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Publisher
Michael Dominguez
michael@engineeringmaintenance.info

Advertising
Steve Pheasant
stevep@engineeringmaintenance.info

Website
www.engineeringmaintenance.info

Telephone
+44(0)207 193 1396

Msl Media Ltd
Suite One,
Lower Ground Floor,
One George Yard,
London,
England,
Ec3v 9df
www.mslmedialtd.com

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A Powerful Combination Of Broadband Ultrasound Measurement Instrument And Asset Tree Management Software

"What led to this condition?" is one of the most common questions asked in the course of inspecting faulty or damaged rolling bearings. For machines with rotating shafts, the focus is on monitoring the rolling bearings. As the interface between the shaft and the machine foundation, they have to absorb the resulting forces. This means that faults and damage in design and operation have a particularly strong effect on rolling bearings. This is precisely what makes them suitable measurement points. Although rolling bearings are among the most important components in most machines, there is often a lack of effective methods for monitoring them. Monitoring (trending) is performed to detect changes or deterioration in condition. For this purpose, simple characteristic values are recorded by means of recurring measurements and their change is observed over time. If an alarm value is exceeded, measures must be initiated. If it is a first warning level, a detailed analysis is carried out first and, if necessary, the time interval until the next measurement is shortened. In order to identify a fault or damage pattern and determine the causes, special evaluations of the measurement data must be carried out. Simple characteristic values are not sufficient for this purpose. At this point, the maintenance measure can be planned accordingly, depending on the severity of the damage level and the possible cause. If the actual alarm level is exceeded, the machine must be stopped either immediately or as soon as possible. The maintenance actions must then be carried out immediately.

BS40: Innovative and reliable solution

The new BS40 broadband structure-borne sound sensor was developed by SONOTEC to help companies worldwide better maintain their rolling bearings. This practical and robust sensor is ideal for condition monitoring on machines with rotating parts. The product design impresses with a laser-welded stainless steel housing. The ¼"-28 UNF threaded bolt allows for maximum flexibility in mounting as well as in use, as the BS40 can be used with magnets for flat or curved surfaces. In addition, the BS40 can also be screwed to adhesive pads with an internal thread, resulting in excellent reproducibility. The optimized sensor characteristic in the

range from 10 to 65 kHz ensures a nearly linear frequency response. An extension of the ultrasonic frequency range to <1 kHz also offers even greater flexibility in machine diagnostics. The sensor incorporates a piezocomposite material developed by SONOTEC that helps overcome the drawbacks of many solutions available on the market. Thus, a more reliable evaluation of bearings is possible.

SONAPHONE & LevelMeter App: Intuitive Hardware and Software Solutions

With the intuitive LevelMeter App, the SONAPHONE® digital ultrasonic flaw detector enables broadband measurements and determination of characteristic values. Due to the high sampling rate of 256 kS/s, signals up to 128 kHz can be analyzed. Up to this limit, characteristic values can be calculated and audio signals can be generated based on the filter settings. The instrument provides two methods for converting the ultrasonic signals into the audible frequency range. The heterodyne method is used when a narrowband transformation (bandwidth 4 kHz) is needed, while the vocoder method is suitable for a wideband transformation. The live signal is displayed as time signal, level graph and spectrogram.

Condition Monitoring Excellence

The powerful combination of the SONAPHONE®, the intuitive LevelMeter app, the broadband BS40 sensor and the maintenance task management software - SONAPHONE DataSuite - help you achieve the highest possible efficiency in your ultrasonic condition monitoring program. This holistic ultrasonic solution helps the maintenance team ensure that your equipment production processes are running smoothly. Timely maintenance actions can prevent costly downtime and costly repairs. Decisions regarding bearing lubrication can also be made based on acoustic feedback rather than time interval. With ultrasonic testing equipment developed and manufactured in Germany, it is now possible to detect rolling bearing damage at an early stage and optimize lubrication.

You can find out more about SONOTEC ultrasonic testing equipment at www.sonotec.eu





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Thorite Launches Energy Efficiency Awareness Campaign

Manufacturers Urged To Monitor Unseen Leaks 'Behind Closed Doors'

Compressed air and fluid power specialist Thorite has launched a campaign to raise awareness about the unseen energy inefficiencies in compressed air systems which can lead to excessive costs.

The 'Behind Closed Doors' campaign urges customers to monitor what is happening in compressor houses, where leaks which go unnoticed or ignored can cause inflated energy bills.

It is calculated that powering a compressor accounts for 86% of the cost of ownership over a five year period, yet almost a third of the energy used is wasted due to inefficient practices.

Carl Davenport, Thorite's Marketing Manager, said of the campaign: "Previously, it was easy to have an 'out of sight, out of mind' approach to compressors. So long as they were working as expected, the only time any attention was paid to them was during a service.

"In some cases, it could be argued that the cost of repairing a small leak in the air system might be higher than the cost of wasted energy.

"However, with energy now costing roughly double what it was a year ago - 25.46p p/kWh as of December 2022 - there's now no longer an excuse to let leaks and inefficiencies continue to inflate energy consumption.

"We've launched the 'Behind Closed Doors' campaign to raise awareness of the financial impact compressed air leaks can have and help customers identify how they can make significant savings."

Thorite launched the campaign at the Southern Manufacturing and Electronics show, where it also showcased new products in its range of energy saving solutions.

This included the MSE6-E2M from Festo, a unique energy efficiency module which delivers smart system monitoring, downtime reporting and leak detection, as well as automated shut-off and start-up of idle machines.

It can achieve energy cost savings totalling thousands of pounds, and reduce carbon emissions by up to 3.2 tons per year.

Thorite recently created a dedicated team to focus on helping customers reduce energy use and rein in associated costs.

At the show, Duncan McGuire, Thorite's Business Development Manager for the Southern region said: "Reducing energy use is hugely beneficial to our customers' bottom line, operational efficiency and sustainability goals, so we're passionate about offering them a wide range of options to help identify and eliminate waste.

"We're delighted to be able to offer the MSE6-E2M as a part of our growing range of energy saving solutions."

Other solutions offered by Thorite include:
1. A compressor data logging service, which can accrue significant but often hidden costs.
2. Leak testing, reporting and remedial work.
3. Ultra-low consumption electric double diaphragm pumps, such as Graco's 'QUANTM'
4. Low-cost solenoid operated isolation valves, costing as little as £60, which are wired into the compressor's start-stop button, controlling the air supply and automatically shutting it down when the machine it is powering stops.
5. Air blower sensors which optimise the blowing process to prevent energy waste.
6. Customised smart systems control panels to increase productivity and efficiency for process-driven enterprises.
7. Cost-efficient software upgrades to master controllers to make air generation more intelligent, dependable and efficient.
8. Voltage optimisers to regulate electricity input and eliminate excess energy use.

Thorite's ongoing commitment to supporting customers with energy reduction has seen them shortlisted for the prestigious Institute of Customer Service's 2023 Customer Satisfaction Awards, in the category of Customer Focus.

Snickers Workwear Hoodies – Built For Comfort

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

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

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

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



Managing Director Delivers Knockout Performance For Charity

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

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

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

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

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

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

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

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

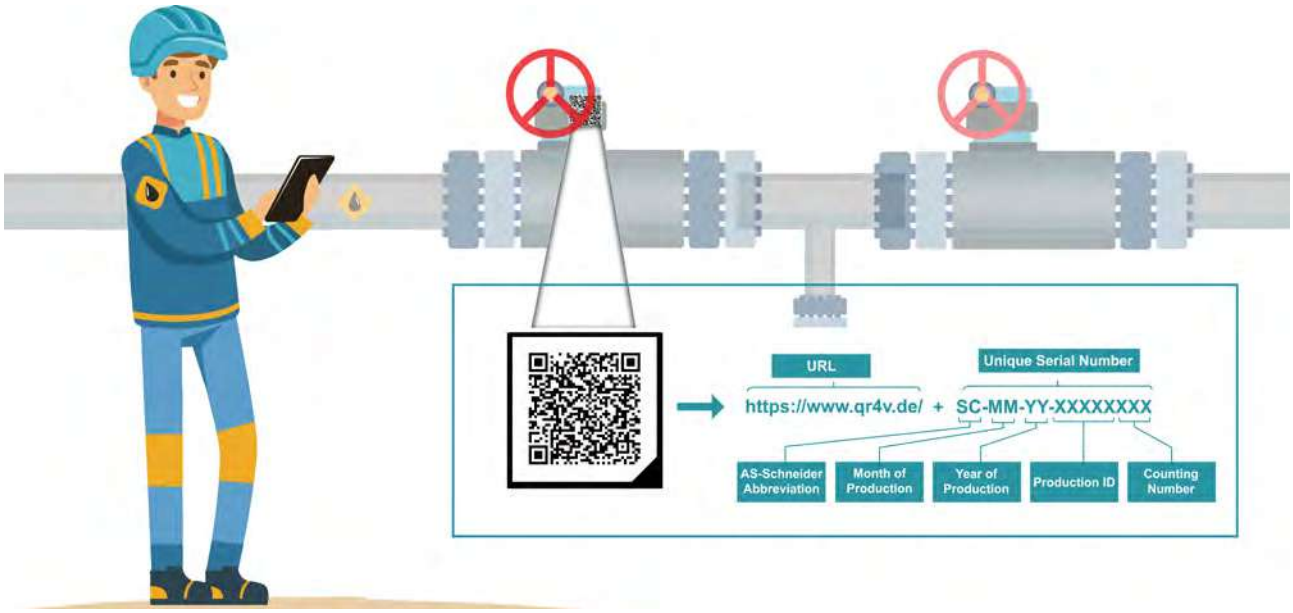
Further information is available from: Hi-line Industries Ltd, Green Street, Burton on Trent, Staffordshire DE14 3RT

Telephone: 01283 533377

Fax: 01283 533367

e-mail: enquiries@hilineindustries.com
www.hilineindustries.com





Digital Product Pass Becomes Digital Valve Plate

Nordheim (Germany) – May 15, 2023 – AS-Schneider will rename its digital nameplate Digital Product Pass (DPP) to Digital Valve Plate (DVP). With this, the valve specialist draws a clear line between its solution for marking valves and manifolds and an initiative of the EU, which also operates under the name Digital Product Pass and is becoming increasingly important in the industry. Now, mix-ups are excluded and both solutions can be further developed in parallel.

Products in the process industry are usually delivered with a large number of technical documents. Depending on the project scope, hundreds of printed pages of drawings, material certificates, testing documents as well as maintenance and servicing information are generated. In order to advance the digitalization of mechanical components and to take a step towards Industry 4.0, AS-Schneider has already introduced its digital nameplate based on DIN SPEC 91406 under the name "Digital Product Pass" in 2019.

What was not known at the time, however, was that the European Commission was working on a Digital Product Pass of the same name as part of the Sustainable Product Strategy. In recent months, this EU Digital Product Pass has increasingly established itself as a fixed term in the industry, according to AS-Schneider.

About AS-Schneider

AS-Schneider is one of the world-wide leading manufacturer of Instrumentation and DBB Valves. Our 145 years of experience are built upon the close cooperation with our customers and engagement in industry associations.

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EEMUA Welcomes Canadian Tank And Vessel As An Associate

Canadian Tank and Vessel (CT&V) has become the latest company to join EEMUA as an Associate.

CT&V is a storage tank contractor involved in the design, fabrication, construction and repair of steel containment structures. The company serves a wide range of industries across Canada, including terminals, pipeline, refining, petrochemical, LNG/cryogenics and nuclear hazardous materials.

EEMUA looks forward to working with Canadian Tank and Vessel in supporting the Association's aim of helping improve the safety, environmental and operating performance of industrial assets worldwide.

EEMUA: www.eemua.org

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Tube Tech's Convection Section Cleaning Approach Achieves Phenomenal Results at Refineries Worldwide

Inefficient heat transfer in the convection section of a process heater is readily witnessed by an increase in stack temperature beyond design parameters. The timing and urgency for addressing this situation are related to not only the degree of overheating in the stack but also product demand, economics, and fuel costs.

This article will discuss Tube Tech's, an Integrated Global Services (IGS) solution, approach to restoring heat transfer efficiency of fired heater furnaces and the results achieved at an Egyptian oil refinery.

Part One: Inspection and Technical Evaluation

For many IGS Tube Tech projects, a site visit is made to complete an inspection of the convection section and to collect current operating data so that an evaluation can be conducted. The evaluation determines the baseline operating conditions and estimates the potential project scope and expected benefits.

The evaluation is based on calculating the external fouling resistance factor for each bundle in the convection section based on the process data. The factors will be relieved by cleaning and a further evaluation would determine the post-cleaning performance, based on a constant processing duty, for example. The IGS Tube Tech cleaning technology allows for more than 90% of all the tube and fin surface area to be treated, unlike other more conventional methods which reach only 20% to 40% of the tube surfaces, depending on configuration.
Part Two: Project Planning & Execution Approach
To perform an effective clean using a unique Remotely Operated Vehicle (ROV) and protect the existing equipment from water exposure, the following five steps are considered for each project (figure 1):

1. Creating or using existing access openings (typically 350x500 mm) to enable placing the ROV on top of each convection bundle.
2. Isolating the radiant box.
3. Assembling scaffold at the bottom of the convection section, allowing the installation of a thick plastic tarpaulin.
4. Protecting refractory walls around convection and radiant sections with the tarpaulin.
5. Collecting all effluent and debris after cleaning into tarpaulin and moving them safely to ground level in sediment containers.

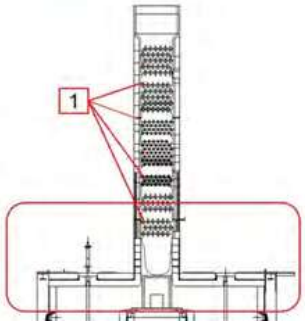


Figure 1. The Tube Tech Solution

The ROV is designed to fully clean convection bank coils by penetrating its lance deep between tube rows. The technology removes more than 90% of fouling from all convection bundles. No refractory is damaged since the ROVs are programmed to direct a high-pressure medium to the tubes only. All activities typically can be completed in 72-120 hours (three to five twelve-hour shifts).





Figures 2&3. The external casing in this instance is cut to create 350 mm openings





Figures 4&5. Plastic tarpaulin at the bottom of the convection section and the ROV on the top of the bundle.

Part Three: Post-Project Benefit Analysis.

In many cases, the stack temperature is determined to be a key performance indicator to identify and quantify the benefit after cleaning. To illustrate the benefits, we will review a recent project, referred to as project x. On completion of project x a sizeable benefit of 40°C in stack temperature reduction was achieved. The plant also reported an average increase in overall fuel efficiency from 89.5% to 91.5%, leading to 2 MW less heat loss to the stack under the same operating capacity. The customer reported a payback period of less than four months.

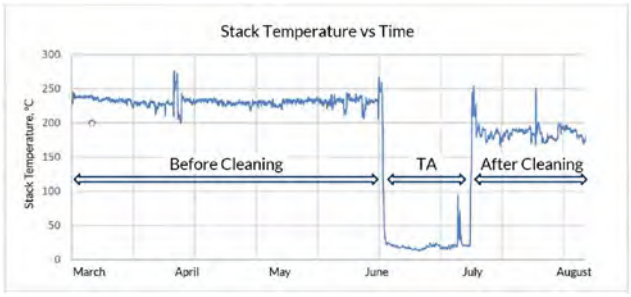


Figure 6. Stack Temperature Before and After Cleaning





Figures 7&8. Before and After Cleaning - Part One

Part Four: Acknowledgements and New Data Two Years After Cleaning

A balanced heat distribution between sections is crucial in coking-sensitive services. Keeping the convection section surface clean not only helps to save fuel and increase steam generation but also positively influences the steam cracking process. The achieved benefit on project x was 16,000 MWh/year fuel savings and 2500 tons annual CO2 reduction (fuel is CH4/H2 mixture).

After almost two years, the client reported a slight elevation in stack temperature of 10 °C and a stable efficiency increase of 1.5%. The next clean is anticipated to take place after six years to reinstate the efficiency. To ensure the obtained benefit is long-lasting, IGS also recommends a combination of the Tube Tech ROV cleaning with Cetek's proprietary ceramic refractory coatings to protect and encapsulate the ceramic fiber and stop refractory deterioration and new fouling formation on the outside surface of the convection tubes.

Part Five: Example of Tube Tech ROV Cleaning – Ethylene Furnace

IGS was provided with furnace configuration and process parameters for each bank of the convection section of this ethylene furnace. The objective was to keep the process duty and thus, the coil outlet temperature the same and compare scenarios before and after.

It is worth mentioning that these furnaces were designed to have 68.3% to 71.0% process duty of total absorbed duty (depending on whether it is SOR or EOR), and if, for example, steam superheating coils are fouled, cleaning may reduce this ratio process/total duty. An additional indicator of this potential fouling consequence is the fact that almost no BFW is being used for attemperation (desuperheating). For this scenario, constant flow rates for process streams are assumed, but it is also possible to consider all the factors and heat balance changes for the entire system.

Table 1. Convection Section Cleaning Results for Ethylene Cracker.

Parameter	UOM	Before	After
Fuel Firing	nm^3/hr	5565	5655
Fuel Firing**	Gcal/hr (LHV)	32.04	32.64
Total Absorbed Duty	Gcal/hr	29.37	30.56
Radiant Duty	Gcal/hr	14.86	15.02
BWT	°C	1033	1037
Stack Temperature	°C	180	134
Radiant Inlet	°C	590	582
CSS Outlet	°C	376	454
HSS Outlet*	°C	446	541
BFW Outlet	°C	269	254
Overall Efficiency	%	**91.67**	**93.61**
Process Duty	Gcal/hr	**21.21**	**21.21**
Steam Duty	Gcal/hr	**8.16**	**9.35**

*HSS coil has been evaluated assuming no BFW for desuperheating
** 1.5% of Heat Losses have been assumed, and 11% of Excess

Air is calculated using the flue gas oxygen content.

Part Six: Example of Tube Tech ROV Cleaning - CCR Platforming Heater
In configurations where a steam generator is only located in the convection section, such as platforming heaters, it is crucial to adjust flow rates and reflect changes in absorbed duty for each bundle that may result from cleaning. Specifically, a steam drum should be included in the model to respond accurately to all changes in temperatures/pressures of inlet/outlet streams.

The following convection section reflects the most widespread design with the following bundles (from top to bottom): Economizer, Upper Steam Generation, Steam Superheating and Lower Steam Generation. (Example under the same firing rate).

Table 2. Convection Section Cleaning Evaluation Results for CCR

Parameter	UOM	Before	After
Stack Temperature	**°C**	**208**	**168**
Fuel Efficiency	%	88.32	90.38
Absorbed Duty	Gcal/hr	13.8	14.8
BFW Inlet Temperature	°C	122	122
BFW Mass Flow	kg/hr	22203	23886
Mass Circulation Through Steam Generator	tonne/hr	150	150
Steam Drum Pressure	kg/cm^2_g	36.2	36.2
Blowdown Amount	%	5	5
Total Amount of Produced Superheated Steam	kg/hr	**21146**	**22748**
Superheated Steam Temperature	°C	360	362

Part Seven: Case Study - Revitalizing the Performance of a Refinery's Hydrogen Generation Unit

An Egyptian oil refinery, in operation since 1999, has faced challenges with its Hydrogen Generation Unit (HGU) since 2005. Issues such as hot spots on catalyst tubes, ageing reformer tubes and outlet systems, and reduced hydrogen demand have led to the unit operating at a reduced capacity. To address these bottlenecks and evaluate the unit's current status, a comprehensive assessment and debottleneck study was conducted by the OEM.

Key Study Findings

One significant finding of the study revealed the underperformance of the convection coils, which hindered the unit from achieving its desired efficiency. Over more than 20 years of operation, the convection coils, primarily consisting of finned tubes, suffered from increased fouling due to inadequate inspection and cleaning practices. The study recommended a potential solution of inspecting and robotically cleaning the external surface of the finned tubes to overcome this issue.

Project Overview

On the advice of the OEM, Integrated Global Services (IGS) was contracted to perform Tube Tech's convection section performance recovery service at a hydrogen production unit at the refinery. The project involved increasing the size of six existing access doors in the convection section and the robotic de-fouling of convection coils.

The project commenced on March 29, 2023, and was completed on April 3, 2023. The original planned scope of work, which included de-fouling and door installation, remained unchanged throughout the project.



Safety

Safety is a primary concern for IGS, and a robust safety program was implemented to ensure a safe working environment for all personnel involved. The company maintains a zero-incident safety philosophy and actively promotes a culture of safety among its employees. Daily toolbox talks, safety observations, unit walk-downs, and job safety audits were conducted to mitigate potential hazards and maintain safety standards throughout the project.
IGS has a strong safety track record, with a Total Recordable Incident Rate (TRIR) of 0.0 in 2022, well below the industry average. The company adheres to OSHA best practices and local safety regulations to ensure compliance and maintain a safe work environment.

Quality

IGS follows stringent quality control standards to meet customer requirements. The project was executed in accordance with the IGS quality control standards, and a Quality Control Package (QCP) was agreed upon before the start of work.

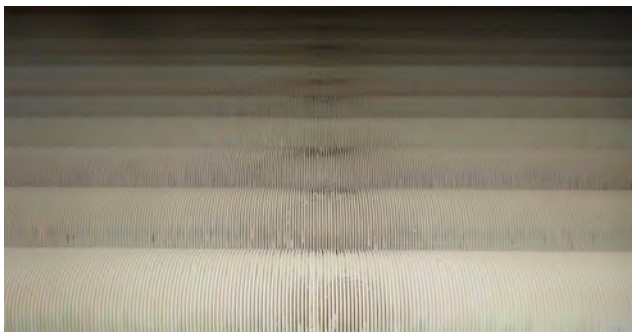
Achieved Results

A performance test run was then conducted to evaluate the unit's condition after the cleaning process. The unit's capacity was successfully raised to 100% on April 16 and maintained for 24 hours. The test procedure for evaluating the unit's performance after cleaning was based on the HPU's latest probation test, ensuring consistency and comparability. Data from various sources, including DCS data, laboratory analysis results, outside field/local data, and electrical data, were collected during the test to accurately assess the unit's performance.

Test Parameters

The performance test for the HGU was conducted from April 16 at 11:00 to April 17 at 11:00, lasting 24 hours. The main feedstock

for the unit was natural gas, supplemented by a small portion of recycled hydrogen. The composition of the natural gas feed, as well as mass flow rates for different streams, was recorded. The laboratory analysis results showed changes in the feed composition and products during the probation test.





Unit Operating Parameters

Various operating parameters of the unit, such as temperatures, pressures, steam-to-carbon ratio, and steam drum pressure, were monitored during the probation test. The unit's performance was compared to previous tests, revealing improved performance in terms of duty recovered by the convection section and a reduction in stack temperature.

Probation Test Evaluation

The evaluation of the probation test results indicated that the cleaning of the convection section had led to a 14% increase in duty recovered from flue gases compared to the previous test in December 2021. The reformer inlet temperature also increased from 437°C to 501°C, contributing to improved thermal efficiency. The lower stack temperature and increased efficiency resulted in cost savings of approximately $220,000 annually.



Case Study Conclusions

The successful cleaning of the convection section in the refinery's HGU unit marked a significant step towards restoring the unit's performance. The removal of fouling from the finned tubes facilitated enhanced heat absorption and a reduction in stack temperature, thereby improving overall thermal efficiency. This achievement represents a noteworthy milestone in the refinery's ongoing expansion project and contributes to its long-term operational success.

IGS also provided technical recommendations for future maintenance and improvement, including the application of Cetek Refractory Coating to prevent refractory fouling. The conclusion of the project underscores the collaborative efforts between the oil refinery and IGS, as well as the positive working relationship among all team members.

Part Eight: Conclusion

Project execution excellence (as well as certainty in terms of % clean surface) and the ability to rigorously evaluate the future performance of the heater system provides IGS and Tube Tech with an opportunity to offer unique services to clients. This combined approach reflects the increased demand for thoroughly conducted feasibility studies, even for small projects. Moreover, it is essential to quantify the influence (if any) of all IGS products on fired heater performance.

www.tubetech.com





Thermal Loop Solutions: A Path To Improved Performance, Sustainability And Compliance In Heat Treatment

Heat treatment processes are a crucial component of many manufacturing processes, and thermal loop solutions have become increasingly popular for achieving improved temperature control and consistent outcomes. But many OEMs are missing opportunities where thermal loop solutions offer more than just greater control. In this article, Peter Sherwin, global business development manager for heat treatment at industrial heating technology supplier Watlow, explores the possibilities of thermal loop solutions.

A thermal loop solution is a closed loop system with several essential components, including an electrical power supply, power controller, heating element, temperature sensor and process controller. The electrical power supply provides the energy needed for heating, the power controller regulates the power output to the heating element, the heating element heats the material, and the temperature sensor measures the temperature. Finally, the process controller adjusts the power output to maintain the desired temperature for the specified duration, providing better temperature control and consistent outcomes.

Performance benefits

Heat treatment thermal loop solutions offer several advantages over traditional heat treatment methods, including improved temperature control and increased efficiency. The thermal loop system provides precise temperature control, enabling faster heating and cooling and optimized soak times. In addition, the complete design of modern thermal loop solutions includes energy-efficient heating and overall ease of use.

Thermal loop solutions can also be integrated with Industry 4.0 frameworks and data management systems to provide real-time information on performance. Combining AI and machine learning algorithms can also provide additional performance benefits, such as the ability to analyze data and identify patterns for further optimization.

The effectiveness of heat treatment thermal loop solutions can be measured using metrics such as overall equipment effectiveness (OEE). OEE combines metrics for availability, performance, and quality to provide a comprehensive view of the efficiency of a manufacturing process. By tracking OEE and contextual data, organizations can evaluate the effectiveness of their heat treatment thermal loop solutions and make informed decisions about optimizing their operations.

Supporting sustainability

Heat treatment thermal loop solutions provide several sustainability benefits, including reduced energy consumption and waste. The power controller regulates the power output to minimize energy waste, and the possible integration with renewable energy sources provides a complete power solution that spans from element design to recycling. The thermal loop solutions, in combination with insulation design and materials, provide energy-efficient solutions that contribute to sustainability and reduce the environmental impact of heat treatment processes.

When discussing these systems in the context of greenhouse gas emissions and the environmental impact, it's essential to consider Scopes 1 (direct emissions), 2 (indirect emissions from energy), and 3 (other indirect emissions), as well as the less common Scope 4 (avoided emissions).

At the component level, energy savings can be realized using current technology. Advanced Selective Catalytic Reduction (SCRs) provide predictive load management functions and

hybrid firing algorithms contribute to sustainability by optimizing the energy usage of heat treatment processes. These SCRs offer real-time monitoring and control of energy consumption, while predictive load management systems use specific algorithms to manage peak power loads and adjust to optimize for local conditions such as load shedding or load sharing.

Adaptive thermal system (ATS) solutions are the next frontier of thermal loop solutions. Watlow has decades of experience with thermal systems to help engineers and designers to incorporate ATS technology into a variety of industrial processes and products.

ATS, which combines sensing, heating and control technologies, represents a different and more innovative approach to controlling thermal performance for complex systems, and provides a merged design between heater and control systems.

Regulatory compliance

NADCAP, the National Aerospace and Defense Contractors Accreditation Program, is an industry-driven program that provides accreditation for special processes in the aerospace and defense industries. Heat treatment is considered a "special process" under NADCAP because it has specific characteristics crucial to aerospace and defense components. These characteristics include process sensitivity, limited traceability, critical performance requirements and potential risk.

NADCAP heat treatment accreditation ensures suppliers meet industry standards and best practices for heat treatment processes. The accreditation process includes audits, thorough documentation, and ongoing process control monitoring to maintain high quality, safety, and performance levels.

The aerospace industry's AMS2750TMG pyrometry specification and the automotive industry's CQI-9 Issue 4 regulations are crucial for ensuring consistent and high-quality heat-treated components. Adherence to these regulations is essential for meeting the stringent quality requirements of the aerospace and automotive industries and other industries with demanding specifications.



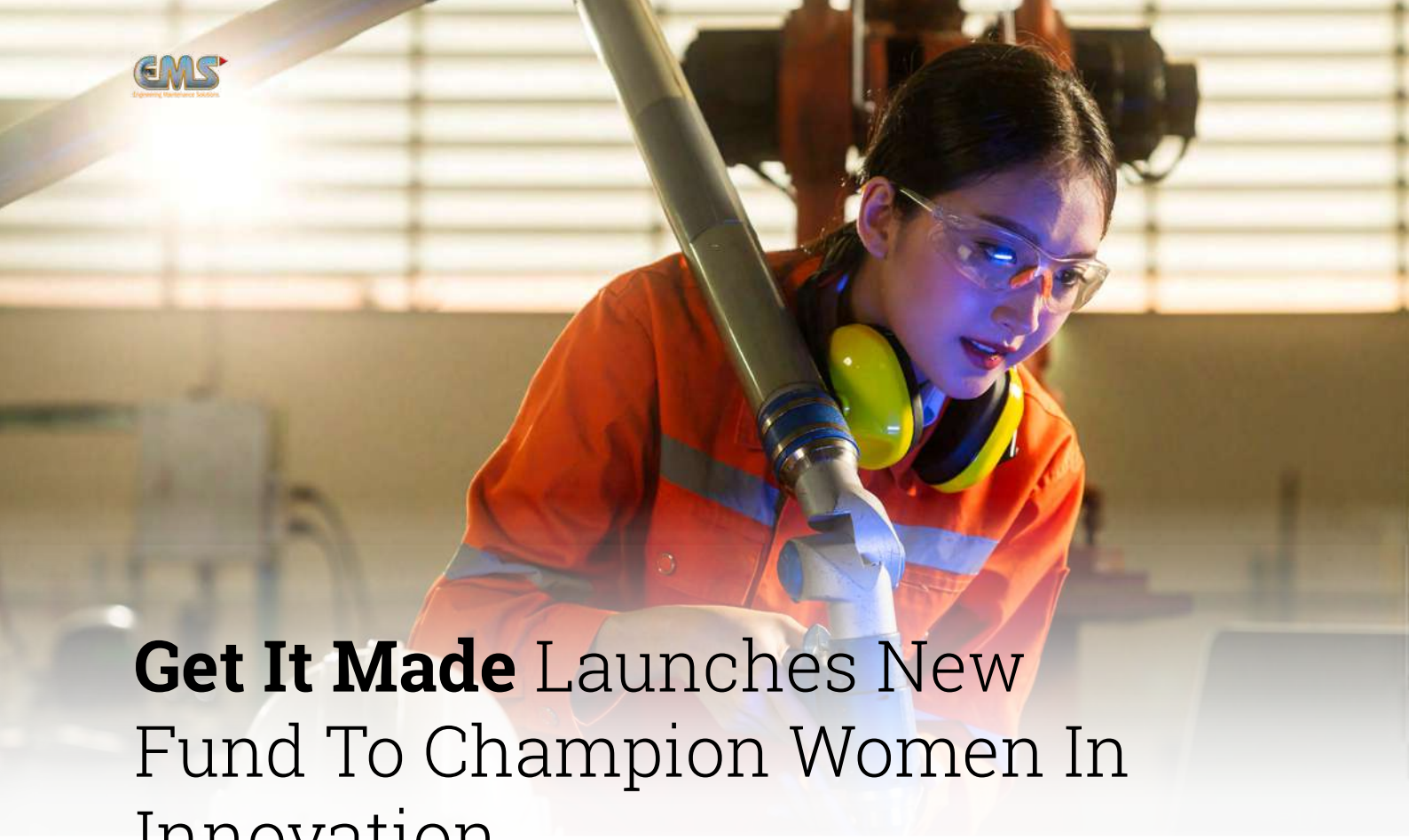
Continuous improvement is also emphasized by both AMS2750G and CQI-9 Issue 4, requiring manufacturers to establish a system for monitoring, measuring and analyzing the performance of their heat treatment systems. This development enables manufacturers to identify areas for improvement and implement corrective actions, ensuring that heat-treating processes are continuously improving and meeting the necessary performance and safety standards.

By integrating these regulations into a precision control loop, heat treatment thermal loop solutions can provide the necessary level of control and ensure compliance with AMS2750G and CQI-9 Issue 4, leading to the production of high-quality, heat-treated components that meet the performance required and safety standards.

Heat treatment thermal loop solutions provide several benefits over traditional heat treatment methods, including improved temperature control, increased efficiency, and improved sustainability outcomes. The integration with Industry 4.0 and data management systems, as well as the use of OEE metrics, further help enhance the performance of heat treatment processes. As Industry 4.0 digital transformation continues to evolve, heat treatment thermal loop solutions will play an increasingly important role in the future of heat treatment.

https://bit.ly/44skVB8





Get It Made Launches New Fund To Champion Women In Innovation

London-based manufacturing specialist, Get It Made, has launched a new 2023 grant to support the potential of women in innovation and to boost the growth of female employment within UK industry.

To mark International Women in Engineering Day on 23rd June, the initiative is tailored exclusively to female-led, engineering, design, tech and manufacturing enterprises, including start-ups, with the grant recipient set to receive £5,000. In addition to financial support, Get It Made will also be offering its expertise to help guide young female-led businesses through the challenges facing any young company in a challenging economic environment.

First launched last year, the initiative attracted hundreds of applicants from all over the UK and will once again champion female entrepreneurship in traditionally male-dominated sectors.

The grant is available to female-founded or female-led engineering enterprises with fewer than 10 employees. Applications for this grant close at midnight on 31st July 2023, and can be submitted through the website here.

Jenny Button, Founder and CEO of FemTech start-up Emm, which is creating a menstrual health wearable and app, and was last year's grant winner, said: "The grant has allowed us to rapidly iterate designs and bridge the gap between prototyping and production tooling, especially for an application that is so intimate and challenging. Innovation isn't easy so this funding enables us to do much more for less; we hope it will encourage more women in innovation to get their ideas further, as well as draw more investment to underfunded areas such as female health and wellbeing."

Luke Smoothy, Founder of Get It Made, commented: "For the second year running, we are delighted to be able to offer our support again to the continued efforts of increasing female representation within UK industry – namely the engineering, design, tech and manufacturing sectors. Grants such as ours are aimed at removing the barriers which are still standing in the way of female-founded enterprises. We're gradually seeing some encouraging signs - for instance, research last year showed that 16.5% of those working in engineering are female, compared to 10.5% as reported in 2010. However, it's not enough; this growth also needs to be reflected across all areas of work where women are underrepresented."

https://get-it-made.co.uk/

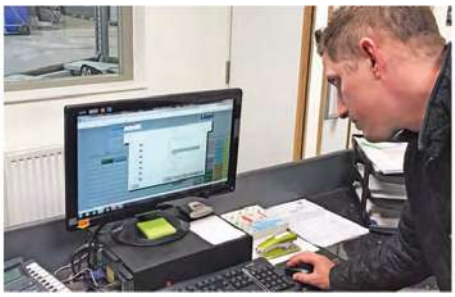
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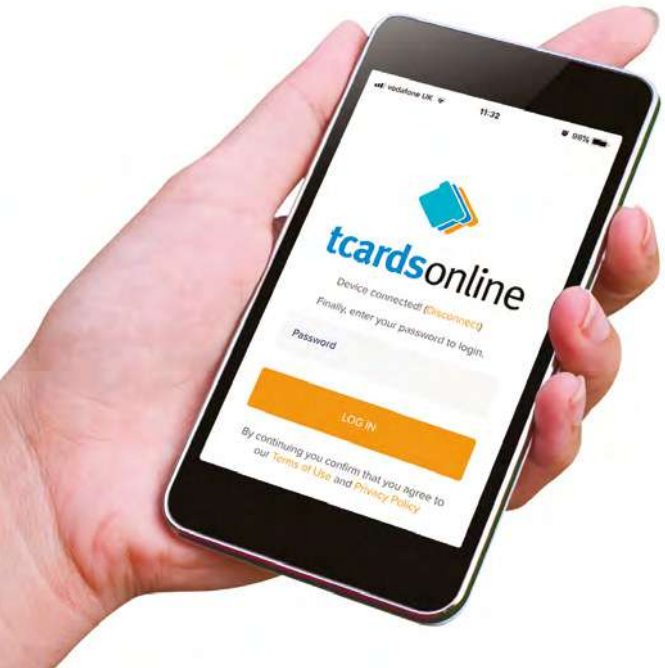






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Attitudes To UK Industry:

International Women In Engineering Day Report

International Women in Engineering Day 2023 (INWED, 23rd June) was recently profiled at a First Friday Editors' Briefing in Central London. The thought-leadership panel discussion featuring leading women in the field of industrial engineering met to discuss Equality, Diversity & Inclusion (EDI) and the reality of being a woman in the workplace. Attitudes to UK Industry (ATUKI) also unveiled its latest public perceptions report on Attitudes to Women in Engineering. Chaired by the CEO of The Royal Academy of Engineering and Queen Elizabeth Prize for Engineering Dr. Hayaatun Sillem, CBE, topics included how influential families are in encouraging children into engineering careers through to how inclusion avoids exclusion.

Dr. Sillem opened the session: "The engineering profession today is comprised of only 16.5% women, there are a whole raft of reasons about why it should be such an urgent priority because engineers shape the world that we live in. They design, deliver, and maintain the physical and digital infrastructure. They serve society and as such need to reflect society".

Dame Dawn Childs, DBE, president of the Women's Engineering Society (WES) and CEO of Pure Data Centres Group added: "INWED was created by WES to try to meet some of the challenges of diversity in engineering. It's been a slow and hugely problematic process. As a business leader I believe that diversity drives the bottom line. If we're not reflecting society then we're not creating solutions for society.

We're effectively stopping half of the products that are needed from coming to market".

Identifying how engineering fits into the world is a mantra offered by Primary Engineer which last year helped over 48,000 children of school age realise that engineering could be for them. Dr. Susan Scurlock, MBE, CEO of Primary Engineer said: "The inclusivity piece for us is about every child having the opportunity to have the experience of what engineering gets, what it does and how it fits into the world. It's about children understanding the context of learning, so that they learn the curriculum through the lens of engineering and their support groups understand where it fits".

All of the panellists cited their parents as having some form of influence over their decision to be an engineer. Dr. Sillem added: "Young people don't make their career decisions in a vacuum. Parents and the others who influence them are really important to this topic".

Katy Deacon, chair of the Institution of Engineering and Technology (IET) EDI panel is in a positive position to influence how an organisation with such a large footprint is moving the EDI agenda forward. She said: "If you include everybody and you accept people for what they are and what they can bring then you will get a true reflection of the different perspectives within out society. This includes people with disabilities and other non-physical differences – neurodiversity for instance". As a wheelchair user, Katy knows first hand how important the inclusivity piece is. "Disabled engineers bring a whole new perspective on the world. We (IET) are striving forward and showing the industry that you can get some incredible benefits by embracing EDI".

Dr. Sillem said: "For me, inclusion is a culture piece. And this is creating a culture in which every single person feels welcome, feels safe, feels valued and feels able to contribute in full.



Some people say it's about equality, some equity, I say it's about fairness and parity of experience and opportunity".
There are organisations that are pioneering the EDI conversation and making real inroads into the agenda. For instance, thirty four percent of Schneider Electric's workforce is women and the executive committee boasts a forty four percent representation. Forty one percent of new hires are women.

Kristin Baker, VP Industrial Automation UK & Ireland at Schneider Electric said: "EDI at Schneider Electric has been a journey from which many businesses can learn. Our focus on diversity has built a pipeline of talent that is now entering the business. Our graduate schemes, apprentice programmes and role modelling the women in the business has led to thirty four percent of our workforce and forty four percent of our executive committee being female. We've made really good progress", but it's not been without its challenges.

"The topic has now shifted to inclusion, because that's where we've identified a potential problem area. We're bringing women into the business, but they are not always staying. We've done some work to try to understand the root causes. Some of the feedback from the field was as simple as PPE not fitting right, which is something we've addressed. However other feedback was more deep seated in the culture and make-up of the wider eco-system we're working in.

In the construction industry for instance there is a lot of sub-contracting – very small players, often from other parts of Europe, with different cultures, different experiences with women in the workplace. Our team members in some instance found the onsite environment challenging as the inclusion approach and ways of working that Schneider Electric has adopted were often not the same way the wider industry was working. We've worked on creating allyship to really bring together our male counterparts onsite with those women so that they feel supported in that environment".

Looking at regional differences, especially in developing countries is something that Aleesha Choudhry founder of WeSpeak identified. "I've seen a lot of mentoring programmes that help people on a local basis, but with my programme we connect girls in developing countries or low-income places and we connect them with professional women from all around the world. What's the chance that your perfect female mentor is just down the road? Especially when we are talking about these environments. Our programme helps deliver active mentorship for women and girls online, wherever they are."

Attitudes to UK Industry runs regular reports on the attitudes of the UK public. Taking a sample of 2,000 UK adults, the most recent report suggests that whilst the sector is taking positive steps towards a fairer, more diverse workforce, there is still a way to go when it comes to encouraging influencers of children and young adults when it comes to choosing a career in engineering. Tom Spencer, MD at Cadence Innovation Marketing, sponsors of ATUKI said: "Just over six in ten (65%) of those surveyed agreed that there should be more women engineers. One in ten (12%) people aged between 25-34 feel that engineering is not a suitable career for women. Nearly one third (29%) of people in the same age group expressed surprise that there are so many women in engineering, despite official figures reporting 16.5% of the workforce is women".

https://www.inwed.org.uk/



IFS Ultimo and InfoConsulting, one of the fastest growing consulting companies specialized in digital transformation have signed a reseller agreement designed to support customers in the implementation of the IFS Ultimo Enterprise Asset Management (EAM) platform. In the first stage, sales will be developed in Europe and Australia where InfoConsulting has a well developed customer maintenance and sales network.

Global growth strategy

This partnership allows InfoConsulting to add the IFS Ultimo EAM solution to its portfolio, and offer customers a better solution for the evolving needs of their business through rapidly improving cross-team collaboration, boosting productivity, maximising asset availability, controlling costs and securing health and safety requirements.

InfoConsulting serves its customers globally in industrial and asset-intensive verticals like manufacturing, construction and mining but also in many others. IFS Ultimo provides a SaaS EAM solution, focused on maintenance & safety with an unparalleled time to value.

InfoConsulting had noticed an increased demand for EAM solutions, advancements in technology and changes in the business landscape, alongside the need to meet customer requirements, such as reducing costs and improving efficiency. This partnership provides them with a comprehensive EAM solution and addresses the evolving needs of businesses. IFS Ultimo's EAM portfolio enables customers to have the tools needed to harness real value and achieve business goals faster and with more efficiency.

Integrated solutions

Mirosław Kamiński, Head of InfoConsulting commented: "We are enthusiastic about the Introduction of IFS Ultimo to our offerings, as it is a complementary solution to the IFS ERP System. Above all, we see a number of benefits for our customers. By improving maintenance, safety and cross-team collaboration, they can increase their efficiency. One of the benefits of the product is also the rate and speed at which customers obtain value and an ROI.

Freddy Vos, Vice President International Sales & Channel at IFS Ultimo said: "With the years of experience that InfoConsulting has in industrial markets, this is a perfect partnership for us to explore the European and Australian markets. I'm convinced that we can offer value for the customers of InfoConsulting, supporting them with their maintenance and safety challenges. InfoConsulting's experience in solutions that are connected to EAM, like ERP, also offers an opportunity for us to provide solutions in a more integrated way together."

About IFS Ultimo

IFS Ultimo is a SaaS EAM solution from IFS, focused on maintenance & safety and well known for a rapid deployment, ease of use and an unparalleled time to value. Details about IFS Ultimo can be found at Ultimo.com.

About IFS

IFS develops and delivers cloud enterprise software for companies around the world who manufacture and distribute goods, build and maintain assets, and manage service-focused operations. Within our single platform, our industry specific products are innately connected to a single data model and use embedded digital innovation so that our customers can be their best when it really matters to their customers—at the Moment of Service™. The industry expertise of our people and of our growing ecosystem, together with a commitment to deliver value at every single step, has made IFS a recognized leader and the most recommended supplier in our sector. Our team of 5,900 employees every day live our values of agility, trustworthiness and collaboration in how we support our 10,000+ customers. Learn more about how our enterprise software solutions can help your business today at **www.ifs.com.**



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Condition Based Maintenance

(Or How To Avoid Unexpected Breakdowns!)

Condition Based Maintenance (CBM), using tools such as vibration analysis, thermal imaging, ultrasonic detectors and oil analysis, is now clearly recognised as being the key to running an efficient maintenance program. By comparison, planned maintenance, or worse still breakdown maintenance, strategies are expensive and unreliable, and particularly in these harsh financial times could prove to be the death sentence for a production facility.



Whilst they are using CBM tools, service and maintenance personnel bring another valuable skill to the job – they use their eyes and ears! For example, a vibration analyser indicates that a pump bearing is likely to fail prematurely sometime in the next two months - but why has this happened? A simple inspection may show that the drive coupling is misaligned, which can then be remedied along with the bearing change. This is Proactive Maintenance, identifying the root cause of the problem and correcting it. What if the misaligned coupling hadn't been fixed? – The bearing may simply have been replaced, only to prematurely wear out again!

It is generally accepted that the three main causes of premature bearing failure in rotating equipment are:

- Out of balance
- Misalignment
- Lack of lubrication

Fortunately, thanks to modern technology, all of these

conditions can be detected very easily using extremely affordable, simple to use handheld vibration analysers. For example:

Out of balance shows up as a **large** amplitude vibration at the **running speed (1X)** of the machine.

Misalignment on the other hand generally shows up as an additional large vibration at **twice the running speed (2X).**

Lack of lubrication will result in high frequency vibration (bearing noise) that is not necessarily audible to the human ear but can easily be detected by a vibration analyser.

Finally, **machine looseness** will typically generate vibrations at higher harmonics of the machine running speed e.g. **three times running speed (3X)** and above.

These days, once diagnosed, all these faults can easily be remedied in-house using affordable easy to use tools such as laser alignment systems, in-situ rotor balancers or even a simple grease gun!

Technology to the rescue

Not so long ago CBM tools used to be expensive and difficult to use. But thanks to modern technology, these tools are now not only extremely affordable; they are also very easy to use.

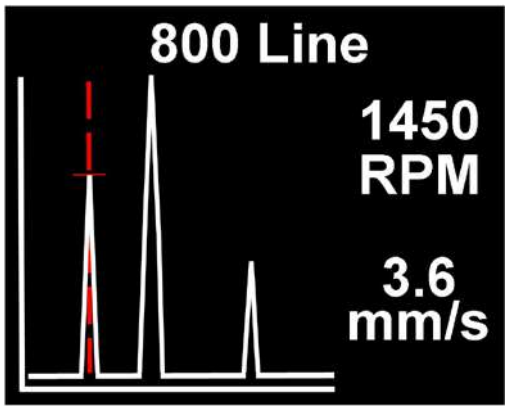
The TPI 9070 (pictured) is a simple to use, incredibly low-cost vibration analyser that records, analyses and displays vibration signals at the push of a button. The unit displays colour coded alarm levels based on internationally agreed (ISO) vibration values and bearing condition. It also incorporates a fully zoomable vibration frequency spectrum (FFT) display with cursor, and diagnoses out of balance, misalignment, looseness and bearing faults.

TPI manufactures a complete range of low cost, high performance, easy to use vibration analysis tools for maintenance engineers. All are incredibly easy to use, from the simple one-button-to-press, TPI 9070 to top-of-the-range CBM units that include machine balancing.

The TPI 9085 (Intrinsically Safe ATEX/IECEx/US/C version also available) is the latest in the line of easy-to-use high specification maintenance products. The TPI 9085 offers high level functionality and capability, including instantaneous bearing temperature measurement, at extremely low cost. The TPI 9085 can automatically download machine routes (as simple lists) that can be followed by even the lowest skilled operative to collect and store vibration and temperature readings for automatic upload to the included, free-to-use, C-Trend II trending software. This powerful but highly intuitive windows-based software, with its ability to automatically generate reports and email alerts, allows faults to be identified well ahead of when they start to become a problem that could result in unexpected breakdowns.

For more information, please contact TPI Europe on +44 1293 530196 or www.tpieurope.com or email cbmsales@tpieurope.com







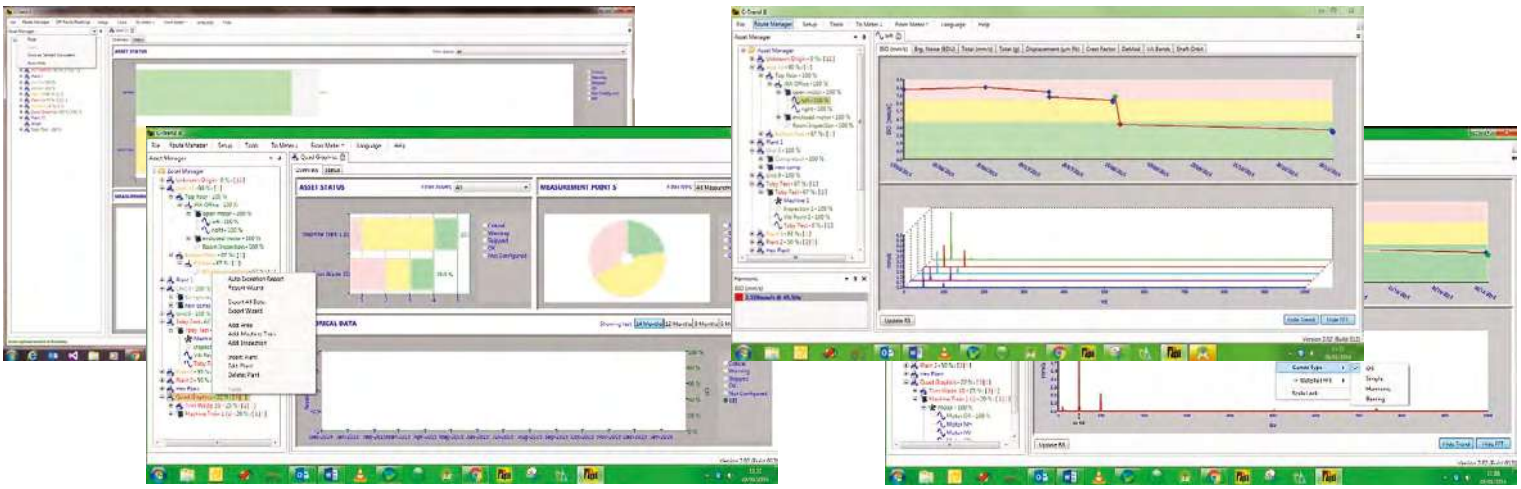
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Why We Use Artificial Intelligence (Ai) In Our Maintenance In Balance (Mib) Software

Condition monitoring is a crucial aspect of equipment maintenance that involves tracking the health of machines in real-time to prevent potential breakdowns and unplanned downtime. Traditionally, condition monitoring has been carried out through manual inspections and routine maintenance checks. However, with the advancements in technology, artificial intelligence (AI) is being increasingly used in condition monitoring to automate the process and improve the accuracy of the results.

AI can be used in several ways to perform condition monitoring, including:

1. Predictive maintenance: Predictive maintenance involves analysing data from sensors installed on equipment to predict when maintenance will be required. AI can be used to analyse large amounts of data in real-time and detect patterns that may indicate a potential problem. This helps to identify potential equipment failures before they occur, minimizing downtime and maintenance costs.

2.Fault diagnosis: AI can be used to diagnose faults in equipment by analysing sensor data and comparing it to a database of known fault signatures. This helps to identify the root cause of a problem quickly and accurately, allowing for timely repairs and maintenance.

3. Anomaly detection: AI can be used to identify anomalies in equipment behaviour that may indicate a potential problem. This involves analysing sensor data and comparing it to historical data to detect any deviations from the norm. This helps to identify potential problems early on and prevent equipment failures.

4. Asset optimization: AI can be used to optimize the performance of equipment by analysing data from sensors and other sources to identify opportunities for improvement. This can include optimizing energy usage, reducing waste, and improving production efficiency.

Overall, AI can significantly improve the accuracy and efficiency of condition monitoring, leading to reduced maintenance costs, increased equipment uptime, and improved safety. However, it's essential to ensure that the AI algorithms used in condition monitoring are properly trained and validated to ensure that they provide accurate results. Additionally, human experts must be involved in the process to provide oversight and interpret the results.

In conclusion, AI is an increasingly important tool in condition monitoring that can help to improve the reliability and performance of equipment.

As technology continues to evolve, we can expect to see even more advanced AI applications in this field, providing greater insights and value to businesses

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A Cool Condition Monitoring Solution

Global automotive and industrial supplier Schaeffler has supplied a fruit processing company with its ProLink condition monitoring system to monitor the condition of trolley bearings on stacker cranes, which operate in cold and frozen storage areas.

Zentis GmbH & Co. KG, with its headquarters in Aachen, Germany, is one of Europe's leading fruit processing companies, producing jams and fruit preparations for the baking, confectionery and dairy industries.
The Aachen site uses large stacker cranes for storage, transfer and retrieval. In order to monitor the large and difficult-to-access moving components in the cold and frozen storage areas and to avoid unplanned downtime, the logistics team at Zentis was looking for a predictive maintenance solution.

Previous CM success

Zentis had previously implemented Schaeffler's SmartCheck condition monitoring devices on gearboxes and cable reels to monitor the health of a critical pallet lifter. The devices have helped to prevent unplanned downtime and optimise production. If the pallet lifter fails, the first production stoppages occur around two hours later. The SmartCheck devices measure the vibration, speed, temperature and imbalance of various rolling bearings in the gearbox, as well as the gear teeth/mesh. The CM solution has enabled an early warning period of several weeks which allows Zentis to carry out repairs and remedial action as part of planned maintenance work, thereby avoiding costly unplanned downtime.

A cold challenge

In the cold and frozen storage areas at Aachen, a different kind of CM solution was required. The stacker cranes constantly move around the 30-metre tall racks in different directions. The trolley bearings, in particular the non-driven bearings, are highly stressed. The fact that constant measuring conditions do not exist during regular operation posed an even greater challenge. In addition, temperatures in the frozen storage area are as low as -20°C, which presented yet another challenge for the new measuring system, for example, how to attach the sensors to the measuring points.

Michael de Ben, Head of Internal Logistics at the Aachen site, comments: "We were looking for a monitoring solution for our stacker cranes that could reliably take measurements despite inconsistent measuring conditions and ultra-low temperatures in order to protect us from unplanned downtimes."

A smart solution

After approaching one of Schaeffler's local authorised sales partners the Schaeffler ProLink condition monitoring system (CMS) was chosen. This intelligent measuring concept was adapted to suit Zentis' unique requirements.
To monitor the stacker cranes, a Schaeffler ProLink CMS and five sensors (bearing guards) were installed on each stacker crane unit. In order to perform meaningful vibration monitoring, the original measurement concept had to be changed in the multi-channel CMS. Schaeffler achieved this by breaking down the short, slow travel times into many short measurements. Any extreme impacts could then be determined from these measurements.

To solve the temperature challenge in the cold storage area, the ProLink CMS was installed in the switch cabinet. In the frozen storage area, the ProLink system was placed in heated control cabinets that escort each stacker crane run. The sensors were attached to the measuring points using a special, cold-resistant adhesive compound.

Permanent benefits

The implementation of the ProLink CMS, has benefitted Zentis in several ways. With early warnings of any change in the condition of the stacker crane trolley bearings, the site has also seen an improvement in the planning of maintenance activities, as well as improved safety and transparency. The ProLink CMS is also fully integrated into the sites own control system.

As Michael de Ben states: "The ProLink CMS monitors heavily strained moving components on the stacker cranes that, due to their size or mounting position, cannot be repaired promptly in the event of an unplanned malfunction. By using bearing guards, the vibration pattern of this equipment can be permanently observed and any deviation can be detected at an early stage. In this way, the ProLink CMS makes a crucial contribution to safeguarding the production supply at Zentis KG Aachen."

ProLink is part of the Schaeffler Lifetime Solutions portfolio, which offers a comprehensive range of products, services and solutions for industrial maintenance. It is designed to support maintenance engineers over the entire lifetime of a machine.





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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."

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Lightweight, Portable, Zone 0 Area Light



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

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

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LL13 9UZ

United Kingdom
0845 862 2447

EUROPE

ExVeritas ApS, Severinsmindevej 6,
4420 Regstrup

+45 7734 4638

NORTH AMERICA

3000 Forest Ln, Suite 400,
Garland, TX 75042

+1-877-637-4322

www.exveritas.com
info@exveritas.com

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

Wolf 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







Accurate And Reliable Flow Rate Measurement For Water

Accurate and reliable flow rate measurement for water, including ultrapure water, at up to 1000 litres per minute is easily achieved with the new SU Puresonic flow sensor from ifm electronic. Since this innovative sensor uses ultrasonic technology, it delivers results that are not influenced by the conductivity of the water, making it an ideal choice for use in water filtration and purification systems as well as in more general applications where precision and dependability are key requirements.

These new sensors use a stainless steel measuring pipe free of measuring elements, seals or moving parts. This means no additional restriction to the flow is introduced by the sensor and the risk of leaks and/or blockages, which can occur in mechanical flow measurement systems, is eliminated. As a further aid to reliable operation, the sensors also incorporate a self-monitoring system. This can be used to alert users to, for example, increases in particulate matter in the medium or to the build-up of deposits on the inner wall of the measuring pipe.

SU Puresonic sensors are available with G1 and 1" NPT process connections and a measuring range of 1 to 240 litres per minute, and with G2 and 2" NPT connections and a measuring range of 5 to 1000 litres per minute. All versions have an IO-Link output that provides comprehensive real time data for flow rate, medium temperature and sensor status, as well as a 4-20 mA analogue output, a pulse output, a switching output and a diagnostic output.

Compact construction means that installation is straightforward, even in applications where space is restricted, such as on water manifolds with a 50 mm pitch. Set up is equally straightforward as, unlike clamp-on devices, SU Puresonic sensors offer plug-and-play operation with no need to make adjustments for pipe material and wall thickness.



24/7 Boiler Room Performance Monitoring
With Babcock Wanson's Navinergy

Now available from industrial process heating specialist Babcock Wanson is the Navinergy digital platform for 24/7 boiler room performance monitoring. This innovative system allows customers to monitor their boiler room from any device, anywhere in the world, to optimise energy and water efficiency, and ensure regulatory compliance.

The Navinergy platform integrates all the components needed to supervise and operate the boiler room, including control, regulation, recording, visualisation and communication.

Using a local Modbus TCP network, Navinergy gathers, records and stores field data from all the connected boiler room equipment. The data is presented in the form of graphs or a performance report, which can be customised to customers' precise needs. These are sent to customers at regular intervals, but can also be easily generated whenever required, for up to date information.

Where deviations in the operation of boiler room equipment are identified by Navinergy, alerts are sent to customers directly to enable them to assess the situation and decide if action is required. Alert levels are customisable to best manage and prioritise them.

In this way, Navinergy not only delivers information to be acted upon and periodically reviewed, but also provides customers with complete traceability.

Several modules are available with Navinergy, including a module to list actions to be taken in the boiler room, a drift alert module, and the eWater module which monitors water quality to prevent boiler breakdowns. eWater enables operators to determine whether the water quality is in line with Babcock Wanson's recommendations, in order to ensure equipment longevity. Where water quality dips below predetermined levels, Navinergy proposes corrective actions. In case of a major problem, a Babcock Wanson expert can also be notified to take proactive measures to address and solve the issue.

Navinergy is available with all Babcock Wanson firetube boilers and is fitted as standard with Babcock Wanson's BW7DAYS seven day unattended boiler operating system.

Babcock Wanson offers a complete range of products and services for boiler houses and other process heating needs, including firetube boilers, coil type steam generators, 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 or go to www.babcock-wanson.com





Boost For Wastewater Aeration Business As Mapal Hit Investment Target – And More

Mapal has surpassed its fund target of £400,000 via Crowdcube, with 475 new investors choosing to inject over £467,000 into the business that has completed over 100 installations of its energy-saving, wastewater aeration solutions.

Due to the high demand, the deadline to invest was extended by 14 days as more and more parties expressed their interest in becoming part of the Mapal success story, which has seen projects delivered worldwide, including the UK, Australia, Israel, South Africa, and Chile - with critical acclaim.

Mapal's Chairman/Director, Ilan Diamond, commented: "It is very encouraging to not only achieve our target, but beat it. Investors can clearly see the major benefits and huge potential of our innovative systems that are 50-60% more efficient than traditional mechanical surface aeration."

He added: "As well as providing general working capital, this new boost in funds will enable us to further develop our sales and marketing teams. We can also fund a pre-sale trial (rental) fleet and continue to develop our key research into ammonia removal in aerated lagoons."

Diamond explained that while some aeration methods partly address higher than ever energy (and maintenance) costs of conventional surface treatment, they often require very specific conditions. This can prove price-prohibitive as a new-build, and requires the process to be shut down for upgrades, resulting in costly and potentially damaging downtime.
In contrast, Mapal's floating and retrievable fine-bubble aeration solutions, which do not need a levelled floor, can be installed and maintained while the plant is operating; without personnel having to enter the wastewater.

mapal-ge.com

Delta Hybrid Represents One Of The Most Groundbreaking Advancements In Compressor Technology

Delta Hybrid represents one of the most groundbreaking advancements in compressor technology and stands out as an exceptionally efficient system within its class. These latest models are equipped with intelligent features, enhanced functionality, and remarkable energy savings of up to 30% when compared to traditional positive displacement blowers.

AERZEN rotary lobe compressors, or screw blowers combine the benefits of blower and compressor technology into a single, versatile system, catering to a wide range of performance requirements for various industrial processes. These assemblies are primarily designed for oil-free air conveyance and serve an extensive array of key industrial applications, including pneumatic conveying, homogenisation, and wastewater treatment. The newly introduced models deliver energy efficiency, feature a simplified service and maintenance concept, and smaller footprint, which contributes to minimising the Total Cost of Ownership (TCO).

Thanks to an innovative compressor stage equipped with highly efficient screw profiles, internal flow optimisation, standard motors with energy efficiency class IE4, optimised process and cooling air flow, and a self-tensioning belt drive is over 98% efficiency in conjunction with a compact design, substantial energy savings of up to 30% can be achieved compared to traditional blowers.

The patented bearing ensures a service life 70,000+ hours. An effective sealing mechanism for the driving shaft and conveying chamber minimises natural wear, guaranteeing oil-free operation in accordance with ISO 8573-1 class 0 standards.

Additionally, the patented reactive silencer, free from absorption materials, effectively prevents process air contamination and safeguards downstream systems, making it particularly advantageous for sustainable, safe, and long-lasting operations in the food industry and wastewater treatment. The intelligent oil system, which functions with minimal oil quantities and extended change intervals of 16,000 operating hours, positively impacts longevity and maintenance.



LET'S TALK
Parikshit Manjrekar, Internal Sales Engineer
Phone: +44 (0) 208 502 8112
E-Mail: parikshit.manjrekar@aerzen.com
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Manufacturers Face A £20,000 Fine And, At Worst, Imprisonment

Manufacturers face a £20,000 fine and, at worst, imprisonment, for failing to comply with regulations which cover the disposal of compressed air condensate. Yet many companies are unaware of the regulations and their responsibilities under it, warns Steve Boults, of compressed air and fluid power specialist Thorite. Here he explains how you can avoid putting both your finances and reputation at risk.



Almost all manufacturing processes use compressed air in their operations and condensate is a by-product of the compression process.

It is caused when the compressed air temperature decreases and turns back into a liquid, which contains contaminants such as lubricants, solid particles and airborne micro-organisms which were present in the compressed air.
Compressed air condensate is classified as hazardous waste and the legislation relating to its disposal is stringent. Companies which fail to comply can face fines of £20,000 and, in worse case scenarios, directors can face a prison sentence.
The solution to safely disposing of condensate – an oil/water separator - is simple and relatively low cost. Yet the number of compressed air users who do not employ one is surprisingly high.

We estimate that as many as 40% of compressed air plants fail to employ an oil/water separator, and a further 5% to 10% have one but fail to maintain it properly. This can apply to SMEs and multinationals alike.

The result is that toxic waste from their processes is draining to the ground and potentially making its way into waterways. The legal ramifications and environmental implications alone should give companies pause for thought. But additionally, a compressor without an oil/water separator is also a compressor which is very likely to be performing inefficiently, as the build-up of oily condensate will eventually cause damage, leading to downtime and repair costs.
With the penalties for breaching the legislation so high it is essential that both company managers and operatives on the factory floor understand the regulations that govern condensate treatment and the steps they must take to meet them.

Safe disposal of condensate

Companies must handle all condensate and associated materials, from filters to spillage mats, in compliance with the Hazardous Waste (England and Wales) Regulations 2005.
This is as simple as installing an oil/water separator to separate the emulsified oil and waste water. Separators can cost as little as £100 and even at the larger end of the scale will only cost a few thousand pounds. They can also be retrofitted.
With relevant permissions, the waste water can then be drained to the foul sewer, while the oil collected must be removed by a registered Hazardous Waste Producer or Licensed Waste Carrier, usually on an annual basis.
If an oil/water separator is not fitted, this mix of pollutants is discharged into the compressor house drain and eventually makes its way into the nearest waste water system or, worse still, directly onto the compressor house floor where it drains to the ground outside. This activity is illegal.

The cost of failing to comply

If you have a compressed air system producing condensate, you are governed by a further two key pieces of legislation.
Water Resources Act 1991

This states that it is an offence to knowingly permit entry of toxic waste to surface or ground water. The penalty is a fine of £20,000 or more in a Crown Court.

Water Industry Act 1991

This sets out the administrative requirements relating to the discharge of the treated condensate water, such as gaining consent from the local sewerage service provider and provision of analysis data and records if requested.
It also states that under no circumstances can treated condensate water be discharged to open water such as rivers and streams, ground water or storm/rain water drains and that penalties for breaching the Act can result in fines of up to £20,000 and potential imprisonment for company directors.
The solution is straightforward - so why is the number of companies failing to fit an oil/water separator so high?
The main reason appears to be a genuine lack of awareness of the legislation, at all levels.

Management are unfamiliar with the law and consider oversight of the compressor house as belonging to the engineering or maintenance teams, while operatives might have inherited legacy equipment which never had a separator fitted, and have no cause to question the status quo. Therefore, responsibility falls between two stones.

Failing to comply with the regulations around condensate disposal presents a very real cost in terms of equipment efficiency, potential fines and professional reputation, not to mention the ethical implications of polluting the local environment.

Is that risk really worth the price of an oil/water separator?

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Water Treatment Plant Installs New Borger Pumps For Membrane Filtration

Fourteen Rotary Lobe Pumps made by Borger have been installed for a membrane filtration application at a water treatment plant.

Achieving a total output of up to 10,000 m³/h, the Borger pumps extract water so that it can be purified through the membranes.

In addition to being extremely stable and practically wear-resistant, the pumps were chosen to suit the cleaning of the membranes by back-flushing with filtered water. This made it essential for the operator of the plant to have pumps that could be operated in reverse. The rotary lobe pumps from Borger also have a high suction capacity that allows the treatment plant to vary the quantity of water during the back-flushing phase.

Regulated by a frequency converter, the Borger Rotary Lobe Pumps (which have a rated capacity of 450 - 720 m³/h), are designed with maintenance-in-place for easy servicing, requiring only basic tools to keep downtime and costs to a minimum.

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The Importance Of Industrial Boiler Services To Maintain A Healthy Plant

Why you need help to regularly service your industrial boiler

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Why things go wrong

Industrial boiler maintenance is essential to keep your boiler working safely and at maximum efficiency. Things like rust and scale build up can quickly begin to affect the operation of your boiler and can lead to catastrophic boiler failure. Unplanned boiler failure will have a significant impact on your workflow and process and can result is costly repairs and loss of revenue. This is why we strongly suggest you ensure your boiler is serviced by the experts with a Byworth Service Contract.

Packages

At Byworth we understand that there is no such thing as a one size fits all solution, which is why we offer different levels of service packages to meet your specific needs and requirements. These range from additional service visits to packages that use our award-winning Unity system to help identify ways you could run your boiler more efficiently saving money on water and fuel. We also offer longer term contracts that give you peace of mind not having to worry about renewals each year and include pre-inspection preparation for your 5-year NDT.

Contact our Team on service@byworth.co.uk for more information or to discuss the options that will best fit your needs.





Thordon Seawater-Lubricated Tailshaft Bearings Selected For Sumed Pipeline Service Boats

Egypt's SUMED pipeline operator Arab Petroleum Pipeline Company (SUMED) has completed the tailshaft conversion to Thordon's SXL seawater-lubricated bearing system for seven special purpose single point mooring (SPM) service boats.
The final vessel in a series of 17.5m (57.4ft) long, 1976–built service boats had its original oil-lubricated tailshaft bearings replaced with the Thordon system at Nefertiti Marine's Yard-K, in Rosetta Nile, in December 2022. The first vessel, SUMED 10, was converted in 2019.

Referring to the first installation, Karim Abd El Karim, Engineering Manager with Nefertiti Marine, Thordon Bearings' authorized distributor in Egypt, who has overseen the completion of all seven conversions, said: "Oil was leaking from the shafts, and the operator was looking for a longer lasting bearing solution, resistant to abrasive waterways. We proposed the SXL material as the right solution to meet all performance and environmental needs. The vessel owner agreed."

In addition to SXL tailshaft bearings machined for shaft diameters of 95mm (3.74in), Nefertiti Marine provided classification approval drawings and advised on the installation process through to commissioning. All seven service boats received the same scope of supply.
"The success of that first installation, together with the reliability and availability of Thordon's SXL bearings, lead times and Nefertiti Marine's engineering expertise, gave us the confidence to convert all our special purpose service boats to seawater-lubrication. The perennial problem of worn aft seals leaking oil into the sea and canal has now been solved."
A water-lubricated tailshaft arrangement negates the need for an aft seal, notoriously prone to failure, resulting in oil pollution, costly repairs, and downtime. Only a forward seal is required in an open system.

SUMED's fleet of service boats assist tankers in loading shipments from the SUMED oil pipeline. The pipeline, which runs from the Ain Sokhna terminal in the Gulf of Suez to Sidi Kreir port in the Mediterranean Sea, provides an alternative to the Suez Canal for transporting oil from the Arabian Gulf region to the Mediterranean.

"We are delighted that SUMED has put its trust in our zero-pollution, low-maintenance bearings to deliver environmental and economic benefits," said Neil McDonald, Thordon Bearings' Regional Manager – Northern Europe & Africa.

"Based on the success of that first installation, the other vessels in the fleet spent less time in drydock, reducing vessel downtime considerably. The company is now looking at converting greased deck equipment bearings and rudder bearings to our grease-free ThorPlas-Blue bearings," he said.
Thordon Bearing's SXL and ThorPlas-Blue non-metallic bearings are ideal solutions for tugboat, dredger and other coastal workboat operators looking to easily convert their closed oil-polluting seal system to solutions more in-line with their Environmental, Sustainability and Governance goals.
"Compared to oil-lubricated metal bearings, SXL eliminates shaftline pollution forever," furthered McDonald.
An open SXL water-lubricated bearing system is also less expensive than new, white-metal bearings that operate with two oil seals; however, vessel operators looking to convert should do so before existing shaft liners are too worn, as it may be possible to use existing shaft liners and simply replace the bearings with Thordon, providing additional cost advantages.

"We are seeing increased market interest for Thordon's water-lubricated and grease-free seal and bearing products across the Middle East," said McDonald.
"With the completion of these conversions, Thordon Bearings continues to grow its retrofit market, while increasing workboat reliability and improving the environment in the waters of the middle east."







Over A Million Bearings: Schaeffler Wind Power Standard Ensures Maximum Reliability In Wind Turbines

Against the backdrop of ambitious climate goals and an ever-increasing awareness of sustainability issues in society, renewable energy generation – including wind power as a central component – is of growing importance. As market leader and strategic development partner, global automotive and industrial supplier Schaeffler has been supplying reliable bearing solutions for onshore and offshore wind turbines for around 40 years. Rolling bearings from Schaeffler can be found in every second to third wind turbine worldwide.

Schaeffler introduced a Wind Power Standard for wind turbine bearings more than 10 years ago, which takes into account the high demands on the reliability of turbines and associated components. This standard for products and processes ensures that wind turbine bearings are subject to the highest quality standards, as also implemented, for example, in the automotive industry, and in the aviation and aerospace sectors. The start of the year marked the manufacture and delivery of the one millionth bearing by Schaeffler in accordance with the Wind Power Standard.

Rolling bearings play a key role in wind turbines
The progression to multi-megawatt turbines is resulting in higher loads and torques, which place the components under even greater strain, while the costs associated with downtime and maintenance work in the event of a failure are becoming increasingly higher, particularly where offshore systems are involved.

"Our customers require reliable components that allow the increasing power density in wind turbines to be used to its full potential. With the Wind Power Standard, we have been ensuring the highest level of quality for more than ten years – and with more than a million bearings to date," says Bernd Endres, Head of the Wind Power business unit at Schaeffler.

Processes specific to wind power applications for the entire supply chain
In order to ensure these high standards, Schaeffler relies on coordinated and transparent processes, a defined change management system, strict quality control, and extensive documentation along the entire process chain, which is achieved in close cooperation with customers and suppliers. Targeted supplier development activities ensure that the highest quality standard is achieved from the outset.

Long-standing experience and comprehensive system expertise
Compliance with the strict quality standards that apply on a global scale to all development and design teams, and to all production facilities that design and manufacture bearings for wind turbines, is monitored by means of internal audits. In addition to the long-standing experience and comprehensive system expertise of the specialists at Schaeffler, the use of state-of-the-art calculation and simulation programmes in particular ensures that wind turbine bearings are designed to optimum effect. The calculations are supplemented and validated on powerful test rigs. Schaeffler offers extensive testing options, particularly for rotor bearings, in the form of the "Astraios" large-size bearing test rig.

Bearings that are produced in accordance with the Wind Power Standard undergo a full ultrasonic and grinding burn test in order that material defects can be identified or ruled out prior to delivery, thus preventing possible bearing damage and any detrimental effect on bearing life.

www.schaeffler.com



Nsk Bearings Lead To Significant Savings At Ore Plant

When NSK solved an overheating issue involving the bearings on a dust extraction fan at an ore preparation plant, it led to annual cost savings of €88,955. These ongoing savings emanate from the elimination of compressed air – previously required for cooling – thanks to NSK's correctly specified bearing and lubrication solution.

Dust extraction fans are necessary at ore preparation plants to help remove the high level of airborne particulates that occur from processes such as crushing, sorting, grinding, screening, decanting, filtering and drying. At this particular facility, the running temperature of bearings on its extraction fans was proving unacceptably high. To help counter the situation and prolong bearing life, the plant was using compressed air for cooling purposes - at considerable cost.

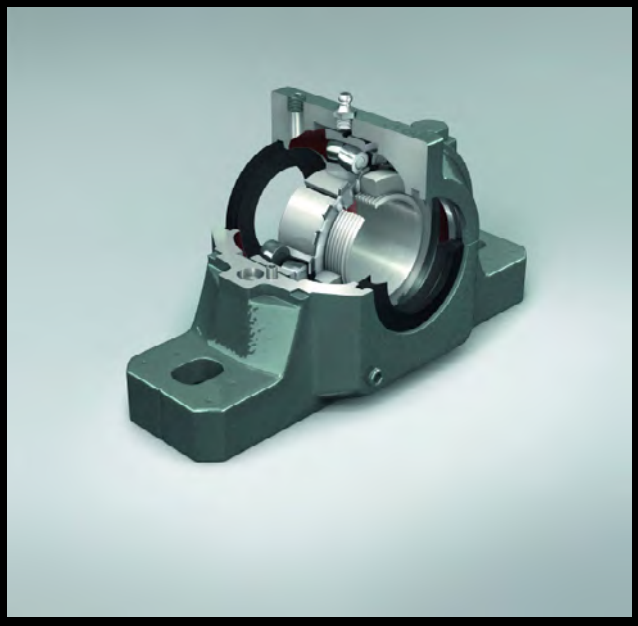
Concerned about the ongoing expense of this activity, the facility's management team invited NSK's experienced engineers to undertake a thorough application review. The review included value proposals such as a bearing condition report and a temperature survey that revealed serious issues with the seals of the incumbent bearings. High rotational bearing speed was causing seal lip burn-off and over-lubrication, contributing to elevated running temperatures.

To combat this unwanted situation, NSK recommended its high-performance NSKHPS spherical roller bearings with SNN plummer blocks and labyrinth seals, along with proposals for correct installation procedure, lubrication intervals and quantities. SNN plummer blocks feature two lubrication

holes and one draining hole to support easy maintenance. A subsequent trial showed a considerable reduction in temperature, eliminating the need to run the compressor for cooling purposes.

NSK's modular SNN housing range offers various technical options to match the needs of demanding applications such as the dust extraction fan. Notably, the components are easy to fit, remove and maintain. Equipped with high-performance bearings, like the NSKHPS series, SNN split housings support companies in achieving their cost-reduction plans.

With the trial at the ore preparation plant proving highly successful, NSK's engineering team oversaw the installation and implementation of its recommendations, with the facility ultimately benefitting from increased productivity and reduced maintenance costs, as well as the removal of compressed air. The latter alone led to annual savings of €88,955.



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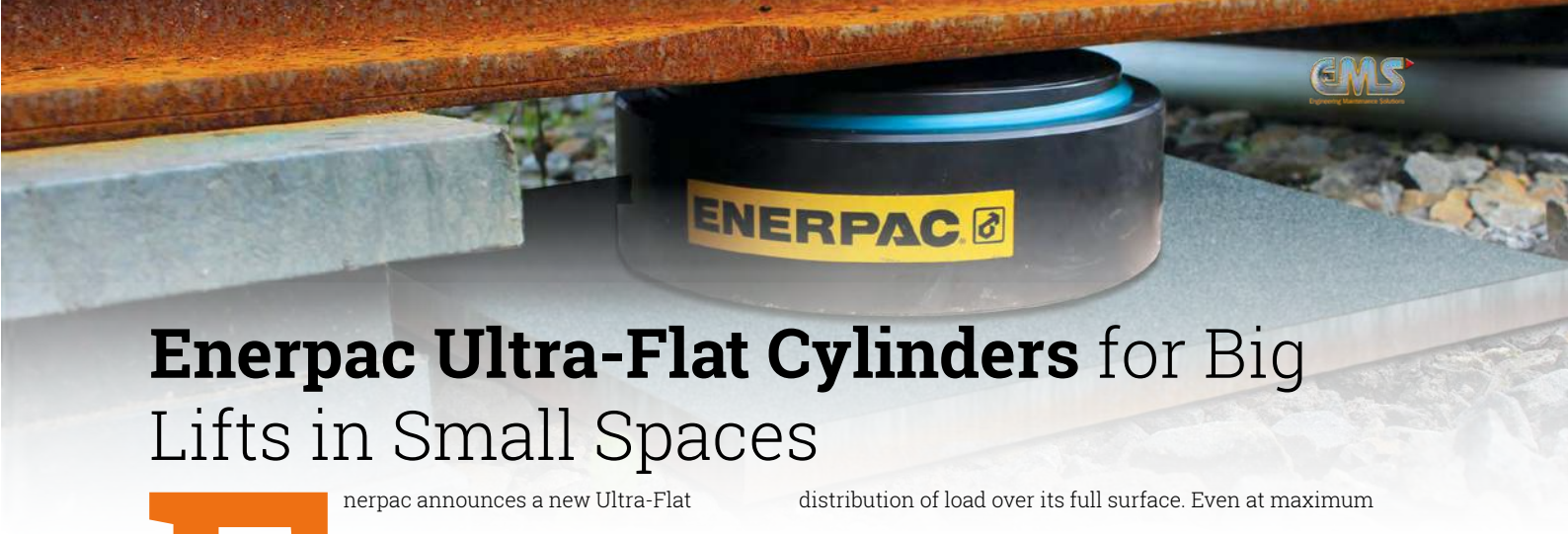
The new DX1063 multifunction display module from ifm electronic provides a simple and effective way of displaying key data locally on a machine or process plant, making it much easier for operators to keep an eye on status when they're away from the main operating position. To maximise its versatility, the DX1063 is compatible with most commonly used analogue input signal types. It incorporates a high-resolution TFT display that offers a wide range of colour and digital labelling options.

Measuring 48 mm high x 109 mm wide and just 42 mm deep, the DX1063 is large for essential data to be read from a considerable distance but small enough to be accommodated in almost any control panel. It detects and converts voltage, current, frequency, pulse counter and thermocouple inputs, displaying the results directly in units specified by the user. The unit is also shown, along with the signal name and location tag, so that the meaning of the displayed value is always readily apparent.

To further increase the usefulness of the DX1063, the display's background colour can be altered according to the value of the input signal. This means, for example, that a green background could be programmed for a signal in the normal range and red for an alarm condition. The DX1063 also has two relay outputs that the user can configure to pass alarm signals to the plant control or supervisory systems.

https://www.ifm.com/gb/en





Enerpac Ultra-Flat Cylinders for Big Lifts in Small Spaces

Enerpac announces a new Ultra-Flat hydraulic cylinder series for those projects with small working space, starting at just 2,8 cm, but large lifting requirements up to 1000 ton. The CULP-Series with lifting capacity 10 – 50 ton, and CUSP-Series 10 – 1000 ton, are designed for applications where high lifting forces are needed in confined spaces.

With a 700 bar max operating pressure, the Ultra-Flat cylinders provide a 7 – 17 mm stroke, and are designed to withstand up to 4% side load at full lifting capacity. The CUSP-Series has an integrated tilting function up to 4 degrees, and a 6 – 10mm tilted stroke.

Safety is critical to all Enerpac products. CULP Ultra-Flat hydraulic cylinders are equipped with an internal stop ring that prevents the plunger from accidentally dropping at the end of its stroke. CUSP Cylinders have a "Red Line" as visual indicator to the operator when the maximum stroke has been reached. The CUSP-Series' tilting plunger can be adjusted enabling equal distribution of load over its full surface. Even at maximum tilted position, most models will have a straight lifting stroke of 10 mm.

All Enerpac cylinders are built to last. In addition to low maintenance requirements, the Ultra-Flat hydraulic cylinders feature a nitro carburizing surface treatment providing greater load and wear resistance, as well as, corrosion protection in the harshest working conditions.

The CULP-Series and CUSP-Series Ultra-Flat hydraulic cylinders can be used with Enerpac hydraulic pumps - available in over 1000 different configurations – whatever the application's requirements for speed, control, intermittent or heavy duty.

For more information on Enerpac Ultra-Flat hydraulic cylinders, visit: www.enerpac.com

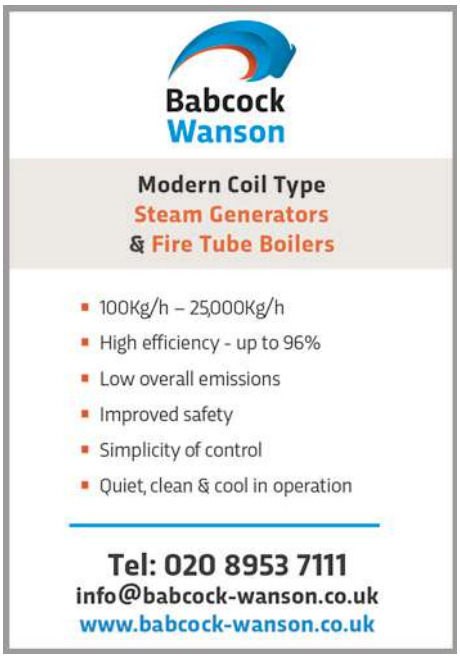


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