ISSUE 38

KNOW + HOW

Reliability

Reliability is a buzzword that is seemingly always on the tip of industry tongues, but it's clear that businesses need to be more proactive in their attempt to maximise their assets.

In this issue, we look beyond equipment, but at processes, systems, strategy and communication.

ERIKS IN ACTION
A woman called the BBC
Discover how ERIKS helped weather the storm when forecasting parts requirements.

IN FOCUS
Smarter than the average asset
We can't upgrade our brains, but we can be smarter about our management of assets

DEBATE
Share and share alike
Reflecting on an iconic event of the past, is a lack of information sharing holding Industry 4.0 back?

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SKF Explorer deep groove ball bearings: The right choice for high-performance systems

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Let's take a trip down memory lane. Back to the late 1980s. In a little over 12 months, the world saw two pieces of history unfold right in front of its eyes.

Firstly in 1986, the Chernobyl disaster. One of only two nuclear energy disasters ever rated at maximum severity. But horrifyingly, it may have been avoided if the design flaw in the RBMK-1000 reactor had been disclosed to the day-to-day engineers. A clear lack of communication seemingly the sole reason for this harrowing catastrophe.

Then, arguably one of the most iconic blunders to ever grace British broadcasting – weatherman Michael Fish's dismissal of hurricane Ophelia, which hours later, struck to cause over £1 billion of damage. Another simple lack of data interpretation and communication saw controversy surround one of the UK's leading forecasters.

Reflecting on both scenario's over 30 years later, they may now seem like simple miscommunications or oversights, but it's avoidable errors like these that potentially cause devastating effects and continue to be problematic throughout industry today.

In this issue, we discuss the theme of reliability, looking beyond equipment and machinery, but at processes, systems, strategy, communication and people.
For ERIKS In Action, we look at how ERIKS assisted one customer in a C Class Confined Space Entry – the most dangerous an engineer can be involved in. One where drowning and entrapment are serious considerations, as is the risk of heavy fines.

Secondly, how a shift in process enabled one customer to implement a new system, which provided them with a better forecast of their requirements.

We also discuss Overall Equipment Effectiveness and how SKF's innovative five-step strategy can assist manufacturers in achieving their performance and productivity KPIs.

For the debate piece, we stay topical and revisit Chernobyl – the TV series of that name is definitely worth checking out – opening up the conversation regarding the connection between communication, data sharing and Industry 4.0, and what barriers need to be overcome to unlock its potential.

We do hope that you enjoy this edition of Know + How, and we'd love to hear your opinion on any of the topics discussed and any stories that you may have about how you make industry better. Don't hesitate to contact us via email and remember to check out the website for more news, views and blogs from ERIKS.

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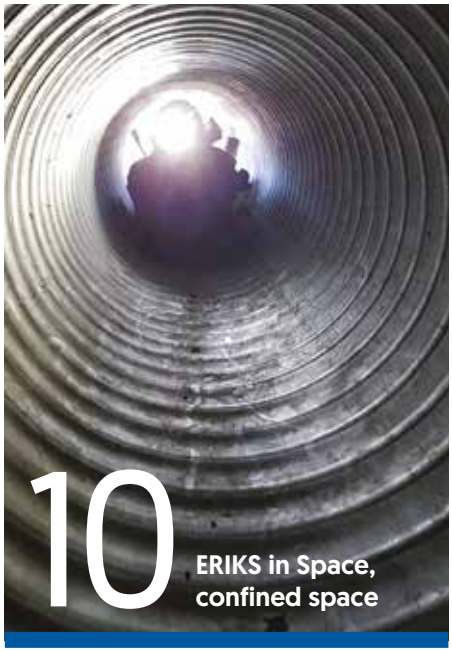

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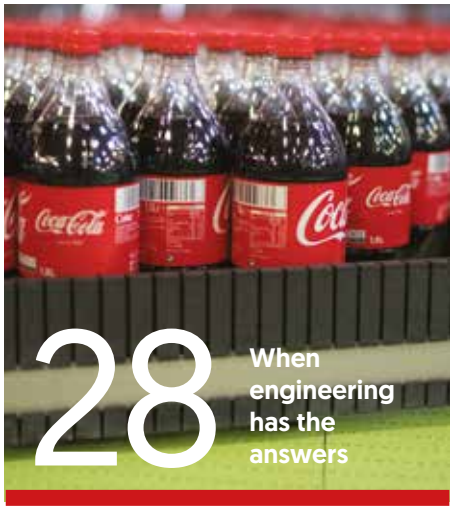

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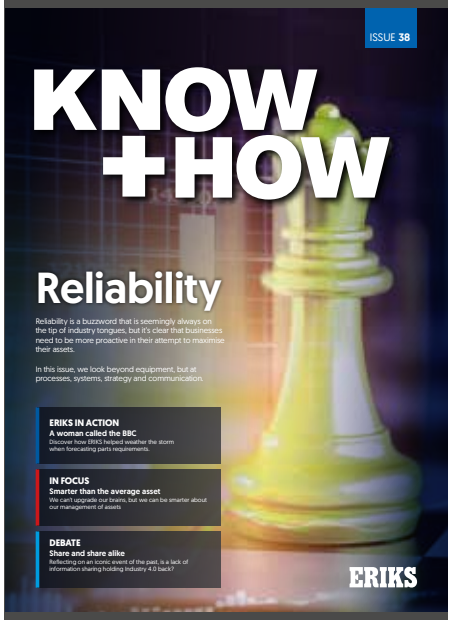

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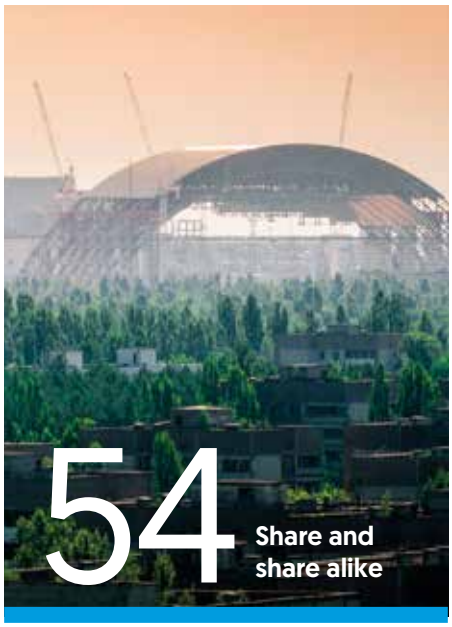


Businesses are struggling with the UK's growing digital skills gaps

The digital skills gap in the UK is widening, according to a new report from the CBI, which found that over two-thirds of companies struggle to fill vacancies for digital roles.

At the same time, around 60 per cent of larger firms said their digital skills needs are set to increase over the next three to five years. Despite this future requirement, one in five firms were unable to find employees with basic digital skills, such as writing documents using a word processor or using spreadsheets effectively, and more than half reported challenges in recruiting software engineers or data analysts.

The survey, which included 250 businesses, revealed that companies are losing around £63bn a year due to a lack of skills – which could jeopardise the UK's competitiveness.

£11.8m of funding awarded to support SME manufacturers

Small to medium-sized (SME) manufacturers across England have been given £11.8m via the extension of the Manufacturing Growth Programme (MGP) until September 2021.

The ERDF-funded programme will continue to deliver business growth support across 16 Local Enterprise Partnership regions. Thanks to the additional funding, businesses will be able to receive a more valuable and quality level of assistance from a local manufacturing growth manager.

An in-depth business diagnostic and comprehensive action plan will be provided as part of the new programme, alongside improvements grants starting from £1,000.

The initiative is available to businesses in the West Midlands, Yorkshire and Humber, parts of the East Midlands, the South East and now within the Solent and M3 regions.

Scottish manufacturers offered £14m of funding to support growth

Manufacturing businesses in Scotland will be able to improve their productivity and upskill their workers with support from a £14 million fund.

The Advancing Manufacturing Challenge Fund will invite public bodies, academic organisations and charities to enhance their existing equipment and training services with funding distributed through a competition.

The £14m fund will provide free support to help small and medium sized businesses advance their research, processes or products and make their systems more efficient and effective.

New survey finds manufacturers lack awareness of the annual investment allowance increase

A new survey by the Manufacturing Technologies Association and Close Brothers Asset Finance has found that many manufacturing and engineering firms are not planning to take advantage of the increase of the Annual Investment Allowance (AIA).

From 1st January 2019 to 31st December 2020 a temporary increase in the AIA has been introduced by the government, enabling faster tax relief for plant and machinery investments between £200,000 and £1m.

However, the survey has found that despite the increase, only 42 per cent of manufacturing and engineering firms were aware the government had made an increase in AIA.

The survey also revealed that only a minority of companies (40 per cent overall) are planning to increase investment in 2019 as a result of the rise in AIA. And while that sounds like a reasonable rate, only 15 per cent of respondents and 16 per cent of engineering and manufacturing companies were planning a significant increase.

Green material for cooling identified

Researchers from University of Cambridge, Universitat Politècnica de Catalunya and the Universitat de Barcelona have identified an eco-friendly solid that could replace the inefficient and polluting HFC's (hydrofluorocarbons) and HCs (hydrocarbons) – used in most refrigerators and air conditioners.

Most conventional cooling technologies rely on the thermal changes that occur when a compressed fluid expands.

The new discovery shows cooling can be achieved by putting plastic crystals of neopentylglycol (NPG) under pressure with a mechanical force.

This method yields huge cooling effects – sufficient to make it competitive with using conventional liquid coolants. In addition, the material is inexpensive, widely available and functions close to room temperature. As well as the obvious environmental benefits, solid state fridges could also be more compact and adaptable than traditional models.

Bosch has the X-LOCK factor

The world-first X-LOCK changing system for Bosch grinders means it's never been quicker, easier or safer to change angle grinder accessories.

X-LOCK is a new 2-piece changing system which uses an X-shaped interface between the grinder's head and the accessory. No tools required – so no tools to lose. When the accessory is attached, an audible click provides peace of mind that it's correctly mounted and firmly fixed.

The whole changing process is up to 5 times faster than conventional solutions. And with the accessory clicked into place, X-LOCK has still more benefits. Because there's no clamping nut for fitting the accessory, there's no clamping nut to get in the way and potentially scratch surfaces. The result is flatter grinding, with a better finish. With a choice of over 130 accessories for cutting, grinding and brushing – almost all backwardly compatible – Bosch X-LOCK has it covered from A-Z. Y choose anything else?

Top-drawer tool storage from Facom

With a tool storage cabinet from Facom, you can keep not just your tools safe, but also your workers.

The safety lock system on Facom tool storage cabinets makes it impossible to open more than one drawer at a time. A safety hook also prevents the drawer being completely pulled out. These features means there's no risk of even a top-heavy loaded cabinet tipping over – injuring the user or damaging the tools – or of a drawer coming out of the cabinet and dropping heavy tools onto the user's feet.

All cabinets in the Facom range also feature swivelling and braked wheels for easy manouevrability, and a side-positioned or embedded key to avoid the risk of it being broken off.

With a choice of sizes from 3 to 8 drawers with capacities up to 450kg, and a cabinet load capacity up to 1000kg, this range of useful units also includes a hygienic solution. Made from food grade stainless steel, it has with food industry-specified blue wheels, and high chemical and salt spray resistance for frequent intensive washdowns without damage.

First bite at MOSH/ MOAH-free lubricant

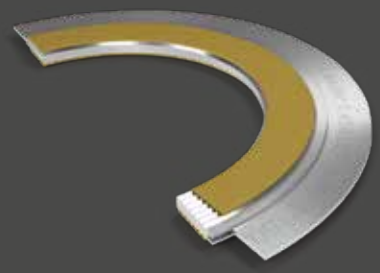
Mineral oil residue contamination of food packaging is increasingly becoming an issue for consumer protection organisations. Instead of waiting for legislation to force action, OKS has launched its first MOSH/ MOAH-free adhesive lubricant.

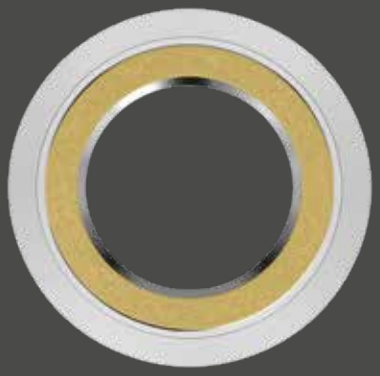
Mineral Oil Saturated Hydrocarbons (MOSH) and Mineral Oil Aromatic Hydrocarbons (MOAH) in recycled paper and cardboard food packaging can pass into the packaged food. To protect consumers, OKS is undertaking a long-term development program to avoid these substances in lubricants for the food industry.

The first result of the program is OKS 3750 / 3751 Adhesive Lubricant with PTFE, which has been modified to be free from MOSH/MOAH.

NSF H1 certified, the product is especially suitable for lubricating drive and transport chains on sorting, conveying and packaging systems. OKS 3750 / 3751 is PTFE-enriched to enhance its wear protection, pressure absorption, oxidation, aging-resistance and creeping properties. It also provides good resistance to media such as cold and hot water, steam, alkaline and acidic disinfectants and cleaning agents.

LeaderGasket takes sealing to extremes



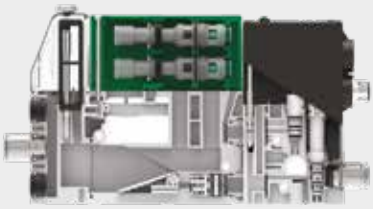


The next generation in extreme temperature sealing is already here, from LeaderTHERM.

Extreme temperatures place exceptional stresses on sealing solutions. Graphite gaskets in particular can be attacked by oxidation, leading to leakage and seal failure. But the new LeaderTHERM NXT solves the problems of extreme temperature sealing, with a family of modified phlogopite flake structured materials, offering a number of special qualities.

Phlogopite is an aluminium silicate with extremely low weight loss and a stable material structure. So even at temperatures as high as 1000°C, and high pressures, gaskets made from this material retain effective tightness.

Oxidation- and chemical-resistant, non-combustible and non-ageing, LeaderTHERM NXT is a sustainable solution that's ideal for use across a wide range of applications. From gas boilers to catalyst cracking systems, and across industries from chemical processing to automotive, the LeaderTHERM NXT can take the heat.



Piab is now an even safer choice

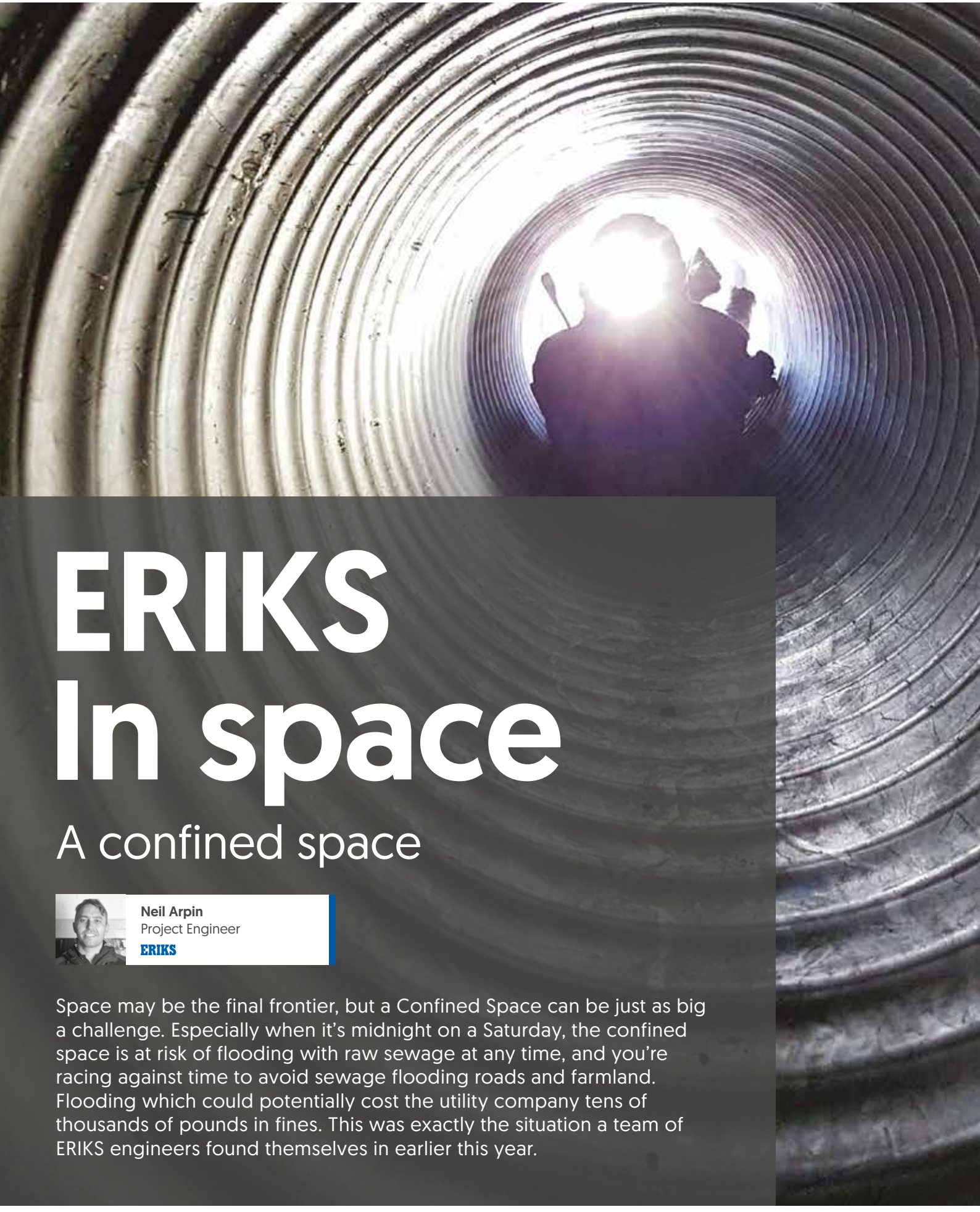
Handling large, heavy, cumbersome parts can be a real danger to operators. So the new Piab piCOMPACT®23 SMART vacuum generator platform includes optocouplers for enhanced safety.

Creating an isolating barrier between actuator and sensor lines, the optocouplers reduce the risk of accidental equipment damage or personal injury.

Separating the sensor lines from valve or other actuators, they prevent faulty connections or power failures from causing hazards such as valves opening unexpectedly, cylinders moving when they shouldn't, and robot arms swinging in the wrong direction.

Even when power to one device in the system is interrupted, the optocouplers contain the problem, and the rest of the system remains operational.

With IP65 casings and electrical enclosures, the piCOMPACT®23 SMART is suitable for use even in harsh and rugged industrial environments. And it's not just ready for anything. Its gyro-based display function makes it ready for Industry 4.0, with simplified readings to reduce mistakes and increase productivity.



ERIKS In space

A confined space

Neil Arpin
Project Engineer
ERIKS

Space may be the final frontier, but a Confined Space can be just as big a challenge. Especially when it's midnight on a Saturday, the confined space is at risk of flooding with raw sewage at any time, and you're racing against time to avoid sewage flooding roads and farmland. Flooding which could potentially cost the utility company tens of thousands of pounds in fines. This was exactly the situation a team of ERIKS engineers found themselves in earlier this year.

Thursday
The first call to ERIKS from the water company comes late on Thursday. A suction line at a sewage pumping station requires inspection for a suspected blockage.
The water company is in the process of organising a wet well clean, in preparation for ERIKS to enter the confined space to carry out the inspection.

Friday
On arrival at the site, the ERIKS team helps the customer with setting-up a 4" over pump to assist with flow management, as well as placing sandbags in the incoming sewer. Once these are in place the wet well clean is completed, but the incoming flow to the pumping station proves to be too great for the 4" over pump, so it's unsafe to enter the wet well to inspect the pump snorkel.

> "So it's unsafe to enter the wet well to inspect the pump snorkel"

Saturday
Another call to ERIKS from the water company. The pump at the pumping station has blocked again. This time the customer has arranged for a 6" over pump to be delivered to site to help manage the flow, while ERIKS carries out an inspection on the pump suction line.

The ERIKS team is dispatched at midday, and arrives on site in good time to help with connecting-up the over pump. In addition, the customer is taking steps to isolate and manage the flow from the surrounding sewage pumping stations which feed into the one being inspected. A tanker is positioned at the site to take any sewage still flowing in.

Even so, the level of incoming flow requires the job to be stopped at midnight for safety reasons. An ERIKS' crew is immediately dispatched to Leeds to collect two isolation bungs to prevent the sewage inflow.

> "Stopped at midnight for safety reasons"

Sunday
The crew arrives back at 8am with the isolation bungs. ERIKS, the customer and a tanker operator work together to co-ordinate:

- setting-up the 6" over pump in the incoming sewer
- setting-up two tankers to receive waste from the incoming sewer
- setting-up an additional tanker to receive inflow to the wet well
- isolating and managing three incoming sewage pumping stations
- reducing flow from three other pumping stations in the network.

With all these safety measures in place, ERIKS' Confined Spaces Manager carries out a risk assessment for entry into the wet well. All possible safety measures are in place, and a C-Class Permit to enter is issued.

The expert ERIKS engineer inspects the pump snorkel and uses a high-pressure jetter to break-up the "rag rock" of rags, fats and debris which is causing the blockage. Once the work is completed, the ERIKS team returns the pumping station to service.

Sewage from the other pumping stations starts to flow into the site again, and normal service is resumed. The speed and careful management of the operation ensures no flooding incidents. The only thing the general public notices is some temporary traffic management around the feed-in pumping stations.

At 4.30pm on Sunday, with the site fully operational and running on automatic, the ERIKS team leaves the site.

Non-stop solution

Following the initial call on Thursday and attendance on Friday, ERIKS' engineers were on site continually from just after midday on Saturday until late afternoon on Sunday – working non-stop through the night over the weekend.

Engineers worked in rotation to ensure all ERIKS employees had a minimum eight-hour break between shifts. On Sunday alone there was a total of seven ERIKS employees in attendance, including engineers and a Confined Space Manager.

> "All the public noticed was temporary traffic management"

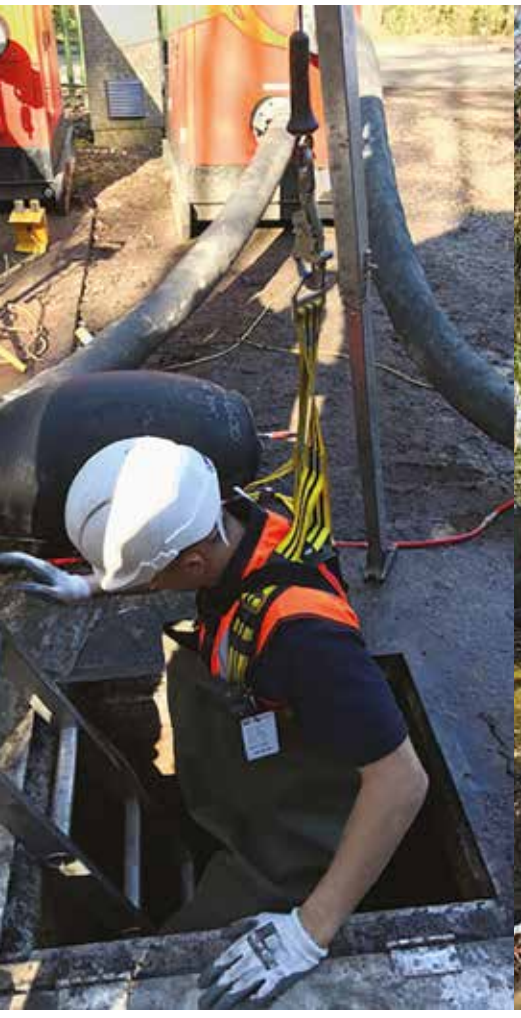
Despite the successful resolution of the emergency, the story continues. While on site, ERIKS' engineers noticed an issue with the level control. This was reported to the utility company, and ERIKS is now in the process of quoting for a solution to eliminate air locking. No doubt the ERIKS' team are hoping this can be installed during normal working hours...

C Class act

A C Class Confined Space Entry is the most dangerous an engineer can be involved in. Conditions include a constant uncontrollable water flow, a wastewater environment with potentially explosive and poisonous gases which cannot be eliminated, and oxygen enrichment and deficiency. Drowning and entrapment are also a risk.

ERIKS' C Class entry team attending this particular emergency comprised a Level 2 qualified Confined Space Manager, one engineer working in the confined space, and two trained in rescue, First Aid and resuscitation. The engineer in the confined space was also fitted with a harness so he could be winched to safety if required.

No-one was allowed to enter the wet well until a full risk assessment had been carried out by the Confined Space Manager, and a C-Class Permit to enter had been issued.



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Let's make industry work better

ERIKS

“...a woman rang the BBC... she had heard there was a hurricane on the way... don’t worry, there isn’t.”

MICHAEL FISH, WEATHERMAN, October 1987

Thomas Richmond
Business Development Manager
ERIKS

Sorry Michael, but we all know what happened next. In one of the great forecasting fails of all time, one of the worst storms for several hundred years proved you wrong. But similar forecasting fiascos are still happening in industry. And even if no trees are uprooted, productivity, efficiency and profitability can be blown away on the wind. Here’s how ERIKS help one customer to weather the storm.

You might imagine a manufacturer of packaging machinery would have their parts requirements forecasting all wrapped up. But for this OEM, producing can decorators and packaging machines for the canning industry, that wasn't the case. In fact, not only didn't they forecast their production component requirements from week to week – they couldn't as their own systems wouldn't allow it.

To make matters even worse, because there was a perceived limited handle on their production requirements, the company didn't hold stock onsite. So, whenever an order came in for a machine, the only time you'd see more of a mad scramble would be an explosion in an egg-packing plant, spares can be on a manufacturers leadtimes of 18 months plus.

The customer knew something had to be done to ensure productivity on site met their customers deadlines. With the relationships built, the customer saw this as an opportunity to review their processes, Which is where ERIKS join the story.

> "Took a long hard look at the problem"

The bearing in the haystack

When you're searching for a needle in a haystack, at least you only have one haystack to look in. And the haystack won't charge higher prices to deliver the needle at short notice.

But when this contract customer received an order for a machine and needed bearings for the job, all they had to help them was a list of parts required and a database of suppliers, so the hunt began with the ERIKS team. The customer had no record of which bearings they had ordered previously, or from where, or what price they'd paid for them.

Whilst some suppliers took advantage of the customer's urgent needs, and made hay while the sun shone, ERIKS Bearings and Lubrication team working with the onsite ERIKS Service Centre took a long hard look at the problem and proposed a cost-saving, efficiency-improving solution.

> "A three-fold solution"

Stock answers

The challenge was to work out how to meet the customer's forthcoming bearing requirements, when the customer themselves didn't know what they might be. ERIKS' solution was three-fold.

Firstly, the ERIKS team reviewed the customer's bearing purchases for 2018, as a means of setting a benchmark for their 2019 requirements. Secondly, at ERIKS' request the customer provided their production schedules – as far as they knew them – for the coming year, to enable ERIKS to stock-up with the likely bearing requirements.

And thirdly, an experienced ERIKS dedicated resource moved-in onsite for one day a week, to support the customer in forecasting their manufacturing schedule, identifying their bearing requirements, and planning their component ordering.

Now, with a better view of their possible requirements, the customer now has a critical spares holding on site. At the same time, ERIKS provides local storage of bearings: shortening delivery times and immediately shaving valuable time off the customers production schedule.

Not just supplying: delivering

ERIKS' expertise goes far beyond supplying the right products at the right time and the right price. Our Bearings and Lubrication team can call on experienced application engineers, able to look beyond the customer's order and identify more up-to-date product options and deliver more effective solutions.

By looking closely at the machines the customer is building, ERIKS is able to identify more efficient, more reliable and more cost-effective bearing alternatives to the existing choices. Experience also means we can categorise parts by their criticality or risk of obsolescence, and help the customer to find alternatives which are higher quality, more reliable, and which better meet their needs through shorter lead times or improved technology, for example.

And lastly, ERIKS' broad industry understanding helps us to identify where the customer's processes can be improved, to engineer-out the issues. As a result, we've helped them improve their forecasting, their ordering and their productivity, as well as the quality and reliability of the machines they produce for their own customers.

So now they've really got the wind behind them.

> "More efficient, more reliable, more cost-effective alternatives"

Many hands make light work

And make projects run more smoothly, assets operate more efficiently...

Stewart Royle
Regional Engineering Manager
ERIKS

You know only too well that "boots on the ground" are becoming harder and harder to come by. Especially if you want them to be worn by skilled maintenance engineers. Cost-cutting, the Nineties' apprenticeship gap and an aging workforce have all contributed to a shortage of skilled manpower, compounded by ever more complex assets and systems demanding increasingly specialist skills.

Whether you have a one-off, relatively straightforward job that needs completing – re-aligning a drive, say, after an in-house motor repair – or there's a longer-term scheduled project you need help with, you'll know the challenges of being under-resourced and over-worked.

Sometimes you need "firefighters" who turn up when the alarm sounds, douse the flames and leave. But you know you'll see far more long-term benefit from the engineering equivalent of a Fire Prevention Officer: someone who will get involved before there's a problem, will take the time to understand what you want from a project, process or asset, and then work out the best way to help you achieve it with enhanced reliability, greater productivity, and increased profitability.

> "Enhanced reliability, greater productivity, and increased profitability"

> “Understand what you want from a project, process or asset”

In terms of engineering and technical services support, this could include identifying and analysing problems, looking for the root causes of excessive costs or inefficiencies, and gathering data as a basis for proposing solutions. In other words, helping you to eliminate problems rather than simply control them.

Unfortunately, as you've probably noticed, the solution you're offered isn't always in your best interests.

Talk to a parts supplier and – funnily enough – their solution will be a new part. Talk to a repair specialist and (what do you know?) they're likely to recommend a repair. One advantage of talking to a supplier with a solution-neutral approach, like ERIKS Technical Services, is that you can benefit from expertise in all areas. So whether the most appropriate solution for your issue is repair, or replace, or upgrade, you'll receive a totally impartial answer that's right for you.

> “Eliminate problems rather than simply control them”

A safe pair of hands

When a job is ready to proceed, inviting engineers onto your premises – even if they're going to improve asset reliability and productivity and cut your costs – isn't something to be done lightly. In every industrial facility, there are Health and Safety implications to consider.

That's why, as well as boots on the ground with engineering credentials, you need ones with Health & Safety accreditations.

All ERIKS Technical Services and On-Site engineers, for example, have up-to-date, appropriate Health & Safety certificates. They also ensure a full risk assessment is undertaken, and a method statement and a statement of work is written, before any work is done. They'll even flag-up any evident existing health and safety issues before they start.

In the event of catastrophic failure, using a specialist such as ERIKS actually reduces the risk of accidents compared with your own in-house team – possibly overworked and certainly undermanned – trying to cope with the problem and with time pressures too.

Asset Management vs Just Managing

The more closely you involve experienced, qualified, solution-neutral technical services experts in caring for your assets, the more your assets can do for you: in terms of reliability, productivity and reduced total cost of ownership.

With the help of ERIKS Technical Services foresight and insight, together you can identify and analyse potential problems before they become critical. And then find solutions that deliver reliability, predictability and practicality.

Of course this requires more than just boots on the ground and extra pairs of hands. It also requires safety helmets with wise and experienced heads wearing them. And a full set of skills supported by comprehensive resources and specialist expertise. All things that ERIKS Technical Services can bring to your business.

If you need us to, we'll even make your lights work better (see p.40 for Lighting Surveys).

Learning from experience

As part of ERIKS' commitment to making industry work better, we have provided week-long apprentice workshops for some of our larger customers' apprentices.

Led by our own engineers, these workshops help young trainees to:

- learn how to look for and identify root causes
- understand Best Practice
- gain hands-on experience under expert tuition

Tom Boswell
Reliability Engineering Manager
ERIKS

Smarter than the average asset

In asset management as in life: the more you know, the more you can do. And the sooner you know something, the better. We can't upgrade our brains. You can be smarter about your management of assets with ERIKS' Smart Asset Management.

Today's Condition Monitoring largely relies on manual data collection: meaning its periodic at best, but can still leave you exposed. By the time a problem is flagged-up, performance may already be compromised, components already damaged, and you could be looking at unscheduled downtime for repairs.

Smart Asset Management not only gives you more data about your assets, but also gives it in real time. And in such quantities that you can spot trends, see problems as they develop – and act before they get out of hand.

> "Spot trends, see problems as they develop – and act"

Breakdown or break-in?

If assets were a car, the benefits of Smart Asset Management would be obvious.

Condition Monitoring – a service within asset management – is a single variable such as monitoring your tyre pressure or oil temperature. Smart Asset Management encompasses multiple variables such as an indication as to how many miles you have left based on your fuel level, MPG, speed etc. You can then schedule a time for when you next need to fill up, and have it all done well before you run the tank dry.

By automatically collecting data from sensors 24/7, Smart Asset Management gives you the opportunity to know exactly what's happening with your assets, and to take timely action to maintain their optimum performance.

But just as your car won't drive itself to the garage, Smart Asset Management still needs expert human supervision if it's to repay your investment.

Figures aren't facts

The sheer volume of data collected by Smart Asset Management will only be useful if it's analysed and interpreted. Then you can spot trends, identify root causes, and act to address the issue.

That demands expert application engineers who understand your assets and how they're utilised, understand how they fail, and know how to maintain, adapt, reconfigure or upgrade them, to perform more efficiently and more reliably, for longer.

> "Perform more efficiently and more reliably, for longer"

ERIKS' engineers not only understand your industry, applications and assets, but also your assets' criticality to your process. They know how assets fail, and the length of the supply chain behind them. So they can interpret the data and take all these factors into account, before advising whether you should effect a quick repair, fit a replacement, or invest in an upgrade to optimise efficiency.

To use another analogy, a smart energy meter doesn't cut your energy use if you only look at the bill. But look at the read-outs, understand when usage goes up and down, make decisions like turning down the central heating or using the tumble dryer less, and you'll soon see a positive effect.

Keep on keeping on

Smart Asset Management is an essential tool for your journey towards ISO 55000 and the continuous improvement it demands. It's a means of acquiring data that predicts problems so you can take action, then of monitoring the effect of those actions and providing yet more data, so you can do it all over again.

Amongst other things Smart Asset Management is itself on a continuous improvement journey, with more capabilities, monitoring and reporting coming on-stream all the time.

So talk to ERIKS about Smart Asset Management now, and you're making a smart move towards asset reliability and efficiency, that's far above the average asset.

"Expert human intervention"

Managing asset management

Smart Asset Management is more than maintenance and minimising downtime. It's also optimising assets' performance and minimising their total cost of ownership. The ISO 55000 Asset Management standard drives continual improvement and ongoing value creation, by managing asset-related cost, performance and risk. To meet that standard, you need to:

- Establish an asset management system to optimally manage assets
- Implement, maintain and improve an asset management system
- Comply with asset management policy and strategy
- Demonstrate that you are applying best practice
- Seek external certification of your asset management system or make a self-declaration of compliance

ERIKS Smart Asset Management can help you.

What's more effective than Overall Equipment Effectiveness?

Gavin Coull
Services Sales Manager
SKF

Overall Equipment Effectiveness (OEE) is industry's prime metric for identifying and rectifying machinery-related problems in the manufacturing process. It's also a benchmark for progress made against other manufacturers' performance. But for companies lacking the necessary in-house skills, and striving to achieve more productivity for less cost, achieving the reliability and long service life that drive OEE can be challenging. A new industry-leading asset care strategy from SKF could be the answer.

> "OEE can be challenging"

Applying OEE strategies helps with meeting business objectives and sharpening your competitive edge. With a huge variety of rotating equipment found on every shop floor, getting the right performance is essential, but hard to achieve. And the "right performance" for one manufacturer may not necessarily be the same for another.

What's required is a more tailored approach.

Getting equipment a good REP

Based on their huge experience of industrial rotating machinery, SKF is addressing the machinery aspect of OEE with a new asset care strategy. Known as Rotating Equipment Performance (REP), the strategy brings together a range of SKF products, technologies and services under flexible new business models, to meet most budgets and work practices.

The result is a five-step process, to help manufacturers achieve their performance and productivity goals.

Experienced in almost every industrial sector and machine type, SKF is able to work closely with clients on single or multiple machines, throughout their complete life cycle. They can also provide high-quality products and related services, to help those clients meet their productivity objectives. The REP offering even extends to an assessment of core machine design, and advice on improvements to boost performance or output.

The five steps of REP provide what is essentially a cycle of continual improvement, taking clients on a journey from an initial assessment of machine performance, through to monitoring, maintenance and problem-solving.

> "Five-step process to achieve performance and productivity goals"

Here's a look at each of the steps in more detail:

Assess

Compare performance with others in the sector, identify key areas for immediate improvement and savings, and set longer-term goals and strategies.
SKF consultants undertake these assessments using the company's own asset and lubrication management benchmarking tools. These allow for review and analysis of operationally critical aspects, and comparison with reference values and industry sector best practices.

Detect

Detecting machine problems using appropriate condition monitoring technologies and services can prevent costly unplanned downtime and loss of production. It encourages and promotes efficient planning for machinery maintenance activities. And it streamlines the process of spare parts ordering: avoiding lead-time problems and assuring maximum availability.

SKF monitoring solutions use the latest digitalisation and Industrial Internet of Things solutions – based on the criticality of machinery – to enable clients to gain insights into the performance of machinery wherever it's located.

Maintain

As well as providing a wide range of maintenance products, SKF offers support for alignment, balancing, bearing installation and other rotating equipment requirements. If poorly executed, any one of these can have a profound impact on service life expectations. So, if a company's in-house engineering project skills are limited or non-existent, SKF can supplement them on-site to resolve rotating equipment problems.

Solve

Fixing a problem is not an end in itself. Further investigation should always be undertaken to ensure no re-occurrence. SKF has the knowledge, expertise and experience to help clients improve their rotating equipment performance, by identifying and eliminating problems using Root Cause Failure Analysis support services. These identify any underlying problems – from inadequate installation procedures to poor lubrication practices – and provide suggestions for remedial actions to prolong equipment life and enhance reliability.

> "Prolong equipment life and enhance reliability"

Rebuild

Remanufacturing cuts the lifecycle cost of industrial equipment, while reducing negative environmental impacts arising from overuse of natural resources and energy. SKF offers professional capabilities for remanufacturing, refurbishing, reconditioning, reworking and upgrading key industrial components.

Whether you want to solve a specific rotating equipment problem, enhance plant and equipment performance, or improve your overall maintenance strategy and efficiency, SKF is the ideal partner.

With proven application insights, a huge portfolio of products, connected technologies and tailored solutions, SKF can help you achieve the performance you're looking for from your rotating equipment: ensuring optimum OEE, without pushing your budget OTT.

How progressive cavity pumps keep progressing

Peter McGarian
Managing Director
SEEPEX.
ALL THINGS FLOW

It's 10 years since SEEPEX revolutionised progressive cavity pump efficiency, with the launch of Smart Conveying Technology (SCT), but their drive for optimum pump performance hasn't stopped there.

The smart stator, split into two halves and held in place by four retaining segments, can be adjusted as wear occurs, to restore the original interference fit between stator and rotor. This extends maintenance intervals by 200%.

When maintenance is eventually required, SCT pumps can be dismantled, parts changed and re-assembled without removing the suction or discharge pipework. The smart rotor can also be removed without affecting the universal joint: eliminating the need for replacement joint parts.

SEEPEX SCT pumps are not only easier to maintain, but also have less tendency to block. Blockages which do occur can be accessed simply by removing one half of the stator.

But not content with achieving the lowest life-cycle costs across a wide range of applications, SEEPEX have introduced yet another SCT innovation: Smart Seal Housing.

> "A major leap forward in pump design"

Even simpler maintenance

Traditionally, changing a pump's mechanical seal requires removal of the pipework or suction casing – but not with SEEPEX Smart Seal Housing. The result is far simpler and far quicker maintenance, meaning less downtime and lower maintenance costs.

Combining this latest development with the other SCT design innovations, SEEPEX progressive cavity (PC) pumps now offer up to:

- 200% extended maintenance intervals
- 85% reduced maintenance time
- 200% longer stator life
- 25% energy saving compared to conventional PC pump designs

In addition, the design innovations allow for:

- planned predictive maintenance with no unplanned downtime
- lighter components, for reduced Health and Safety requirements
- improved environmental performance due to elimination of bonding between stator halves and tube

Innovation beyond design

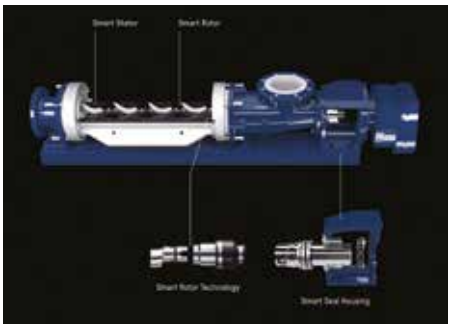
SEEPEX innovation doesn't stop at the pump design. It also includes peripheral services.

For example, new SEEPEX digital pump monitors reduce operational costs by turning pumps into intelligent field devices. By continuously monitoring themselves and the processes they're operating in, the devices gather real-time data including flow rate, temperature and pressure. This paints a comprehensive picture of the application's operating conditions and the pump's efficiency, and the record of history and trends enables performance analysis and process optimisation.

> "Simpler and quicker maintenance, less downtime, lower maintenance costs"

If there are deviations from set values the devices can trigger alarms which can be delivered remotely to smartphones or tablets – reducing the need for standard inspection tours, and offering better protection for critical production processes. Data analysis also enables predictive maintenance and flexible service scheduling, to reduce unnecessary downtime.

> “Turning pumps into intelligent field devices”



Applying apps

Even the most innovative pumps require maintenance sooner or later. However SEEPEX make the process easier and more efficient, with dedicated apps.

Simply scanning the QR code on the SEEPEX pump will allow you to:

- download the relevant operating/ maintenance manual
- order spare parts quickly and conveniently
- quickly access all the information you need
- comply with your ordering processes (the responsible contact in Purchasing automatically receives the spare parts quote)

These are just some of the latest innovations from SEEPEX that – for a wide range of processes across all industry sectors – help to make their pumps some of the most cost-effective available. That’s progress everyone can appreciate.

Pick your pump – carefully

Innovative designs help deliver efficiency gains, reliability improvements and cost savings. But so does correctly matching the pump to the application, as Thames Water discovered.

Piston pump replacement

A piston pump’s pulsating action generates a high discharge pressure and uses more energy than alternatives. By replacing them with SEEPEX PC pumps to move high solids sludge, Thames Water realised significant benefits. In this application PC pumps have:

- low pulsation flow
- lower energy use (15kW v 31kW)
- lower discharge pressure (13 bar v 64 bar)
- extended maintenance intervals (2+ years v 6-months)

PC pumps can also handle higher solids content within the existing pipework and still maintain increased reliability.

Hydraulic oil: the dirty truth

Baljit Randhawa
Product Manager Filtration
ERIKS

Imagine you've been feeling under the weather and you're not sure why. You take yourself to the doctor's and you're offered a choice of diagnostic techniques: investigative surgery or blood analysis? When a hydraulic system is not performing as it should be, and components are failing prematurely or frequently, those are effectively the options. So do you choose to put your system under the scalpel, or do you reach for the syringe instead?

An estimated 70% of component replacement is due to surface degradation or wear. In hydraulic and lubrication systems, half of those replacements are down to mechanical wear, and a fifth to corrosion. Yet both those problems can be picked up by oil analysis – often well before the problem turns into a crisis.

So your assets not only avoid being dismantled for "investigative surgery", but can be "treated" without the need for a major operation.

Getting down and dirty

There are essentially four types of oil contamination (see below), and each one can cause different problems within the system. The only thing they have in common is that each one is bad news.

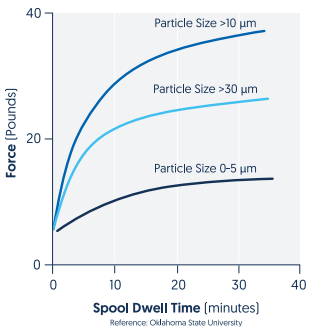
But simply identifying their presence is not enough. The results of the oil sample need expert interpretation to pinpoint the root cause of the contamination, so you can take steps to resolve it.

That's why ERIKS' independent laboratory oil analysis service goes beyond simple sampling and reporting. It also includes comprehensive and expert analysis by a qualified Application Engineer.

> "Oil sample results need expert interpretation"

Analyse, advise, address

A less useful analysis may only tell you what's in the oil that shouldn't be. An ERIKS analysis will not only discover the contamination, but will also identify the likely source, and propose the most effective solution.



For example, dust in the oil can be countered by installation of desiccant breathers, to prevent ingress of dust or other small particles.

Water is another common oil contaminant, with a number of potential sources. In a hygienic environment, ingress during aggressive high-pressure washdowns could be the cause. If your power packs become very hot, water in the oil could be condensation. Or there may be a leak into the hydraulics from the cooling side of the system.

ERIKS' experts will know what to look for, where to look, and can either guide your engineers or inspect the system for you, before addressing the root causes of the problem.

> "Identify the source and propose the most effective solution"

Code breakers

If you adhere to the ISO Cleanliness Code, you may be thinking that dirty oil isn't something you have to worry about. Unfortunately, that's not the case.

Every hydraulic component has an ISO code to guide you on the level of filtration required. But cracking the code and choosing the correct filtration depends on a number of variants, including the system operating pressure and the particular components within the system. In fact there could be a number of different codes and a number of conflicting filtration levels indicated for one system, leaving you none the wiser about which to choose.

ERIKS' expert Application engineers are able to advise you on the correct code to observe and the right filtration rating to adopt, to ensure the optimum service life for all components within your hydraulic system.

> "Ensure optimum service life for all components"

So after hydraulic oil analysis by ERIKS, you can expect:

- **confirmation** of the ISO Cleanliness Code you should be following, and of the filtration micron rating you need to be operating
- **interpretation** of the contaminants present in the oil
- **solutions** (ranging from preventive maintenance to component repair or replacement) to the problems identified

If it's possible to squeeze out that much essential information from a few drops of oil, surely it's time to learn the truth about your own hydraulic system? Especially when the process is as simple as taking a sample.

Contaminants and their consequences

The 4 basic types of oil contaminants are:

- **solids** – leading to abrasive wear, leakage, component failure etc.
- **liquids** – a source of corrosion, wear, sludge formation, cavitation etc.
- **gel-like residues** – resulting in bearing wear, valve malfunction, dynamic seal damage etc.
- **gases** – causing cavitation, oxidation, premature oil ageing etc.

We've seen the future of bearings

- and it's now

Sally Sillis
Technology Manager
SCHAEFFLER

Knowing how much longer your rolling bearings will run sounds like something only a fortune teller could help you with. But the new SmartCheck diagnostic system from Schaeffler not only automatically identifies potential bearing problems, but also provides valuable data for calculating the bearing's remaining useful life.

Rolling bearings are a key component of motor gearbox units. And those units are critical to a huge range of plant and machinery – from machine tools to steel rolling mills to conveyors. Many of these operate virtually non-stop, so downtime can be exceptionally costly, and preventing it demands intensive maintenance.

To make that maintenance as effective as it can be, operators need to know as much as possible, as early as possible, about the condition of their bearings.

That's where Schaeffler SmartCheck does more than a crystal ball can.

> "Critical to a huge range of plant and machinery"

Calculating in the cloud

SmartCheck identifies the threat of bearing damage, wear and irregularities (such as imbalance and misalignments) by spotting vibration pattern changes. Using raw SmartCheck data uploaded to the cloud, together with other useful data (from the machine control system, for example), the system creates an automated diagnosis. But it doesn't stop there.

> “Accurate prediction of remaining useful life”

Because the data is stored in the cloud, it's readily available to use for other calculations. So if you want a drive train and rolling bearing simulation relating to their static and dynamic strength, it's relatively quick and easy to do.

All of which means you can have an accurate prediction of the remaining useful life of your rolling bearings, at any time, based on real load spectra recorded during operation. And that gives operators and machine builders an efficient solution for reducing not only Total Cost of Ownership, but unit costs too.

Optimum maintenance for optimum efficiency

Condition monitoring only provides information about a machine's current condition: which is useful, but limited. Predictive maintenance based on the Schaeffler SmartCheck, on the other hand, looks at a machine's most likely future condition too.

This makes it possible to predict the optimum time for maintenance, and enables optimised production planning. For example, production can be increased if the order book demands it and machine capacity is available. Alternatively, production can be reduced when there are fewer orders pending, in order to match a specific maintenance interval.

In this way, production machine maintenance can be carried out based on the load conditions and according to requirements, instead of at specific time intervals or when there's an acute malfunction.

This correlation between the level of capacity utilisation in production and the condition of the machine elements naturally leads to increased productivity.

In addition, being able to order replacement parts just-in-time reduces stock and warehousing costs. Optimum utilisation of maintenance intervals reduces overall operating costs. And even if there's incipient bearing damage, predictive maintenance can still help. Because when you know how long a bearing is going to continue functioning, you can make an informed decision on whether or not to continue production.

Show your workings

The remaining useful life calculation is driven by a combination of:

- machine-mounted sensors matched to the application
- machine control system data
- a BEARINX model of the machine
- a connection to the Schaeffler Cloud

With the real load spectrum data available, Schaeffler's BEARINX tool makes an automatic calculation of the nominal rolling bearing rating life, via the Cloud-based software platform.
Then – by subtracting the current runtime from the calculated rating life – the nominal remaining useful life of the bearing can be predicted.

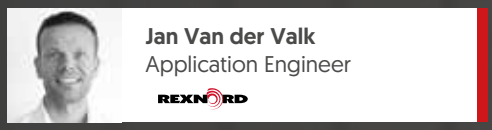
Of course the customer doesn't see any of the calculations. They just see what they really want to know: the life expectancy of every individual bearing in the machine. And they can view that information on any Internet-connected device. But not via a crystal ball.

Calculated benefits

When a customer has access to a continuous calculation of the remaining useful life of their rolling bearings, it opens up a range of possibilities, including:

- active control of machine capacity utilization, with a view to predictive maintenance
- higher-capacity utilisation for individual axes and entire machines.
- requirements-based maintenance intervals, according to real load conditions
- use of real field data and load spectra, for improved design optimisation and re-engineering of machines by the manufacturer

When engineering has the answers



Jan Van der Valk
Application Engineer
REXNORD

Your production assets all have a job to do. But that's not all you want from them. What about maximising safety? Minimising water use? Reducing energy usage? And all while optimising productivity, of course. That's why these are the four pillars of the Rexnord Engineered Sustainability™ product program: the program that proves sometimes engineering has all the answers.

Balancing all the conflicting demands you face against all the different targets you're given is your day-to-day challenge. So when an original equipment manufacturer comes up with a program that helps you do just that, it's worth taking notice.

And with conveyors playing such a large part in production lines, they can play a large part in delivering on your requirements too.

No safety slip-ups

Naturally, all other considerations have to come second to safety.

In the beverage filling industry, for example, slippery floors are a hazard, as a result of spillages from conveyed products. PET bottles are relatively unstable and highly susceptible to falling when conveyed on a high-speed filling line. These high-speed lines also use large quantities of water for external lubrication, and that can lead to slippery floors too.

Rexnord's Engineered Sustainability program helps to eliminate both problems. Firstly, Rexnord MatTop Chain is exceptionally flat, so helping PET bottles to stay upright. And secondly, Rexnord conveyor products which need no external lubrication mean no more, potentially slippy wet floors.

> "No external lubrication means no more wet floors"

Plus, eliminating lubrication servicing means removing the need for engineers to be in close contact with fast-moving machinery, and the risks that creates.

Beverages without water

High levels of water use for external lubrication, and cooling of high-speed corner tracks, are not only a safety hazard, and unsustainable in themselves, but also generate large quantities of waste water for collection.

The Rexnord Engineered Sustainability program can reduce – and in some cases eliminate – external lubrication and the associated problems.

Rexnord plastic chains, for example, are self-lubricating and suitable for "dry running" even at high speeds. And for conveyor lines which need to turn corners, there are Rexnord Magnetflex® Combi-X Curves, with integrated Ultra Low-Friction (ULF™) upper parts. These not only offer consistent low friction between chain and curve, but also minimal headshaft tension, long wear life, and low noise.

Less-energy drinks

The average beverage filling and packaging line typically contains around 80-100 conveyors, each with its own power-hungry drive. How much power each drive demands depends on a combination of varying factors, such as weight, conveyor layout and friction between contact surfaces.

Rexnord's Engineered Sustainability program can help you to choose the most effective combination of state-of-the-art conveyor materials, to minimise friction and therefore reduce energy use. The 1005 XLBP Series Chain, for example, is only 40% of the weight of a traditional modular LBP chain, and creates 30% less friction between packs and chain during accumulation.

The 1005 XLBP Series can realise even more energy-savings by extending conveyor lengths, which minimises the number of drives required.

> "The most effective combination of state-of-the-art conveyor materials"

Productivity all along the line

Safety, water consumption and energy-use are all important. But at the end of the day – and the conveyor line – productivity is what counts.

> "The critical connection between machines"

As the critical connection between machines, conveyors provide optimal product flow and buffering capacity, to ensure consistent, reliable production at optimum speed. Which means it's the reliability and durability of your conveyor components which determine total uptime and cost, to keep line performance at the required level.

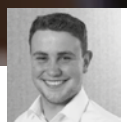
By upgrading your conveyors through the Rexnord Engineered Sustainability program – utilising state-of-the-art materials for chains and components – you can increase productivity without compromising on your other aims.

Which just goes to prove that the quickest and most sustainable way to reach all your goals, is by conveyor.

Sustainability through innovation

- Rexnord ZeroGap™ Multi-flex chain has a patented top plate design allowing tight side-flexing with no surface gap opening – for less tippage, reduced debris trapping and improved safety
- While other plastic chain shows a permanent increase of friction level against PET after just hours of running, Dry-PT™ TableTop® and MatTop® Chains Dry-PT are the first plastic chain materials to provide consistent low friction over time

Precision, accuracy, reliability, repeatability.



Basil Shead
Applications Engineer
IMI
Precision Engineering

Precision, accuracy, reliability, repeatability.

Increasingly complex machine requirements are leading manufacturers to consider alternative linear motion technologies, to ensure they are selecting the best solution for their applications.

While the operational benefits and tradition of pneumatic actuators are well established, the popularity of electric actuation in recent years has continued to grow as they offer precision control, better flexibility, guaranteed repeatability and easy connectivity.

The IMI Norgren ELION rod-style electric actuator adds to IMI Precision Engineering's comprehensive linear motion portfolio. An advanced range of electric actuators, based on ISO 15552 that has been designed for safer, smoother and energy efficient operation.

Complemented by a range of high-performance AC servo motors and drives, IMI Precision Engineering can offer a complete electric actuator solution for any application.

Axial or parallel motor configurations are available depending on the load transmission and space available, as well as a wide range of accessories including mountings, switches and cables to suit your application needs.

> "Multiple intermediate positions"

The benefits

Electric actuators can provide the highest degree of precision-control over the linear motion stroke, offering unmatched performance when it comes to controlling speed, position, accuracy and repeatability. For example, accuracies of +/- 0.02mm are possible with a repeatability of +/- 0.01mm.

Multiple intermediate positions can be achieved and the in-built positioning flexibility allows several actuators to move in unison, changing speed without the need to stop or overrun a position. In addition, acceleration and deceleration control also allows the cylinders to glide into position without stopping abruptly, making electric actuation suitable for applications where vibration and disruptive movement is not acceptable.

> "Enhanced control of acceleration and speed"

In certain applications such as large, multiple axis machines, a combination of electric and pneumatic actuation can be appropriate as there may be both simple and complex linear motion positioning requirements.

With extensive experience in industrial automation, and in designing systems to help machines move reliably, IMI Precision Engineering have the expertise to solve customers' problems and meet customers' needs, however complex they may be.

So, whether you need drives with a variety of protocols, or a mixture of technologies, IMI Precision Engineering can ensure you achieve the optimum solution in the most appropriate combination. Precisely, accurately, reliably and repeatedly.

Once in a lifetime

The intuitive, easy-to-use online configuration tool gives you the added flexibility to specify the correct actuator for your requirements. You can configure using product attributes such as size, stroke and mountings; or application attributes such as distance, load, speed or lifetime.

> “Configure once - buy for life”

If you need your actuator to move from fully in-stroke, pause for 15 seconds, move to mid-stroke in half a second and rest there for two minutes, the configurator will complete all the necessary calculations to ensure that you are recommended the most appropriate actuator.

Once configured, you won’t have to repeat the process to order the same product again in the future. In other words: configure once – buy for life.

> “Configure once – buy for life”

One-stop shop

The new IMI Norgren ELION electric actuator range is complemented by a range of high-performance AC servo motors and drives, offering a complete electric actuator solution for your specific application.

Key features:

- **Accurate and repeatable positioning** with a ball screw and servo motor
- **Long life** ball screw and bearing mechanisms
- **Easy installation** based on ISO 15552 standard with universal mounting options
- **Performance monitoring** with integral sensors and external switches
- **Higher forces available** compared to a pneumatic cylinder of equal size at 6 bar

Why pumps fail – and how to stop it happening to yours

Bob Orme
Senior Technology Specialist
LOCTITE

Most pump failures are caused by human failings in installation or maintenance. But get those right and you can minimise failure risk, extend the pump's useful life, and even increase its efficiency and reliability.

At every stage of a pump's life – from assembly and installation to repair, preventative maintenance and disassembly – LOCTITE® engineering adhesives and compounds can help prevent pump failures and save money. They can even help restore pumps to "as-new" condition so they don't have to be scrapped and replaced.

> "Prevent pump failures and save money"

Here are some of the most common reasons for pump failure, and how LOCTITE® can help overcome them.

Leaks and corrosion

Air space between the threads of the bearing frame and housing components can lead to oil leakage and ultimately, pump failure.

By using an anaerobic thread sealant – which also stops rust and corrosion in the thread space, and you can stop contaminants from entering the oil. The gland flushing connector is also susceptible to corrosion, but thread sealant will protect this too.
While thread sealant helps prevent loosening of the thread, it also makes a unit easier to disassemble using just normal hand tools.

Less dramatic than an oil leak is oil seepage, from porous areas created during cast parts' manufacture. A LOCTITE® chemical resistant coating applied to the bearing frame interior during assembly forms an effective seal.

Self-loosening and disengagement

If a threaded assembly can loosen itself, it will. But a thread locker is an easy and effective way to prevent self-loosening – and corrosion – on, for example, frame adapter mounting bolts, pump casing bolts and gland studs.

Couplings can also disengage or be misaligned or damaged. A thread locker will help to keep them stable.

It can also do much more. Apply it to the outside diameter of an oil seal and it will fill small air spaces that could create a leak path.

It can secure a key in a keyway, to prevent keyway wear. And it not only keeps assemblies and couplings together, but can also help you get them apart.

When disassembly is required, anti-seize products also make the engineer's job easier. Exposed, non-stainless and non-coated metal pump parts (power end bolts, lock nuts, dowel pins) are almost certain to rust. Anti-seize will prevent corrosion and reduce seizure risk.

> "Avoid traditional gasket problems"

Cut gasket crises

When a cut gasket relaxes, shrinks, extrudes or breaks, it can lead to a leak. The simple answer is to eliminate cut gaskets altogether by using liquid gasketing adhesive.

In areas such as between the bearing frame and adapter, and between the stuffing box and pump casing, you'll not only avoid traditional gasket problems, you'll also seal the air space –helping prevent corrosion.

Air spaces also cause problems for bearings, when rust forms in an air space between the bearing and shaft. And all bearings are prone to fretting or spinning on their shafts or within their housing, leading to damage. A retaining compound not only fills the air space to prevent corrosion, but also prevents bearing spin.

Cavitation, wear and tear

Abrasive slurries, solids, cavitation and chemicals all take their toll on pump casings and impellers. But with the help of LOCTITE®, the pump can still be repaired.

> “Return the part to full service, quickly and easily”

A choice of LOCTITE® metal-filled compounds and wear-resistant putties can rebuild worn cutwaters, wear-ring seats, impeller vane tips and other areas. A topcoat of brushable ceramic then adds a high gloss, low friction finish, so the pump runs as close as possible to its best efficiency.

Epoxies also have a restoration role. Constant pressure and abrasion can wear and damage a shaft, and in time oil seals can even cut a groove. But an epoxy with high compressive strength returns the part to full service, quickly and easily.

With so many different LOCTITE® solutions to help prevent pump failure and optimise pump life, it pays to get advice.

So ERIKS has teamed up with LOCTITE® maintenance experts to run a series of pump repair and rebuild workshops. To find out more, please contact your usual ERIKS Service Centre. Without Fail.

Man and Machine in Perfect Harmony

Ian Hodkinson
Technical Sales Office Manager
piab

You don't have to be an engineer to tell the difference between a machine and a person. For one thing, simply because they're flesh and blood, not metal and oil, people tend to tire easily and potentially sustain repetitive strain injuries. But imagine if you could give a person the strength, reliability and durability of a machine, without turning them into a robot. Then you could ensure health and safety considerations are met whilst also obtaining consistent productivity and still have someone you won't mind sharing your tea break with.

Manual lifting is one area where humans need a helping hand. Strength is the key requirement, and even the biggest muscles are susceptible to wear, tear and injury. So Piab have developed a solution in the shape of the piLIFT® SMART vacuum lifter. It doesn't look human, but it does enhance human performance – and it has brains.

Lightening the load

Manual handling is a risk to health and safety. Involving lifting or moving heavy loads, and tending to be repetitive, it can lead to repetitive strain injuries at best, or acute injuries from dropped loads at worst. But across a broad range of industries and processes, it's an integral part of the production process.

Now, from loading and off-loading boxes onto and from transportation pallets, to moving and emptying bulk material containers, the Piab piLIFT® SMART vacuum lifter can lighten the load.

This smart, ergonomic and energy-efficient vacuum lifter increases reliability, speed and productivity – yet reduces risk of injury – by effectively integrating human and machine.

> "Increase reliability, speed and productivity"

Shaping-up to the job

The Piab piLIFT® SMART vacuum lifter can handle objects weighing up to 40kg. But simply taking the weight off human muscles is not enough to make lifting easier and safer. You also need to ensure that the movement of machine and operator meld together naturally and ergonomically making it simple to use and master, otherwise efficiency will not improve and one set of potential injuries will simply be replaced by another.

The Piab piLIFT® SMART vacuum lifter is designed around strong ergonomic principles, to mimic or enhance natural movements.

For example, the handle is shaped to allow a side-on grip which is more comfortable for the operator, and the variable speed controls are placed so they can be used equally comfortably and efficiently by a left- or right-handed operator.

For operator safety, a protective handguard is incorporated into the design, and the noise level during operation is kept to a minimum for worker health, wellbeing and environmental considerations.

The lifting process of the Piab piLIFT® SMART is also designed with safety at the forefront. Using a single vacuum source to grip and lift in a single movement creates an inherent safety feature unavailable with any other lifting solution: if the object to be moved can't be gripped, then it won't be lifted. Which means there's no risk of it being accidentally dropped mid-procedure.

And when it does lift, the Piab piLIFT® SMART can reduce the load on an operator's body by over 80% – meaning less risk of repetitive strain injury, fewer sick-leave hours, and therefore more process reliability and higher productivity.

Brawn and brains

Using a vacuum lifter is already a proven solution for many material handling processes. What makes the Piab piLIFT® SMART a major step forward is its Industry 4.0 integration capabilities: the brains behind the brawn.

As the first vacuum lifter to be Industry 4.0-ready, the Piab piLIFT® SMART has integrated smart data features based on internet connectivity. These not only make it more effective at handling, but also provide more data for more efficient utilisation.

> "The first vacuum lifter to be Industry 4.0-ready"

The ability to sense and record movements enables it to respond more quickly to operator intentions, so it's more user-friendly. And the ability to lift and weigh loads simultaneously, as well as collect and log data, means process statistics and analysis are immediately available to the user – either on the piLIFT® SMART's built-in display, or through a web platform.

These data management features not only provide a useful record of activity, but also let the operator know when it's time for the vacuum lifter to be maintained or cleaned. So downtime is minimised, reliability is optimised and the Piab piLIFT® SMART just keeps on lifting.

How to live a longer, pain-free life

Unfortunately, only for bearings

Robert Bryan
UK Territory Manager
NSK

In any high-volume, high-cost production environment, a single bearing can make the difference between an efficient and an inefficient production line. But like any other mechanical component, bearings have a finite life. So how do you ensure that's as long as possible? And how do you prevent the unpredictable failures and unreliability which always cause the most pain in production?

The length of a bearing's life depends on many different factors: design, quality, operating conditions, load cycles and more.

However, with the help of NSK's Asset Improvement Programme (AIP), you can give any bearing the chance of a longer, healthier life. And by improving machine reliability as a result, unlock additional profitability too.

> "Unlock additional profitability"

Where does it hurt?

Whatever the reasons for premature bearing wear or bearing failure, they all end up in unreliability and high production costs. Sometimes problems can go undetected for years – all the time driving up costs and reducing profitability. Identifying the contributing factors, and finding the most effective bearing solution, can be tricky.

NSK experts use the NSK AIP Value Cycle – a standardised, tried and tested process – to take a closer look at your working practices, production processes and choice of bearings. Trained to find the causes of production pain, they have the knowledge and experience to recommend proven solutions, to improve your machine's or your system's reliability.

The data they collect on your plant and the condition of your machines tells them everything they need to know. They'll quickly identify the issues and prescribe the cure, in a comprehensive report highlighting all the opportunities for improvement.

These could include improving your choice of bearings, or refining the design of the machine. But ultimately, they'll help you to eliminate production pain and increase reliability.

> "Eliminate production pain and increase reliability"

The report will also provide you with information on machine component design, available part numbers and running conditions. And there's tailored training available, so your own team can gain the bearing knowledge they need, to optimise your NSK product performance, and maximise Total Cost of Ownership (TCO) savings.

Laser treatment for less fatigue

Over 50% of machines run out of alignment – causing higher loading, which in turn leads to lower overall performance and decreased efficiency. In fact, a shaft or belt system which is just 0.1% out of alignment results in a bearing life just 50% of the calculated fatigue life.

Laser alignment tools for drive belts and shafts are valuable weapons in NSK's bearing care armoury. They provide a highly effective way to minimise losses, and ensure optimum machine performance with the lowest energy consumption.

Accurate alignment is difficult using traditional methods, yet today's manufacturing environment demands fast, precise, machinery set-up. NSK laser alignment tools make it easier and quicker to be accurate, which:

- increases bearing lifetime
- increases machinery uptime and productivity
- reduces wear on machinery components
- reduces energy consumption
- reduces vibration and noise
- helps with smoother running and
- ultimately improves machine reliability.

If only extending life and avoiding pain were as easy for the rest of us.

Stuck between flaws

If there's one application where unreliability isn't an option, it's a lift. So when an international manufacturer of gearboxes for lifts started experiencing irregular and unscheduled product stoppages during operation, they called in NSK as soon as possible.

NSK engineers investigated, and traced the problem to a complex, difficult to assemble bearing arrangement, which was resulting in inconsistent product performance.

The problem was handed over to NSK's machine design consultancy service, who designed a far simpler solution. The upgraded component now features a fully integrated two-row flanged bearing assembly unit in a compact sealed design. The design also incorporates a 40° contact angle for high axial forces.

This bearing unit not only reduces the number of components – making it easier to assemble as a result – but also provides far superior performance. As an additional benefit, the reduction in component count allows for supplier rationalisation.

Of course, NSK also provided training for the customer's own engineers, to ensure they can correctly and efficiently install and remove the new bearing unit.

As well as the optimised reliability – very reassuring in a lift – the change of bearing design has helped the customer to save around €103,750 per annum.

Gearbox repair, replace or upgrade? It's your choice...

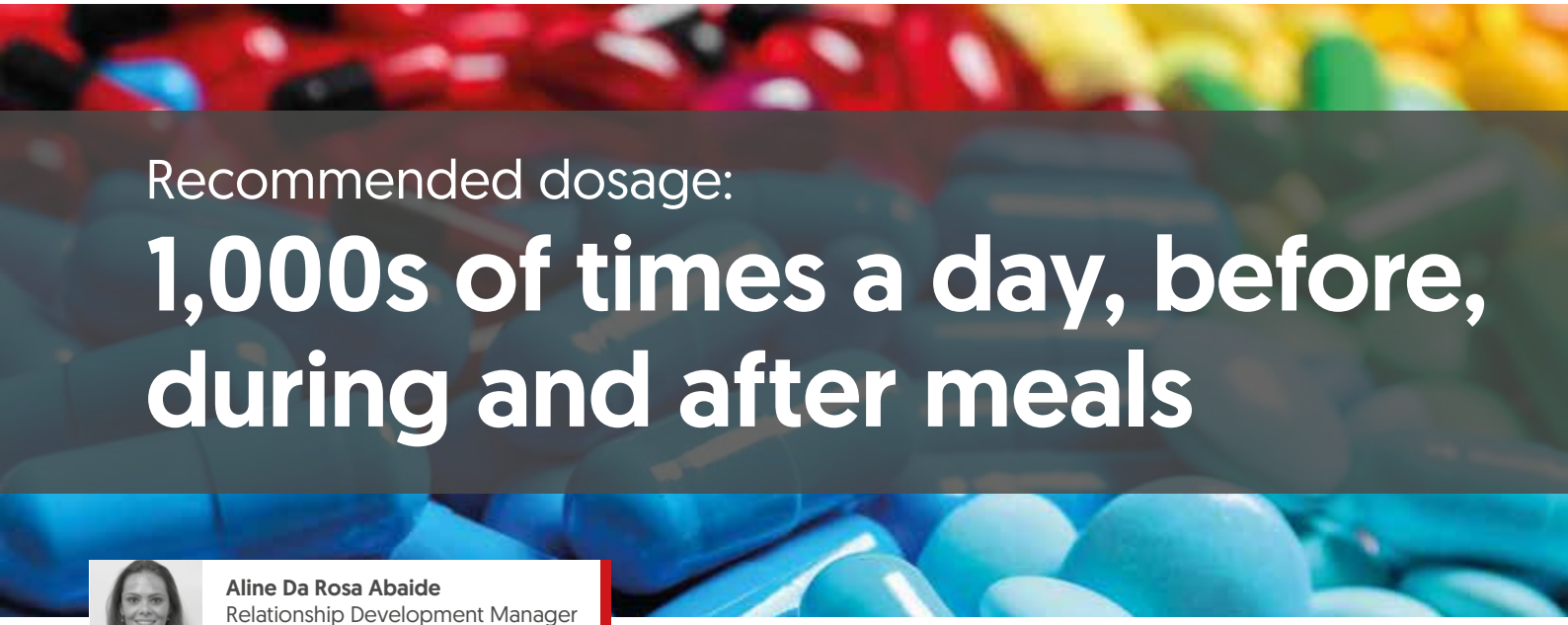
When deciding whether to repair, replace or upgrade your gearbox, it's important to determine what represents the best value.
At ERIKS we understand your requirements and offer the complete gearbox solution.

- Application and project engineering
- Design and customisation
- Assembly and installation
- Repair, replace or upgrade options
- Safety and control integration
- Asset management

Call 0121 508 6000 or visit
eriks.co.uk

Let's make industry work better

ERIKS



Recommended dosage:

1,000s of times a day, before, during and after meals

Aline Da Rosa Abaide
Relationship Development Manager
FESTO

A dosing and packaging line automatically filling pharmaceutical additives performs complex operations, thousands of times a day. Despite the complexity, Festo automation components ensure the line performs reliably all day long, with no side-effects.

The process involves no fewer than five separate operations. The customer demanded that all five stations should be fully automated and linked, and that throughput times should be fast. Also essential – given the stringent regulations applying throughout the pharmaceutical sector – the line had to be built to an hygienic design.

Last but not least, despite the unpredictably of handling bulk goods, the customer wanted a highly reliable line to minimise downtime and maximise productivity.

> “Essential components for a successful solution”

> “Reliable performance and clean operation”

Steel and plastic

The customer chose Burgener AG to manufacture their plant. With over 50 years’ experience of developing and designing dosing and packaging sealing technology, they were an obvious choice. They in turn chose Festo, to provide the essential components for a successful solution.

With extensive experience in manufacturing hygienic design stainless steel components to meet the most stringent regulations, the Festo components would ensure not only reliable performance but also clean operation.

At the first station on the production line, the boxes to be filled are separated, and at the second they’re lined with a plastic bag inflated with air. The volume of air needs to be consistent, and this is achieved using a Festo pressure sensor SPAU for measurement. An IO-Link® ensures there’s a secure connection between the analogue, binary and serial communication devices.

Also at this station, the top of the bag is folded over the box edge: vital for preventing possible reverse contamination of the chemical additive. This stage of the process uses a handling system equipped wit a Festo semi-rotary drive DRRD, rodless drives DGC-K, and compact cylinders ADN and ADNGF.

Additive accuracy

The next stage is the filling of the chemical additive at the dosing station. Starting with a coarse flow for faster filling, this is subsequently scaled down to a fine flow to ensure the required filling quantity is accurate to + 20g.

At the fourth station, the filled bag is sealed using pulse sealing. The top of the bag is shaped using Festo stainless steel round cylinders CRDSNU in a clean design and a complex spreader system, followed by pressing together. Finally, at the fifth station, the boxes are closed with a lid, which involves a number of Festo drives DGSC and DGC.

By making the complex straightforward and the unpredictable reliable, as Simon Brantschen from Burgener AG acknowledged: “the components from Festo play an important role in the successful system concept.”

Saving energy: your lightbulb moment

Jon Whitehouse
Director, Industrial MRO and Safety
ERIKS

Saving energy is an ongoing challenge for industry. Responsible managers are continually searching for new ways to cut kilowatts off their energy use, shave pounds off their power bills, and shrink their carbon footprint into the bargain. So here's an energy-saving idea that can be as easy as changing a lightbulb – literally.

Changing your lighting technology is a simple undertaking which can pay for itself in as little as two years. Yet the benefits for energy use, energy costs, the environment, and even employee health and safety are long-term.

Why work in the dark?

The benefits and cost reductions of some energy-saving measures are more obvious than others. So in some cases you may need support in identifying the most effective actions and in compiling a viable business case.

Upgrading your lighting is one such measure. But an ERIKS Lighting Survey is all the help and support you need to prove your point. And best of all: it's free of charge.

Our partner lighting experts will undertake a comprehensive survey of your site and current lighting set-up, make cost-effective proposals for energy-efficient solutions, and provide you with a fully-costed report detailing the changes they recommend and the likely payback period.

> "A fully-costed report"

LED Q.E.D.

The energy-saving benefits of LED lamps versus fluorescents or sodium discharge lamps are well known. And as the price of LED fittings continues to fall, swapping your old lighting technology for new becomes an increasingly cost-effective decision. Longer life and lower maintenance also help to reduce the total cost of ownership of LED lighting. With a warranty of up to 50,000 hours, you can expect to replace LED lamps far less frequently – and in a warehouse where replacing a light means using a scissor-lift for access, that can represent a significant saving in maintenance time and costs. However not all LEDs are created equal.

> "Not all LEDs are created equal"

The quality of the built-in chip is the main influence on a lamp's lifespan. So if you want to ensure the performance you expect, it's important to choose products from reputable suppliers and manufacturers. ERIKS works with the leading brands and supplies only quality LEDs with a guaranteed lifespan.

Easing your headaches

An ERIKS Lighting Survey not only eases the headache of choosing and planning the right lighting solutions for your warehouse, factory or office. It can also, literally, ease headaches and prevent migraines, by making sure lighting is correctly positioned.

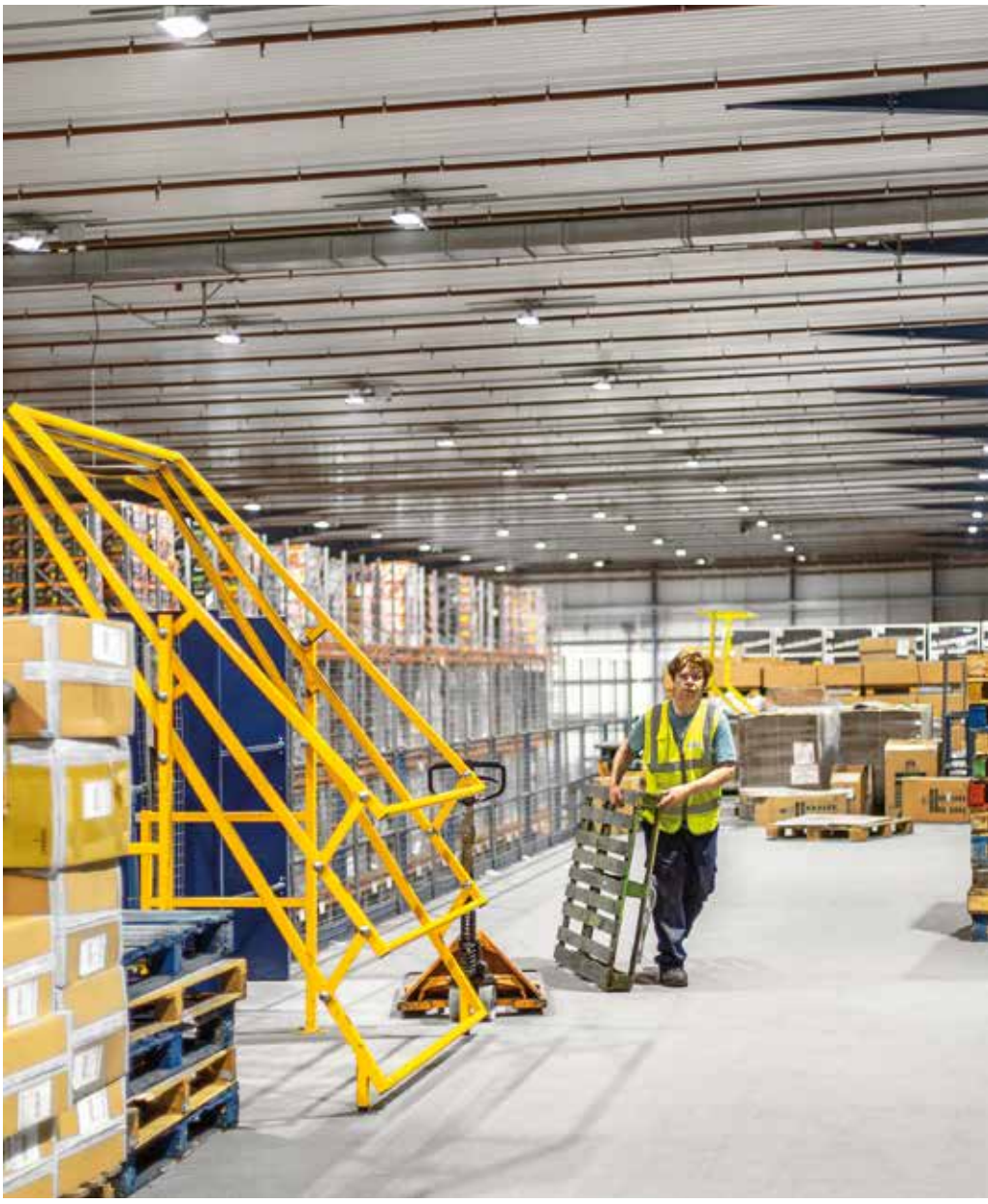
Some lights in certain positions can create shadows which – although not particularly noticeable – cause discomfort for workers in the area. Some cheaper LEDs also flicker – again, unnoticeable in normal use – which can also lead to health issues for people exposed to the lights for long periods.

ERIKS' experienced lighting designers are able to advise on positioning lights for more effective illumination, and avoidance of eyestrain and associated problems. Their analysis of light spread patterns may even lead to you needing fewer fittings and fewer lights, which will help cut costs even further.

> "As easy as changing a lightbulb"

And in areas where your lighting requirements can change – such as a warehouse when shelving is reconfigured – they can recommend "click and connect" wireless fittings, which are quickly and highly adaptable to new lighting needs.

To find out more about saving energy and improving employee comfort and health through lighting, talk to your usual ERIKS representative. It could prove very illuminating.



There's a right way and a wrong way to change a life

Paul Barker
Sales and Application Specialist
Honeywell

If you're an employer, you're no doubt already aware of the re-categorisation of Noise-Induced Hearing Loss (NIHL) by the HSE. The change in status from Category 2 to 3 puts NIHL on a par with – for example – falling from height, as a potentially life-changing risk. However, there's much you can do to provide more effective protection, and – where hearing-loss risk is concerned – to change your employees' lives for the better instead.

A fall from height is not something you would miss. NIHL however can go unnoticed for some time. It's progressive, but also irreversible. That's why it has now been recategorised, and why employers need to be sure they're taking all the right steps to prevent it happening to their employees. As a responsible employer, that's something you'd want to do anyway. But it's also worth noting that there is the possibility of employees making claims against their employer many years after their progressive NIHL first began.

A knee-jerk reaction might be simply to hand out more earplugs or other hearing PPE. However that's not going to go far enough to meet your obligations as an employer, and there's far more you can – and should – be doing.

> "I've been using my earplugs wrong my whole career"

Fit for purpose

A worker involved in a recent hearing protection-related survey by INSPEC International Limited (UK) commented that: "I learned I've been using my earplugs wrong my whole career"!

That's why proper individual fit-testing and training is so important.

The Single Number Rating for hearing PPE is an estimated protection level derived from laboratory testing. But your employees' ears are not laboratories, and the actual level of hearing protection achieved may be nothing like that promised by the product packaging.

As the box-out opposite shows, simply providing PPE is no guarantee of adequate protection. It not only has to fit properly, but also has to be used correctly to be effective.

The VeriPRO® fit-test system from Howard Leight by Honeywell, for example, measures real-world attenuation using unmodified earplugs, and provides accurate, easy-to-understand results in minutes, as well as ensuring you fulfil the regulatory requirements to "ensure proper initial fitting" of hearing protectors.

> "Employees could make claims against their employer many years afterwards"

When is a noise not a noise?

When it's a colleague telling you something important. When it's a phone ringing. When it's a fire alarm or a forklift truck horn. These are all things it's vital for workers to be able to hear, even when their hearing is protected from other damaging noises in their working environment.

The feeling of isolation which some hearing PPE can create is one reason why some employees won't wear hearing protection, even when it's provided. Or if they do, when they need to hold a conversation or take a phone call they remove it temporarily – which may be long enough for NIHL damage to be done.

Fortunately, there are now solutions available from manufacturers such as Honeywell, which not only provide protection but also allow for sounds that wearers need to hear to filter through. For example, the Honeywell Howard Leight™ Impact® Pro Industrial Earmuff incorporates strategically placed directional stereo microphones. These amplify ambient sounds such as alarms, signals and conversations, but suppress loud impact noises down to a safe level.

Choosing and supplying the most effective hearing PPE for the environment. Ensuring it fits properly. Providing training in its correct use. Together, these can be life-changing for your employees. In a good way.

One-on-one ear

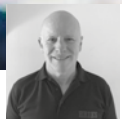
A study using the VeriPRO® earplug fit-test system from Howard Leight by Honeywell asked 100 noise-exposed workers across eight companies to fit the earplug they typically wore, in the way they always did. The results clearly show the importance of one-to-one training in correct earplug fitting:

- 1/3rd of those tested achieved real-world attenuation at least equal to the manufacturer's rating for their earplug
- Another third achieved attenuation within 5dB below the rating
- The last third achieved real-world attenuation from 5-30dB below the published rating for their selected earplugs

Subsequent interviews with the users revealed that the only consistent factor in predicting a good fit and high attenuation was one-to-one training.

> "Fulfil regulatory requirements to "ensure proper initial fitting"

Failure is not an option



Bill Gibson
Technical Manager
ERIKS

In Silicon Valley they say "Fail early, fail fast, fail often." That may be okay when you're developing a new software app but it won't wash with pressure equipment. Failure here can release compressed liquid, steam or other gases, can start a fire with escaping flammable liquids or gases, and can even cause a life- or property-threatening blast. So at ERIKS, we say "Test regularly, test correctly, don't fail at all."

Providing a safe workplace and safe work equipment are the employer's responsibility. For pressure systems and equipment, the Pressure System Safety Regulations (2000) put the requirements down in writing. Systems must be inspected, tested and certified every 12-14 months, and failure to comply may be a criminal offence.

So for the safety of others and for your own legal protection, it's worth knowing the risks, your obligations, and how best to meet them.

Why pressure systems fail

The likelihood of failure for pressure systems varies in line with a number of factors.

For example, the higher the system pressure, the greater the stresses on components and connections. The type of liquid or gas contained and their properties will also affect the level of risk. For example, a highly corrosive substance will introduce additional risks into the system.

> "Know the risks, your obligations, and how best to meet them"

Some of these risks will not be an issue if the equipment and pipework are suitable for the substances being handled. But if they're not, that's another potential cause of failure. Similarly, the equipment's age and condition will have an influence on its performance and reliability, as will the complexity and control of its operation.

However, it's not just the equipment that matters. The skills and knowledge of the people who design, manufacture and install it all have a part to play in reducing the risk and the likelihood of failure.

> "Reducing the risk and the likelihood of failure"

Effective maintenance, testing and operation are all highly important in reducing risk. That's why the Regulations demand a written scheme of examination; require inspection in accordance with this written scheme at the intervals it prescribes; and make it a criminal offence to operate a pressure system after expiry of the resulting certificate.

Take the pressure off

As an employer, you are under huge pressure to stay safe and legal with your pressure system. ERIKS Flow Control takes the pressure off, by testing and certifying two of the most crucial components of your pressure system: the Safety Relief Valve and Pressure Relief Valve.

To help your system remain safe and help you maintain compliance, ERIKS Flow Control – operating from a purpose-built facility – can provide:

- **Nitrogen and water SRV / PRV testing, up to 690 bar.** The ERIKS facility has a fully armoured enclosure, remotely monitored by CCTV, for testing to the limit
- **Installation or installation support.** The first step to a safe and compliant system is correct installation. ERIKS' experienced application engineers can install your system, or provide Best Practice support to your own engineers
- **Repairs and modifications.** After any major repair or modification, the whole system may need re-examination before it can be recommissioned and recertified. ERIKS can carry out work to the highest standards to ensure full compliance, and conduct subsequent testing too
- **Asset logging.** Ensure your pressure system is recertified regularly, as required by the Regulations. ERIKS logs all pressure system assets passing through the Flow Control facility, enabling traceability, tracking and recertification notifications.

One of Silicon Valley's most successful entrepreneurs, Mark Zuckerberg, said that "The biggest risk is not taking any risk." But where your pressure system is concerned, we think you'd be better off listening to ERIKS than to Mark.

> "Test regularly, test correctly"

Pressure points

Pressure systems and equipment can be found across most industries and in many different applications. The Pressure System Safety Regulations (2000) are concerned with the uncontrolled release of stored energy in a pressure system, not with the hazardous nature of any product within the system. Examples of systems and equipment covered by the Regulations are:

- Boilers and steam heating systems
- Pressurised process plant and piping
- Compressed air systems (fixed and portable)
- Pressure cookers, autoclaves and retorts
- Heat exchangers and refrigeration plant
- Valves, steam traps and filters
- Pipework and hoses
- Pressure gauges and level indicators

Are you PrePar Ed?

Paul Skade
Category Manager, Safety Products
ERIKS

The PPE Regulation has changed, and not necessarily to something simpler. If you're wondering about your duties and obligations around Personal Protective Equipment since 21 April, this expert update will help you and your colleagues stay on the right side of the Regulation, and stay safe too.

When new PPE Regulation came into force on 21 April last year, they gave a year's breathing space until 21 April this year. During that interval, new products conforming to the original PPE directive could still be placed on the market. But from 21 April 2019, all new PPE products placed on the market must be manufactured and certified under the new Regulation 2016/425.

So what does this mean for you, your colleagues and your safety at work?

Your protection; not your problem

The good news is that as a purchaser or user of PPE you will benefit, but you won't have to worry about conforming. As long as you always buy properly certified PPE equipment – and why wouldn't you? – the Regulation is not really your problem.

The changes are more of a concern for manufacturers, importers and distributors, who will have to ensure that the products they make, import or sell are certified correctly in line with the current legislation. Even then, there's still some leeway.

> "Certified, safe, and ensures you meet your PPE obligations"

Products are generally certified for 5 years at a time (Category III for 1 year), so current certificates will continue to be valid until they expire or until 21 April 2023 – whichever is sooner. That means that if you buy new PPE during this period and it's the supplier's "old stock", it will still be certified, still be safe, and still ensures you meet your PPE obligations.

Not just red tape

The changes to the Regulation may simply seem like more bureaucracy to deal with. But many decisions on PPE have been made across Europe in the time since the original Regulation was written, and PPE manufacturers and users have been working with these new requirements in the meantime. All the changes do is bring them all together in one place.

Many of these changes you won't even notice, and won't need to. However, you do need to be aware that some products have changed category.

> "Some products have changed category"

You can read more about the change of category for Noise Induced Healing Loss on p.42 , for example. Other category changes include those for products which protect against cuts by handheld chainsaws, and those which protect against high-pressure jet cutting – both of which move from Category II to Category III.

One other change is that products are no longer defined by name (such as "life jackets" or "hearing protection") but in terms of risk (such as "risk of drowning" or "harmful noise").

Safe choice

It's easy to say don't worry about the new Regulation. But when your job or your safety depends on it, that's not so easy to do. What's easier is to let someone else do the worrying.
By choosing to source your PPE from ERIKS, you can take a weight off your mind and pass on the burden of compliance. ERIKS – and all distributors – are obliged under the new Regulation to:

- Act with due care
- Verify that the PPE bears the correct markings and is accompanied by the required documents in a language that can easily be understood by the consumer
- Not make PPE available in the market if it is not considered to meet the essential health and safety requirements
- Ensure transport and storage do not jeopardise the PPE's conformity

Naturally ERIKS will meet these obligations. In addition, as a reputable distributor, we will ensure all supplier partners are adhering to the new Regulation. And we'll ensure we know the provenance of every single PPE product we offer.

> "Pass on the burden of compliance"

Lastly, ERIKS is also fully informed on the possible Brexit implications for PPE, and will ensure the equipment you buy continues to meet your health and safety obligations, whatever the outcome of the UK's withdrawal.

In the face of changing regulations, changing circumstances and changing requirements, ERIKS is always your safest choice for PPE.

When OEM means "Over-Engineered Manufacturing"

Andrew Dawes
Product Manager, Hydraulics
ERIKS

Playing it safe by over-engineering your hydraulic cylinders is not best practice. With the huge range of standard dimensions, configurations and materials available for hydraulic systems, it's perfectly possible to specify the right cylinder for the right duty, to deliver optimum performance at a competitive price, without costly customisation.

An experienced engineering manufacturer will be able to advise you on striking the right balance of the criteria below. And on doing so with standard components, to maintain effective lead times to customers.

Even for higher load requirements there's no need for custom high-pressure designs. Tandem cylinder constructions will be cost-effective, and save compromising other areas of performance.

> "Specify the right cylinder for the right duty"

Stroke, speed and temperature

For customised stroke distances above 3.05m concerns grow around pressure rating. Please note, it is important to consider the positives and potential negatives to optimise system performance, the manufactures will be able to assist such requirements.

Rod diameter will need to be determined to handle the load, and if necessary a pressure rating on load in thrust (push mode) will need to be specified. However, rod sag from horizontal applications may lead to premature rod bearing wear.

When specifying speed, a rule of thumb is that standard hydraulic cylinder seals can handle speeds of up to 1ms. The tolerance threshold of standard cushions is roughly two-thirds that speed.

A standard low-friction seal is often the better choice for higher-speed applications, but greater fluid velocity means higher fluid temperature, which may have a negative effect on the entire system. An experienced hydraulic system manufacturer will offer seals to meet a complete range of temperatures and fluid types.

“Expert knowledge of component”

Applications which require low or high temperature extremes – or both – demand expert knowledge of component interdependency, to achieve the best balance and optimum performance.

Mounting styles

Every mounting design aims to absorb force: stabilising the system and optimising performance. Considerations when selecting a mount are load, speed, and cylinder motion (straight/fixed or pivot).

There are three basic mounting styles. Fixed and Pivot can absorb forces on the cylinder’s centreline, and typically include medium- and heavy-duty mounts for accommodating thrust or tension. A second Fixed category allows the entire cylinder to be supported by the mounting surface below the cylinder centreline.

Standardised mounts within each category meet a growing number of application requirements, and most mounting options are available for single-acting and double-rod cylinders.

“Standard components, for shorter lead times and lower cost”

Bore and rod size

Cylinder bore size is related to operating force, calculated in conjunction with system pressure requirements, and virtually every industrial requirement can be met with ISO and or NFPA standard compliant components. Piston rod size is frequently customised, but is should be remembered that push or pull is never independent of stroke length.

Standard piston rods are chrome plated, you can request other versions, stainless steel as an example, however chrome plated will suffice in the majority of applications.

Cylinder configurations

Standard ISO or NFPA double-acting cylinders are supplied with ports at head and cap ends, there is an option to allow configuration, to include a four-way direction control valve to direct flow to the head or cap ends, where cylinder control be critical in the application. This is also good practice if the cylinder is located a distance away from the directional valve, to help maintain an effective hydraulic system.

Rod ends, rod threading and stop tubing

There are many standard rod end options, including standard threads in metric or imperial formats, male and female and each diameter is typically available in four distinct rod-end styles. Special rod ends are available, however this introduces complexity and non-standard costs, resulting in “special product”. To maintain best engineering practice, maintain the specified thread in the opposing mating half for ease of installation.

For long stroke cylinders under compression loads, a stop tube should be used to reduce bearing stress and potential cylinder locking. Stop tube requirements differ dependant on the style of fixing (fixed or pivot mount).

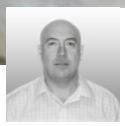
The stop tube lengthens the distance between rod and piston bearings, to reduce bearing load on the push-stroke cylinders when the cylinder is fully extended. This is especially critical for horizontally mounted cylinders, to increase stability and bearing life.

Experience and automation

Some applications may require a level of customisation in component size, materials or configuration. But working with an experienced hydraulic systems solution manufacturer such as Parker, from early in the design process, can save engineering time and money through intelligent use of standard components.

Why not discover the right cylinder for your needs now, with the Parker automated cylinder quoting tool? Just visit **https://ph.parker.com/gb/en/hydraulic-cylinders**

Slow, slow, slow-slow, slow



Nigel Jones
Sales Manager
ERIKS

The slow food movement is probably the best known. But there's also slow travel. Slow fashion. And in the waste water industry, with a s-l-o-w speed of just 1-3rpm, there's the waste tank half-bridge wall drive. But as one utility company's current drive units were becoming slowly obsolete, a fast response was needed from ERIKS.

Slowly crawling around the waste tank walls, half-bridge wall drives scrape the bottom of the tank to agitate and aerate the liquid – encouraging the aerobic activity which leads to breakdown of the waste.

The exceptionally slow speed means that any build-up of waste against the scraper happens at an equally slow rate, allowing the scraper to continue in operation for a long period of time in spite of it. However,

> "Obsolescent parts made this no longer cost-effective"

if the build-up is not spotted and removed in time, ultimately it leads to a catastrophic failure.

Despite this potential for failure, one utility company's wall drives – manufactured by a now long-defunct engineering company and incorporating Brauer wheels and double-reduction drive units – had been in operation for over thirty years.

But now they were beginning to show signs of age. These included significant wear within the castings, and a loss of tolerance in the bearings.

ERIKS had been working with the customer for some time to maintain the units and keep them operational for as long as possible, until the level of failure amongst obsolescent parts made this no longer cost-effective.

After such a length of time and so much wear, it was no longer possible to re-machine the bearing housings back to the original tolerances, which meant efficiency was being lost. At the same time, the cost of new worm and wheel sets was becoming unsupportable, especially when the amount of plant downtime to install replacements was taken into account.
Rather than swapping the obsolete units for

> "More efficient, more cost-effective and even more reliable replacement"

an identical solution, ERIKS proposed a more efficient, more cost-effective and even more reliable replacement: a Fenner CYCLO unit.

Stand by for a shock

One of the major reliability improvements ERIKS' engineers were looking for was in avoiding the risk of catastrophic failure.

The Fenner CYCLO is the ideal solution, thanks to its exceptionally high shock capacity. Whereas most units have a shock capacity of just 200%, the Fenner CYCLO has a shockload rating of up to 500% of torque rating.

This high rating, combined with the slow speed at which the debris and therefore the load build up, gives more time for one of two things to happen. Either the debris will clear itself naturally over time, which then restores the normal load, or the unit will have plenty of time to alert the control panel so it can be turned off and the debris manually removed – long before the load is sufficient to cause catastrophic failure.

Putting it all together

This particular utility company has over 200 half-bridge wall drives in operation, all of which are coming to the end of the useful service life. To help them prepare for the inevitable need to replace their existing units – whilst maintaining continuity of operations – ERIKS have now created a modular solution.

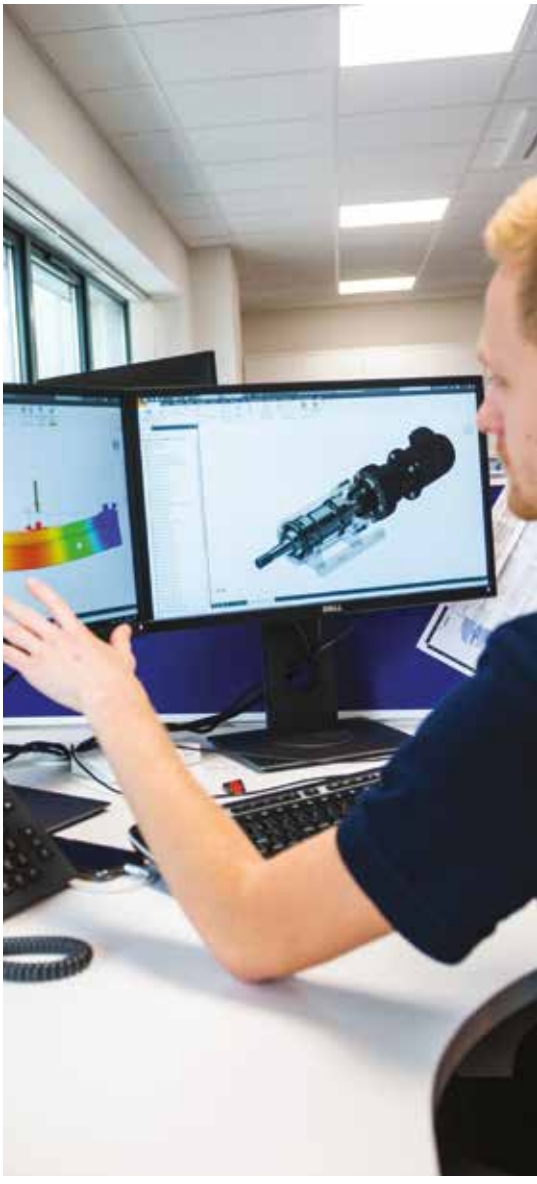
This comprises a standalone shaft housing assembly with parallel and taper shaft options – engineered by ERIKS – a bearing housing, a plug-in Fenner CYCLO gearbox with a wide range of output speeds and an IEC frame dry fit motor. The assembly features adjustable feet to allow for different base-to-centre heights, and the bearing housing can be used as a slave unit to accompany the drive unit.

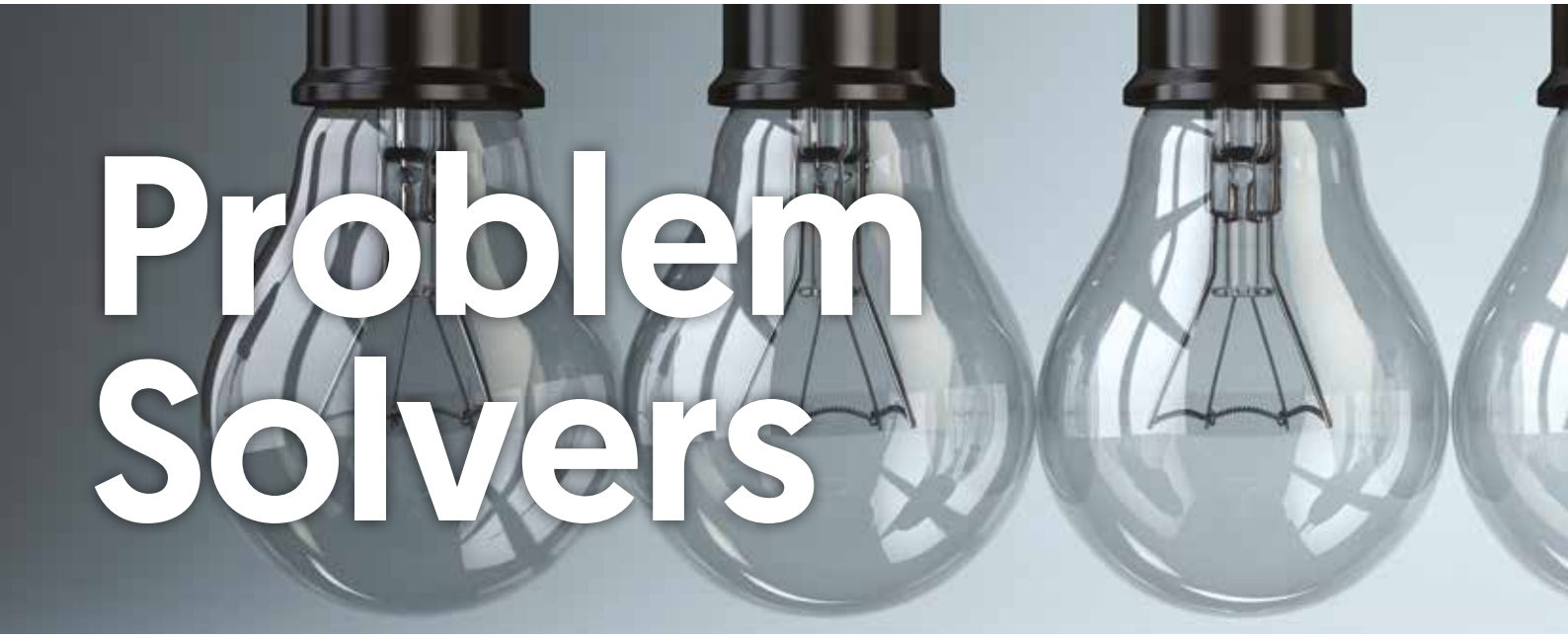
With these modular components kept in stock, when an in-service unit fails it takes only 2-3 days to assemble a complete drive operating to the customer's specified ratio, and to deliver it ready for installation.

Other utility companies can take advantage of ERIKS' experience in the industry with an obsolescence survey. This enables ERIKS to see critical plant in operation, to understand the issues and commonalities across sites, and to devise a service exchange programme to maintain reliable operation.

And even if the utility companies' process is a slow one, ERIKS' service won't be.

> "Created a modular solution"





Problem Solvers

Reliability is an issue across industries, applications and even borders, as the problems outlined below reveal. Whether it's fixing tram wheels in Croatia or soaping-up in your washroom, getting the results you want, time after time is something you can rely on ERIKS to help with.

Just the ticket

Problem

Trams are a hardworking part of the public transport network in Croatia. Transporting over half a million people a day, and with only 5% of time allocated to repair and maintenance, the trams take a heavy pounding. Yet they're expected to achieve a 35-year service life. With the tram wheels required to sustain loads of up to 60 tonnes each, and just 12 bolts per wheel to keep them in place, a safe and reliable locking system is essential.

Solution

To ensure safe, secure locking of every single bolt on every single tram wheel, the tram manufacturer relies on Henkel's LOCTITE range of adhesives. The anaerobic **Henkel Threadlocker LOCTITE 243** in particular offers high load and vibration resistance, helping to keep the bolts firmly secured to the wheels despite the rigours of the tram tracks. The adhesive also completely seals the bolt threads, which means moisture can't get access and cause corrosion. This means bolts not only last longer, but are also easier and quicker to remove when maintenance is required.

Air lock

Problem

Operating pneumatic equipment and applications outside their optimum operating pressures shortens equipment lifecycles and wastes compressed air and energy. Yet many systems lack effective pressure regulation. Even systems which do have regulators may find the pressures have changed because the regulators have been tampered with. Which means the operating pressures are once more outside the optimum, and air and energy are once again being wasted.

Solution

Fitting a regulator is the best way to control pressure, and therefore reduce air and energy consumption, and costs. Fitting an **IMI Norgren Excelon®** Plus tamper-proof regulator is an even better way. Safety and tamper-proof options are built in, including a safety padlock feature as standard. This allows engineers to set the pressure to the optimum level, then lock it in place so it can't be changed or tampered with by anyone unauthorised. The regulator is also 35% lighter and 25% smaller, and when combined with a general purpose filter provides market-leading 98% water extraction at 100% flow rate.

Soap on tap

Problem

Frequent handwashing by workers exposed to dirt and contamination can lead to skin problems. If soaps are too mild, the dirt isn't properly removed, too much soap is used and dry skin can result. And the more soap used, the higher the cost. If soaps are too harsh, frequent washing can also damage skin.

Solution

Foam soap technology can ensure just the right skin cleaning and conditioning, using just the right amount of product. **Estesol® FX™ POWER FOAM** from Deb lasts up to twice as long as traditional washroom soaps. And **Solopol® GFX™** provides 43% more hand washes than traditional hand cleansers. They're also both dispensed from a convenient, hygienic dispenser which helps to ensure just the right amount is used for each handwash. Estesol® FX™ is available dye- and perfume-free for food manufacturing environments. Solopol® GFX™ is HACCP-certified as foodsafe and appropriate for use in food facilities.

Bearing down on counterfeiters

Problem

More than 2.2 million counterfeit bearing products have been seized over a 2-year period. These ranged from small, high-volume production bearings to larger-bore bearings. If undetected, counterfeits can go on to cause real problems for the unwitting buyer. Of inferior quality to genuine bearings, they are more likely to seize, which can lead to application shutdowns, loss of production, severe accidents and even – in the worst-case scenario – death.

Solution

NSK has joined forces with the World Bearing Association and other bearing manufacturers, to **combat bearing counterfeiting**. While they aid enforcement agencies and help close down the counterfeiters, they advise bearing buyers to take their own steps to avoid buying fakes. These include: always buying through an authorised channel; checking the product is wrapped in appropriate shipping material; looking for manufacturer markings in the usual areas of the bearing; inspecting the rolling elements and raceways for abnormal roller appearance and rough finishes.

Share and share alike

Is a lack of information sharing holding Industry 4.0 back?

The hit TV series "Chernobyl" has raised awareness of the 1986 nuclear disaster to a whole new generation of people. Perhaps most shocking for many is the claim that Soviet scientists knew about a fundamental design flaw in the RBMK-1000 reactor but did not tell the engineers who were responsible for its day-to-day operation. As a result, although human error was the overriding cause of the Chernobyl explosion, the system design made it a very difficult one to manage.

This got us thinking about the importance of information sharing in industry. With the issue of collaboration and information visibility central to Industry 4.0 trends that are transforming the sector, what lessons can we all learn from historical events like this? And how can it inform best practice now and in the future?

> "So how can information sharing inform best practice"

The new era of manufacturing that is revolutionising industrial technology and processes through smart connectivity and interaction between machines, people and processes is driving unprecedented operational efficiency. But crucial to this is a seamless information flow about all aspects of production processes and equipment performance.

However, concerns about security and the safety of the data is proving to be a roadblock. Research by ERIKS into who businesses trust when it comes to sharing data found that over three quarter think their own organisations offer only limited or no disclosure of information with their OEM equipment partner. For industrial supply chain and third part maintenance suppliers the situation is worse – with 83% saying that there is limited or zero disclosure of information about machine or production data.

> "Reluctance to share information limits key decision making"

Whether it's down to commercial sensitivity or cybersecurity, reluctance to share information limits the ability of engineers and managers to make key decisions. If further compounded by silo working and budgeting, the true benefits of connectivity are unlikely to be realised.

Going back to Chernobyl, history tells us the catastrophic consequences that can ensue if engineers don't have full visibility of the information and data they require to operate critical machinery. Industry 4.0 trends offer huge opportunities for transformational efficiency and productivity, but this can only happen with a cultural change towards greater collaboration.

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