergency situation, it is possible to make an emergency call directly via the SOS button of the smartwatch on the wrist (connected to the emergency app of the smartphone) – the employee in distress can be located via GPS. The monitoring of the vital functions pulse and oxygen saturation additionally complement

the safety concept. Coupled with a push-to-talk-enabled smartphone, users can employ the smartwatch as a remote PTT button. This means that all safety-relevant functions are available via the smartwatch on the employee's wrist.

## **Convenient Access Control and RFID Reader on the Wrist**

The RFID chip integrated in the smartwatch can not only read various RFID tags, but also emulate different contactless chip cards (e.g. MIFARE) – the watch can thus be used in a highly flexible manner. With the reading function, RFID tags attached to machines or sensors, for example, can be read and then the associated measured values can be shown directly on the display of the clock. Due to the

possibility of RFID card emulation, the watch is excellently suited for commercially available access control, time recording and payment function systems such as those based on MIFARE.

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