

KNOW + HOW

Issue 32

AGGRESSIVE ENVIRONMENTS

When working in tough conditions which can involve wet, corrosive and even extreme temperatures, solutions require special considerations which offer resistance and reliability against the environment they will be exposed to.

IN DEPTH:

Exploring how ERIKS delivers countless solutions via their logistics, supply and support network

IN FOCUS:

Who are you calling aggressive?

Redefining the definition of aggressive environments in relation to condition monitoring

DEBATE:

Delving into the pros and cons of just how exactly the Brexit Trade talks are going to be conducted

Your outstanding everyday valve

FESTO



You are looking for a low-cost, all-round valve.
You want high flow rates and reliability.
We are your valve specialists.

→ **WE ARE THE ENGINEERS
OF PRODUCTIVITY.**

VUVS: your new all-round valve.

The VUVS range is perfect for all your everyday applications. Robust and high quality, they deliver excellent performance. Easy to mount with a versatile accessory range. Everything a new valve range should offer – and attractively priced as well!

www.festo.co.uk/VUVS

Welcome



NEVER MISS AN ISSUE

SUBSCRIBE TODAY AND
RECEIVE YOUR **FREE** COPY
DELIVERED TO YOUR DOOR

knowhow.eriks.co.uk/



2017 has been a whirlwind of a year with many twists and turns to keep us all on our toes. What better way start the New Year, then, than with a bumper issue on aggressive environments and how you can keep your equipment strong and reliable, even in the most extreme of conditions.

As readers of KNOW+HOW, you'll no doubt have different opinions on what an aggressive environment actually is. For some of you, it'll be the rocks, rubble and dirt of a quarry. For others, it'll be the high temperatures and pressures of a steel-making plant. Defining "aggressive" is half the battle, which is why we break down what it actually means from a condition monitoring perspective on page 14.

This issue, we have a number of fascinating case studies demonstrating the ways in which companies are already overcoming aggressive environments to achieve significant cost savings and productivity increases. On page 36, learn more about Bosch Rexroth's involvement in the set-up and configuration of an offshore windfarm off the Baltic coast. Festo also joins us on page 16 to reveal how it is keeping a newly-developed product production system safe and reliable.

As well as case studies, we've got insight into a range of products and solutions specifically for aggressive environments. On page 44, learn how applying pressure can

help to sustain electric motors in aggressive operating environments. Page 32 features Gates and its abrasion-resistant hydraulic hoses. Rexnord also joins us to offer advice on choosing the best flexible shaft couplings.

The best laid plans, however, don't just "gang aft agley" – they're guaranteed to not last forever. Equipment will eventually fail or cease being fit for purpose. We've got you covered here as well, though, with a piece on obsolescence planning on page 40.

As we go into 2018, I'd love to hear your thoughts on where you think your industry is going, and what 2017 has taught you. Email us on knowhoweditor@eriks.co.uk, or visit www.eriks.co.uk/KnowHow for more information.

Richard Ludlam
Editor-in-Chief

Contents

ISSUE 32

6-7

LATEST NEWS

The mineral products association commits to supporting mental health initiative

Natural gas emissions set to threaten EU carbon budget

IOT helps improve health and safety in the mining industry study claims that UK oil and gas reserves may only last a decade

Study claims that UK oil and gas reserves may only last a decade

Getting prepared for the next phase of ESOS

8-9

TECHNOLOGY UPDATE

Decent exposure

Making circuit boards smarter

SKF Cooper split roller bearings

2-in-1 lubrication

Cup winners

10

IN DEPTH

Exploring how ERIKS delivers countless solutions via their logistics, supply and support network



10

12

IN FOCUS

14

Who are you calling aggressive?

Redefining the definition of aggressive environments in relation to condition monitoring

16

Taking the long view on safety

Festo shares insight into implementing a fast and reliable solution in a potentially hazardous environment

20

Who cleans up the dust you've cleaned up

IMI have the low down on the most efficient ways to clean your dust filters

22

How to arrange your bearings

Maximise the service life of your bearings under tough conditions with SKF

24

Not all couplings are created equal

Rexnord de-mystifies how to choose the right coupling for the right application

26

When a bearing is really a hinge

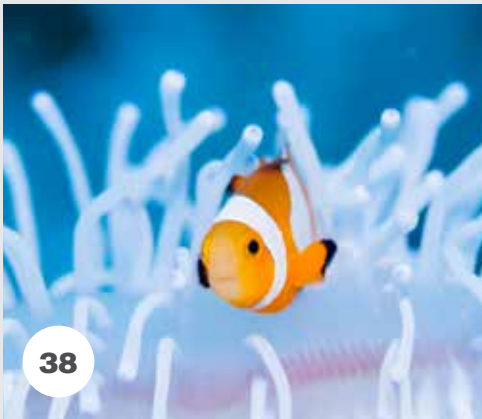
NSK's range of bearing solutions, keep equipment operating in the most challenging conditions



26



30



38



40

ENERGY SAVINGS BEST PRACTICE

- 40 Obsolete-ly fabulous**
Being prepared and mitigating risks are the most effective way of avoiding the more severe consequences of part obsolescence - Andy Cruse of ERIKS, shows you how
- 44 Can pressure be good for your motors?**
A surprising solution for getting the best performance and reliability from your motors in aggressive environments

46

DEBATE

Delving into the pros and cons of just how exactly the Brexit Trade talks are going to be conducted

- 28 How a brickmakers production was saved from hitting the wall**
ERIKS in-house design and production capabilities help to guard against a catastrophic failure
- 30 Digging for victory**
What can OEM's do to adapt to changing times in the mining and quarrying sector?
- 32 Abrasion resistant hose**
Standard hydraulic hose is no match for aggressive environments but Gates have the solution
- 34 Hands up if you're clear on the new PPE glove regulations**
Helping you choose the right gloves for your particular and regulatory needs
- 36 A sea change in thinking**
Innovative thinking from Bosch Rexroth saving time and money
- 38 New anti-seize paste seizes the initiative**
Finally an anti-seize paste that works and is still kind to the environment
- 39 The dark slide of lighting**
Personal lighting designed for use in ATEX Zones, ERIKS have the answer



THE MINERAL PRODUCTS ASSOCIATION COMMITTS TO SUPPORTING **MENTAL** **HEALTH INITIATIVE**

The Mineral Products Association (MPA) has joined a growing list of organisations championing the Mates in Mind initiative, which supports better workplace mental health.

The MPA has committed to improving positive mental wellbeing across the construction materials supply chain, from implementing a mental health at work plan to raising awareness of and addressing the stigma of poor mental health.

Key elements of the Mates in Mind initiative include: guidance and support, awareness and education, communication, and research and development. The association will also have access to a range of resources, techniques and tools to help its members improve mental health support in their own workplaces.

NATURAL GAS EMISSIONS SET TO **THREATEN** **EU CARBON** **BUDGET**

The Tyndall Centre for Climate Change Research has compiled a report stating that current methane (CH₄) emissions will lead to a temperature change of approximately 0.6°C.

Alongside other fossil fuel use, this would mean that Europe's carbon budget (which aims to limit a 2°C increase in temperature from pre-industrial levels), will be exceeded in under nine years.

The report, which is based on life cycle analysis and was commissioned by Friends of the Earth Europe, concludes that, to meet its commitment in the Paris agreement, the EU must immediately phase out existing natural gas and other fossil fuel use across the EU.

European countries, including the UK, have been using natural gas as a "bridging fuel" to help the transition to a low-carbon economy. However, natural gas supply chains, which emit methane, have approximately 34 times more global warming potential than CO₂ over a 100-year period.

IOT HELPS **IMPROVE HEALTH AND** **SAFETY IN THE MINING INDUSTRY**

According to research by Inmarsat, a UK satellite telecommunications company, adopting automation and the Internet of Things (IoT) can greatly improve the health and safety of staff in the mining industry.

Inmarsat's 'The Future of IoT in Enterprise – 2017' report takes into account responses from around 100 large mining companies and reveals that health and safety remain key factors in driving them to embrace IoT.

Around 44% of respondents stated that deployment of IoT is important in improving the health and safety of staff. Roughly 40% of companies in the mining industry are also planning to deploy IoT solutions within the next 18 months.



STUDY CLAIMS THAT UK OIL AND GAS RESERVES MAY ONLY **LAST A DECADE**

Research by scientists at the University of Edinburgh has suggested that the UK oil industry is entering its final decade of production.

The study estimates that close to 10% of the UK's original recoverable oil and gas remains. It also warns that

fracking is unlikely to be economically feasible in the UK due to a lack of sites with suitable geology.

Based on the study's findings, the authors have predicted that the UK will soon need to import all of its oil. They

therefore recommend a move towards using more renewable energy sources, such as offshore wind and advanced solar energy technologies.



GETTING PREPARED FOR THE NEXT PHASE OF **ESOS**

The compliance period for Phase 2 of the UK government's Energy Savings Opportunity Scheme (ESOS) has begun, so now is the time to gather data and choose a route to compliance to ensure you're ready for the 5th December 2019 deadline.

Finding the cost and time necessary to assess energy savings can be a complex task, which is why we suggest sourcing a supplier that can undertake assessments and present unbiased recommendations.

The right partner will offer a range of solutions to ensure you're ESOS compliant, including condition monitoring, pump and system energy audits, compressed air leak surveys, and thermography surveys.

ANTI-FREEZE FOR PEOPLE

Exposed skin in cold working conditions needs specialist protection. Which is exactly what Deb Stokoderm Frost pre-work cream is formulated to provide.

Skin exposure to the cold for long periods can cause dry skin issues, as well as severe long-term problems. Dry skin is especially common in winter, when outside humidity drops, the air is cold and dry, and the water in the skin evaporates more quickly.

In these working conditions, inadequate skin protection can seriously hamper productivity. And developing an occupational skin disorder can have negative effects on workers' morale, earnings, and even friends and family.

Part of the Deb Stoko Range, Stokoderm Frost's dual-action formula prevents skin dryness and prevents the cream from freezing – so it can be applied even at temperatures as low as -30°C. Dermatologically tested and safe for use on any exposed skin – including hands and face – Stokoderm Frost strengthens the skin's natural barrier, to maintain user comfort throughout the working day.

Easy to apply, quickly absorbed, and compatible with gloves, Stokoderm Frost is ideal for outdoor workers in construction and mining, for example, as well as those working in refrigerated environments across the food, catering, warehousing and logistics sectors.



MAKING CIRCUIT BOARDS SMARTER

Your Industry 4.0 smart factory relies on data to optimise production efficiency and increase flexibility and responsiveness. So making every single circuit board in production into a data generator is another step closer to even smarter manufacturing.

Brady's fully automated printed circuit board labelling solution applies durable product labels that remain legible throughout entire production cycles. Accurately applied by automated print-and-apply systems, Brady labels connect every circuit board in production to your smart factory, sending information to your MES, to other machines

and production cycles, or to your up- and down-stream supply chains.

Accurate tracking throughout production processes unleashes a whole range of competitive advantages. Product quality control and safety will increase. You'll improve your reputation and brand protection. Reduce counterfeit components and product recalls. And cut the costs of production and warranties. As well as ensuring legal and regulatory compliance.

The Brady solution includes labels and auto-apply systems, supported by setup, maintenance and parts services.



SKF COOPER SPLIT ROLLER BEARINGS

To reduce machinery maintenance and repair downtime, whether planned or through bearing failure, SKF Cooper split roller bearings are the ideal solution. SKF Cooper bearings are split to the shaft, making them ideal for inaccessible or trapped locations, such as between a head pulley and gearbox or motor, and eliminate the need to dismount associated equipment.

Split to the shaft bearings disassemble into smaller components, easing the task of lifting and handling, and making assembly or changeout simple, even in the most cramped and inaccessible locations. Clearances are pre-set, so no need for on-site adjustment, and no specialist fitting tools are required.

The current range is the widest on the market, comprising four series of cylindrical roller bearing and two types of split tapered roller bearing. The standard manufacturing range is available for bore sizes from 30 to 1,500 mm.

SKF Cooper is the only manufacturer of split bearings to have its own integrated foundry, ensuring attention to quality for both the bearing and its housing. Housings are produced and machined in a variety of configurations and materials, including grey cast iron grade 250, nodular iron, steel, aluminium and stainless steel.



2-IN-1 LUBRICATION

Now there's no need for two automatic lubricators when you're lubricating two rolling bearings of different sizes. The FAG CONCEPT2 does the job with one device.

Even if the lubrication intervals of the bearings are different, the FAG CONCEPT2 can cope, as it has two lubrication points which can be individually controlled by two piston-dispensing pumps, or controlled as one by one pump.

The CONCEPT2 has a 250cm³ lubricant reservoir suitable for oil or grease up to NLGI 2. Lubricant delivery pressure is up to 50 bar when the lubricator is powered from the mains, or 30 bar when powered by battery.

Ideal for relubrication of rotary tables and a variety of industrial rolling bearing applications – from pumps to fans, compressors, gearboxes and electric motors – the FAG CONCEPT2 is the compact and cost-effective way to lubricate more bearings, for less.



CUP WINNERS

From the smallest moulded plastic parts, to glass screens for electronic devices, to large metal sheets for aircraft, a Piab cup will handle them. Or the Piab design team will engineer a custom-made solution for you.

In high-speed applications – such as unloading parts with rough or textured surfaces – and on flat, potentially slippery surfaces, the cups' specially developed Duraflex® material offers excellent hold, combining the elasticity of rubber and the wear resistance of polyurethane.

In high-temperature applications such as injection moulding and curing, Duraflex's heat resistance helps to shorten cycle times. And where precise parts placement is important, Piab cups' superior stability helps improve finished product quality and reduce scrappage.

Duraflex is highly durable with an elastic memory, for a longer cup lifespan. And the material is mark-free, with no Paint Wetting Impairment Substances in the formulation.

A wide range of flexible and nimble Piab friction cups is also available, to eliminate expensive and cumbersome spring brackets and plunges on ejectors or robot end-of-arm tools. Piab cups are simpler, less costly to install – and just as effective.



IN **DEPTH**



DEMAND
THE BEST
SUPPLY SOLUTIONS



In previous editions of Know+How we've been outlining how one conversation with ERIKS leads to countless solutions. But where are those solutions when you need them? Thanks to ERIKS' logistics, supply and support network, they're at your fingertips.

Whether you're after a critical component to get production back up and running, a regular consumables delivery, or expert technical advice, ERIKS deliver. And the figures show that ERIKS deliver on time, no less than 99.6% of the time.

So how do ERIKS deliver the products, solutions and advice you want, where and when you want them? By giving you the best of both worlds: the convenience and proximity of a local independent, backed by the efficiency and resources of a major global business.

All over the place

ERIKS are all over the place in a carefully organised way – from on your doorstep to across the UK and beyond.

Your first point of contact will usually be your local Service Centre. Our nationwide network means your only 30 minutes away on average and each one is able to respond quickly and efficiently to your product requirements. They're also intelligently stocked and staffed specifically to serve the principal local industry sectors with their most commonly requested items, supported by industry know-how.

Behind every great Service Centre is an ERIKS Regional Hub

This is a larger resource with more capabilities and even more expertise – including a workshop with time-served specialist engineers able to maintain, repair and restore your mechanical and electrical assets.

Your customised assemblies can be built and tested here in less time than most companies take to acknowledge your order. And each Regional Hubs' Parts Warehouse is tailored to local industries'



needs, supported by know-how that covers everything from simple parts selection advice to full turnkey product specification, installation and commissioning.

“BECAUSE ERIKS ALWAYS AIM TO GO ABOVE AND BEYOND, ERIKS' NETWORK GOES FURTHER STILL...”

There are Engineering Centres to provide you with specialist engineering services. Technology Centres offering you the ultimate technical know-how supported by project management. And Distribution Centres which are focused solely on getting the right parts to you in the least possible time.

For the ultimate in convenience and efficiency, ERIKS also offer solutions that bring product supply know-how not just to your doorstep but right through your door. ERIKS On-Site and Integrated Solutions can take your MRO supply chain problems completely off your hands, leaving you free to concentrate on your core business.



Your order, your way

How would you like to order your product?

For common products, the ERIKS Webshop is the first port of call. It contains our core product offer, available for account customers to order 24/7.

You can also get help through online chat during Webshop working hours, and you can check prices and availability in real time, together with detailed product and delivery information, a complete view of all your transactions with ERIKS.

When your order is more complex or unusual, then the ERIKS Easy Order System online ordering tool is here to help you.

ON TIME,
99.6%
OF THE TIME

It not only supports efficient procurement – with a web catalogue featuring over 200,000 popular maintenance products, and a stock control solution – but it can also help you to simplify your administration process, monitor your MRO spend, and cut your internal procurement costs.

Pricing and stock availability are provided in real time, and you can search by your own part number to save even more time and effort. It's also a big step towards streamlining your supplier base.

Lastly, as they're important elements of your procurement processes, ERIKS naturally supports hosted and punch-out catalogues, and EDI transactions.

Life support for products

Over several articles, we've looked at the whole ERIKS story. We've learned about ERIKS' unparalleled product range.

We've discovered more about the people with the know-how who support it, maintain it and repair it. And now we've revealed ERIKS' extensive logistics operation, that ensures the products and expertise you want are always in the right place at the right time to meet your requirements.



But it's important to remember that ERIKS' supply, service and support isn't just a one-off. It's a long-term, sustainable product solution that lasts as long as the product – and then starts all over again with its replacement...

...SO IT COULDN'T
BE ANY SIMPLER
TO **GET THINGS DONE**



IN FOCUS

AGGRESSIVE ENVIRONMENTS



David Manning-Ohren
Business Development Manager
ERIKS UK and Ireland

The first step towards useful Condition Monitoring in an aggressive environment is to clarify your definition of “aggressive”. Only when you are clear what you’re dealing with can you deal with it successfully.

What's aggressive in one context might not be in another. Flour on a bakery floor isn't aggressive. Flour in a bearing is. If it finds its way through seals and combines with lubricant, the resulting paste will grind into the bearing, causing excessive wear and, ultimately, bearing failure.

Many failure modes in aggressive environments have a very sharp failure curve. By the time traditional Condition Monitoring solutions have flagged-up an issue, much of the damage is already done. So before you think about Condition Monitoring, there are other ways to give your assets a fighting chance against even the most aggressive operating conditions.

A clean sweep

Hostile environments for machines are quite often a result of a process within an industry. The machine manufacturers are aware of the possibility of creating such an environment and hence specify their equipment accordingly. Over time though, containment measures wear and equipment is at higher risk of asset failure. So good housekeeping can make a difference.

It may not be possible to avoid producing contaminants. But they don't have to cause a problem.

Dust can be damped down with sprays or extracted with extractor fans so it doesn't

escape into the wider operating environment. Conveyor belts can be fitted with surfaces which prevent offending substances from falling off. Anything which does escape should be cleaned-up immediately. Elements of the process which create most dust should be contained, making the aggressive environment smaller and more manageable.

With a combination of these measures, even the dirtiest process can clean up its act to the benefit of its operating environment and the equipment within it.

But it's also good to question why the equipment is there in the first place.

IT MAY NOT BE POSSIBLE TO AVOID PRODUCING CONTAMINANTS.
BUT THEY DON'T HAVE TO CAUSE A PROBLEM.

WHO ARE YOU CALLING AGGRESSIVE?

Even if your motor isn't operating in an aggressive environment in the strictest sense, it could still be affected by aggressive contaminants.

For example, a crusher clearly operates in an aggressive environment but, strictly speaking, the motor driving the conveyor belt from the crusher doesn't. However, if contaminants from crushing are not sufficiently contained, effectively extracted or otherwise removed, they will spread, the aggressive environment will extend, and now your motor will be within it. If it only has a standard IP rating, it won't be long before its performance and reliability are affected.

SO ONCE AGAIN, THE ISSUE COMES BACK TO GOOD HOUSEKEEPING

But let's say you've established the cleanest operating environment you can. You've moved whatever assets you can out of harm's way. And you've correctly specified the IP rating of those assets that unavoidably come into contact with contaminants.

Now what else can you do to maximise reliability, and reduce downtime and critical failures? It's time to employ the third line of defence.

Defence of the last resort

When all other options have been exhausted, it may be time to consider moulded-oil bearings and super seals to increase protection against contaminant ingress, or to look at automatic lubricators such as the Simalube, which place positive pressure on the lubricant within the bearing, to help keep out contaminants.

Then it's time to think about Condition Monitoring

Given the sharp failure curve within aggressive environments, traditional periodic portable monitoring will not be effective. Instead you should consider live data acquisition through real-time online monitoring, and ERIKS eConnect, to enable you to identify issues soon enough, such as when debris, dust or fluid has increased, to avoid them creating critical failures.

ERIKS' comprehensive know-how and solutions capabilities, plus transferable skills from a vast range of industries, will ensure that you find the optimum solution for every application and any aggressive environment.

If you can't stand the heat...

Just because an asset is part of the process which is creating the aggressive environment, it doesn't mean it physically needs to be in that environment.

Using a longer driveshaft to connect a gearbox to its motor, for example, makes it feasible to move the motor out of the aggressive environment, yet still have it driving the gearbox inside. Driveshafts of up to 10m in length are entirely possible if engineered-in at the design stage, so there are few applications where it's impossible to create enough distance for the motor to be situated somewhere cleaner.

For the gearbox which remains in the aggressive environment, lubrication is an effective defence against contaminants. It reduces the friction that can result if

contaminants enter moving parts, and it offers a medium which can be monitored for early warning signs of contamination. For example, some sensors can detect as little as a teaspoon of water in a litre of oil.

Performing seals

If you've done everything you can to keep your operating environment clean and free from contaminants, and you've moved vulnerable assets out of the aggressive environment, then your next course of action is to look at the assets themselves.

IS THEIR IP RATING CORRECT FOR THE OPERATING CONDITIONS?

TAKING THE LONG VIEW ON SAFETY



FESTO

Richard Causley
Relationship Development Manager

When your new product R&D can take up to 15 years, you want actual production to be as fast and reliable as possible. And when your entire production system is classified as potentially explosive Zone 1 and Zone 2, then you also want it to be as safe as possible. Which – if you're Bayer Crop Science – means asking for advice, support and solutions from Festo.

Bayer's €110 million investment in a multi-purpose production system brought their ingredient development and manufacturing, laboratory processing, sampling, piloting and production all under one roof, in Dormagen, Germany.

With process development requiring the use of flammable operating fluids, frequent process changeovers, and numerous interfaces and intervention points, the whole system is designated as potentially explosive zones 1 and 2, in accordance with explosion prevention and protection measures.

So, knowing that the probability of an incident depends largely on the reliability of the system components and individual processes, Bayer realised the importance of choosing reliable process control instrumentation and technology.

The efficiency bonus

Instrumentation and control technology components certified in accordance with IEC 61508 make an essential contribution to safety. They help to prevent dangerous plant conditions such as overpressure, and can detect future trends and initiate suitable preventive measures. For example, by calculating the temperature gradient they can detect a runaway reaction so that automatic measures – together with alerts if necessary – can be activated to prevent a safety risk incident.

Reliable availability of coolant water, electricity, emergency stop and stress-relief devices, pumps, mixers and process valves minimises safety risks.



The bonus for production plants is that all these factors also optimise the economic efficiency of the process. Today's process engineering systems are so highly optimised, the only sure way to increase output is to ensure a reliable, highly productive system with minimum downtime. This leads to reduced inspection cycles and inspection times, as well as avoiding equipment idleness or downtime due to unscheduled repairs.

Safety first – but flexibility second

The Bayer Crop Science multi-purpose system is designed to be highly flexible in its connectivity and operation – allowing subsystems and equipment such as dryers, centrifuges, distillers, stirrer tanks and other reactors to be connected and utilised in a variety of ways.

An in-house pipeline with adaptable piping handles material flows, while the decentralised process control system is distributed over



1500+ VALVES
15 YEARS
0 MALFUNCTIONS

a total of 67 automation systems, to enable highly flexible and adaptable adjustment.

To ensure safety, extensive instrumentation and numerous control technology devices are used to switch dosing, exhaust, steam and other valves to failsafe positions, with actuators activated by solenoid valves. If an emergency situation arises, the valves quickly exhaust the actuator and close the process valve.

Placed between the positioner and the actuator, the solenoid valves are required to have at least the same SIL classification as the entire safety loop they sit in, with single-channel architecture.

The impossible valve

The Festo solenoid valves VOFC and VOFD can be supplied with TÜV certification up to SIL 3. This guarantees a failure probability rate of 2.41 E-4, and a safe failure fraction of 75%. Or in simple

terms, used correctly, there will be a maximum of one faulty operation in 2,410 switching cycles.

If the safety loops have an annual failsafe inspection – as most will – then a faulty operation will occur only once in 2,410 years – making it virtually impossible for a valve not to switch when it should.

However, what makes conditions especially challenging for a solenoid valve in a safety loop is that it's in "low demand mode". Built for several million switching cycles, a valve only switched on in case of emergency will be permanently energised – perhaps for decades – but almost permanently idle. Even so, it has to be ready and able to shut down immediately and reliably when required.

That's why Bayer chose Festo solenoid valves VOFC – and installed over 1,500 of them in safety- and non-safety related circuits in their multi-purpose system.





1 valve. Dozens of applications

Bayer's requirement was for one solenoid valve to suit all applications, and to be compatible with the requirements for actuation in intrinsically safe circuits (Exi) in zone 1.

Many of the VOFC valves on their site are used in the multi-purpose system for actuating ball valve units in tank systems, reactors and media supply systems. But others are used across the site for a wide range of applications – some to control large actuators and some to control small, some indoors, some outdoors.

Specifically developed to meet process industry criteria, the VOFC range features piston poppet valve technology, with no dynamic seals. This allows switching operations to be made by a diaphragm, with no friction which might otherwise negatively affect switching performance. The solenoid coil power rating is comparatively low, at just 1,8W (or less than 200mW for the intrinsically safe variant). The valve itself has outstanding flow characteristics, and these have a positive effect on the safety valve's closing time.

Even the harsh ambient conditions within Bayer's facility are no challenge for the VOFC, which has proven Ematal corrosion protection, exhaust ports with special non-return devices to prevent penetration of rainwater or outdoor air into the solenoid valves or downstream actuators, and also lacks venting holes which could allow unwanted ingress.

The compressed air supply lines for the solenoid valves have also been designed for reliability and efficiency, with zero leakage. Made from polyurethane tubing they utilise NPOH push-in fittings featuring an integrated sealing ring. The lines are highly flexible, quick and easy to install, and highly resistant to UV radiation and chemicals. Available in a choice of colours, they eliminate the need for additional identification of the nitrogen and compressed air lines used in the system as a pressure medium.

Lastly the use of bulk packs eliminates the need for connection screws for large tubing lengths, which reduces to a minimum the number of possible sources of leaks.

Festo forever

During 15 years of operation in Bayer's multi-purpose system, not a single one of the 1,500-plus intrinsically safe Festo solenoid valves with TÜV certification up to SIL 3 has malfunctioned.

When 14 of them were removed and extensively tested in the climatic chamber at Festo, they provided statistics for comparison with earlier laboratory test results from the German Technical Control Board TÜV-Rheinland. As a result, the TÜV has now issued certification with no limitation of the valve's service life.

This means that the operating company responsible for installation, operation and maintenance can specify service life for itself. Festo is the first company to receive this unlimited service life certification for solenoid valves.

When new product R&D can take up to 15 years, like Bayer Crop Science's, you tend to take the long view. With Festo solenoid valves VOFC, you can afford to.



LOCTITE®

Losing money with parts vibrating loose or joints leaking?

Whatever your industry, LOCTITE has an adhesive solution.

Contact us on:

01442 278100

www.loctite.co.uk



**CONTACT
US NOW**

Henkel

Excellence is our Passion



WHO **CLEANS UP**
THE DUST YOU'VE
CLEANED UP?



IMI
Precision Engineering

Neil Lamb
Business Development Manager

In most production environments it's essential to collect dust – because it's potentially harmful to workers, equipment, the wider environment, or all three. But once it's been collected, how is it cleaned out of the filter that's collected it?

Like anything else that's exposed to dust, dust filters become less effective the more dust they collect. So it's as important to thoroughly clean the filters as it is to clean the air in the first place. With over 25 years' experience of producing dust cleaning system components, IMI Precision Engineering have the solution.

Rigged results

One of the most efficient ways to clean a dust filter is by air-blasting: using a short, intense pulse of air which blasts into the soiled filter element, causing dust and loose dirt to fall out ready for removal.

IMI Precision Engineering's filter valves for air-blasting are part of their IMI Buschjost process valve product family and have been developed to enable efficient, inexpensive cleaning, with reduced air consumption and prolonged valve service life. The valves have recently been proven in use in the highly aggressive environment of a surface top hammer drill rig.

These rigs can only operate reliably if the large quantities of dust the drilling generates are removed from the drill's path, to prevent the drill string from jamming. However, the dust contains respirable particles which present a significant health and safety hazard, so it can't simply be exhausted. Instead, it has to be carefully collected for safe disposal.

The customer in question achieves this by integrating compressors and patented jet pulse dust collectors directly onto the drill rigs. The dust-laden air flows into sock-shaped filter bags where it collects or cakes on the outside. The caked dust is then shaken into the collector by timed blasts of compressed air, ready for safe disposal.

A fast blast

To deliver the necessary fast and intense blast of air for the most effective cleaning, a valve is required which can very quickly achieve the set point air pressure in the filter. This means the valve has to open fully in just milliseconds.

The IMI Buschjost valve is operated by a unique one-piece diaphragm rather than the traditional spring, and functions reliably at the very high speeds necessary. The closing mechanism works just as quickly as the opening mechanism – in milliseconds – which ensures the air pulse returns to zero as quickly as possible. This means less compressed air is used so there's less cost in producing it.

Explosion-proof up to hazardous area 1/21, and suitable for use in temperatures ranging from -40°C to +140°C, the valve not only reduces energy consumption, but also simplifies the customer's ordering process, as it can be used across their complete range of blast hole drill rigs.

Because dust gets everywhere

Wherever there's dust, the IMI Buschjost valve is an effective solution in the filtering application.

Pneumatic pressure and vacuum delivery systems, for example, incorporate air filters to separate the product – such as grain, pharmaceutical products or cement – from the air. General dust filter systems have also become more important over the years, in line with the increasing stringency of environmental standards, which demand that any air or gas contaminated with dust is fully filtered before it can be discharged into the atmosphere.

“LESS COMPRESSED AIR IS USED SO THERE'S LESS COST IN PRODUCING IT...”

Dust filter systems are also used to reduce gaseous chemical content – such as sulphur – from discharged air, and to clean dust particles from air used in combustion processes for electricity generation. In a gas turbine power plant, for example, dust particles could cause permanent damage to the turbine blades.

Complete solution

With most filter systems featuring a fabric or cartridge filter that needs cleaning, the IMI Buschjost valve series provides a highly effective solution.

Manufactured from high-grade materials, it offers a high flow rate, optional high

corrosion resistance, an integrated silencer, and a frost-proof solenoid system. The solenoid is also interchangeable without tools, thanks to IMI Twist-On®.

However valves are not all that IMI Precision Engineering offer

The company's filter system range includes electronic controls, differential pressure regulators, measuring line purge valves, and Venturi and Coander nozzles for the secondary air flow involved in the dust collection process.

With such a comprehensive product offering, market-leading innovation, technology, reliability, and value for money, one thing IMI can't ever be accused of is gathering dust.



**EFFECTIVE
AND
RELIABLE
BEARING
PROTECTION**

HOW TO ARRANGE YOUR **BEARINGS**



Dave Oliver
Channel and Platform Manager
SKF UK

The high-volume, all-weather, 24/7 production of the mining and quarrying sector – all conducted in an extremely hostile environment – can cause even the most rugged mechanical components to struggle. And for precision engineering parts such as rolling bearings, it's one of the toughest tests. But correctly specify the bearing and seal arrangement, and bearings can have a long and trouble-free service life despite the conditions.

The recently upgraded SKF Explorer spherical roller bearings now combine high-quality steel with an improved heat treatment process, for even better performance. The result is longer service life, even under difficult operating conditions and where contamination or poor lubrication are a fact of life.

Sealed SKF Explorer spherical roller bearings are ready-to-use units, factory-filled with the correct amount of grease. The high-performance lubricant is then protected by integrated double-lipped seals on either side of the bearing.

The bearings are designed to accommodate high radial and axial loads in applications prone to misalignment or shaft deflections. They're also vibration tolerant, surface

hardened, and have stamped steel cages that withstand much faster accelerations than standard bearings. This combination makes them particularly suited to a tough life in aggregate processing machinery.

When three's better than two

Bearings are typically fitted in grease-filled housings with an open bearing. This creates two barriers to contaminants: the external L- or S-seals within the housing, and the grease.

In contaminated working environments, contaminants are usually forced out of this bearing arrangement by purging the bearing cavity with large quantities of grease. But using the SKF three-barrier solution eliminates that process.

"IT'S A TOUGH LIFE FOR AGGREGATE PROCESSING MACHINERY..."

SKF Product Solutions



With the open bearing replaced by a sealed SKF Explorer spherical roller bearing, an extra layer of sealing protection is added. At the same time, the barrier grease (for filling the housing) and the housing seals are effectively independent of the bearing lubricant. This can help to extend bearing life, reduce maintenance and – if appropriate – allow the use of biodegradable greases.

Ultra-protection

In quarries where ultra-fine dusts such as taconite abrasive iron ore are released, an even higher level of bearing protection is required. The SKF three-barrier solution can be made even more effective by replacing the housing's external seals with SKF Taconite seals.

Suitable for protecting bearings in SKF split plummer block housings, these are essentially a labyrinth seal, with three to four labyrinth stages arranged axially.

The additional labyrinth stages include an internal low-friction rotating V-ring facing

the bearing, to deflect water. Together, these barriers provide extremely effective and reliable bearing protection, against moisture and fine particle ingress. They also prevent contaminants from penetrating the bearing when the seal is purged for re-lubrication.

Quick-ety split

Another bearing type frequently found in quarrying applications is the split roller bearing, in pillow block or flange housings. These split-to-the-shaft bearings save time and money for quarry operators, because they can be removed more quickly and easily than ordinary bearings, from difficult-to-access locations in machinery. Often an ordinary bearing couldn't be taken out from the same location without dismantling large components.

SKF Cooper is a leading manufacturer of these bearings – some of which have bores as large as 1,500mm – and is a key supplier to the quarrying industry.

In addition to split roller bearings, the company supplies split tapered roller bearings. These feature two opposed rows of tapered rollers, to take axial loads in either direction. Both bearing types are housed and sealed in special swivel cartridges, suitable for mounting in pedestal

or flange outer housings. The spherical outer surface of the cartridge fits into a conforming surface in the mounting unit, so that any shaft misalignment tends to move the cartridge, seal and bearing together – maintaining the seal on an axis parallel to the shaft.

This maintains extremely close tolerances between the housing and shaft, and provides a sealing performance recognised as one of the best in the anti-friction bearing industry.

The choice of sealing medium depends on the severity of the application, and ranges from general purpose felt packing and conventional lipped shaft seals, to triple-stage labyrinth seals. There is also a bespoke seal design service, for customers with the most challenging operating environments who need nothing less than the best possible sealing performance. Which means SKF, of course.

ALL COUPLINGS ARE NOT CREATED EQUAL



REXNORD

Dominic Dempsey
Area Sales Manager

All coupling applications are not the same. And all couplings are not created equal. So choosing a flexible shaft coupling is not at all straightforward – as an ERIKS customer at a water treatment plant recently discovered.

Flexible shaft couplings connect rotating machines, transferring power from a motor or engine to a driven machine such as a gearbox, pump or generator, within a drive train system. In this case, the coupling was installed on a vertical disc aerator for an effluent reservoir.

One of the primary functions of a flexible shaft coupling is to compensate for the inevitable misalignment within any co-axially coupled shaft arrangement. If the misalignment isn't dealt with then noise, vibration, power loss, or bearing, seal and component wear, can result. In the worst cases, shafts can even fail through fatigue.

A coupling should also act as a “fuse” within the drive train system – protecting connected machinery from mechanical overloads, which could otherwise cause damage ranging from costly to catastrophic.

That's why it's important for a coupling supplier to carefully consider all the application parameters, and to have a thorough understanding of the end-user's needs, before the coupling choice is made.

“CAREFULLY CONSIDER ALL THE APPLICATION PARAMETERS...”

Too much choice?

There are two very different types of flexible shaft couplings.

Mechanical Flexing shafts – such as Gear or Grid designs – permit movement or flexing within the coupling assembly, by incorporating increased clearances within the components. Material Flexing designs permit movement by incorporating a pliable, flexible element into the design.

There are also two types of Material Flexing couplings: Elastomeric and Metallic.

Mechanical Flexing designs tend to be torsionally stiffer and extremely robust, and are often deployed for larger shaft diameter installations. Material Flexing designs are torsionally softer, which can introduce a damping mechanism into the drive train system, to absorb moderate vibration and shock loads.

The importance of choosing the correct option was highlighted when ERIKS were approached by the customer from the water treatment plant, who had been experiencing repeated flexible coupling failures.



Right coupling, wrong place

The size of the customer's installation means that the machine rotor has to be split into sections, connected by flexible couplings. This allows a single drive source to be employed for each rotor assembly.

The original installation incorporated a coupling design known as a toothed or gear elastomer in shear. This is essentially an elastomeric element held between two drive hubs, with the torque transferred by a series of mating teeth. Replacement of the element – the most likely component to wear – simply requires sliding the hubs along the shafts to release it.

However, in this particular operating environment, that wasn't simple at all.



The coupling is situated between the rotor sections in an exposed location, prone to the build-up of contaminating environmental residue. This collects on exposed areas of the shafts, and prevents the coupling hubs from sliding along them for maintenance. Additionally, the manufacturer had left the coupling element mostly exposed, in an attempt to make inspection easier. But all it achieved was the need for additional regular cleaning of the toothed profile.

All these complications arose from a basic lack of understanding of the operating environment. The coupling design wasn't at fault. It was simply the wrong coupling for the application.

“THE RIGHT COUPLING PROVED TO BE THE REXNORD WRAPFLEX...”

Quicker, easier, safer

The Wrapflex is another elastomer in shear design, but with a “replace-in-place” wrap-around element feature, which improves on the design originally installed.

Because the hubs don't need to be moved to replace the elastomeric element, it's now a quick and effortless maintenance procedure. In addition, the element is covered and secured in place by a retaining ring, which largely protects it from contaminants.

The location of the coupling – in a cramped space, precariously close to the waterline of the effluent reservoir – made technicians' safety an important consideration.

Guard-rails and other safety features are in place, but tackling time-consuming maintenance operations in these conditions is obviously potentially hazardous. So reducing the maintenance time, thanks to the flexible wrap element, will also reduce the risks involved and optimise safety.

Which makes choosing the right coupling straightforward after all. It's the Rexnord Wrapflex.

WHEN A **BEARING** IS REALLY A **HINGE**



Robert Bryan
After Sales Manager

Once in service, the bearings provided greater resistance to wear and seizure – reducing downtime and giving a 6-year service life.

This resulted in a saving to the customer of £663,000 per year.

MOTION & CONTROL
NSK

Across a huge range of industries, continued production hinges on the performance and reliability of bearings. In sectors with aggressive operating environments, there's a constant battle to keep bearings working in the face of high contamination levels, speed and temperature extremes, shock loads and vibration. NSK has a range of bearing solutions which keep equipment operating even in the most challenging conditions – reducing the risk, frequency and cost of downtime.

If you were asked to name good examples of aggressive operating environments, you'd probably mention quarrying, mining and construction. It's not only the conditions – where dust and dirt are intrinsic parts of the job – but also the often remote locations, that can make getting replacement parts a slow process and can lead to lengthy production downtime.

“80% OF PREMATURE BEARING FAILURE RESULTS FROM HIGH CONTAMINATION LEVELS COMBINED WITH POOR LUBRICATION.

Yet the sector depends on bearings for equipment ranging from draglines to shovels, trucks and conveyors, and for operations from digging access tunnels to removing ore or mineral deposits, and crushing, grinding and screening the resulting material. In the unforgiving conditions, machinery and bearings are pushed to the limit, and 80% of premature bearing failure results from high contamination levels combined with poor lubrication.

For one large quarrying company, the handling of 60% of their plant's production depended on a single conveyor – which needed replacement head pulley bearings every 18 months. Bearing analysis by NSK revealed the root cause as water and grit ingress, and NSK High Tough steel (HTF) technology was trialled as an alternative bearing solution.

The heat is on

The steelmaking sector is another which provides unique challenges for bearings. Along with particle contamination, water, heavy and shock loads, vibration, extreme operating speed ranges, and rapid acceleration and deceleration, a significant factor is the extreme temperatures, which were causing twice-yearly bearing failures on one international steel manufacturer's rotary coal valve.

The bearing failure also had knock-on effects in terms of lost production, downtime costs and damage to associated components.

NSK conducted a bearing review which revealed the current bearing was inadequate for the high temperatures involved, and recommended a customised Self-Lube HLT bearing insert within a Self-Lube cast iron FC housing, plus a special heat-isolating spacer. Changes to lubrication amounts and frequencies were also recommended, and NSK engineers oversaw fitting of the new bearings for a trial.

After more than 12 months the bearings still hadn't failed, which meant a cost saving for the customer of over £127,000.

A vital ingredient

In the food industry as in many other sectors, a single bearing can play a key role in a processing line – and a single bearing failure can shut down an entire process. But in addition to the need for high reliability, low- or no-maintenance and high speed operation, bearings in food processing environments are also required to comply with strict hygiene requirements.

There may also be frequent washdowns, hugely fluctuating temperatures, or constant high temperatures (up to 260°C for baking or roasting).

At the opposite extreme of cleanliness and hygiene, some bearings in the sector may operate in extremely dirty conditions, and in the presence of contaminated water – for example on vegetable conveyors, milling machines, and fruit or vegetable washing. NSK have a range of bearings to suit all these environments, so when a large producer of cooked fish products was experiencing bearing failures every eight weeks, naturally they called NSK for advice.

The problem proved to be water and hard contaminants entering the bearing on the customer's Scraped Surface Heat Exchangers, causing failures which resulted in high maintenance costs, lengthy machine downtime, and a waste of around 60 man-hours a year.

A trial with NSK Molded-Oil Deep Groove Ball Bearings resulted in an extension of bearing life to more than three years – saving the customer over £84,000 a year in production costs.

As in many other industries, when productivity hinges on a single bearing, a reliable bearing choice from a reputable manufacturer such as NSK can open the door to significant savings on lost production, downtime and maintenance costs.



HOW A BRICKMAKER'S PRODUCTION WAS SAVED FROM HITTING THE WALL



Pete Townsend
General Manager
Bearings and Lubrication
ERIKS UK and Ireland

Any catastrophic failure of a production asset is, well, a catastrophe. But when your only back-up option is built to exactly the same design, then that catastrophe becomes a disaster waiting to happen. And where replacing a critical asset is concerned, waiting is something you can't afford to do.

A clay hammer mill at a brickworks had functioned for several decades in one of the dustiest and dirtiest areas of the production process, in one of the dirtiest and dustiest production environments.

However after 35 years ago it finally, catastrophically, failed – leaving production reliant on the sole back-up mill. Given that this was built to the same design, the very real worry was that its failure was also imminent.

Design of the day

When the mills were designed, bearing technology was very different from today. Given the high operating speeds and high loads, the OEM had no option other than designing the spherical roller bearings with oil lubrication.

In contrast to today's typical designs, the bearings were also very large for the shaft size and the housings were cast iron.

Unfortunately, the extent of the damage made it impossible to identify the root cause of the catastrophic failure. However, the early 1980s' design made a lack of lubricating oil the most likely culprit.

Good news and bad

Although the bearings were stock items, the housing design had been made obsolete over 20 years ago. To add to the difficulties, original engineering scale drawings of the castings were available, but with no dimensions shown.

The customer approached a number of suppliers. Some proposed sourcing similar products, and quoted on that basis. Others proposed



a new housing based entirely on the original design. The only thing these options had in common was their significant lead time.

At a time of high production demand, with no back-up, this wasn't what the customer wanted to hear.

Short-cut to success

What ERIKS could offer which other suppliers couldn't were in-house design and production capabilities.

Instead of simply copying the existing design and all its faults, ERIKS could design and engineer an upgraded solution based on the original drawing, eliminating its failings and outdated technology. They could also achieve this to a shorter timescale than the other proposals.

- The upgrades – designed to increase reliability in the brickworks' aggressive operating environment – were:
- Grease lubrication rather than oil – eliminating the risk of lubricant leakage
- Auto-lubricators, so any lubricant lost to evaporation could be quickly and automatically replaced



**12-WEEK
PROJECT
COMPLETED
IN JUST
5 WEEKS**

- A housing design offering the option to change to oil lubrication if required at any time
- Housings flame-cut from solid steel, then precision-machined as split housings for ease of assembly
- Hydraulic fitting, eliminating the risk of over- or under-tightening and ensuring a perfect bearing setting and correct clearance

Designed for dust

Although bearing technology has changed since the original mill was designed, the aggressive operating environment of a brickworks hasn't. In the exceedingly dusty conditions, dust inevitably found its way into the original mill and caused problems for the components. ERIKS' upgrade included additional features to counteract the issue.

Grease collars were incorporated to prevent airborne debris from entering the equipment. Because the high temperatures in the shaft cause expansion, a labyrinth seal system was added, to allow for shaft growth. And to facilitate the option to switch to oil lubrication, gaskets – specially cut by ERIKS Gaskets to ERIKS' own design – were installed between the end caps and housing.

Less is less

Normally, designing and manufacturing a design of this type would take at least 12 weeks. Which, with the risk of complete production shutdown looming over them, were 12 weeks the customer couldn't afford.

Thanks to ERIKS' in-house capabilities, the project was actually completed in just 5 weeks. And at £42,000, ERIKS' invoice was half that of some competitors' quotes.

Not surprisingly, the customer decided to proceed with replacing the bearing and housings on their second mill, to the same design. Such a successful and cost-effective solution for their brickworks was obviously something they wanted to build on.

“LACK OF LUBRICATING OIL AND
THE ORIGINAL DRAWINGS HAD NO
DIMENSIONS...”

DIGGING FOR VICTORY



Andrew Dawes
Product Manager Hydraulics
ERIKS UK & Ireland

For most of the last decade, OEMs in the mining and quarrying sector would be forgiven for thinking about surrender in the face of overwhelming odds.

The sector has faced unprecedented challenges, the future looks no more certain than the recent past, and while demand

and budgets have shrunk, legislative requirements have grown. So what can OEMs do to fight back?

It's not the OEMs alone who are under pressure. As they shift their focus to efficiency and cost-reduction, their suppliers have to share the burden and consider their own costings. As reliability becomes increasingly important, the quality of the assets and components supplied

is critical to maximise uptime, minimise lost productivity, and reduce repair and maintenance costs.

And in an environment that's already one of the most hazardous there is to work in, and in which health and safety legislation is ever-increasing, equipment which operates correctly and safely is more important than ever.

The key is for OEMs to find suppliers who understand the sector. Suppliers who are as efficient and cost-effective as they are themselves. And with whom they can work in partnership for mutual benefit.

“SUPPLIERS WHO UNDERSTAND THE SECTOR



Always delivering

One area where OEMs are reducing costs is on-site inventory. Just-in-time ordering and shrinking storage requirements can help to save money – but they can also lead to inefficiency and lost production.

Manufacturers need to be able to rely on a supplier who can supply parts and equipment as and when they're needed, often within very tight delivery windows.

The quality of the parts and equipment supplied are just as important as their availability. Few operating environments are more aggressive than those found in mining and quarrying, and they demand equipment

designed for purpose. Dirt, dust, heavy payloads, shock loads, and 24/7 operation are the norm, so equipment which might be fine for a factory floor will soon wear out or break down.

“PRODUCTS THAT ARE FIT
FOR PURPOSE WILL PAY
LONG TERM DIVIDENDS...”

An OEM needs to choose a supplier who understands the unique demands of the environment and of the sector, and can provide products that are up to the job.

In fact, a supplier in the sector needs to go beyond simple supply. On-site application support can make all the difference to the OEM, helping to ensure that the right items are specified, and that they're delivered safely, installed correctly and commissioned efficiently. This kind of support – for new and redesigned machinery – can make all the difference in keeping plant running and productive for as long as possible.

A safe pair of hands

Complying with health, safety and environmental regulations may be the responsibility of the OEM, but suppliers' parts must meet the same requirements.

A trusted supplier with a deep understanding of the sector will be able to provide valuable advice on equipment choices that meet the needs of the OEM for productivity and efficiency, at the same time as ensuring they conform to the latest legal standards. And all within budget.

Your flexible friend

A strong and supportive partnership with a supplier will pay dividends in the long-term.

A trusted supplier will be happy to flex and adapt not only their services and support, but also their products, to suit the needs of their OEM partner. This may be something as simple as providing on-site support, but it could mean a complete remodelling of a part for a particular purpose or application. It could mean a product upgrade. Or it may even mean designing and engineering a new product from the ground up. Though of course, that demands a supplier who's not just willing but also able – with the necessary skills and resources at their fingertips.

This kind of OEM / supplier partnership will clearly help OEMs to achieve greater efficiency, reduce costs, increase productivity and comply with legislation. But it can go even further.

In a challenging time for a challenging sector, it's no exaggeration to say that a supplier with understanding, experience and know-how can not only refresh an OEM's business, but can also help to revitalise the sector as a whole.

ABRASION RESISTANT HOSE? GATES HAVE GOT IT COVERED



Andrew Dawes
Product Manager Hydraulics
ERIKS UK & Ireland

Just because there's no active industry performance standard for hydraulic hose covers, it doesn't mean there isn't a need for hoses that can withstand abrasion. Standard hydraulic hose is no match for aggressive environments and tough applications. That's why Gates have set the standard themselves – with the 25 times tougher XtraTuff™ cover for their EFG4K and EFG5K hoses.

Nothing wears down a hydraulic hose cover like constant abrasion. Even a spring guard or nylon sleeve won't protect a standard hydraulic hose if it's rubbed against metal or against other hoses for long enough. The result is, you'll be replacing your hose far earlier than expected, and far more often.

Solutions do already exist – such as Gates MegaTuff™, for example. But when the application or budget don't justify fitting something so high spec. (up to 300 times the abrasion resistance of standard hose) then Gates XtraTuff™ is the answer.

Less loss. More resistance

The international maximum weight loss requirement for a hose is 1g after 2,000 reciprocating cycles. Gates XtraTuff™ beats that hands down, with a weight loss of under 0.02 grams after the same number of cycles.

Compared with the standard Gates EFG4K and EFG5K hoses, as per ISO 6945, that means XtraTuff™ offers 25 times the abrasion resistance.

But it's not only resistance to hose-to-hose and hose-to-metal abrasion that makes the XtraTuff™ cover the perfect choice for aggressive environments

Tough in all the right ways

Made from modified nitrile, the XtraTuff™ cover resists oil, ozone and weathering just like Gates' standard and MegaTuff™ options.

In the ozone test, XtraTuff™ revealed no cracking even after 400 hours, which means it exceeds the ISO 7326 and market requirements. The cover is also tested to the minimum validated bend radius.

As part of the MegaSys® spiral hose range, XtraTuff™ follows the same colour-coding principles, with a purple layline for the EFG4K and red for the EFG5K – making identification easy in your stockroom and in service.

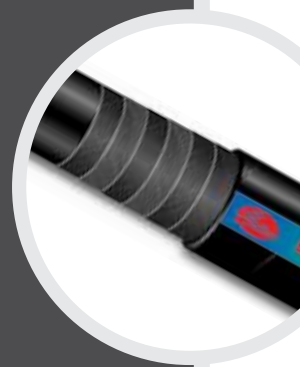
Validated for coupling using GS couplings – which simplifies your ordering and inventory – XtraTuff™ is available in sizes -6, -8, -10, -12, -16 and -20, and in long-length packaging ranging from 36-60m. So you can use XtraTuff™ to make longer hose assemblies, while minimising the amount of

Extra life and extra savings

The increased abrasion resistance of Gates XtraTuff™ ensures a longer service life for your hose, even in an aggressive environment. It also helps reduce maintenance, and eliminates the need for – and cost of – additional hose protection.

So when you need a hose with all the advantages of the Gates MegaSys® range, but don't need the ultimate protection of MegaTuff®, then Gates XtraTuff™ makes it easy to make a tough choice.

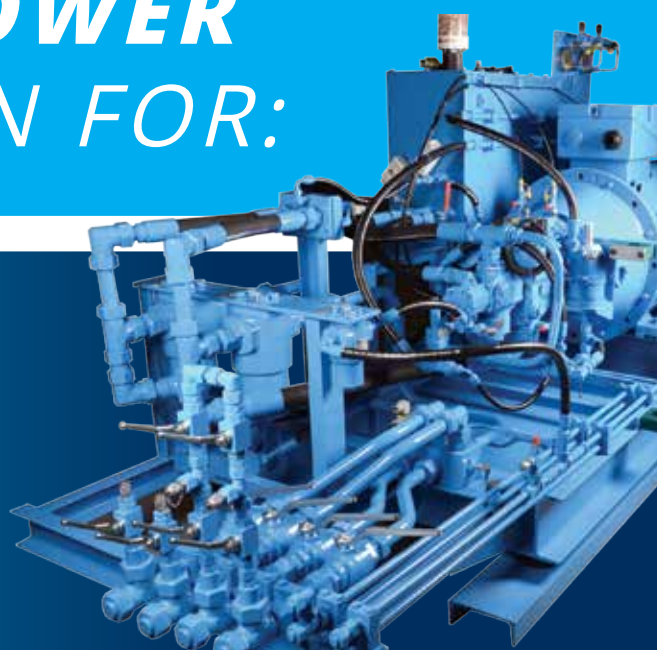
“RESISTS HOSE-TO-HOSE
AND HOSE-TO-METAL
ABRASION





YOUR FLUID POWER SOLUTION FOR:

- **HYDRAULICS**
- **PNEUMATICS**
- **CUSTOMISED SOLUTIONS**
- **ENGINEERED SYSTEMS**
- **CONTAMINATION MONITORING**



FLEXION DELIVERS A
WIDE RANGE OF **FLUID POWER**
PRODUCTS AND SERVICES THAT OFFER
VALUE TO DESIGN AND MAINTENANCE
ENGINEERS, BOTH IN TERMS OF
PERFORMANCE AND COST

THE FLEXION RANGE GIVES YOU:

- Access to proven Fluid Power solutions and customisation
- Dedicated Fluid Power application and technical support
- Engineering products that exceed international standards
- Effective product development through shared knowledge
- Proven track record in providing Fluid Power solutions

ERIKS Call us today on: **0845 006 6000**

**YOUR
FLUID
POWER
SOLUTION**

CHANGES IN
THE WAY
**GLOVES ARE
TESTED**



HANDS UP IF YOU'RE CLEAR ON THE **NEW PPE GLOVES REGULATIONS**



Paul Skade
Product Category Manager
Tools, Safety and Maintenance
ERIKS UK and Ireland

There are more PPE gloves than ever available for mechanical and chemical protection. Which can make it difficult to choose the right ones for your particular needs. And just to make things even more complicated, the PPE rules for gloves are changing too. So here's a timely – and handy – update.

If you are a specifier or purchaser of protective gloves, you need to know that what was simply guidance on choosing gloves for mechanical and/or chemical protection has now become a regulation. Guidance is something you could, in theory, ignore – though at your own risk. Regulation is something you can't.

Essentially you need to be reconsidering the gloves you choose now, and definitely by 21st April 2018 when the new PPE Regulation (EU) 2016/425 completely replaces what went before.

The good news is, the new Regulation will actually make it easier for you to identify and choose the right gloves for your application and your workers' protection.

Too good for their own good

PPE gloves have improved enormously in recent years. Using new, more technical fibres has helped to make them even more effective at providing protection, particularly against mechanical hazards like abrasion, blade cuts, puncturing and tearing.

In fact some of the new fibres are so tough, they actually blunt the circular blade used to test the material, before the level of cut resistance can be properly determined. So you know they are effective, but not precisely how effective – which can make specifying a slightly risky business.

Now changes to the cut (or "Coup") test specify a maximum number of test cut cycles. If a material is likely to blunt the test blade before 60 cycles are completed, or if the test gets that far without cutting the material, then an ISO Cut Resistance tomodynamometer (or TDM) test has to be used, which measures the cut force needed, in Newtons.

In real-life, cut hazards don't get blunter as time goes by. So the new testing regime gives you a much better idea of the way the gloves will actually perform in use.

More than mechanical

While information regarding changes to cut protection standards and regulations has been readily available, changes to the chemical test have been less well-publicised. But if you specify or buy this type of protective glove, you need to be aware of the new levels of protection and the new markings coming into use.

The new markings define gloves as offering Type A, B or C protection levels.

- Type A: 30 minutes minimum breakthrough time for at least 6 defined chemicals
- Type B: 30 minutes for at least 3 defined chemicals
- Type C: 10 minutes for 1 defined chemical

As well as providing a clear indication of the level of protection offered, the new testing is more comprehensive, with the list of defined

chemicals for manufacturers and testers to choose from, increased from 12 to 18.

This means you are more likely to find a clear indication of protection provided, for whatever chemical or chemical family is involved in your application.

"NEW TESTING REGIME GIVES A BETTER IDEA OF THE WAY THE GLOVES WILL PERFORM..."

Time for change

Although the new regulations are already in force, that's more of an issue for manufacturers than for buyers and end-users. So you have plenty of time before the changes affect you. Gloves you have in stock which are certified under the Directive can still be used. In fact, you'll still be able to buy them until their certification expires – which may be as far away as 2023.

The information you need to identify the level of protection – whether mechanical or chemical – should all be available either on the gloves themselves, or in the supporting paperwork provided by a reputable supplier.

Alternatively, you can find full details of the changes, the new legislation, and how your glove choices will be affected, from the British Safety Industry Federation (<http://www.bsif.co.uk/>) and the HSE (<http://www.hse.gov.uk/index.htm>).

Or you can talk to the experts at ERIKS. We have years of experience in supplying gloves and other PPE to customers across most industry sectors, and we have the know-how to show for it.

A SEA CHANGE IN THINKING



Rexroth
Bosch Group

Les Bloomfield
Key Contracts Manager

Extreme weather conditions. An ever-present and unavoidable aggressive fluid. Remote locations. The offshore industry is one of the most hostile and costly operating environments for people and equipment, with costs for setting-up and configuring installations typically in the region of six figures per day. So saving even just a day can create significant cost-savings. But it does require innovative ways of thinking.

Large Diameter Drilling (LDD) is a company specialising in subsea foundation installation services for constructions such as offshore wind farms. For one of their most recent projects – a new wind farm 65km off the Baltic coast – LDD were keen to replace their current method of installing piles with a faster, more integrated, truly intelligent system.

The project involved deployment of 70 wind turbines in an area of sea with a maximum depth of 100 metres. The turbines were to be positioned on

four 62m subsea piles, each weighing up to 175 tonnes and with a diameter of 2.7m. The piles have to be placed a specific distance apart with minimal margin for error.

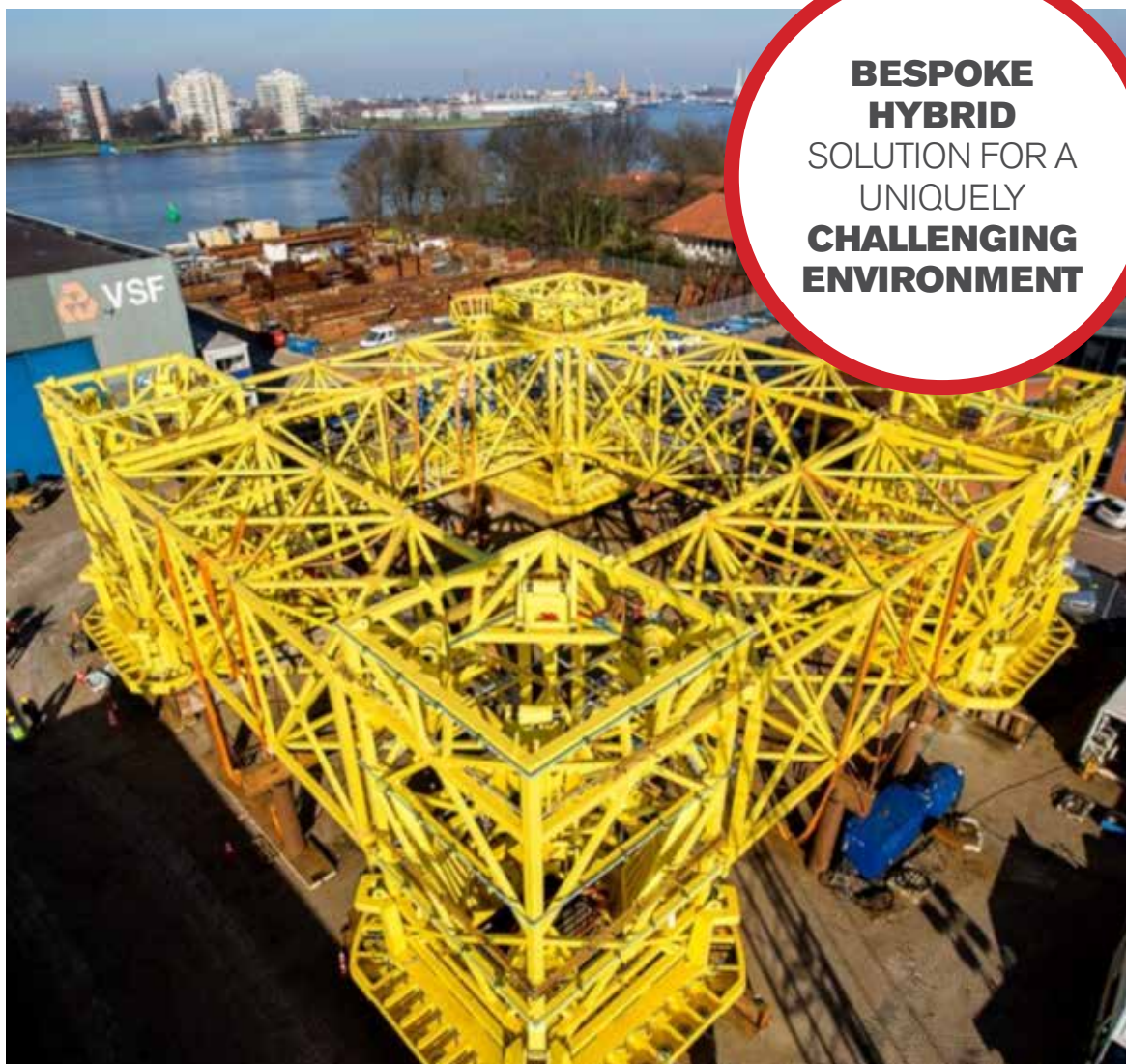
This would be hard enough on dry land – but add in factors such as current, pitch, yaw, and gusty winds and you can imagine the scale of the challenge.

Battling the variables

Traditional piling methods position and align each pile individually and sequentially, with the location measured from the pile installed before it.

Compensation has to be made for:

- the sea current, which affects the positioning accuracy in relation to the previous pile or datum deformation of the sea bed floor as it compacts during piling – affecting the installation angle of the pile.
- These variables almost invariably result in the need for shims or welded brackets to offset tolerance errors. The need to beat the effects of the variables is what led to LDD developing the concept of an "intelligent template", which can continuously react to changes with a degree of control, and can automatically correct pile angle and positioning during installation.



Thinking innovatively

With the help of some innovative thinking by Bosch Rexroth, a bespoke hybrid solution was designed and developed to continually monitor the piles' position, and ensure accurate positioning through the creation of a reactive template. This shortens installation and completion time, and cuts costs as a result.

Rexroth's extensive experience was applied to designing the hydraulic and control system, verifying its effectiveness and suitability, and selecting the most appropriate materials, capable of withstanding the uniquely challenging operating environment.

Such a new and unique system required extensive virtual testing to mitigate technical and commercial risks before it could be implemented in a real application.

Simulation of response characteristics through Finite Element Analysis (FEA) was essential to ensure they were in line with the customer brief. Structural integrity of the piles has to be maintained at all times, which demands a detailed understanding of factors such as spring and deflection under the forces likely to be encountered.

Subjecting the project to a quality gated review process provided a robust environment for the development of bespoke software. Only when the

customer was confident that the control system had been optimised, and all likely eventualities accounted for, could the project proceed to the next stage.

Unprecedented accuracy

The final result of the planning, development and testing is a precision, heavy-duty, electro-hydraulic control system delivering unprecedented accuracy of $\pm 25\text{mm}$ across 676m^2 .

Unlike traditional techniques, the new active template can simultaneously hold the four piles together as a set, as it optimises the positioning of each one with a group reference which includes the seabed, the template and the adjacent pile. This saves considerable time and, therefore, money.

The final system includes fault level detection, with algorithms allowing the generation of error signals. These, combined with predictive technology, enable the control system to deliver sequential correction.

The system proved itself ideal for the construction of the windfarm, and its capabilities are now being explored for other applications where accurate positioning of machinery and components is vital for safety and operational reasons. Wherever these projects may be, LDD and Rexroth will be able to ensure they're don't end up all at sea.

NEW ANTI-SEIZE PASTE SEIZES THE INITIATIVE



Graham Wignall
Product Manager Lubrication
ERIKS UK & Ireland

Preventing screw connections and sliding surfaces from seizing together has always had a trade-off. A new copper paste from OKS resolves it.

Secure screw connections, and surfaces which slide smoothly even under high stress, are essential elements of most industrial assets. But countless maintenance engineers have come to service or repair an assembly, only to find that – even when a connection was tightened to the correct torque – it's impossible to dismantle easily. And many sliding surfaces seize all too quickly under high loads or stresses.

The traditional solution has been to use an anti-seize paste: also known as an assembly paste.

However, these most traditional and effective solutions have tended to contain a level of copper which requires them to be labelled as toxic in a marine environment, and handled and used accordingly.

As its name suggests, the new OKS 7240 Copper Paste contains copper for its effective anti-seize qualities. But its innovative low-copper formulation not only frees-up screw connections. It frees-up usage restrictions too.

From factory to fish farm

Unless your site is on a riverbank or the coast, you may think the marine environment isn't your problem. But marine toxicity of anti-seize paste isn't just an issue for fish.

If you wash-down equipment, the water you use will eventually make its way to the drains and ultimately to a marine environment. Which means you have to take responsibility for meeting safe handling and usage requirements.

The benefit of new OKS 7240 paste is that it's lost its marine toxicity without losing any anti-seize effectiveness. So you can use it in a factory, and even in a fish farm.

Anti-seize properties have traditionally been provided by solid lubricants – usually copper – within the paste. Long after the oil in a lubricating grease has disappeared, these solid lubricants are still present, and still preventing sliding surfaces from seizing and screwed connections from burning- or rusting-on. In OKS 7240, copper is still an ingredient, but it achieves the best of both worlds. It's:

- at low-enough levels to eliminate marine toxicity labelling requirements, and
- in sufficient concentration to be a highly effective anti-seize paste.

When the going gets tough

In an aggressive operating environment, any likelihood of seizing, rusting or burning-on will be many times higher than under more normal working conditions.

However, OKS 7240 not only aids lubrication and separation, but does so at temperatures of up to 100°C for lubrication and 1,100°C for separation. It also meets DIN EN ISO 9227 salt spray test requirements, and is certified to DIN 51 350-4 in wear protection tests.

In fact the only thing that isn't tough about this new OKS anti-seize copper paste is getting hold of it. Just speak to your usual ERIKS contact.



THE DARK SIDE OF LIGHTING



Jon Whitehouse
Business Development Manager
Industrial Electrical
ERIKS UK & Ireland

Working in the dark is dangerous. Tasks need sufficient light on the subject for workers to be safe and to carry out the job in hand. But in an explosive atmosphere, the wrong light can be as dangerous as no light.

When flammable gases, mists, vapours or combustible dusts are present in the atmosphere, and mix with the oxygen in air, all that's needed is a source of ignition to cause an explosion. And sometimes, even something as seemingly innocuous as a torch can be that source.

So if you work in an explosive atmosphere and need personal lighting, you need a torch that's designed for use in ATEX zones.

Unlimited lighting

The Unilite ATEX Zone 0 range of personal torches is specified for the maximum grade of safety protection – which means no workplace is off limits for their use.

36 years of experience have gone into developing torches which can be used with confidence wherever there's an explosion risk, and which have been proven in a range of industries.

Bright ideas

Two special features make Unilite ATEX Zone 0 torches suitable for use where others would be a safety risk.

In ordinary torches, hazardous gases can build up inside until they create an explosion risk. In Unilite ATEX torches, a safety release valve releases these gases before they can become a danger. In addition, the torches have a safety-locking battery compartment, to prevent the batteries from coming into contact with any hazardous substances.

Together, these two features earn the torches their ATEX Zone 0 accreditation, and give users peace of mind wherever they're working.

Of course, bright ideas are one thing you want in a torch, but a bright light is another. So Unilite ATEX Zone 0 torches are fitted with high-powered CREE LEDs, which provide a reliable high-level lighting output.

Light work

Different tasks demand different types of torches.

Someone repairing equipment, for example, needs both hands free. A torch with the beam at right angles to the torch body can be more convenient than the traditional design in some situations. Or perhaps you simply need a small and handy light for illumination when you're making notes, or taking a quick glance into a dark area.

Unilite has ATEX Zone 0-rated solutions for all those situations.

Choose from two different head torches (140 or 200 lumens), a right-angle torch, a flashlight and a safety penlight, with complete confidence that they will be perfectly safe to use whatever environment you're in.

Proven in use with fire services, in the petroleum industry, at power stations and in the haulage industry, the Unilite ATEX Zone 0 range is the shining example for safer torches.



ENERGY
SAVINGS
BEST
PRACTICE

OBSOLETE-LY
FABULOUS



Andy Cruse
Product Business Unit
Manager Pumps
ERIKS UK & Ireland

Obsolescence may be inevitable, but that doesn't mean its impact on productivity, reputation and costs is any less tangible. Being prepared and mitigating risks are the most effective ways of avoiding the more severe consequences of part obsolescence. Andy shows you how...

"Nothing lasts forever." These three words may have become a staple of any brooding protagonist whenever a harsh reality check is due, but they're also a fact of life. As manufacturers, buyers and engineers, we know this only too well. Even the most reliable and established products will eventually need to be replaced, whether that's through wear, supersession or discontinuation.

Responding to obsolescence is a relatively accepted concept outside the world of manufacturing. Most of us would jump at the chance to upgrade our phone as soon as we had the freedom, and funds, to do so. Manufacturing, however, is more like the curmudgeon who prefers to stick to his rotary telephone, despite the fact that most of the numbers have peeled off, and the wires connected to the receiver are loose. We know what we like, and we stick to what we know.

There are good reasons for this, though. Obsolescence poses a number of challenges, and the process of mitigating or resolving them can be complicated, time-consuming and expensive, without the right support.

Understanding obsolescence

There are two different ways of understanding obsolescence within the context of manufacturing. Technical obsolescence is the most common, and occurs when a new product supersedes an old one, thus becoming the preferred choice. Functional obsolescence occurs when a

company changes its processes or business strategy, meaning the existing equipment no longer serves its original purpose.

The latter is usually planned as part of a business's revised strategy, so we won't focus on it in too much detail here. Technical obsolescence, however, is often problematic, particularly if it comes as a nasty surprise.

Technical obsolescence can occur for a number of reasons. The amalgamation of two companies, for example, could mean that one department or product group duplicates or contradicts another one. In this instance, one will be removed and its products will, subsequently, fall out of production.

Changes to legislation can also lead to parts obsolescence if existing products or technologies are deemed to be non-compliant. This is particularly prevalent in legislation surrounding environmental protection and energy efficiency. For example, there are currently a number of concerns with regards to ErP directives, and how these will affect spare parts and repairs.

"EVEN THE MOST RELIABLE AND ESTABLISHED PRODUCTS WILL EVENTUALLY NEED TO BE REPLACED, WHETHER THAT'S THROUGH WEAR, SUPERSESSION OR DISCONTINUATION..."

Product upgrades or improvements are a further cause of parts obsolescence, and will become increasingly problematic as greener technology and Industry 4.0 gather pace.

OEMs will naturally

prioritise the production of newer parts over older ones. This makes sourcing any spare parts for legacy machinery both challenging and time-consuming.

What are the consequences?

Many of us use legacy machinery, and there is nothing wrong with that. After all, replacing machinery wholesale is both expensive and disruptive. That is not to say, however, that its continued use will not pose problems.

The challenge many manufacturers face is sourcing the spare parts needed to maintain or repair legacy equipment. There are a number of approaches that have been explored in the past, but these come with downsides.

Stockpiling parts, for example, may seem like a sensible thing to do, but these stores





>> will also need maintaining, rotating and reviewing on a regular basis. Spare parts do not have an unlimited shelf life. Elastomers and metals, for example, will start to degrade until they eventually become useless. When that happens, you might as well have thrown your money out of the window.

Furthermore, relying on legacy machinery also means relying on the staff that understand how to use it. Staff will not stay around forever – whether by retirement or a career change, you will eventually find yourself with a vital piece of machinery, and no-one who knows how to use it.

Without some kind of strategy in place, engineers can find themselves wasting valuable time while spare parts or know-how are sourced. In the most serious cases, production can be impacted – if not halted completely – if you are unable to find the parts needed to get your machine up and running again.

Time to make a plan

What, then, is the answer? Put simply, you need to identify the areas of your plant that are at the highest risks of obsolescence, and start mitigating these risks. This can be done in-house, but it's better to use an asset management specialist.

The specialist will start by conducting a full obsolescence audit of your plant, during which they can identify any areas of concern and order them by "criticality". This is particularly beneficial if budget is tight, as you can prioritise any further action accordingly. They should also conduct a processes and utilities audit, in which aspects such as reliability and energy efficiency can be examined and any areas for improvement identified.

What follows is known as an "asset consolidation", wherein you can gain further insight into your stock, spares and storerooms. This will allow you to spot any purchasing trends that aren't particularly cost effective, and organise your store to allow for the proper rotation of everyday items.

Once you've completed these steps, you can start implementing a set of KPIs to guide and focus your asset management activities. The final stage involves outlining and implementing a full asset management programme using "mean time between failures" (MTBF) and "mean time to repair" (MTTR) analyses. From here, you can start to build an effective preventative maintenance regime, which will reduce the likelihood of unexpected downtime as a result of part obsolescence or failure.

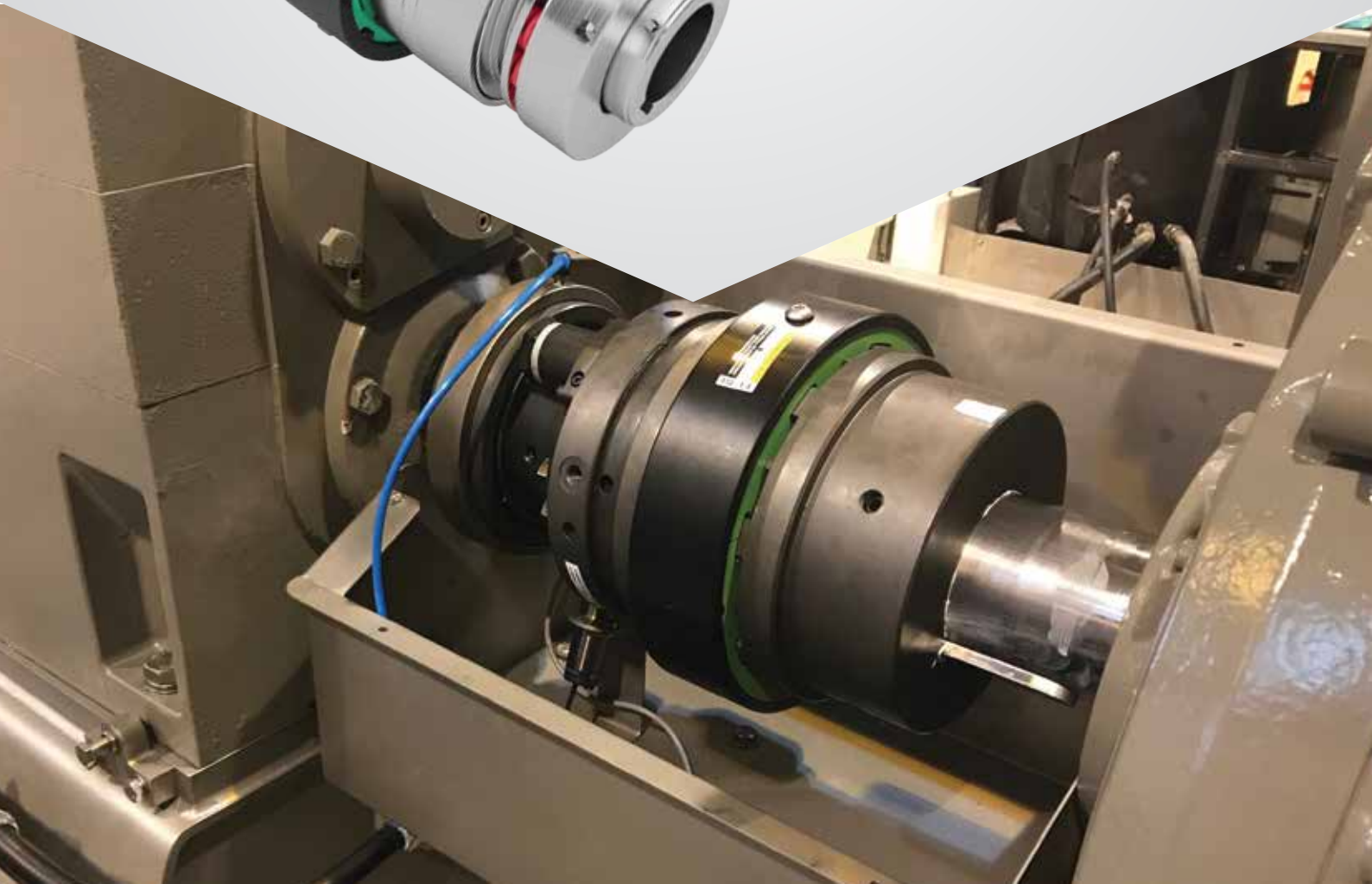
Knowledge is a powerful thing, particularly when it comes to planning for obsolescence. By being aware of the parts you use, the parts you'll need, and the parts that may soon cease to exist, you can build an idea of what you will need to upgrade, replace or gradually phase out over the next few years, and factor these into a wider preventative maintenance schedule.

What's more, by partnering with a specialist, you can be confident that no stone (or stock) will be left unturned.



Autogard XG Series Torque Limiter

Mechanical overload protection for extruders



CAN PRESSURE BE GOOD FOR YOUR MOTORS?



David Bevilacqua
Technical Manager
HV Motors and Coils
ERIKS UK & Ireland

Electric motors can be delicate things. Yet they're expected to perform reliably in a whole range of aggressive operating environments, without breaking under the strain. Inevitably not all of them manage it, and contamination and moisture ingress start to weaken insulation resistance, causing trip-outs and failure.

The surprising solution is to put them under even more pressure – but of the right sort.

One of the weakest points of a motor in an aggressive environment is the winding. Once contamination gains ingress it creates a tracking path through the winding which allows a leak to earth and a motor trip. The same can happen in damp conditions even without contamination.

The challenge is to find a way to resist contaminant and moisture ingress, to ensure the insulation resistance of the motors is maintained.

VPI – VIP treatment for windings

There are usually two ways motors are treated to resist moisture. One is dipping the winding in a polyester or epoxy resin, to create a moisture-resistant coating. The other – more effective method – is Vacuum Pressure Impregnation (VPI) of the winding.

The advantage of VPI over dipping is that moisture resistance is integrated into the winding structure, rather than being just an outer coating. The resin is forced right into the depths of the winding under vacuum pressure, filling air pockets in the winding. This also binds together any loose lamination in the core: not only helping to keep out moisture but also enhancing the winding's mechanical strength and heat dissipation properties.

VPI has been available for many years, but many treatments use resins optimised for low- cost processing rather than performance. Leading suppliers such as

“RESIST CONTAMINANT AND
MOISTURE INGRESS...”

ERIKS use a more effective 100% solid epoxy resin, optimised for performance and protection.

The scale of equipment required for VPI means the treatment is only available from a limited number of suppliers. ERIKS VPI plant is designed to process stators from the smallest DC coil wire wound, up to larger 6,600 volt windings.

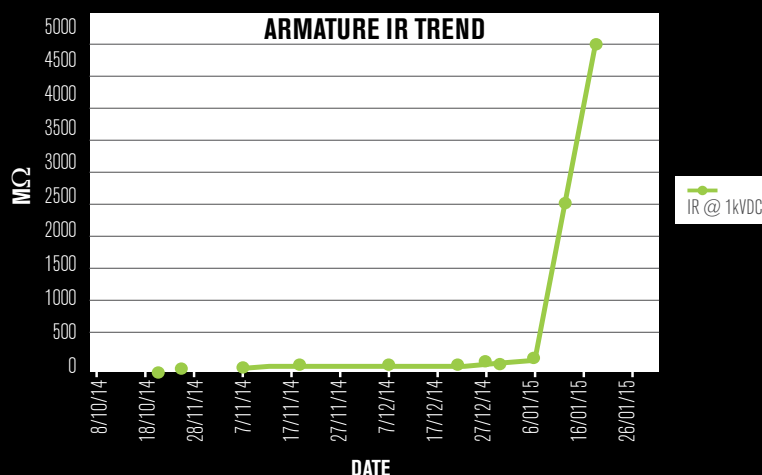
However, it takes more than just equipment to make VPI effective in protecting motors and increasing their reliability. It takes know-how too.

Going further. Lasting longer

ERIKS' engineers have the expertise to determine whether VPI will solve the problem, or whether additional measures – such as a complete rewind – are required.

**Fig 1: Cleaning and VPI of motor winding**

Date	Insulation Resistance @ 1kVDC (ECH 262)	Comments
22/10/14	0.6M Ω	As Received
27/10/14	18M Ω	Post 1 st Wash
7/11/14	20M Ω	@ Preliminary Test Stage
13/11/14	102M Ω	Post Intensive Cleaning After Removal Of Front Vee Tape
6/12/14	108M Ω	After Further Cleaning, Vacuum Drying & Re-Stoving
22/12/14	250M Ω	@ 40°C After 'Bubbling' & Re-Stoving
22/12/14	104M Ω	After Cooling
23/12/14	72M Ω	After Standing Overnight
29/12/14	156M Ω	Pre Re-Stove
31/12/14	118M Ω	Post Re-Stove
6/01/15	185M Ω	Post Further Re-Stove
9/01/15	2600M Ω	After VPI (Cooling Down @ 61°C)
12/01/15	4600M Ω	After VPI (Ambient Temp, Stood Over Weekend)

Fig 2: Insulation Resistance trend of armature, before, during and after cleaning and VPI

If the motor winding is in good condition apart from its porosity and moisture absorption, then VPI alone has the potential to increase its service life by several years. If, on the other hand, the winding has deteriorated too far, ERIKS will recommend a complete rewind utilising highly absorbent VPI-compatible material, followed by the VPI process. The compatible material will increase the uptake of the epoxy resin and help to form a solid, homogenous mass providing maximum moisture resistance.

Their know-how also allows ERIKS' engineers to look beyond the motor winding to the bigger picture.

Back on the rails

When traction motors on Channel Tunnel freight trains were proving unreliable, some suppliers may simply have recommended VPI. After all, the damp and dirty operating

conditions in the Channel Tunnel suggested that contaminant and moisture ingress to the motor were the main problems.

"VPI INCREASES SERVICE LIFE..."

However, in addition to very low insulation resistance readings, ERIKS' wider investigations determined the failure mode as a breakdown between phases on the stator winding connections.

Realising that VPI would only partly solve the problem, ERIKS' engineers not only stripped the connection rings and reinsulated them using VPI, but also redesigned them. The original high-temperature silicone insulation system within the coils was retained, to provide

higher-temperature protection where it's most needed. Meanwhile the redesigned rings were sealed with Class H 180°C epoxy VPI, providing greater protection against the environmental conditions.

The result was a complete elimination of the motor failure mode, and an ongoing programme to modify all the customer's other traction motors in the same way.

As the chart [Fig. 1] and graph [Fig. 2] show, when VPI alone is the answer, the results can be dramatic. But if a broader solution is required, ERIKS have the know-how to see it through – and to take the pressure off you.



Have you wondered how Brexit trade talks are going to be conducted? Are we, for example, going to take a sectoral approach or a broad-brush one-size-fits-all?

My well-informed sources tell me that a sector by sector approach is most likely. In other words, **"It's Tuesday, it must be chemicals"**.

Now, this is good news, because chemicals are our second largest manufacturing sector, which means it's likely to be prioritised along with aerospace and automotive and, with the clock ticking, being high on the list is important. God help you if you're in textiles!

The problem with this sectoral approach is that it is likely to get bogged down in the minutiae. I envisage the following exchange across the negotiating table in Brussels between David Davies and Michel Barnier:

"Good morning Michel, I see its chemicals today. We'd like to focus on coatings, now I'd like to you to consider exempting them from your REACH regulatory regime."

"Yes, it's chemicals and no they must still comply. There can be no dilution of compliance in the Single Market."

sounding beligerent "I really must insist."

Sounding aloof "Insist all you want, but it's not happening."

And on and on it will go. If it's not coatings, it will be abrasives, polymers or flammables. Imagine this level of detail across automotive, aerospace, machine tools and pharmaceuticals and you can see why there is now real concern that there will be no deal in place by March 2019.

And make no mistake, the chemicals industry in the UK has a lot to lose if there is no deal. Exit from the Single Market would mean that manufacturers and exporters would no longer be recognised under REACH and would become non-EU manufacturers.

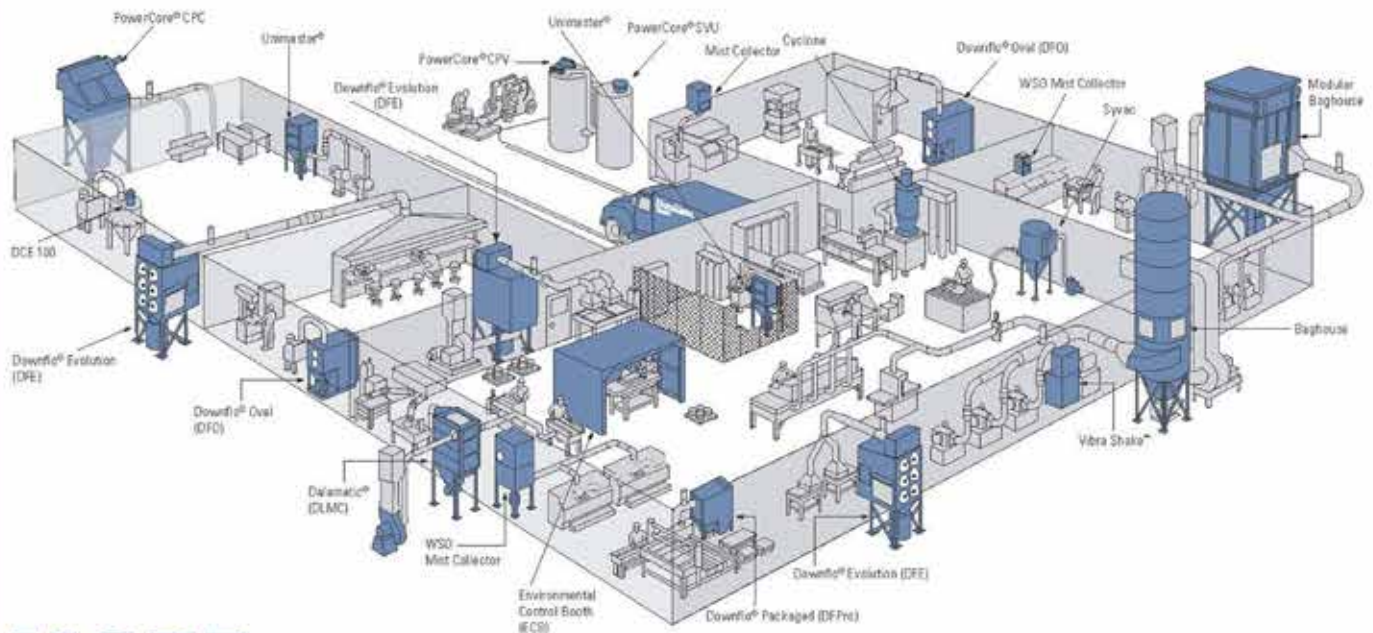
In turn, this would potentially mean additional measures and investment would be required to continue accessing the Single Market, not least re-registering each individual product.

In fact, the European Union's own review estimated that each new registration would cost on average €70,000 with charges going as high as €400,000. And that's before potential supply chain disruption costs and loss of contracts due to failure to supply are taken into account.

All the time the American, Middle Eastern and Chinese chemicals manufacturers, continue to push into European markets with competitively priced products due, in many cases, to low wage costs.

The chemical sector is one of the 'jewels' in the UK's manufacturing crown, but we need to remember that 60 per cent of its exports go to the European Union. It needs protecting and the very least we need from the government is a transitional arrangement that allows manufacturers to get the proper accreditations and registrations in place before we go through the exit door.

THE CHEMICAL SECTOR IS ONE OF THE 'JEWELS' IN THE UK'S MANUFACTURING CROWN



MORE EFFECTIVE DUST, FUME, AND MIST COLLECTION FOR INDUSTRIAL APPLICATIONS

For decades, Donaldson® has offered manufacturers advanced and reliable dust, fume and mist collectors and filters engineered to provide outstanding filtration efficiency and energy savings.

**NO MATTER YOUR INDUSTRIAL FILTRATION REQUIREMENTS,
WE HAVE THE RIGHT SOLUTION FOR YOU.**

PLEASE CONTACT US:

Tel: 0116 256 4240

www.DonaldsonToritDCE.com

PRODUCTS, SERVICES, SOLUTIONS **SUCCESS**

More
CHOICE
less hassle

SIX IN ONE PRODUCT RANGE



**Bearings and
Lubrication**



**Sealing
and Polymer**



**Power
Transmission**



**Flow
Technology**



**Fluid Power,
Transfer &
Control**



**Tools,
Maintenance
and Safety**

PRODUCTS at
the **HEART**,
SOLUTIONS that
last a **LIFETIME**

24/7

A product is just a product, but a product supported by services that are provided by people with know-how is more than just a product...

SAVING YOU **TIME** AND
MONEY EACH AND **EVERY** DAY

- National service centre network
- Fully integrated supply chain
- In-house technical engineers
- Impartial repair or replace service
- Predictive maintenance solutions
- Access to over 1.3 million product lines



www.eriks.co.uk

know-how makes the difference

ERIKS