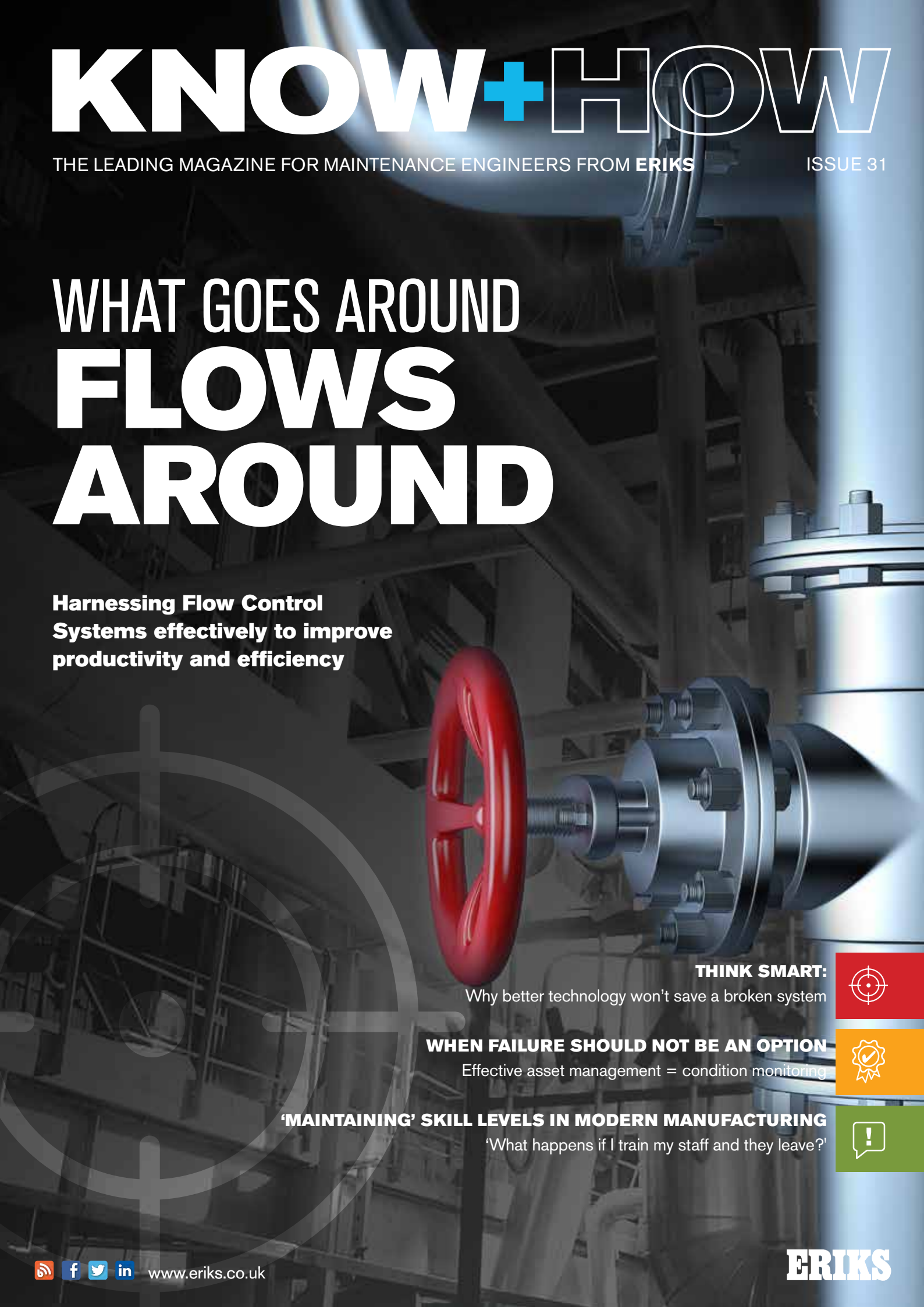
KNOW+HOW

THE LEADING MAGAZINE FOR MAINTENANCE ENGINEERS FROM **ERIKS**

ISSUE 31

WHAT GOES AROUND FLOWS AROUND

Harnessing Flow Control Systems effectively to improve productivity and efficiency



THINK SMART:
Why better technology won't save a broken system

WHEN FAILURE SHOULD NOT BE AN OPTION
Effective asset management = condition monitoring

'MAINTAINING' SKILL LEVELS IN MODERN MANUFACTURING
'What happens if I train my staff and they leave?'

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ERIKS

CONTENTS
ISSUE 31

DON'T MISS OUT

keep up to date with all the latest news from ERIKS

WELCOME TO KNOW+HOW

As I write this introduction to the latest issue of Know+How, the rain is pouring down the windows in true British summer fashion. It seems fitting, therefore, that this month's issue looks at flow control and how you, as manufacturers and engineers, can harness it effectively to improve the productivity and efficiency of your business.

Flow control means different things to different sectors, whether it's safely transporting volatile organic compounds, or harnessing the power of steam. Whatever you need, we've got you covered, with a range of articles and products to suit any type of flow control system.

Monitoring and controlling potential gas leaks before they occur is an important part of any health and safety programme. We take a look at ERIKS' state-of-the-art Optical Gas Imaging camera, which provides a comprehensive and accurate view of even the smallest of gas leaks. No soap suds required.

We let off a little steam by discussing the best ways to improve a steam trap system, and why steam loss could be costing your business up to €15,000 a year.

AMG stops by to tell us about its new set of valve actuators, which can deliver up to three million operations without needing maintenance, and we also look at why the right kind of hose is a vital tool in any effective fire prevention plan.

Flow control is an important part of industry as a whole. As always, we would love to hear your thoughts on the topics contained within this issue. Simply send an email to the editor at knowhoweditor@eriks.co.uk.

ERIKS UK & Ireland prides itself on offering a full solution to improving flow control, from audit, to installation, to maintenance and, finally, de-commission. If you're interested in learning more, head over to the Know+How website, www.eriks.co.uk/KnowHow, where you can register for a copy of the magazine, enquire about the subjects discussed, or contact one of the contributors.

I look forward to hearing from you and hope that by the time you read this, the sunshine will have reappeared once more.

Richard Ludlam
Editor-in-Chief

DEBATE!

'Maintaining' skill levels in modern manufacturing

See page 40

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LATEST NEWS

EFFICIENT ELECTRO-HYDRAULIC PRODUCTS SUPPORTED BY STRONG SERVICE OFFERINGS WILL DRIVE GROWTH FOR HYDRAULIC EQUIPMENT

According to Frost & Sullivan's Industrial Automation and Process Control team, manufacturers need to focus on integrating electronic components, leveraging sealing technologies and offer strong service capabilities to drive growth for hydraulic equipment.

Frost & Sullivan predict the market will experience positive growth as investments flow in from end-user segments such as food and beverage, water and wastewater treatment, and renewable energy.

The company also states that Asia-Pacific is a high-growth region, with the United States and Western European countries focusing on supporting smart and digital platforms through hydraulics, and the food and beverage and steel production industries interested in exploring new technology advancements, including fluid viscosity.

OIL AND GAS CONTRACTOR CONFIDENCE HAS GROWN SIGNIFICANTLY FOLLOWING HISTORIC LOWS

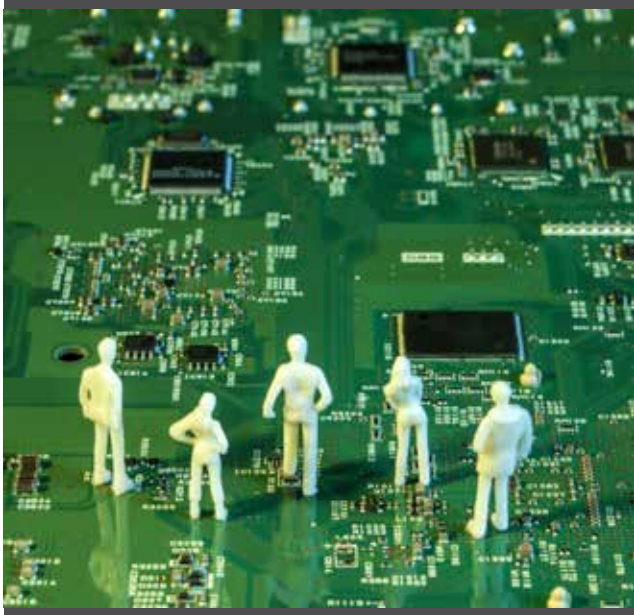
According to the 26th Oil and Gas survey, conducted by Aberdeen & Grampian Chamber of Commerce in partnership with the Fraser of Allander Institute, oil and gas contractors have gained confidence, both in the UK Continental Shelf (UKCS) and internationally.

The survey reveals that 38% of contractors are more confident about business in the UKCS compared to data from six months ago when the figure was just 12%.

While disappointingly, 52% of respondents reported no change in their outlook, when asked what position they expect their business's to be in by January 1st 2018 – 42% expected their business to be growing. It may be too early to claim that a recovery is being universally felt but there are some positive signs, if this data is anything to go by.

SURVEY REVEALS THAT HALF OF FIRMS BELIEVE ARTIFICIAL INTELLIGENCE WILL BE TRANSFORMATIONAL AND WIDESPREAD

A CBI survey of 160 businesses, in association with IBM, reveals that half of firms believe current artificial intelligence (AI) will transform the industry they work in. Despite this, only a third of respondents feel their business has the skills to adopt data-driven technologies.



However, many UK firms are leading the way with technological developments, with one in five companies (21%) having invested in AI during the past 12 months and 42% of companies planning to invest in the next five years. Investments over the past 12 months include cloud, mobile technology, and security.

The message is clear, UK must act quickly to bridge the digital knowledge gap between firms., in order to keep up with international competition.

EEF LAUNCHES HEALTH, SAFETY AND ENVIRONMENT LEADERSHIP COURSE FOR PRACTITIONERS

The manufacturer's organisation, EEF, has launched a two-day course to help businesses avoid the risk of failing to adhere to health, safety and environmental regulation.

The unique course aims to help health, safety, and environment practitioners to communicate more effectively within companies at board level and engage whole businesses in key health and safety issues. Alongside learning integral health and safety skills, practitioners will also be able to develop their leadership and management skills.

For example, the course covers the importance of being commercially aware in your role as well as understanding the wider internal and external factors for business including customers, market-dynamics, and financial drivers.

More information on EEF's health and safety courses can be found on https://www.eef.org.uk/training/health-and-safety.

NORWAY ANNOUNCES PLANS TO BUILD THE WORLD'S LARGEST TUNNEL FOR SHIPS

Norway is planning to dig a 1.7km (1 mile) passageway underneath a rocky peninsula in the north-west of the country to create the world's largest tunnel for ships.

The Stad Ship Tunnel will enable cruise liners, freight ships, and smaller vessels to take an underground shortcut through the Stad peninsula to avoid the rough wind and waters of the Stadhavet Sea.

The project is expected to cost around US $312 million and will be roughly 49 metres high and 36 metres wide. Construction is set to begin in 2019 with a possible completion date of 2023.

The Norwegian Coastal Administration (NCA), who are managing the project, expect 100 ships to pass through the tunnel every day and claim that the passage will save money by providing a quicker and safer means of travel.

IS EDUCATION THE KEY TO UNLOCKING INDUSTRY 4.0?

Is UK industry ready to embrace true asset management? The combination of increasing product complexity combined with a lack of internal resource is placing industrial maintenance teams under unprecedented pressure. We talk to ERIKS CEO Steve Waugh to gauge the health of industrial maintenance in the UK and how ERIKS is repositioning itself as a multi-product specialist supplying Products + Services + Customer Solutions

Steve Waugh
CEO, ERIKS UK

IN-DEPTH

One of your key messages is that maintenance teams are under more pressure than ever before. Why is that?

Basically, they have less internal know-how than ever before because they have fewer engineers to support maintenance organisations. I often tell the story of when I was in my twenties, working as an ICI plant engineer supported by an engineering department in Billingham in the North East staffed by 400 engineering experts. If you wanted an expert on bearings, lubrication, rotating equipment or whatever, you had local support who knew everything about the installed equipment and it's application. That internal support is now limited and reducing over time, plant engineers increasingly rely on advice and product knowledge from their supply chain.

Are customer expectations changing therefore in terms of what they want from a distributor?

A typical conversation with a product distributor is often focussed on transactional issues, price and availability? Sometimes that is sufficient to meet the end-users needs but it is only a small part of the customers overall requirement. Advice on the product application, customisation of the product or co-engineering to meet the environment products are required to operate in should also be determined at the point of sale. Increasingly customers are also seeking a supplier who can support installation and during use support that asset through time keeping the customer informed about its condition.

The expectation is increasingly that specialist product knowledge should be providing technical advice, operational knowledge and predictive maintenance services including condition monitoring of the products supplied. Extending product life, reducing repair costs and avoiding lost production time for unplanned breakdowns must in the future be available from product supply chain experts.

So, you feel that the total cost of ownership message is getting through?

Yes, because the initial purchase price is a fraction of the total cost. When you look at the lifecycle cost of a product, a pump for example, you can see that the capital cost is only 5 per cent of the lifecycle cost. Getting the lowest overall cost of the product through it's lifecycle is the optimum solution customers need, to be productive and remain competitive in their own markets.

Traditionally, industry has attempted to control maintenance costs by buying better, but is that leaving maintenance teams exposed?

Customers will always require competitive pricing, supplying the ideal product solution but also looking beyond the original acquisition price. ERIKS is currently working to support a world-class manufacturer in the food and drink sector that has circa 400 pumps on their prime production site.

We worked with them to perform a survey of their pump assets, specifically what it would mean if there was an unplanned failure, and then cross-referenced against their spares provision and failure history. Forty pumps were identified without adequate spares provision that halt the production line if they fail. Understanding the criticality and the risks involved through premature failure allowed ERIKS and the customer to develop specific solutions that reduce exposure to significant cost impacts on production and maintenance budgets.

Does that mean that buying better is not always the answer?

No buying well remains important, what we are seeing however is industry recognising that total cost of ownership [TCO] considerations provide a range of benefits above the acquisition cost. The water industry, for example, is under tremendous pressure from the regulator to minimise water and sewage leaks, which means that greater equipment reliability has become more important than lowest purchase price.

Nevertheless, many customers are operating in very competitive industries, and they know that they have to keep both their direct and indirect cost bases as low as possible. Recognising that there is only so much benefit from price negotiation professional buyers consider life cycle costs and production risk when selecting a product to purchase and selecting the supplier who provides the right long term solution. Technical assessment of equipment application, understanding the impact of the equipment to production risk and a review of life cycle value to the operation should all be key considerations at the point of purchase. ERIKS has the specialist knowledge to help customers achieve this objective for a wide range of mechanical products.

You have to have some sympathy with the maintenance teams though, with the breadth of equipment that they are having to maintain.

I have enormous respect for the plant engineer and the maintenance team who have responsibility for thousands of individual pieces of equipment that make up a bottling plant for example. How do you ever have sufficient knowledge of your vulnerability for all that equipment? Where do you focus your time and attention?

ERIKS is providing it's customers the opportunity to buy a range of products from a single supplier who uses engineering and logistic knowledge to provide services and solutions to support the challenges of modern maintenance organisations.

Does this explain some of the changes you've been making at ERIKS?

There is some misconception out in the marketplace that we don't want to repair equipment anymore. That's not the case. When I came in we had different business competencies operating under one brand - an engineering repair business and a spares distribution and logistics business. Combining product and engineering specialists to reduce

customer risk and costs is our unique customer proposition, because where we were joined up the customer could see and measure the benefits ERIKS can bring.

We decided to bring the distribution and engineering organisation together as one operation, geographically focused on industrial regions with the essential specialist capabilities located close to the customer. What we now call Regional Hubs and Technical Service Centres. Our Product and Engineering capabilities combine to improve asset TCO for customers across industry from both on-site and off-site ERIKS locations.

ERIKS is a product specialist company, but we have engineering capabilities, technical know-how and customisation capabilities that support customers from product selection, customisation, installation, operational management and eventual retirement of the product. Essentially, whole life asset management for ERIKS core product range.

It's always a more difficult sell though isn't it, prevention rather than cure?

It is but many customers recognise the benefits of taking a strategic view on their selection and management of engineering products. ERIKS measures customer benefits from a total asset management approach, encouraging use of a range of metrics to gauge their maintenance efficiency, such as MTBF [Mean Time Between Failure] tracking performance improvement and related costs. Once demonstrated and trust is established our customers spend less over time with ERIKS, but we have relationships that last for many years on an international basis.

In the end, for most sophisticated complex manufacturing operations it is just so expensive when things fail. Recently an ERIKS customer asked for advice on a critical fan design, when the main driveshaft bearings failed they had to remove the roof of the building just to complete replacement. ERIKS redesigned the bearing assembly, sourced a different bearing product from one of our A Brand partners and installed remote condition monitoring equipment linked to ERIKS customer specific webshop. In the future failures will reduce but if intervention is required the bearings can be removed and replaced in a fraction of the time and without the expense of roof removal, that's one example of what ERIKS can do for our customers.

For more information on ERIKS UK, please visit www.eriks.co.uk

TECHNOLOGY UPDATE

THE QUICK ANSWER TO MACHINE HEALTH MONITORING

The biggest barrier to using data to enhance equipment maintenance routines is the speed of data collection and analysis. But a new handheld solution from SKF makes this as quick and easy as making a phone call.

The SKF QuickCollect handheld sensor monitors machine vibration and temperature, then wirelessly transmits the data to a mobile device loaded with the QuickCollect app. The app provides machine diagnostics which create a real-time picture of the asset's condition.

The QuickCollect Sensor and app can be used by service, operations or maintenance staff with no special skills required. So it's an easy way to add an extra dimension to a walk-through machine data collection routine.

For extended diagnostics, management and monitoring of maintenance tasks and inspection data, an upgrade to the SKF DataCollect app is available. This also offers connection to the SKF Cloud for remote expert services.

ACCURATE ANSWER TO PUMPING PROBLEMS

A new SEEPEX Smart Dosing Progressive Cavity Pump helps reduce costs by making dosing more accurate.

The Smart Dosing Pump (SDP) requires only the proportional flow ratio to be inputted, before the pump and integrated PLC monitor automatically make all other adjustments. The flow rate is then monitored and controlled by the pump drive.

Combining a Progressive Cavity Pump (PCP) and intelligent inverter drive, the SEEPEX SDP features dry running and over-pressure sensors to protect the pump from damage. Because PCPs provide a smooth, constant flow, there's no need for pulsation dampeners, and smaller pipework bores can be used.

Suitable for low- or high-viscosity products (with or without solid particles), along with shear sensitive, abrasive and corrosive products and soft solids, the pump adapts to variations in operating conditions. The result is highly accurate, repeatable dosing – with no overdosing required – which lowers chemical consumption and cuts running costs.

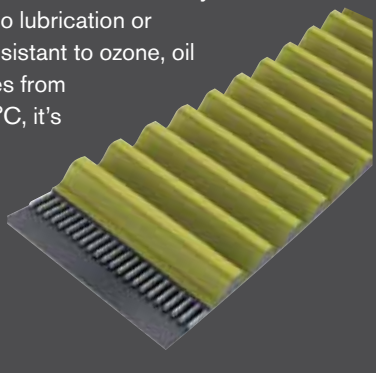
ON AN EMISSIONS MISSION

In time to meet the increasing demands on machines, and the need for higher-performance belts, ContiTech have introduced the strongest rubber timing belt in their range.

The Synchroforce Carbon is a heavy-duty belt with a carbon tension member. Combining carbon fibres – which scarcely stretch even under high tensile loads – and a compound specially designed to cope with high demands, the new belt is a durable drive solution for challenging applications.

A boon to OEMs designing cost-effective drives with a small installed size and low weight, the belt transmits rotary motion with high angular precision. With a high tear strength and dynamic load capacity, it enables synchronous drives to operate in extremely tight spaces.

Completely maintenance-free, the Synchroforce Carbon needs no lubrication or retensioning. Resistant to ozone, oil and temperatures from -30°C to +130°C, it's also electrically conductive to ISO 9563.



SOLUTIONS IN BULK

ERIKS offer a complete range of bulk liquid storage solutions, from valves and emergency vents to hatches and hoses. So naturally you'd expect to find ERIKS' dedicated tank storage team in attendance at the Tank Storage Conference and Exhibition – held this year on 28th September at Coventry's Ricoh Arena.

The Conference is a perfect showcase for ERIKS' range of actuated and non-actuated valves, flame arrestors, breather and blanketing valves, and much more.

With design, engineering and modification capabilities, plus in-house testing of automated valves, and on-site installation, support and maintenance, ERIKS has a comprehensive tank storage service. This extends to associated gaskets, electric motors, gears, pumps, pneumatics and hydraulics.

And if the worst happens and your tank springs a leak, ERIKS has the answer to that too.

The Optical Gas Imaging camera demonstrated at the show is a highly effective and safe method of detecting and pinpointing leaks of around 30 different gases.

CUTTING-EDGE BANDSAW SERVICE

Next time you need a bandsaw blade of almost any kind, no-one looks sharper than L. S. Starrett. As an ERIKS supplier and preferred partner, Starrett can have a new blade manufactured and delivered direct to your site in just 24-48 hours.

Having been manufacturing blades since 1880 Starrett offer a huge choice, ranging from bimetal, diamond grit, carbon and carbide-tipped, to blades for wood cutting and meat cutting, and band knives for foam, rubber, soft plastics, cardboard, paper and cork.

Their extensive manufacturing experience is reflected in continuing innovation, with technologists continually developing new combinations of materials and new teeth patterns, to meet customers' specific cutting needs.

Manufactured to ISO 9001, and supported on-site if required by bandsaw experts, Starrett bandsaws are available from ERIKS at competitive prices, with a low minimum order value for carriage-paid delivery.

LOWARA
a xylem brand

LET'S CONSUME LESS WHILE DOING MORE.

Achieve higher levels of efficiency and performance with the newly designed e-range of in-line and end-suction pumps from Lowara. The system experts of Xylem and its Lowara brand have redesigned and enhanced the hydraulic efficiency of the e-range for an MEI better than 0.6 to exceed the ErP 2015 requirements. Through cutting-edge design, the new e-range provides improved overall system performance, with flows up to 2200 m³/h and heads up to 160 meters, while enabling reduced electricity consumption and lower life cycle costs. And when combined with the Hydrovar variable speed drive, you can see systems energy savings of up to 70%. The e-range is available in several standardized sizes with performance and curves specifically optimized for HVAC applications.
Find out more at www.uk.buildings.xylem.com

www.lowara.co.uk

xylem
Let's Solve Water

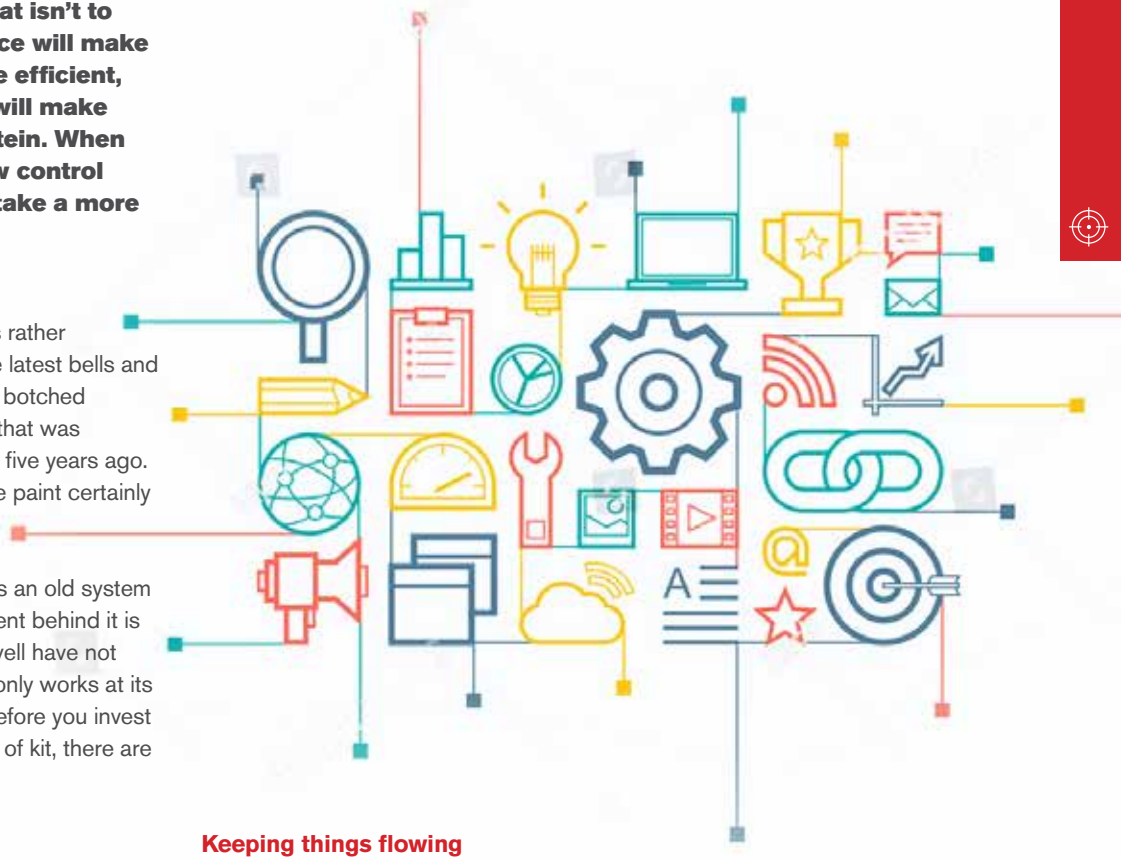
WHAT GOES AROUND **FLOWS AROUND**

IN FOCUS

THINK SMART:

WHY BETTER TECHNOLOGY WON'T SAVE A BROKEN SYSTEM

We're lucky enough to live in an age that offers a gadget or gizmo for nearly every application we can imagine. That isn't to say, however, that a smart device will make a poorly-designed system more efficient, any more than a smart phone will make Joe Public the next Albert Einstein. When it comes to improving your flow control system, we at ERIKS prefer to take a more holistic approach.



When a company decides to equip its rather antiquated and clunky system with the latest bells and whistles, we're reminded of the rather botched restoration of the Jesus Christ fresco that was undertaken in a church near Zaragoza five years ago. Yes, you've filled in a few gaps and the paint certainly looks newer, but is it art?

Smart technology may look like it gives an old system a breath of fresh air, but if the equipment behind it is not up to scratch, then you might as well have not invested in it at all. Smart technology only works at its full potential with smart systems, so before you invest in the latest Industry 4.0 related piece of kit, there are a few things you should consider.

Have you got "The Right Stuff"?

At ERIKS, we believe that understanding your systems, your needs and your ambitions is the best way to build an effective flow control system capable of harnessing the power of big data, smart solutions and Industry 4.0. This starts with looking at your equipment and breaking it down to its parts to see what is working, and what isn't.

Each part of the equipment has a job to do, so when you choose a part, you shouldn't leave it up to chance. There's a lot of choice out there on the market, and you will need to look at both your requirements and your options in order to make the most informed decision possible.

Actuator valves, for example, are a key controlling mechanism for flow systems. Many options exist on the market, but it's not just a case of choosing between a manual or an automatic valve. For example, what kind of valve closure element will you need? What are your trim requirements? Do you need a specific kind of material? You may not have the expertise at hand to answer these questions, but we do.

Keeping things flowing

Movement is at the heart of every flow control system, and unexpected blockages can cause some rather unwelcome problems for your production line. At best, blockages can stop your equipment from working at its most effective. At worst, they can lead to critical system failures that may require an unquantifiable amount of downtime to fix.

Auditing your equipment is one of the best ways to keep on top of any potential issues and schedule downtime that will cause minimum disruption to production. A steam trap survey, for example, can help you to identify areas of leakage or condensate build-up, both of which would lead to the slow deterioration of your system's efficiency and performance.

Audits don't just identify blockages – they look at every aspect of your system to make sure that every part is working as it should. They are also an effective way of better understanding your system and identifying areas that could be improved.

Asset management and condition monitoring

Industry has been getting particularly excited about condition monitoring over the past few years. It's easy to understand why: at its most sophisticated, it has the potential to significantly reduce the amount of downtime needed for repairs and maintenance, eliminates expensive damage to equipment, and focuses resource where it is needed.

The idea of using data is still an unnerving concept for some. You only have to read our recent report on the UK's readiness for Industry 4.0 to see that many senior managers regard data sharing and collaboration with trepidation. ERIKS provides a trusted partner that knows and understands your equipment from the inside-out, and uses industry expertise to analyse data, monitor performance and propose solutions to help unexpected downtime become a thing of the past.

In order to achieve the level of oversight and control without such systems, you would need extra staff, maintenance engineers on hand 24/7, and giant warehouses or storerooms in which to keep every possible part. With condition monitoring, it is possible to maintain equipment simply by harnessing the power of big data.

Manufacturers are now able to spot patterns, receive advance warnings of equipment failures and analyse discrepancies in output, all from a single screen. In fact, with the right know-how, it's possible to identify a problem right down to the nuts and bolts.

Industry 4.0 will enhance these capabilities further, by allowing manufacturers to share device data with OEMs and maintenance engineers. Depending on the complexity of the problem, this may mean that an OEM can identify a problem and propose a solution without even having to visit the site.

Reducing your total cost of ownership

A flow control system made from the right parts, with the right amount of knowledge, data and insight behind it, will be the true beneficiary of smart technology. By working with ERIKS from commission through to installation and operation, you can benefit from an extensive network of products and expertise to help get your systems ready for the Fourth Industrial Revolution.

This will, in turn, significantly improve your total cost of ownership through more efficient, more reliable and more productive engineered solutions. This was what smart technology was made for.

ERIKS is more than a products and repairs supplier. To find out more, please visit www.eriks.co.uk.

TLV BUILDS A HEAD OF STEAM

Nigel Ord
General Manager, Flow Control
ERIKS

With over half a century of steam experience and expertise, and almost 4,000 patents to show for it, global steam specialists TLV are strengthening their offer in the UK and Ireland by forming a strategic partnership with ERIKS.

The partnership will give ERIKS customers access to a broad portfolio of steam products from TLV, now backed by ERIKS know-how in asset management, condition monitoring and support services. As with other products supplied by ERIKS, TLV steam systems will be supported across their whole lifecycle, from installation to commissioning, operation and, ultimately, decommissioning.

Integration and evaluation

Founded in Japan and now a leading global business with operations in a dozen different countries, TLV takes its name from the philosophy behind one of its original products. The concept of the "Trouble Less Valve" led to "TLV" and to the company's continuing drive to develop innovative solutions in steam engineering.

TLV prides itself on research and development which doesn't simply imitate existing ideas or follow established industry standard designs, but instead looks at completely re-engineering concepts and ideas. This commitment to designing and building only patented products has led to over 3,800 patents to date.

However, what helps to make TLV a perfect partner for ERIKS is the shared focus on providing more than just products.

The company's holistic approach to steam system integration includes its Steam System Optimisation Programme (SSOP). This is a three-phase evaluation of an entire system, aimed at improving its safety, efficiency and productivity.

Of course products are also important, and the partnership with ERIKS will enable TLV to offer customers a wide range, including their innovative Cospect pressure-reducing valve. A compact all-in-one solution for steam systems, the Cospect is one of the few products on the market that combines solid particle removal, steam separation, condensate removal and pressure reduction in just one valve.

Opening up valves

ERIKS' partnership with TLV will add another facet to ERIKS' valve offering, and will provide customers with access to TLV's risk-based analysis and Lloyd's-approved testing systems.

Nigel Ord, General Manager of ERIKS' Flow Control business, sees the new partnership as benefitting both existing ERIKS customers and existing TLV customers.

"Partnering with TLV will enable us to leverage further knowledge and advice and to help support our customers looking to make the most of their steam systems – whether from an asset management or a condition monitoring perspective. It will also pave the way for ERIKS to build relationships with existing TLV customers, who may benefit from other products and services we supply."

DON'T LET OFF STEAM

When you're looking for ways to reduce energy consumption and costs, and to increase efficiency and productivity, you shouldn't let steam off the hook. An efficient steam system is a perfect energy transporter. But a poorly-designed system, or one with leaks or condensate build-up, can waste thousand of pounds a year in energy costs.

Nigel Ord
General Manager, Flow Control
ERIKS

If other systems in your production process were running inefficiently, you'd spot the issue and resolve it quickly. But the problem with a steam system is the slow rate of deterioration in efficiency and performance. In fact some systems which have gone without a survey for as long as 5 years have been shown to have up to 30% of their steam traps leaking or blocked. Yet the reductions in efficiency, increases in energy costs and CO2 emissions, and the changes in the speed or quality of production were so gradual, the problems had gone almost unnoticed and completely unresolved.

Just one year after system start-up as many as 10% of traps may be leaking, and the number is likely to increase by 7% for every year the system remains unchecked.

At 11kg/h steam loss from each steam trap, even on a site with a relatively small steam system of just 50 traps, total steam losses for a year will be 5,203 tons, at a cost per ton of €31. That's a loss of €14,815, 3,061kW of energy, and an increase in CO2 emissions of 765 tons.
However the good news is that an expert ERIKS Flow Control Steam Audit will deliver results with a payback period of just 2-4 months.

The steam trap

Too many people fall into the trap of thinking that because a steam system is relatively simple, it's robust and maintenance-free. But that can be far from the truth.

System audit by ERIKS Flow Control experts have found:

- Leaking steam traps
- Wrong type or wrong size steam traps
- Steam traps fitted upside down
- Incorrect diameter pipes fitted
- Inadequate insulation of pipes and fittings
- Poor pipe layouts allowing condensate to gather
- Water build-up creating water hammer, which damages pipe bends, valves etc.

Some surveys have even discovered steam traps the customer was unaware of. As steam traps are the weak point of any steam system that could prove a costly oversight.

Tracking the traps

An ERIKS Flow Control steam system audit begins with discussing the system's operation from steam production to steam use, with everyone involved. Existing system drawings are also reviewed, but the surveyors then undertake their own thorough mapping of the system from beginning to end. This includes an inspection of every centimetre of pipe and insulation, every valve and every steam trap.

More than just a visual inspection, the audit also involves ultrasonic and infrared thermographic measurements to identify blockages and leaks, and to assess the functioning of every system component.

Steam under pressure

With increasing pressure to reduce energy costs, cut wastage and reduce CO2 emissions, an expert steam system audit represents a quick and easy win.

A recent survey by ERIKS Flow Control tested 180 traps in service on an average-size site with a total of 235 traps. Of these 180 traps tested, 32 were leaking, 5 were "cold" (failing to discharge condensate), and 2 were incorrectly installed. These faults represented a steam loss of 11,000 tons p.a. at a cost of €385,000; an energy loss of 6,100 MW p.a., and unnecessary CO2 emissions of 1,600 tons/p.a.

Commission an ERIKS Flow Control steam audit of your steam system and you will be presented with a comprehensive report, including:

- Inventory and identification of all installed steam traps
- An overview of the status of each steam trap
- Loss calculation for the complete measuring circuit
- Comparisons with previous measurement (if applicable)
- Overview of rejected steam traps
- Advice on repair or replacement
- Suggestions for further improvements to the steam system

If the recommendations are followed, you can expect an ROI in just 2-4 months.

Putting an annual survey schedule in place will continue to reduce energy losses and costs, as the percentage of leaking traps within a system just 12 months after the last survey can be around 5%. Implementing a full ERIKS Econosto asset management service will further improve and optimise your steam system's performance, through expert maintenance, increased reliability, reduced downtime, enhanced safety and continued lower operating costs.

3,000,000 REASONS TO CHOOSE A DIFFERENT VALVE ACTUATOR

Nigel Ord
General Manager, Flow Control
ERIKS

Three million operations, maintenance-free. That's six times more than the standard actuator you're probably using. Until now, you've never had the chance to choose an actuator as long-lasting and reliable as this. But now that AMG actuators are available from ERIKS UK & Ireland you can choose to fit – and forget.

One of the leading names for pneumatic actuators in Germany, AMG designs and manufactures a complete range of pneumatic rack & pinion actuators, for operating all kinds of ball, plug, butterfly and multi-port valves.

Yet what really sets AMG actuators apart is their exceptional reliability and long life.

With a compact design which means they can fit in even difficult to access locations, they can be left to get on with the job without maintenance. If there's only low-frequency use, or a long standstill period, you can still expect the valve to open or close reliably as required. And if there's high-frequency use with millions of cycles, the AMG actuator will go on working smoothly, time after time.

That's why they're chosen by customers for use in critical applications such as in the chemical, pharmaceutical, food, oil & gas, steel industries, and for other other highly-demanding applications where actuator failure just isn't an option.

Made to last

To create an actuator that can operate reliably for up to three million operations, you need to design with care and manufacture with precision.

For example, German-engineered AMG pneumatic actuators operate with the forces on the pinion continually balanced to prevent misalignment, thanks to stainless steel rods guiding the movement, and smooth, precision-machined contact surfaces in the open and closed positions.

The same precision machining of the pinion and rack ensures a seamless fit and effective transition of forces. And precision-machining of the actuator body and interior keeps seal and bearing wear to a minimum.

Chosen by leading European companies in the process industry, AMG actuators are backed by extensive product training, and local support from ERIKS. So you're not only guaranteed millions of trouble-free operations, but also on-time delivery, technical expertise, and unrivalled product and application know-how.

In fact, now ERIKS supply AMG in the UK and Ireland, make that 3,000,001 reasons to swap your existing actuator.

SWAPPING **DOWNTIME** FOR **UPTIME**

An actuator at an end-user's site was requiring frequent replacement, leading to costly downtime, loss of production, and actuator replacement costs.

An authorised fluid control distributor in the USA replaced the actuator with a modified AMG model. This operated continuously for 18 months without problems before failing. When it was returned to the workshop for repair it was discovered to have completed a staggering 16 million cycles, maintenance free.

SAFER HOSES. **LONGER** LIVES.

Think about possible causes of a fire or explosion, and a rubber hose probably won't feature on your list. But using the wrong type of hose to convey certain materials can lead to static electricity. Static electricity can lead to a spark… and we all know what that can lead to.

Mark Carpenter
Product Manager, Fluid Power, Transfer and Control
ERIKS

A non-electrically-conductive rubber hose is effectively a spark waiting to happen. Use it to transport a whole range of materials, from cyclohexane to xylene – and including hydrochloric or nitric acid, mineral oil, paint, petroleum or steam – and you are creating the ideal conditions for a dangerous build-up of static electricity. Only grounding the hose to earth will prevent the problem, and this requires connection to a steel helix (which is itself not 100% safe) or using static wires.

Alternatively, you can simply use Goodall electrically-conductive rubber hose. It's simpler, safer, and static- and spark-free.

Down-to-earth solution

Made from electrically-conductive rubber or thermoplastic compounds, Goodall electrically-conductive hoses enable any electrostatic charge to be conveyed to the metallic hose-end connections, where they can be safely grounded.

There's no need to connect the hose to the steel helix or static wires, which means there's not only no risk during use, there's also no risk during assembly.

Exceeding international industry standards, and conforming to European standards, electrically-conductive rubber hoses are just one way Goodall make hoses safer.

Popcorn free

Popcorning is one of the biggest reasons for steam hose failure, and results from accumulation of water and steam particles in the hose wall. The new Goodall Inferno Steam Hose has a specially developed non-porous rubber compound inner tube to prevent the accumulation, as well as incorporating specially treated steel braids which are more resistant to corrosion.

Able to withstand temperatures of 232°C / 450°F for longer than any other steam hose, the Goodall Inferno has a three times longer lifespan than the average steam hose.

Also designed to last longer under tough treatment is the Goodall Tekno SD Lite. Specially developed for use in chemical plants, this hose has a “memory” which enables it to bounce back to its original shape if it’s been crushed or otherwise mistreated.

Longer-lasting safety

If a hose has a 10-year warranty you can be pretty sure it’s going to last a long time. If it’s called the Goodall Super Long Life, you can be certain.

Made from superior compounds, this is a smooth and homogenous extruded tube with stainless steel braided reinforcement. Although it’s lightweight and flexible, it has a burst pressure ratio of 5:1, for greatly increased safety.

So with the Goodall Super Long Life – like with all these Goodall hoses – you can feel safer for longer.


LEADER
BY NAME.
LEADER
BY NATURE.

Garry Wakeling
Industrial Sealing Manager
ERIKS

A new brand launched recently by ERIKS has a name that couldn't be more appropriate. Leader Gasket Technologies is already leading the way with its product range – and in particular with its new Elastagraph® emission reduction gasket, which sets new standards in its field.

Fugitive emissions are a growing concern for many businesses, due not only to safety concerns but also to the need to meet ever-more stringent environmental legislation, or to achieve increasingly ambitious CSR KPIs. Although the Leader Elastagraph® is a relatively new product, it's backed by all relevant quality certifications, has already been proven in use, and its unique combination of features and benefits enables fugitive emission control to 50ppm or lower.

So what makes it such an effective solution for reducing emissions?

Unique design

The Leader Elastagraph® gasket has a unique profile design, and is manufactured from a distinctive combination of high- and low-density graphite. It also utilises the patented DynaGraph™ special bonding process.

The result is a highly innovative, highly effective, affordable emission reduction gasket, for standard EN/ASME and non-standard flanges. It's ideal for use in heat exchangers, fuel refineries, and other locations where fugitive emissions are not only an environmental but also a health and safety issue.

A cross-section of the Elastagraph® reveals some of the secrets of its success.

It has a unique profile which features "humps" and "valleys" in the Elastolon corrugated steel. This corrugation creates a bellows effect which helps counter the effects of movement and misalignment. On the peak of the "humps", high density graphite (115lb) results in low gas permeability, super sealability and exceptional recovery. By contrast, the compressive inner ring is exceptionally low density (40lb), providing an extremely low "minimum design seating stress" of just 800psi. This compares with the 10,000psi seating stress of spiral wound gaskets.

The corrugation of the whole gasket including the metal layer creates a spring back effect, this moulded multiple density flexible graphite conforms to any surface irregularities, to optimise the gasket's effectiveness against leakage, even at minimum boltforce.

The high purity of the graphite – which contains no fillers or binders – has a number of benefits. It helps to reduce its porosity, which minimises leakage. It has a high level of resistance against almost all chemicals – with the exception of strong oxidisers at high temperatures – and is non-oxidising even at extremely high temperatures.

There is no cold or hot flow right up to the maximum compressive load, and thermal expansion is low.

Patented process

Also helping to optimise the effectiveness of the Elastagraph® gasket is the patented Dynagraph™ process it utilises, which eliminates any volume loss due to adhesive bake off, and which can't be damaged by over-compression. It also allows for easy removal from flanges.

The Dynagraph™ process has passed both the API-607 and API-589 fire tests, and the special bonding technology combining cogebi with graphite – cogebi mica has several attractive properties as a sealing material, such as temperature, electrical and chemical resistance.

The stainless steel substrate of the gasket offers another advantage, by ensuring dramatically improved recovery over tanged core material.

However, in spite of its advanced technology, patented process, and optimised effectiveness, the cost of the Elastagraph® compares favourably with traditional graphite-filled spiral-wound gaskets.

In fact, the Elastagraph® compares favourably with a wide range of competitive products and sealing options, including spiral wound gaskets with asbestos filler, die-cut flexible graphite pieces glued to a metal carrier, flexible graphite sheets with foil inserts, expanded PTFE sheets, and compressed non-asbestos sheets. Against all these alternatives, Elastagraph® provides the lowest Gb rating, at just 32 PSI (next lowest: 816 PSI), the highest a rating, at .718 (next highest: .377) , and the lowest Gs rating, at .001 PSI (next lowest: .06).

More than just the gasket

Even a gasket as innovative as the Leader Elastagraph® can only do so much to reduce emissions and extend product lifecycles. As with any gasket, it must also be supported by best practice.

So, for example, in the first instance you need to be absolutely sure you are choosing the right gasket for the application, and that it will deliver the results you're hoping for. Leader provides a calculating tool to help you establish the emission reduction you can expect to achieve with the Elastagraph® in your specific application.

Once you've selected and purchased your gasket, you must follow proper bolting procedures to fix it in position. Even the unsurpassed bolt-torque retention of the Elastagraph® will be compromised if you don't. The same applies to following proper lubrication processes. Ignore these and even the most effective gasket will underperform.

And no gasket is simply a "fit and forget" solution. Continual flange inspections are required, and best practice for flange maintenance must also be adhered to. To this end, full product and process training for all relevant employees is essential.

With all these practices in place, you can expect any gasket to perform well – and the Leader Elastagraph® gasket to perform superbly.

Out in front

Elastagraph® is one of Leader's Industrial Gaskets range, which also includes Spiral Wound, Camprofile and Clipperlon® PTFE gaskets. Leader Gasket Technology also offers special manufactured gaskets for automotive, valve and special machinery applications.

Leader Gasket Technologies is a division of Leader Global Technologies, which manufactures fluid sealing products in Texas, Louisiana and Slovakia, at ISO90001:2000 Certified facilities.

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YOU CAN'T ESCAPE RESPONSIBILITY FOR GAS ESCAPES

Leaving the EU won't let you off the hook where VOC leaks are concerned. The EU Directive on Industrial Emissions will still remain part of British law. So if you store or handle gases you will still be required – in the words of the Directive – to "control emissions using the best available techniques." But do you know what those techniques are?

Peter Mitchell
Condition Monitoring Technician
ERIKS

A mechanical "sniffer" is one way to find a leak – as long as the leak's not near a draught, outside on a windy day, or too small to trip an alert. Or you can pressure test – though that means shutting down and flushing out the system, with several days' lost production as a result. Or you can go low-tech and smear soapy water around, then look for bubbles.

Alternatively, you can use the best available technique that's actually EU-recommended: "Optical Gas Imaging (OGI) cameras should be introduced… for easier and faster identification of significant leaking components."

Leaks, camera, action

An OGI camera works on the principle that different gases prevent infrared light from passing through them on different wavelengths. So a camera which detects infrared light, if tuned to the correct wavelength, will reveal an otherwise invisible gas.

However this will only happen if the camera is expertly tuned to the correct wavelength, temperature range and resolution. It also needs an operator who can interpret the image. And it needs the skill and experience to know where to point the camera for the best chance of spotting a leak.

Knowing how and where equipment fails is important in finding leaks faster. Since research shows 84% of leaks occur in just 1% of plant, it's also invaluable in reducing the amount of plant that has to be shut down.

ERIKS' camera operators are Level 2 certified – the highest level of training for interpreting the camera data. They're also highly experienced, since they use OGI cameras every day. And they're steeped in ERIKS know-how, covering a vast range of industrial equipment and components.

So they know where and how equipment fails, where leaks are most likely to occur, and where to look first to save time.

30+ ways to damage your business

The 30+ most common VOCs covered by the Industrial Emissions legislation are not just one problem, but several.

If they leak out, they're a problem for employee health and safety – through toxicity, explosiveness or flammability. If they cause an injury, explosion or fire they're a problem for your business's reputation, as well as for its productivity if there's downtime as a result. They're a problem for the environment. And if the gas that leaks is actually the product you're manufacturing, they can be a problem for your profitability too.

The OGI camera used by ERIKS can detect even the smallest leaks in your gas system, whether during a stand-alone VOC leak survey, or as part of complete Condition Monitoring package.

Either way, ERIKS will survey your gas lines from end to end, checking joints, valves, flanges and the lines themselves. The whole survey will be videoed to provide you with a record of your system's condition. Small leaks will be logged and reported, and if there's a large leak detected which represents an immediate danger you 'll be alerted at once. You'll receive a report in digital format, with links to relevant pieces of video. And if the survey is part of a larger Condition Monitoring package, any leak that's repaired will be surveyed afterwards to ensure the repair is effective.

Prevention is better than leaks

As an additional element of an OGI survey, ERIKS can help you find the root cause of leaks to prevent them reoccurring.

Available data indicates that 10–15% of pipework failures result from vibration-induced fatigue of small bore process piping systems. ERIKS can identify the issue and help to overcome it with a variety of solutions: from installing effective pipe supports and correctly bracing connections, to eliminating poor system geometry.

Industrial emissions regulations can't be avoided – even after Brexit. But with ERIKS' OGI expertise, leaks can.

PREVENTION AND ADHESIVES IS BETTER THAN CURE

It doesn't take much to make a centrifugal pump break down. But that's no consolation as you watch the downtime tick by and the costs of lost production rack up. Hopefully, knowing how easy it is to prevent simple problems becoming catastrophic failures will make you feel better.

Bob Orme
Senior Tecnology Specialist,
Henkel

A pump bearing failure, for example, is bad enough. Discovering it resulted from misalignment; that the misalignment was caused by loss of clamp load between assemblies; and that a simple loose fastener kicked off the whole chain of events, only makes it worse.

However, once you know the kind of common problems which occur with pumps and lead to failures, you can take simple steps to eliminate them. And few steps are as simple as using engineering adhesives at the right time in the right place.

Watch these spaces

Many components in the bearing frame and housing of a centrifugal pump will have air space between their threads. This may seem insignificant – and is unnoticeable during assembly – but every space represents the potential for an oil leak. The likelihood of a leak is even greater when there are changes in pressure.

Applying an anaerobic thread sealant not only solves this particular problem, but several others at the same time.

The sealant will prevent leakage through the fittings, which means the pump won't run low on lubricant. It will help prevent loosening of the joint. And it will eliminate rust and corrosion within the thread space, which could otherwise lead to contaminants entering the oil. But what the sealant won't stop is easy disassembly, if required, using ordinary hand tools.

The same type of thread sealant can also be used in other applications to prevent corrosion, such as within the gland flushing connector.

Seal the deal

The cast parts of centrifugal pumps may have porous areas which were created during their manufacture. These can be a source of oil seepage unless they are dealt with preventatively.

Coating the interior of a bearing frame with a chemical resistant coating during assembly is one solution. By preventing seepage, this eliminates the danger of the pump running low on lubricant which, if not spotted in time, can lead to catastrophic failure.

Alternatively, if you can identify where the leak points are, a wicking grade thread locker will create an effective, leakproof seal.

Even oil seals themselves can be prone to leakage if there are small air spaces remaining around them. A thread locker is the answer here too. Applied to the outside diameter of the seal it will fill the spaces which might otherwise create a leak path.

As the name suggests, thread lockers are also a proven method of preventing self-loosening on threaded assemblies, from frame adapter mounting bolts to pump casing bolts and gland studs. They have the added benefits of preventing corrosion, ensuring the stability of couplings to prevent potential disengagement, and even preventing keyway wear by securing the key in the keyway.

Seize the solution

Any exposed non-stainless steel or uncoated metal parts on a pump are liable to corrosion. And corrosion will ultimately lead to seizure. Potentially affected parts include power end bolts, lock nuts, and dowel pins which can seize within the bearing frame.

Treating the relevant parts with anti-seize products will provide protection, prevent problems, and mean one less potential source of pump failure and lost production.

One other potential cause of pump failure which can be eliminated altogether are cut gaskets. These have inherent problems, ranging from relaxation and shrinkage to extrusion and breakage – any of which can lead to leaks, which can in turn lead to pump failure. Of course you still need something to carry out the same function as a cut gasket, and the answer is a liquid gasketing adhesive.

This not only avoids all the issues with traditional gaskets listed above, but also seals any air spaces between parts. Liquid gaskets are particularly effective between the bearing frame and adapter, and between the stuffing box and pump casing.

For all the applications above, the Loctite® range of industrial adhesives is an effective way of ensuring you stick to best practice for proactively maximising pump efficiency.

PUMP BEARINGS: DESIGNING FOR RELIABILITY AND LONG LIFE

David Oliver, Platform and Channel Development Manager - Bearings and Units at SKF, describes a new bearing development from SKF that promises improved speed, reduced friction, better reliability, and longer service life for pumps.

David Oliver
Platform and Channel Development Manager - Bearings and Units
SKF

Often to be found at the heart of a process or manufacturing operation, the ubiquitous pump is frequently taken for granted, being expected to operate continually while receiving minimal maintenance over the course of its life. A pump's performance will change over time, depending upon its operating conditions, its materials of construction, hydraulic design and mechanical robustness. From the perspective of mechanical design, bearings – and more particularly the type of pump motor bearings selected - will have a considerable impact on a pump's long term reliability, its energy efficiency and life expectancy.

A class above

Pump bearings can be subjected to high axial loads, high operating temperatures and mechanical vibration; in a high-intensity process or manufacturing environment, they are also likely to receive marginal lubrication. If these bearings are not able to fulfil one of their design functions, to minimise friction, this can result in power loss, excessive heat generation, increased noise or wear and early bearing failure. Where pump bearings are concerned, a combination of difficult operating conditions and fundamental design flaws may result in reduced uptime, poor or deteriorating performance and shortened service life.

Industrial pumps are some of the most common applications for angular contact ball bearings, and these are generally used in small and medium sized pumps due to their high speed capability and low friction. They are also used when high axial load capabilities are needed for greater pump operational reliability. SKF recently released an improved SKF Explorer class single row angular contact ball bearing that delivers a number of benefits for those designers and operators of pumps and compressors who seek to reduce the total cost of ownership of this type of equipment through improved reliability and energy efficiency.

Speed it up

Featuring a redesigned brass cage that delivers reduced noise and vibration levels and improved robustness, the 40° contact angle bearings significantly increase the limiting speed, up to 30% compared to the previous design. The new cage geometry and the use of stronger brass material reduce cage contact forces and increase cage strength, ensuring greater tolerance of shock loads and vibration, while delivering the significantly higher speed capability even under severe operating conditions.

In addition to the redesigned 40° contact angle, a new contact angle of 25° is also offered, giving the bearing a further 20% increase in speed over that of the 40° version, while enabling higher radial loads to be accommodated. In each case, the ball-to-cage contact arrangement allows cooler running and greater temperature stability, while noise and vibration levels can be reduced by 15% in both the 40° and 25° versions.

Sealed variants of these bearings are also available for applications that may be more difficult to maintain, preventing contaminants from entering the bearing during installation and subsequent operation. Sealed SKF single row angular contact ball bearings have an attractive combination of design features such as low friction non-contact seals that ensure the same load carrying capacity as open variants.

These sealed units are ready-to-use, being filled at the factory with the correct quantity of high quality grease, under clean conditions.

Sealed SKF single row angular contact ball bearings are suitable for bearing arrangements where, due to limited space or for cost reasons, external seals are not practical. Moreover, their favourable design characteristics save space axially, enabling a more compact machine design.

Match made in heaven

In terms of applications, for multi-stage centrifugal pumps the new 25° contact angle standard offers an upgrade to the hydrodynamic/floating radial bearings that typically support the predominantly radial loads in these units. For double-suction impellers or closed impeller pumps, the 25° standard provides cooler running, substantially reduced vibration levels and extended service life in applications with high radial loads.

By combining these two bearing angles the robustness of fluid handling applications or electric motors with vertical shafts can be improved. Bearing arrangements that include a 40° contact angle unit taking the main load, with a 25° unit acting as a back-up bearing offer this improved robustness for applications where the axial load is predominantly in one direction, resulting in longer service life.

SKF Explorer class bearings are the result of years of development and accrued expertise in bearing design, tribology, metallurgy, lubrication and machining techniques. The new 40° and 25° SKF Explorer class single row angular contact ball bearings are an attractive option for both manufacturers and operators of pumps who seek cooler running, energy efficiency and longer life bearings that will enhance brand reputation.

WHY **"LIKE-FOR-LIKE"** WON'T BE TO YOUR **LIKING**

ENERGY SAVING

Andy Cruse
Business Unit Director, Pumps
ERIKS

If you're taking the opportunity of the summer months to maintain, repair or replace your heating pumps, there's one important point to remember. If you want to cut your energy costs, a "like-for-like" replacement might save you some specifying time, but in every other way it will cost you.

A like-for-like swap isn't only a bad idea. It might actually not be possible. After all, surveys reveal that up to 60% of pumps in plant rooms and pumping operations are obsolete. So you may not be able to replace your old pump with the same again, even if it were a good idea. Which it definitely isn't.

Why isn't it?

Because the difference in efficiency between your old pump and one with the latest technology can be as much as 15%. And you might be bored with hearing that 95% of the cost of running a pump is energy, but it gets repeated so often because it's a fact.

If you're running an old, inefficient pump, it's a frighteningly expensive fact too.

Pump or drain?

The summer is a great time to overhaul your pumps. But you can save time, effort and money by auditing them first.

How's their performance? How reliable have they been? How much energy do they currently use? And to help you decide which pumps and their problems should be dealt with first: which are the highest energy users, and which the lowest – based on operating hours, usage and motor size?

In other words: which pumps are an energy and resources drain?

Those may sound like difficult investigations and complex calculations. But a pump systems auditor certified by the British Pump Manufacturers' Association – as ERIKS is – will make it look easy. Using data logging and years of experience to provide a comprehensive assessment, ERIKS will also be able to calculate payback periods for any replacement pumps which may be required.

Repair or replace?

It's not only your pumps which may be a problem. Mechanical and electrical issues are often system related, and may give valuable clues to larger problems with the installation.

On the other hand, the pumps may be doing just what they were designed to do. But if the duty requirement has changed since they were installed, they're never going to be energy-efficient, however hard they try.

With so many possible problems, you need a choice of solutions.

So a solution-neutral supplier like ERIKS – able to repair or replace, and to supply pumps from a number of different manufacturers – will keep your options open. And will help to ensure that this winter, you have the pump system you need to put the heat into your facility, and take the heat off your energy usage.

WHEN FAILURE SHOULD NOT BE AN OPTION

BEST PRACTICE

Andy Cruse
Business Unit Director, Pumps
ERIKS

There is a clear correlation between improving the reliability of critical assets, extending their Mean Time Between Failure (MTBF), and reducing their maintenance costs. Bring asset management into the equation, and there can also be valuable additional benefits – such as avoiding catastrophic failures, minimising unplanned downtime, rationalising spares purchasing, and reducing the overall unit cost of production. How many more reasons do you need to adopt best practice?

The first step towards effective asset management is Condition Monitoring.

Firstly, this enables you to identify potential asset failures and to plan repairs or swap-outs to avoid disruption to production. Secondly, because you identify issues at an early stage, it ensures you can rectify them before a catastrophic failure results.

For a pump that means replacing bearings, seals and rebuilding impellers instead of replacing damaged shafts, pump casings or at worst items around and downstream of the asset if it does go in a truly catastrophic way.

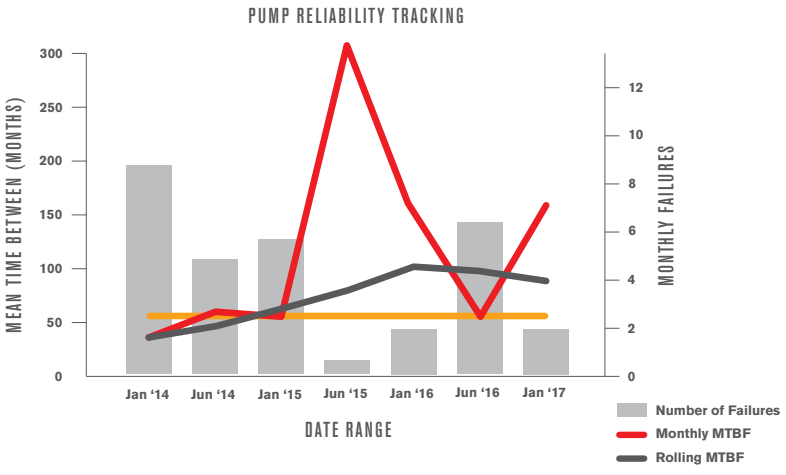
Capital going spare?

No business wants unplanned downtime. On the other hand, no business wants capital tied up unnecessarily in spares, against the remote possibility of a critical asset failure. But getting the size and shape of the spares stock right can be exceptionally difficult without the right data to base your decisions on.

For example, you may have six pumps of one type on your site which, if they fail, will reduce or even halt production.

However, because you know it's unlikely two pumps of the same type will fail at the same time, you only have one spare in stock. But as soon as one pump fails and you use your spare, the five other pumps all become vulnerable. And if that type of pump is on a long production lead time, the vulnerability will be long-lasting and another pump failure will be disastrous for production.

The solution lies in data.



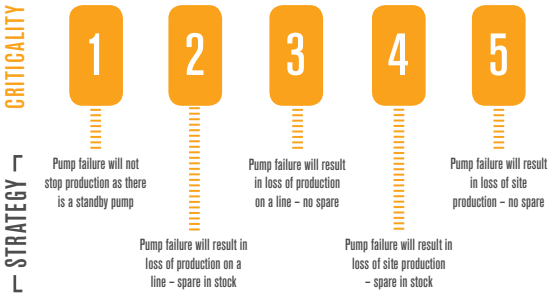
Safety in statistics

You need to know the criticality of each pump. You need to know the MTBF of each type of pump. And you need to know the manufacturing lead time and assess the Mean Time To Repair (MTTR).

Only with all these facts and figures to hand can you develop a spares strategy which will optimise cost-effective spares coverage, to minimise potential loss of production through an unpredicted asset failure.

When ERIKS Asset Management recently conducted an analysis of pumps, spares strategy and criticality at the UK production site of a global beverages manufacturer, it began with the production of a Pump Reliability Tracking graph, and statistics for Mean Time Between Failures:

A criticality analysis was then carried out, highlighting which pumps required spares in stock to reduce their criticality level:



Lastly, the MTTR of each pump type was established, to identify how many spares of each were required.

Once a spares strategy is defined in this way, spares standardisation and rationalisation can follow. A supplier like ERIKS – with close working relationships with leading manufacturers – can ensure your purchasing and stocking provides sufficient coverage, whilst at the same time reducing costs.

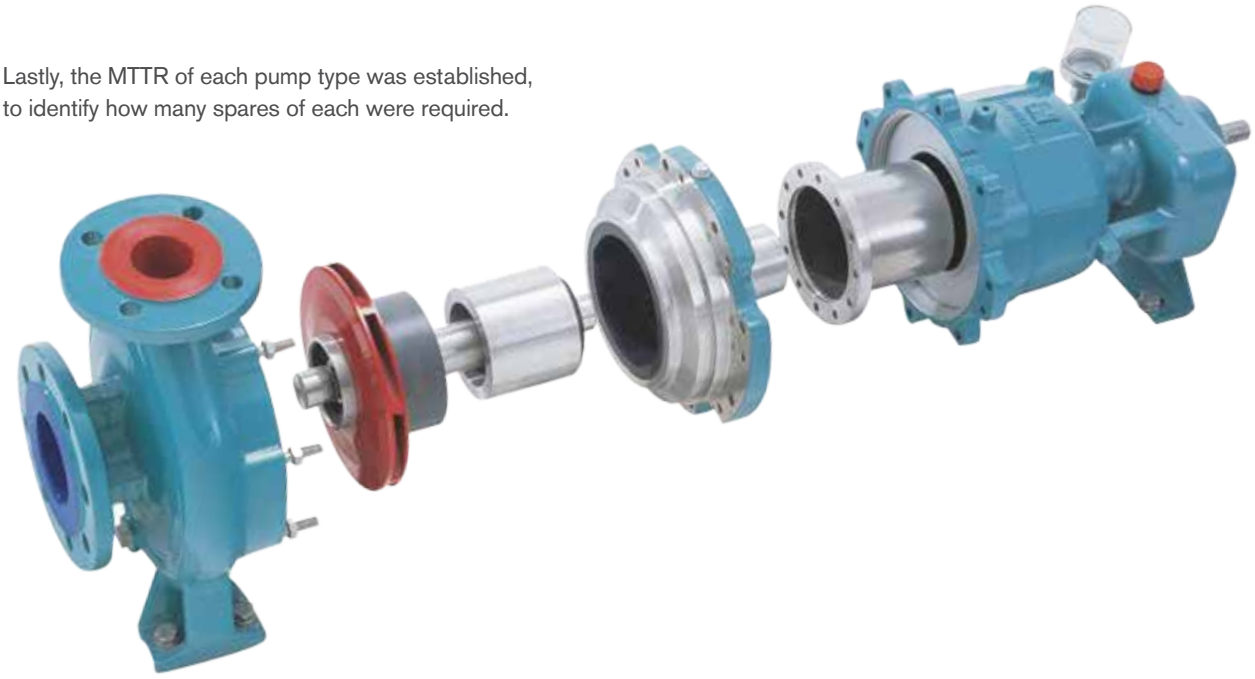
Roots of success

Effective asset management should maximise MTBF. To do that, it's not enough just to look at monitoring assets, predicting failures, and scheduling swap-outs and repairs for when they'll least affect production. It's also necessary to identify the root causes of failures, and to take mitigating actions to prevent repeats.

This demands specialist knowledge covering the pumps themselves and all connected equipment.

Applying ERIKS' know-how at the beverage manufacturer's site helped the customer to achieve a pumps MTBF of up to 100 months, against an industry target of 60 months. This meant a reduction in annual pump system maintenance costs from £250k to £100k.

But improved reliability, increased MTBF and reduced maintenance costs can be realised for far more than just pumps. Any critical assets which – if they failed could reduce or halt production can benefit from best practice and ERIKS Asset Management.



MAINTAINING SKILL LEVELS IN MODERN MANUFACTURING

DEBATE

'What happens if I train my staff and they leave?" is a question often asked by business owners and managers. It's usually met with the response of "What if I don't train them and they stay?".

The 'skills gap' in manufacturing is widely debated, but it means different things depending on the area of operations you are involved in. In a recent survey, 55 per cent of respondents said they need to develop in-house technical capability.

When it comes to equipment maintenance, an in-house team can't be a one-trick pony. If expensive downtime is to be avoided – with all the problems that entails - then any sudden or unexpected breakdown needs to be put right quickly. The last thing the Production Manager wants to hear is that the only person who knows how to do the repair is Dave, but he's on holiday in Ibiza for the next two weeks…

It's an extreme example perhaps, especially in times when condition monitoring and proactive maintenance regimes have, in theory, limited the number of unforeseen breakdowns. But it highlights an important point, as you can never completely anticipate what might happen. After all, even fully automated, Industry 4.0-compliant facilities rely on people to maintain them.

Put simply, if you expect your maintenance team to be able to keep your plant up and running without interruption, then you need to make sure they don't just have the equipment they need, but the requisite knowledge too.

Most facilities operate numerous machines from different manufacturers, all with their own individual requirements and features, meaning the pool of knowledge needed to deal with every eventuality is potentially enormous.

These skills go well beyond simply replacing a part. To truly add value, maintenance engineers should be able to identify why it failed, and then try to seek out an alternative that will do the job better, last longer and even save energy too. With continued growth in automation and Industry 4.0, having the right skills for the job is just as important as having the right tools, so in answer to the question posed at the start of the article, if you invest in your people, they're far more likely to stay anyway…

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