ISSUE 40

KNOW +HOW

Aggressive environments

Each industry under the 'aggressive' umbrella faces its own challenges. In this issue, we outline these problems and highlight the methods used to ensure compliance and effective operation in such dangerous and demanding environments.

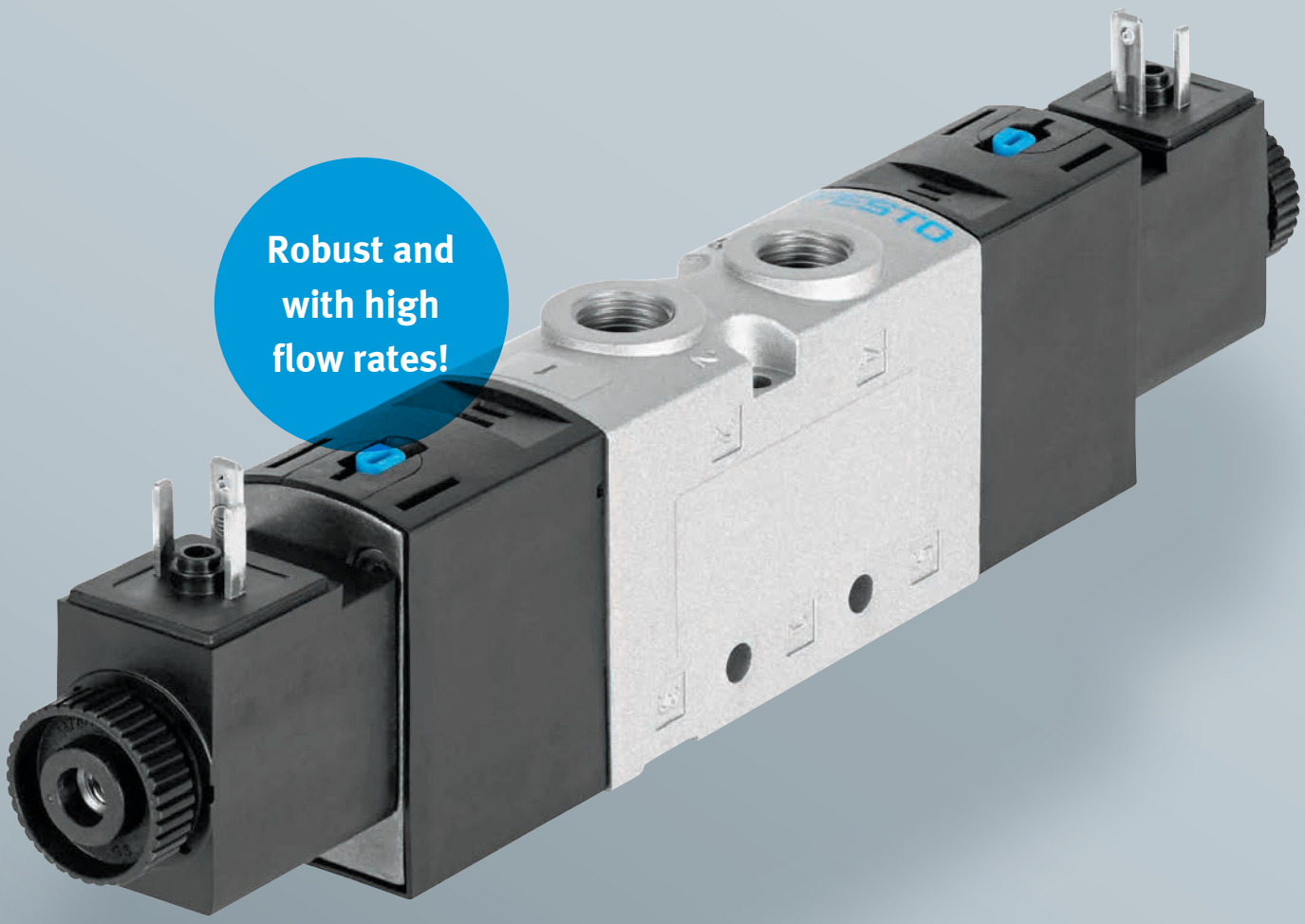
ERIKS IN ACTION
Thinking outside the box
Manufacturing consistency is vital to ensuring overall product quality. Failure to do so could impact the integrity of a product and its intended application.

IN FOCUS
Let's talk about dirty oil
Hydraulic oil is described as the lifeblood of your machines. And just like your own blood, if it becomes contaminated it can have devastating knock-on effects.

DEBATE
Struggling or ignorant?
With consumers being urged more than ever to recycle, are UK local authorities matching the enthusiasm for a greener plant?

ERIKS

FESTO



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Welcome

The term 'aggressive' has many meanings, to act viciously, be competitive, or be highly invasive. But in manufacturing it refers to type of industry.

Richard Ludlam
Editor-in-Chief
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Published by ERIKS UK & Ireland
Amber Way, Halesowen,
West Midlands, B62 8WG

Industries that are categorised as 'aggressive' usually come in the form of 'heavy' or 'harmful' industries such as steel, mining, oil & gas and chemical.

Each industry under the aggressive umbrella represents its own individual challenges, whether that be excessive temperatures, harmful substances, high levels of contamination or stringent and differentiated health and safety regulations.

In this issue, we outline many of the severe challenges that employees are regularly exposed to, and highlight methods used to ensure compliance and effective operation in such demanding environments.

For ERIKS In Action, we showcase how we assisted one large oil & gas company when they decided to significantly increase the amount of coiled coated piping on their reels, without any existing engineering drawings and in a particularly short time frame.

We also discuss (In Focus) the critical nature of sealing and gasket components to production assets, particularly in aggressive environments, and the complexity of choosing the correct formulation of elastomers to suit the specific industry.

And, of course, we can't forget issues surrounding health and safety. So, Making Industry Work Better covers the innovative 24Seven Locksafe from Wearwell, a product that's designed to maximise productivity and reduce risks associated with occupational health and well-being.

Last but not least, we discuss the current state of the UK Recycling infrastructure in our debate piece. We would love to hear your thoughts on the subjects covered in this issue, so why not share your opinion with us via email or tweet us at @ERIKS_UK

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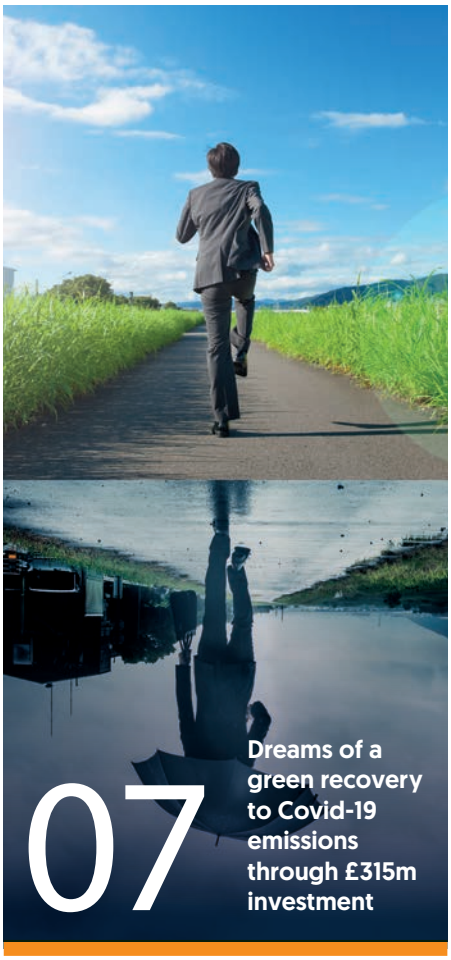
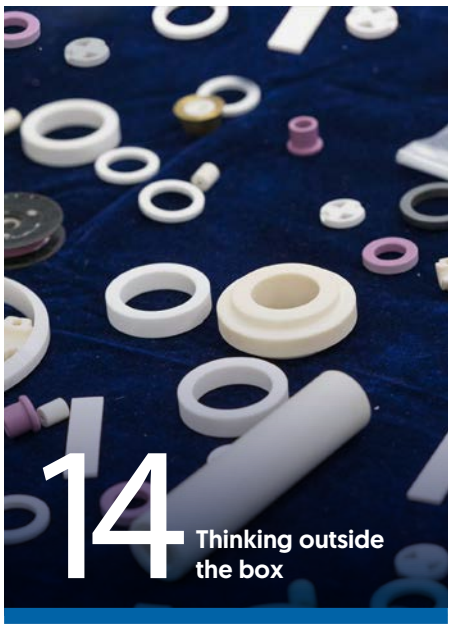
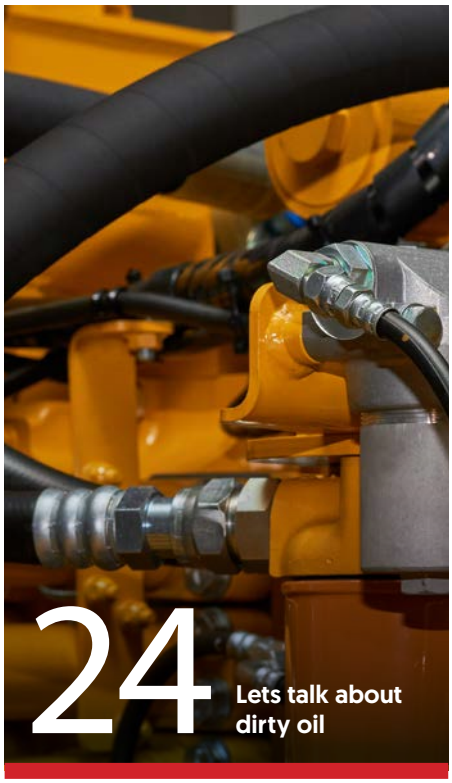
In Focus







ISSUE 40

KNOW +HOW

Debate

Making Industry Work Better

Plans for UK start-up unveiled

With research and development key to UK industry particularly during the Coronavirus pandemic, Chancellor Rishi Sunak recently announced details about a £1.25bn government package aimed to support start-ups and businesses whose focus is on this area.

The package includes Future Fund – delivered in partnership with British Business Bank – a £500m loan scheme for high-growth companies, and £750m of support for SMEs undertaking research and development.

Business Secretary, Alok Sharma commented: *"The UK is a world leader in innovation and at this hugely challenging time, we know that young, fast-growing firms require tailored support. This package delivers important help that will protect some of the most dynamic sectors of our economy."*

Bringing production back home

A report produced by The University of Warwick (WMG) has revealed that, since 2008, 70% of companies have undertaken some level of shoring activity, with 40% offshoring but only 13% directly reshoring back to the UK. However, 52% of companies have indirectly reshored, meaning they made a decision to increase production capacity in the native land rather than abroad. So, is now the time to seriously consider reshoring your production back to the UK?

In reality, overseas production has for years seemingly been the cheaper option, but as post-Brexit plans and trading agreements are thrashed out, realigning UK manufacturing is picking up more pace.

Seemingly, businesses that directly or indirectly reshored felt that they gained competitive edges such as time and flexibility, access to relevant skills and technology and a reduction in supply chain risks, with the study revealing that companies that engaged in indirect reshoring had overall better performance than companies that didn't reshore at all or only directly reshored.

Discussing the true cost of offshoring, Andrew Cooper, Director of Albert Jagger, a Walsall-based hardware and adhesives supplier, who has begun reshoring, commented: *"What is the cost implication of cash [upfront costs] not sitting in your bank account? What's the cash implication of storage, not flipping your stock? Then when you add in all the things such as currency, it's probably more expensive."*

The attraction of lower manufacturing prices abroad seems to be dwindling, with customers now enthused by shorter lead times, faster delivery and versatility of process systems and equipment, all of which can be offered by bringing manufacturing back home. As Brexit is finalised, the UK will no longer be measured on outside investment, but the value generated by the goods we manufacture at here.

R&D Tax Relief - are you claiming yours?

The researching and development stage is arguably the most important of any project, and can be extremely costly. But did you know you can claim back?

It's estimated that less than 37% of businesses are claiming the UK Government R&D tax credits incentive, although up to 80% of engineering companies may be eligible.

The incentive is designed to encourage investment in the research and development of new products, processes and software, and enables engineering businesses to receive a corporate tax deduction or cash payment from HMRC, equalling up to 33.35p in every £1.

Visit **www.gov.uk** for guidance and advice eligibility and how to make your claim.

Coronavirus and its effects on UK manufacturing

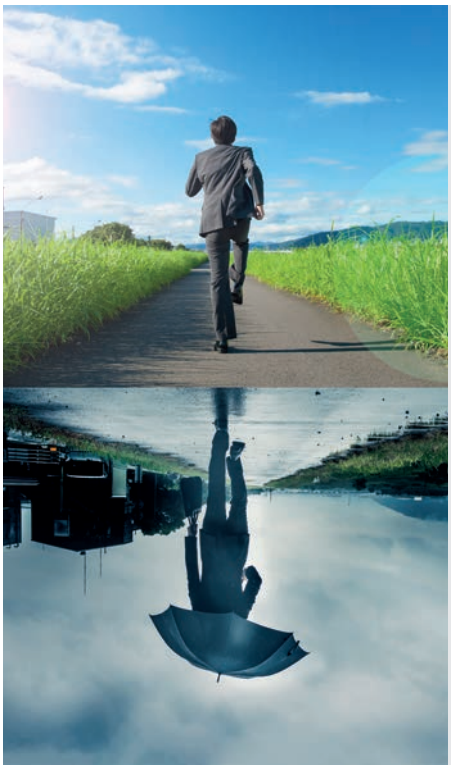
Lockdown restrictions have been in full force over the past twelve weeks, but a recent announcement from the UK Government declared intentions on loosening these constraints in a staged roll-out.

As this phased plan takes its course, the effects on the economy and society will become more evident, but until then, the facts remain somewhat cloudy, although certain aspects such as lack of supply chain strength have been exposed.

The long-term issues are yet to be fully outlined as the pandemic remains a threat, but a recent poll by The Engineer uncovered the thoughts and concerns of the general public. 40% of respondents believe that the UK's supply chain will grow stronger following the events, and just over 26% agreed that companies may well adopt more automation and digital tools in the workforce.

With an equal 14% each, it is thought that some manufacturers will embrace a more subtle outlook to design and manufacturing, while others will continue to embrace more collaboration, which has been one of the key drivers in getting to the position our NHS is in now.

To round of the survey, only 6% believe that the pandemic will improve the publics perception of engineering, although companies, whether they be suppliers, manufacturers or subcontractors, have seemingly proven their worth during these challenging times.



Dreams of a green recovery to Covid-19 emissions through £315m investment

Following the conclusion of the recent Petersberg Climate Dialogue, leading ministers from the UK and Germany have called for a strong focus on climate mitigation to be included as part of any plans to counterbalance the damage caused by the Covid-19 pandemic.

Calls for a 'green' recovery were prioritised, understanding that although the world is currently focused on the Coronavirus crisis, the issues surrounding climate change are still present. UK Foreign Secretary, Dominic Raab explained that economies need to be "revived" in a manner that will "stand the test of time" and discussed the importance of growing the economy and reducing emissions in unison.

Alok Sharma, COP26 President, also revealed that net-zero energy and net-zero transport would be key focuses of the UK in the lead up to COP26, although currently postponed until 2021, and reiterated the need for accelerated climate action.

German Chancellor Angela Merkel too reaffirmed her support for achieving the raised emissions reduction target for the EU to 50%, but also discussed ambitions to further raise the target to 55%.

It's clear that we're on a long road to recovery following this pandemic. Investment needs to be placed in the right areas to in order to effectively rebuild the economy and safeguard the future of the planet.

Helping the environment

Catering for the environment is becoming more prevalent for businesses and playing an increasingly important factor in day-to-day operations.

To help cope with such environmental issues, particularly in industries such as agriculture, automotive, chemical, food and healthcare, Globus Group have added to their market-leading range of disposable gloves with the SHOWA 6110PF.

The SHOWA 6110PF is made from 100% biodegradable nitrile providing the ultimate in comfort, dexterity and protection from chemicals.

The smooth grip, rolled cuff and 'second-skin' feel add to the wearability, while the construction is significantly stronger than traditional latex. Both powder- and latex-free, they are ideal for people with a Type I latex sensitivity.

The addition of innovative Eco Best Technology® (EBT), which contains an organic additive added during the manufacturing process, means they are attractive to microbial activity when disposed to landfill.

Regular nitrile gloves cannot attract enough microbial activity to begin the breakdown process, but the EBT materials in the SHOWA 6110PF break down into three natural compounds, organic soil, methane and carbon dioxide, meaning they will fully biodegrade within five years - helping businesses to reflect a positive approach to saving the environment.

Is RCD tripping causing you a problem?

RCD tripping is one of the most common faults which leads to expensive repeated call outs. But a level of knowledge and a quality leakage clamp meter could be the answer to saving you money on those needless call out charges.

Selecting the right clamp meter for the application is important to gain the most accurate and reliable results, and the Martindale CM69 provides accuracy from 0.1mA to 60A with a resolution down to 0.001mA.

Designed with a built-in peak hold function for capturing the maximum value of leakage current over time, while the true RMS capability means it can be used for reliably measuring maximum triplen currents in neutral conductors of phase 3 systems, helping to identify potential overload and overheating.

The high safety rating and general multimeter functions make it the ideal tool for electricians to carry at all times.

No water. No soap. No drying.

Designed for any product used in environments where contamination is a risk, ROCOL SCRUBS are now NSF registered, lending piece of mind to engineers that these ultra-strong cleaning wipes are suitable for all areas of their facility.

Registered under NSF C1 classification, which means that they are safe to use in inedible product processing, non-processing areas and exterior areas of food and beverage processing facilities, these wipes come in a durable bucket with a convenient snap-on handle, so there's no excuse not to have them when and where you need them most.

The unique formula effectively removes dirt, tar, oils and grease, and locks-in the substance to prevent it from transferring back onto the users' skin. They are also dermatologically tested and contain skin conditioner, leaving your hands clean and free from dryness and irritation – all without needing water or soap.

Specifically designed to complement Mobil Oils

Mobil's rich heritage is infused with performance, innovation and expertise, and today, the focus remains the same. Product development is focused on meeting the demands of the next generation market, and the new Ancillaries™ Range meets that target head on.

Comprising of five aerosol sprays – Anti Friction Spray, Multipurpose Spray, High Temperature Spray, Penetrating Spray and Solvent Cleaner Spray – the Manufacturing Industries Aerosol Range has been specifically designed for maintenance applications across all industry requirements.

Thoroughly tested and manufactured to only the highest standards, these easy-to-use aerosols offer a wide range of benefits for users. Furthermore, the clear and concise packaging eliminates application misuse and offers easy product identification.

Saving money even with heavy loads

Do you regularly transfer heavy loads on your conveying lines, and do these excessive loads need to remain aligned? If so, the MACM Series from SMC is just what you need.

Designed to seek space and air savings, loads up to 1,000kg can now be centred using smaller cylinders resulting in less air usage. Items can be moved in any direction and rotated 360° to +1mm centring accuracy. And it comes with a built-in air locking mechanism and external photo sensor mountable for confirmation of lock/unlock status.

By adding the MACM Series to your conveying line, accuracy and savings are just around the corner.

What a wind-up!

Mahesh Patel
Engineering Manager
ERIKS

Coiling 325 tons of coated piping onto a giant reel is a massive wind-up. But when a customer asked ERIKS to upgrade the machinery involved, with no existing engineering drawings and in under six months, it wasn't a wind-up at all. It was a serious request.

The giant reels in question are moved from side-to-side on rails as newly-coated piping is coiled onto them, to ensure its even distribution. The movement requires traverse rim drive carriages and idler bogies running on the rails to transport the reels. Then once full, the reels are lifted by crane and loaded onto lorries, for delivery to cargo ships and transfer to offshore oil and gas rigs.

Originally the reels held 250 tonnes of piping, but the customer decided to increase this to 325 tonnes each reel, to allow a reduction in connections required for any given length of pipe. Because the pipes are used to transfer oil and waste from offshore rigs to land, that length can be substantial. So manufacturing longer pipe lengths means the efficiency increases and cost reductions can be substantial too.

The predicted benefits were more than enough to justify a £2.1m investment in a new, larger crane to lift the heavier reels. However the customer initially thought that the existing carriages and bogies would be able to cope with the 30% weight increase. It was only with less than six months to go before installation of the crane that they began to wonder if that really would be the case.

That was when they contacted ERIKS.

> "Coping with a 30% weight increase"

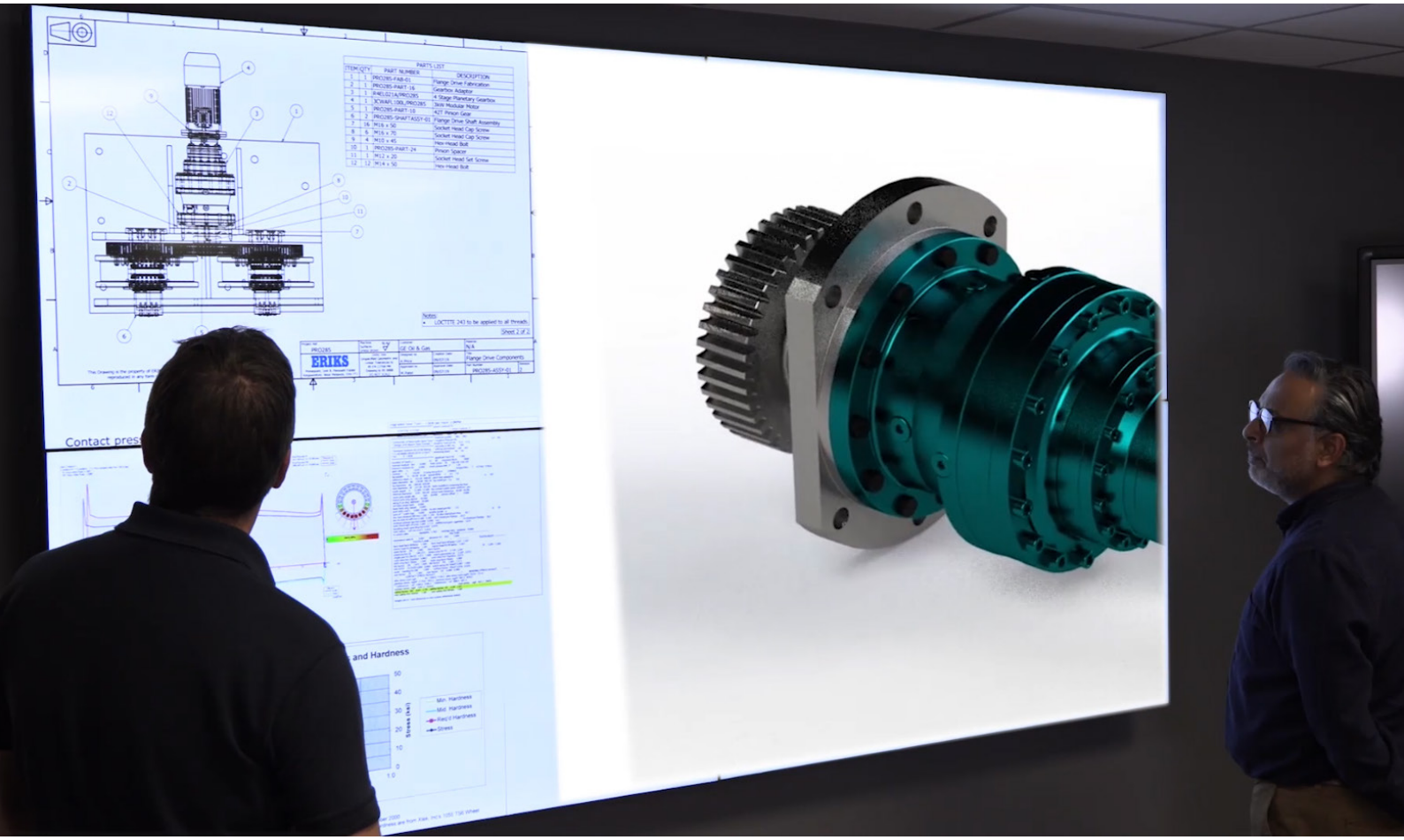
Showing our workings

These include a reduction in:

- Primary Drive – 4.0 kW, 4 pole motor into a 7/1 gearbox. Output split via prop shafts into a secondary planetary gearbox meshing with a 68-tooth wheel, bolted to a flanged driven wheel.
- It can be assumed power and speed at each driven wheel are approximately 1.0kw at 2.25rpm, producing an approximate torque (minus inefficiencies) of 4240Nm – providing the load is shared equally between the pairs of driven wheels at each end.

ERIKS' redesign

- The load on the carriage is to be increased by 30%, from 250 tons to 325 tons. The customer advised that 450kN (unfactored) would be acting on each of the 8 wheels (4 driven, 4 idlers).
- It can be assumed a proportional 30% increase to existing primary drive power of 4.0kW would require an additional 1.2kW, resulting in a total of 5.2kW. This would result in a power increase of 1.3kW at each driven wheel.
- Maintaining 2.25rpm at the driven wheels would increase the approximate torque (minus inefficiencies) to 5520Nm. In addition, the wheel bearing assemblies would be subjected to a new unfactored load of 450kN.



Weighing-up the odds

The customer's current set-up of driven carriages and bogies had functioned perfectly well for around 15 years. Their worry was that the additional weight would cause a critical failure and prolonged downtime, potentially hard on the heels of the planned shut down for installation of the crane.

> "Engineering drawings were unavailable"

Unfortunately engineering drawings of the set-up were unavailable, so understanding its design and construction, and calculating the effect of the increase in weight, had to be done from scratch, based on what was visible or accessible on site and what could be physically measured. The only figures the customer could provide were the weight of the new reels and the resulting load on each carriage wheel (450kN).

Based on the figures provided and measurements taken on site, ERIKS engineers made a number of calculations [See our workings opposite]. They could then advise the customer of the redesign required to ensure the carriages would continue to cope.

Modifying the existing carriages was considered, but ERIKS' calculations proved it wouldn't be cost-effective. The alternative, of installing new carriages, would allow phased production shutdowns over a week, rather than a complete shut down for 4-5 weeks for modifications.

Simple, but effective

As well as the redesign to cope with the increased tonnage, ERIKS' engineers took the opportunity to simplify the set-up.

The reduction gearbox which had previously split through two propshafts was eliminated from the new design, and replaced by individual drives and gearboxes for the driven wheels.

> "No maintenance for the first three years"

This means less engineering complexity, a lower component count, a potential reduction in mechanical wear, and an increase in overall efficiency. At the same time, the redesigned set-up is predicted to deliver a similar service life to the original, with no maintenance for the first three years of operation.

Lubrication of the original gearboxes required a technician to crawl underneath the equipment, with associated health and safety risks. ERIKS took the opportunity to incorporate additional piping into the new design, and the customer is currently considering connecting a lubrication system to these pipes.

With a £2.1m crane waiting in the wings, there was no room for manoeuvre around the deadline. To make sure they could meet it, ERIKS dedicated an entire engineering workshop to the manufacture of the new traverser rim drive.

In total 6 traverse carriages were upgraded, 12 driven axle drives, 12 Idlers drives resulting 48 wheel shaft bearing assemblies were manufactured and supplied within 6 months at a value of £1.1m, which is no mean feat.

Despite the complete lack of engineering drawings, from initial customer approach to on-time delivery and commissioning took only a matter of months. And the drives were installed at the same time as the new crane: meaning only one shut down and minimum loss of production for the customer.

So what could have been a wind-up was ultimately a "reel" success.

Alan Ranson
On-Site Service Centre Manager
ERIKS

Preserving the paint line

Paint is a commodity we've all used. To give our bedroom a new look or give that tatty old fence panel a new lease of life. It's used to colour cars, ships and planes. You name it, and it's probably been painted.

But paint doesn't mix itself. It undergoes a complex process before it's suitable and ready for use. So, when a multi-national paint manufacturer was experiencing issues with its latest Wood Preserver Paint line, ERIKS was the first port of call when production shut down was imminent.

Horrifyingly, in the first 24 hours of production, all eight new pumps were failing due to product leakage through the mechanical seal faces. Production had to cease. There was no alternative. Instead of producing the required 2,000 litres per hour, the line was put on stop, while the pumps were dismantled, seals cleaned and refitted. And this was happening two to three times per day.

Capital was being lost. And at a fast rate. To put it into perspective, the Senior Reliability Manager confirmed that according to OEM pump supplier lead times, the line was going to be slowed down for a minimum of 12 weeks. This stoppage would generate a lost saleable opportunity estimated at £25,000 a day, five days per week, for three months.

Back in production. For now

Upon viewing the problem, the ERIKS on-site utilised our strong supply network, inviting a partner supplier to site to discuss possible solutions. Money was being lost by the minute. A resolution was needed as a matter of urgency.

It was decided, as a temporary measure, simply to get the customer back in operation, that the existing seal faces were taken away and re-lapped. Production could recommence within 24 hours, and although not ideal, it gave time for ERIKS to source the root cause of the problems, while keeping the customer happy.

A stroke of genius

With the line up and running, although not to its required production levels, further examination was undertaken. ERIKS suggested, alongside their partner supplier, that the seal faces from the existing seal arrangement were re-engineered using Silicon Carbide rather than Chromium-Oxide.

Currently, the Chromium-Oxide coated plate, which is microns thick and porous, was running against a carbon seal which was also porous. This was allowing the fluid in contact with the plate to ball up between the seals. Changing the main seal to Silicon Carbide reduced this issue.

Additionally, the plate was bored into and sat in a rubber boot, before being fitted with a Silicon Carbide face. Now, when the two seal faces meet, nothing can ball up the material. New seals were retrofitted into the existing pump mechanical seal housing for all eight pumps.

Failure-free future

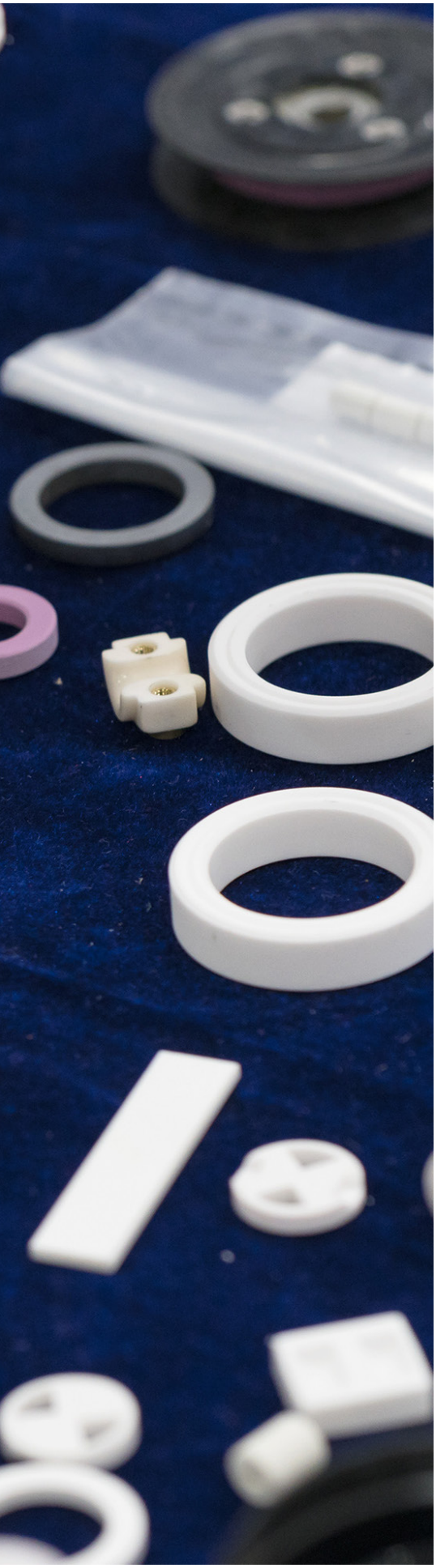
Since the retrofit, the customer has reported no mechanical seal failures, a drastic change from two to three issues every day. Through ERIKS, the customer has also ordered four new mechanical seals, with the correct silicon carbide arrangement, as spares.

Not only did the customer avoid unimaginable production losses of £1,500,000 but the new seal arrangement eliminated the purchase of a new pump installation, approximated at £80,000 initial outlay.

Thinking outside the box

David Carmichel
Senior Project Engineer
ERIKS

Consistency during the manufacturing process is important to ensuring the overall quality of products is maintained to the highest standards. Failure to do so could impact not only the integrity of the product and its intended application, but that of the company in question.



A producer of high-accuracy technical ceramics was experiencing issues with its lapping machines, and who better to call for a 'bespoke' solution than ERIKS' bearings specialists.

The lapping machine features two large round flat tables that rotate in opposite directions, with the ceramic parts placed in between. This process is to ensure that each item from the batch of ceramic parts remain of equal thicknesses. A diamond slurry is then introduced as the medium to slowly grind the surfaces of the manufactured parts.

And it's the introduction of the diamond slurry that was causing the bulk of the problems. The process couldn't change, therefore a new bearing solution needed to be designed and implemented as soon as possible.

> "Bearings were being destroyed with a single shift"

Due to the aggressive nature of the diamond slurry, and the position of the assembly, the bearings were being destroyed with a single shift. This was causing the manufacturer expensive and increased downtime.

Cue ERIKS unrivalled know-how and expertise.

Not an 'off-the-shelf' solution

The bearing assembly was completely redesigned so that it was totally sealed against damage from the diamond slurry.

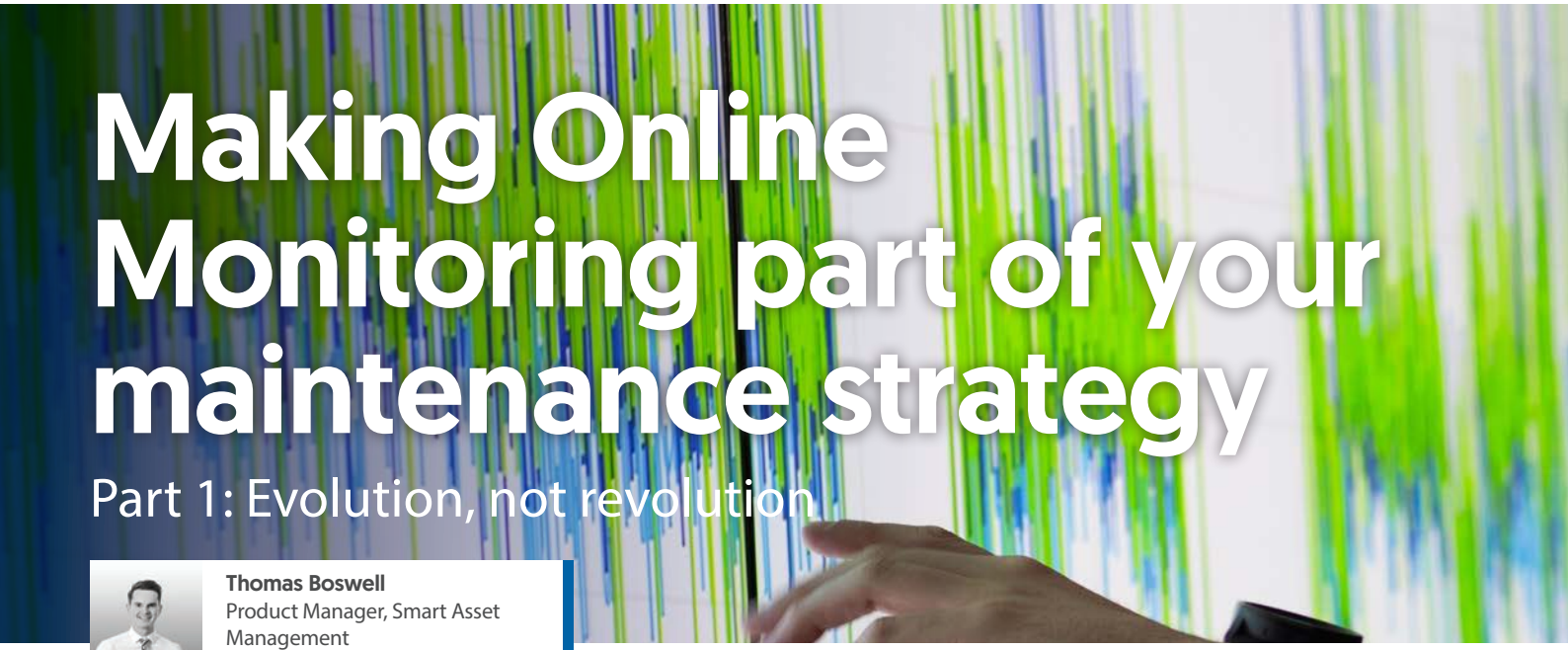
The design is such that, should the bearings fail due to normal service fatigue, the customer will only need to change the sealed bearings and the seals, which act to keep the diamond slurry at bay.

> "Downtime has been significantly reduced"

Consequential damage to the shaft, where the seals run, is mitigated by the introduction of SKF Speedi Sleeves, a new generation of thin-walled sleeves that are simply pushed into position over the worn area, providing a counterface surface.

Manufactured using a proprietary stainless-steel material that minimises wear on both the sealing lip and sleeve, no special equipment is required as the installation tool is supplied with the sleeve itself. All you need is a mallet and a pair of pliers and installation is underway. In comparison to the alternative, which is to manufacture a new shaft, downtime has been significantly reduced, easing the concerns of maintenance engineers.

Since the installation of the new bearing assembly in September 2019, the customer hasn't reported any further issues, and has seen significant savings due to extended machine lifecycles and reduced downtime.



Making Online Monitoring part of your maintenance strategy

Part 1: Evolution, not revolution

Thomas Boswell
Product Manager, Smart Asset Management
ERIKS

It's easy to promise a quick fix that reduces maintenance costs, increases uptime and efficiency, and optimises productivity. It's much harder to make those things a reality. And anyway, in reality they'll never be achieved with a quick fix. But using an iterative process, and with the right know-how, advice and support, making Online Monitoring part of your maintenance strategy can deliver those benefits worth waiting for.

> "Five maintenance methodologies"

A successful maintenance strategy usually comprises five distinct maintenance methodologies. Firstly, Reactive Maintenance. You could call this the "putting out fires" approach. Secondly, Preventive Maintenance.

As the name suggests, this is like taking steps to prevent fires, in preference to having to fight them. However it has its disadvantages, as it tends to be time-based. So if component X is due to be replaced after 12 months, but fails after 11 months, it's replaced with a new one. Then this is itself replaced on the original 12-month anniversary "because the maintenance schedule says so". As a maintenance solution, that's far from cost-effective.

It's also disruptive because it is unavoidably interventionist. When it's time for a scheduled maintenance action such as cleaning or replacement of components, then production is halted and downtime accumulates.

The third methodology is Condition-based Maintenance. This is similar to the way cars are maintained. On a car, variables such as tyre pressures, oil temperature, fuel level etc. are individually monitored, then maintenance is carried out according to how and when they stray outside predetermined parameters. It is significantly less disruptive than Preventive Maintenance, as intervention is only made when the condition of the assets demands it. Their condition can be established in a number of ways, including visual inspection, measurement, and trending analysis.

> "Where Online Monitoring plays its part"

The fourth methodology is Predictive Maintenance. This is where Online Monitoring plays its part, and we'll look at it in more detail in this and subsequent articles.

Lastly, outside the scope of these articles, is the fifth methodology: Prescriptive Maintenance.

A marathon, not a sprint

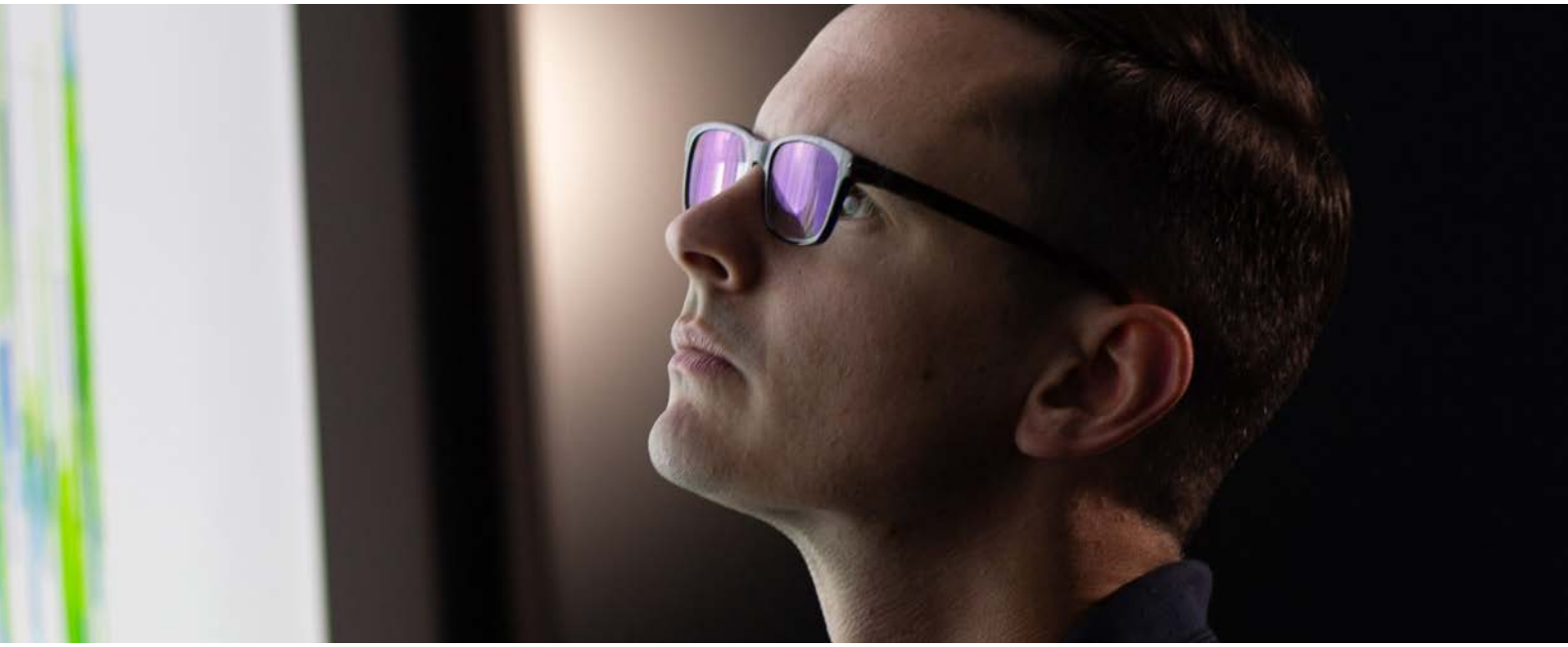
So how and when do you incorporate Predictive Maintenance into your maintenance strategy, and what role does Online Monitoring play?

Think about running a marathon. You wouldn't leap off the couch and immediately start running 26.2 miles. So if you are thinking of adopting Predictive Maintenance, you shouldn't expect to start Online Monitoring tomorrow.

The necessary timescale makes this a marathon, not a sprint. And to make it effective, you need to start from a mature Condition Based Maintenance methodology, which has already provided you with useful data about your assets.

It's sometimes believed that Online Monitoring of one critical asset will transform maintenance, increase uptime and efficiency and optimise productivity. But just as a marathon runner's fitness, health and equipment are all interrelated in achieving their goal, so are all the assets of industrial production.

You can't fully prepare for a marathon simply by investing in new trainers. You can't effectively apply the Predictive Maintenance methodology simply by monitoring one asset.



> The more assets you monitor, the better

The more assets you monitor, the better. The more comprehensive the picture you will paint, and the more accurately you will be able to predict the scale and timing of maintenance requirements.

Knowledge in, understanding out

For a car, Predictive Maintenance would involve monitoring of several variables – such as oil pressure and temperature, miles per gallon and so on – then combining the data in a calculation resulting in a predictive outcome: how many miles of driving you have left before the car needs refuelling.

In the same way in an industrial setting, Predictive Maintenance involves Online Monitoring of multiple variables such as vibration, temperature, and oil pressure. It has the significant advantage over other methods, of being non-intrusive and non-disruptive, as well as providing larger quantities of data.

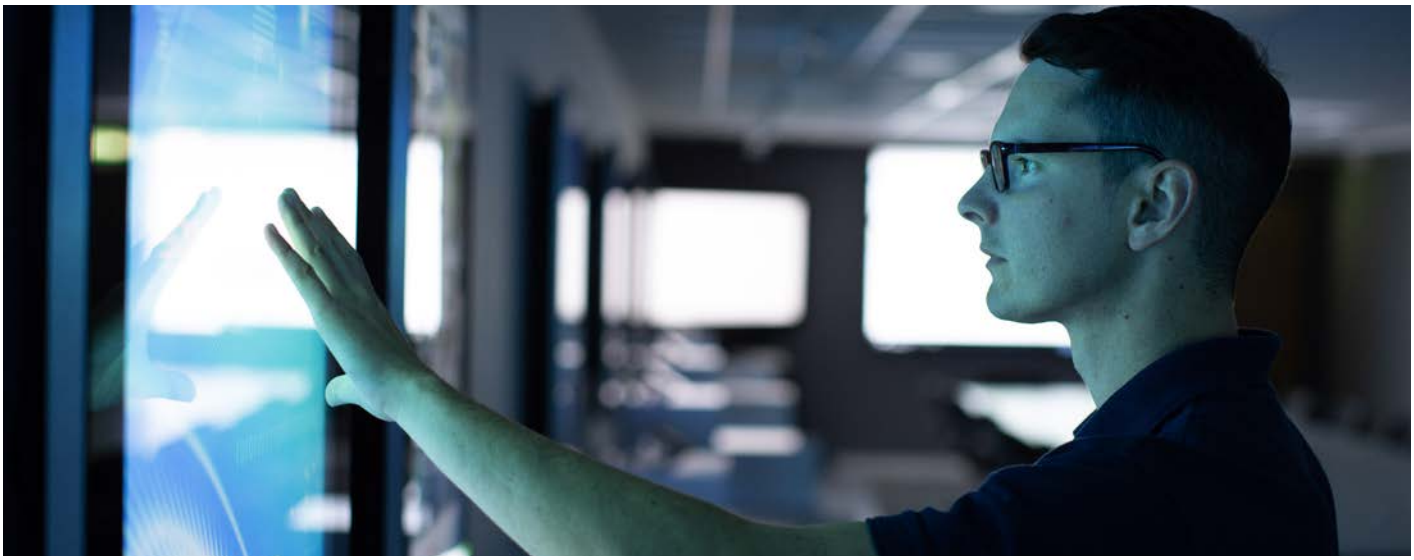
This can be used in a predictive calculation to inform maintenance scheduling. It can also be compared with historical and process data to identify trends, which may help with re-engineering assets or rethinking processes, for greater efficiency and productivity.

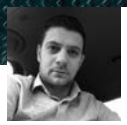
> The results can be revolutionary

By Online Monitoring as many assets as possible, and assessing the results against a sizeable historical database, you can:

- gain a full understanding of your processes and operations
- identify key factors such as :
  - how operations are affecting components' Mean Time Between Failure
  - how soon you need to make a maintenance intervention to reduce downtime, optimise efficiency, or even avoid a catastrophic failure.

Achieving Predictive Maintenance through Online Monitoring has to be an evolution. But the results can be revolutionary.





Daniel Sharp
Business Development Manager, Safety & PPE
ERIKS

Working hand-in-glove with customers and partners

There's more to customer service than just sales. The increasing complexity of industrial processes, the huge range of applications, and the sheer variety of potential solutions to customer requirements all make experience, advice and know-how just as important as price. Especially when lives are at stake.

When a leading manufacturer was planning production of a new product, requiring a chemical they had not previously used, they asked ERIKS to recommend an appropriate PPE nitrile glove. But ERIKS went further.

Where PPE is concerned, there are many factors to take into consideration. So ERIKS' first reaction was to advise due diligence before making any product selection.

ERIKS asked for details not only of the chemical in question, but also of the other chemicals in use on site. The customer subsequently provided the unique Chemical Abstracts Service numbers, the Material Safety Data Sheets, and the Chemical Register Safety System numbers for all the chemicals involved, and ERIKS went to work.

> "When lives are at stake"

Counting on ERIKS

The customer was counting on ERIKS and partners to provide the PPE solution they needed. And of course, working with long-term supply partner Ansell Industrial, ERIKS came up with the goods.

Ansell's investigations revealed that you could count the number of suitable gloves on the fingers of one hand. In fact, their expert advice on the most appropriate protection to offer was that only one particular type of glove was up to the task. But Ansell industrial also pointed the finger at several other problems.

The customer's manufacturing processes and operations involved no fewer than nine different chemical compounds. So they were surprised and shocked to discover that their chemicals handling and working practices fell short on safety in several areas.

On hand with the answers

With the customer planning a trial production run using the new chemical with their existing PPE, ERIKS' immediate and urgent advice was to halt the trial. The customer's PPE was not up to the job.

Then ERIKS and Ansell Industrial together handed the customer the perfect PPE solution.

> "The most appropriate protection"

The key issue with PPE gloves is the permeation time: how long it takes for any particular chemical to break through the glove and make contact with the skin [see box-out opposite]. After Ansell Industrial's careful assessment of the chemicals in use

by the customer, and the gloves available, ERIKS was able to confidently recommend the Ansell Barrier Glove 02-100 as the most – and only – suitable protection.

But the support didn't stop there.

The customer's production processes require frequent changes of chemicals, which demanded equally frequent changes of chemical pumps on the production line. With the potential for chemical spillages and splashes during every changeover, ERIKS recommended all technicians and operators involved should wear not only wellington boots, but also safety suits and head masks with filters.

A hand-holding exercise

The in-depth assessment of the customers' chemicals handling and working practices, and their PPE provision, made them realise they needed professional advice and support. And that ERIKS – with the help of Ansell Industrial – were the people to provide it.

Now ERIKS has an on-site presence at the customer's facility, managing the PPE store.

> "Chemicals handling and working practices fell short"

This enables cost-effective sourcing and supplying not just of gloves but also the boots, safety suits and masks already mentioned, plus hearing protection, safety glasses, other gloves, and general workwear.

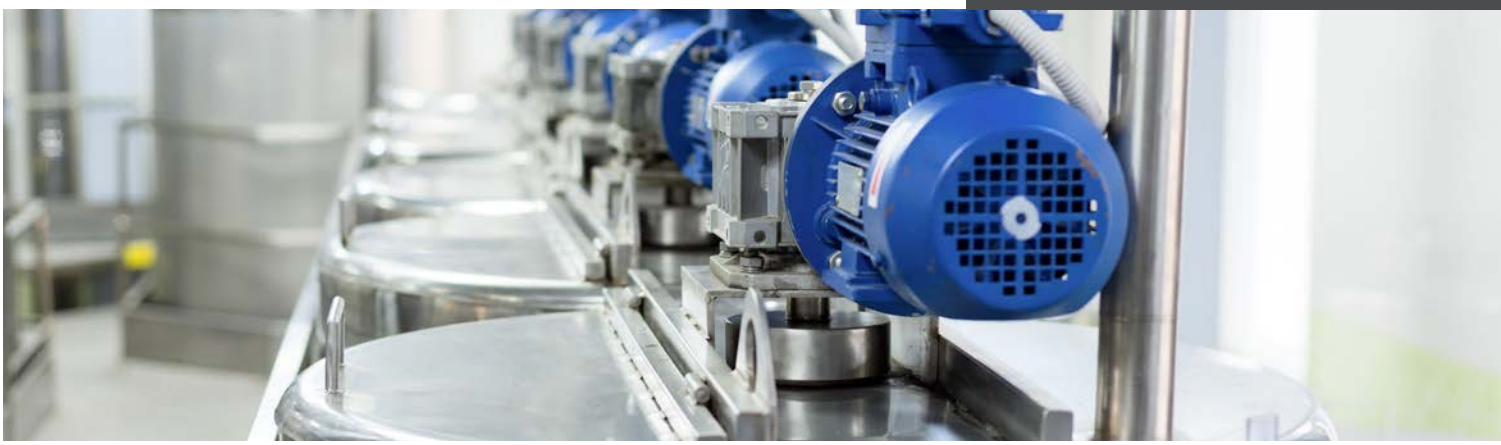
Just as importantly, ERIKS' service includes help and expert professional guidance for the customer across every aspect of PPE – with assessments, recommendations and ensuring they have the right workwear for every task, to provide the correct protection for every worker.

Price is important and always taken into consideration, of course. But the safety of employees is more important still. Which is something everyone involved can shake hands on.

Time for protection

Permeation breakthrough times evaluate the time it takes a chemical to pass through a glove material, before making possible harmful contact with the skin. The gloves are then allocated an advisory rating accordingly.

Permeation breakthrough time in minutes	Protection rating
<10	Not recommended
10-30	Splash
30-60	Splash
60-120	Medium
120-240	Medium
240-480	Good
>480	Good



Seal the deal

Mick Holland
Director, Sealing and Polymer
ERIKS

Wouldn't you like to know about a component which could help improve health and safety, and reduce the risk of environmental and product contamination? Wouldn't you want to find out more about this component, which can also help increase yield, and ensure successful implementation of product innovations? You would? Then it's a deal – let's get it sealed!

Seals and gaskets are critical components of countless production assets. So it's important to know their limitations and capabilities. For example, most seals are manufactured from elastomeric compounds, based on nitrile polymers. Despite their widespread use, they provide only a limited amount of resistance to higher temperatures and chemically aggressive environments.

> "Seals and gaskets are critical components of countless production assets"

So, if your application operates in an aggressive environment, you may be in danger of choosing a seal that's not the real deal.

And an aggressive environment is not always what you might think.

When cleaning plays dirty

Even if the overall environment in your industry sector is not considered aggressive, there could be one factor you've overlooked: the wash-down.

This often involves fluids at high temperature which can cause certain elastomers to deteriorate over time. This can be particularly true in the food and pharmaceutical sectors. A contamination-free production environment is essential but achieving it can involve wash-downs which destroy seals.

In addition, solvent-based systems involved in processes used to manufacture active pharmaceutical ingredients, can act to destroy elastomers and the seals made from them.

But even in environments acknowledged as aggressive, you might be surprised where the challenge to seals really lies.

> "Choosing the correct formulation of elastomers is complex"

Highs and lows of sealing

Operating conditions in the oil and gas industry, for example, are notoriously difficult.

Take a seal on a sampling cylinder. Subjected to extremely high temperatures within a borehole, it will be formulated to cope with those conditions. But in some geographies – such as Russia or Canada – the ambient temperature of certain times of the year may be extremely low. A cylinder left outside when not in use may be affected by those low temperatures even more than the high ones.

Clearly, choosing the correct formulation of elastomers for seals is complex, but critical.

Testing your reactions

Temperature, pressure and chemicals can all cause the constituents of seals to react in different ways.

If a chemical affects the covalent bonds within the elastomers in a seal, the seal may stiffen, crumble or take a new shape – any of which will affect its sealing properties. If a chemical is soluble with the elastomers it may shrink or swell, either of which may cause leakage or product contamination through chemical elution.

With the right advice and support, you should be able to find the best seal for any of these circumstances. But then, disaster happens: you find a way to improve your process.

That's a good thing for your productivity or cost-efficiency, or course. But what does it mean for your seals? If a new chemical is involved, how will your seals react? If temperatures or pressures involved in your process rise, will your seals remain effective?

Some supplier may suggest simply throwing money at the problem, since the premium perfluoroelastomers typically cope with most types of chemically aggressive environments. ERIKS, on the other hand, engineer solutions which meet your sealing need in the most appropriate manner.

> "Engineered solutions which meet your sealing needs"

ERIKS' online tools can help you to identify the materials most suitable for seals in your production environment. A comprehensive library of ERIKS brochures covering a wide range of industry sectors will provide valuable information. And highly-experienced Regionally based Technical Sales staff – plus technical experts based at the ERIKS Technology Campus – are on hand to provide advice, expertise and solutions. Plus a great deal for your seals.

Where to find out more

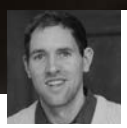
Sealing brochures are available for the following industry sectors:

- Engineered Gaskets
- Polymer Solutions for the Chemical Process Industry
- Engineered Polymer Solutions for Oil and Gas Applications
- Specialist Seals for Heavy Industrial Applications
- Specialist Seals for Utilities and Power Generation
- Engineered Seals for Defence & Aerospace
- Sealing & Polymer HVAC and Domestic

Use ERIKS' online tools to help you select the right seal at: **http://oring-groove-wizard.eriks.co.uk/**

Get in touch: **https://eriks.co.uk/en/enquiry-forms/contact-sealing-and-polymer/**

Improving your most critical non-critical component



James Bukacek
Global Product Manager – Disc Couplings
REXNORD

Can you guess which drive train component is "the most critical non-critical component"?

It is… the coupling. And by applying an innovative Rexnord solution to couplings for centrifugal pumps – specifically in the oil refining and petrochemical industries – you can increase production efficiency and reduce your Total Cost of Ownership (TCO).

> "Increase efficiency, save energy, and reduce your TCO"

The flexible coupling connecting a centrifugal pump to its motor is small in size, small in monetary value, but huge in terms of its criticality. When operating effectively, it should not only transmit power from the motor to the pump, but also protect the connected equipment from potential damage due to equipment misalignment. It should optimise efficiency, prolong bearing life and – if built to the required standards – help ensure safety in explosive atmospheres.

The Rexnord Thomas® XTSR71 Disc Coupling does all these things, and more. Its additional features and benefits make it the best possible choice for your centrifugal pump application.

To infinity and beyond

The unique strength of the Rexnord Thomas XTSR71 Coupling is that it provides very high torque density. Or in other words, it transmits a disproportionately high amount of torque for its diameter and mass.

Most all-metal disc couplings deliver torque through a combination of friction and shear, which increases the likelihood of catastrophic coupling failure. However the Rexnord Thomas XTSR71 Coupling delivers torque principally through friction. Which means less stress and less risk of catastrophic failure.

Combine this with its reduced size and mass, and it definitely punches above its weight.

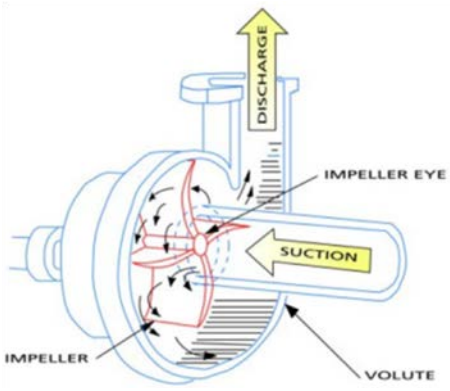
The high torque-to-mass ratio of the Rexnord Thomas XTSR71 Coupling means you still get the torque your centrifugal pump requires. But you get it with less weight on the drive shaft, which means less overhanging weight and hence lower stresses on the pump bearings.

And that leads to all kinds of associated benefits, including:

- less wear
- less maintenance
- a corresponding reduction in Total Cost of Ownership.

Associated with its smaller mass, the coupling also has less inertia which can cause imbalance. And as a flexible coupling, it accommodates misalignment between the pump and motor.

All of which allows Rexnord to claim the coupling is "designed for infinite life" when operated within its design parameters.



One size fits all

The smaller size of the Rexnord Thomas XTSR71 is a clear benefit in terms of efficiency, maintenance and TCO. But what if it's too small to fit the equipments' shafts? Does it require an expensive, custom-made solution?

The answer is no. The Rexnord Thomas XTSR71 Coupling is available off-the-shelf with the ability to use oversized hubs.

Oversized hubs are simply the standard hubs of the next larger sizes, eliminating the need to use non-standard components or upsize the entire coupling to accommodate larger shaft sizes. With shaft size practically eliminated as a selection limitation, nearly any pump and motor combination can benefit from this most cost-effective of couplings.

> “Help ensure safety in explosive atmospheres”

Safety first. TCO second, third and fourth

Lowering your TCO through the use of standard, low maintenance, long-life components is important. In the kind of explosive atmosphere often found in the oil refining and process industries, safety is more important still.

The Rexnord Thomas XTSR71 Coupling meets:

- American Petroleum Institute standard 610/ISO 13709 (or API671/ISO 10441 when specified)
- ATEX 112GD cT6: approved for Gas and Dust (GD) explosive atmospheres and for the toughest temperature class (T6) for the group and category.

Which proves you don’t have to reduce your safety levels when you reduce the size, mass and TCO of your centrifugal pump coupling.

> “Designed for infinite life”

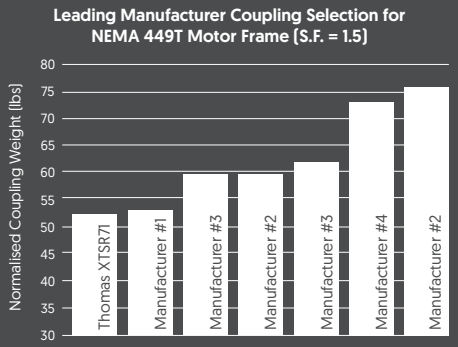
A question of balance

In disc coupling design, manufacturers must balance maximising torque density with optimising durability.

Historically manufacturers have offered products with conservative torque ratings to ensure longer life, but this leads to higher cost and a heavier coupling. Which can in turn lead to greater bending moment on the shaft, more vibration, and increased wear on bearings and seals.

As a Technical White Paper (Disc Coupling Dilemma: Torque Density vs. Durability. 2013) Rexnord carried out a torque density analysis, including a weight comparison of manufacturers’ couplings which met or exceeded torque and bore requirements for a NEMA 449T motor frame.

The results show that the heaviest coupling for this application is more than 45% heavier than the lightest. The lightest (Rexnord Thomas XTSR71) is therefore the most efficient design for the tested application.



Two heads are better than one

Trevor Ellott
Sales Director
hydro marque

You've probably heard the well-known saying, 'the customer is always right.' But in some instances, that's not strictly true. It's an extra level of knowledge and insight that really makes the difference, particularly when addressing an issue that has been persistent for some time.

A large waste recycling plant was experiencing issues with its current submersible pumps, which due to the nature of the application were continuously blocking, causing the sumps to flood and leak onto public roads leading to serious environmental violations.

The facility had a requirement to pump solid laden water from its drainage system back to its storage tanks, where the water would be screened and reused for the field irrigation process of the site product.

But continual blockages were slowing down the process and causing catastrophic failures. To put it into perspective, when leakages reach the public domain, the Environment Agency intervene, hit the red button and the process comes to a complete standstill – resulting in lost production, increased maintenance and rising costs.

Out of sight. Out of mind

People like submersible pumps. And this customer was no different. They had been facing repeated problems for over three years but persisted with using a submersible pump to operate their application. Even the on-site support, a competitor of ERIKS, continued to supply them as a means of solving the problem. But this wasn't the most efficient resolution.

Here's where Hydromarque and ERIKS' unmatched application and industry knowledge really made the difference.

> "Submersible pumps come with their flaws"

Submersible pumps come with their flaws. Mainly, due to their underground positioning meaning problems are only detected once catastrophic failure has occurred. By then it's too late. Their positioning also means that confined spaces, such as wet wells, are inevitable.

When working in confined spaces, much more must be considered, with a bigger emphasis on health and safety, specialist training and certification, and personal protection equipment. No stone can be left unturned to ensure the safety of your employees.

Then you have the hire and operation of heavy lifting equipment to remove the pump from its position. All of this comes at additional cost and resource. So surely, it's not the most efficient method?

ERIKS specialists inspected the site and, in conjunction with Hydromarque, suggested that by switching to a Gorman-Rupp Super T Series® pump, these ongoing issues would be resolved.

Superior solids handling

The Super T Series is specifically designed for economical, trouble-free operation and is suited for harsh environments such as recycling and slurries. Basically, anywhere where there's sewage, sludge or industrial effluent. The large volute design allows automatic repriming in a completely open system without the need for suction or discharge check valves.

The Super T Series has also adapted to the changing requirements of today's 'new sewage' with the inclusion of the Eradicator – marketing leading technology purposely-designed to challenge the rise of stringy solids such as sanitary wipes, plastics and hair.

> "The frequency of maintenance has been reduced"

The innovative Eradicator system features an aggressive self-cleaning wearplate, incorporating numerous notches and grooves, as well as a patent-pending lacerating tooth that helps break up stringy materials and pass them through the pump without impacting performance.

"Prove it works and we will have it"

The customer was unconvinced and reluctant to accept the proposal of switching away from a conventional submersible-style pump, solely based on price. But after hearing ERIKS' impartial viewpoint and Hydromarque's level of knowledge on the product, coupled with the unrivalled benefits on offer, the customer was persuaded and opted to take the new design on trial.

Shortly, following the agreement, KITE Utility Services, an ERIKS's approved contractor was called in to fit the installation.

Since the installation, there has been no issues reported, meaning no unnecessary fines from the Environmental Agency and an increase in production, as a result of being offered something outside of the standard product range.

The frequency of maintenance has also been reduced, and in the event that it is required, the process is now simpler and safer to conduct. The customer is now enquiring into switching another six of its pumps around the field, which will offer better spares commonality and availability. Hydromarque can even courier your requirement to you if feasible in an emergency.

Providing a level of understanding

Recently, Hydromarque conducted maintenance training on Gorman-Rupp products, providing engineers with a better understanding of how this technology operates and what true benefits it can provide.

> "Designed for economical, trouble-free operation"

From the purpose-built facility in Peterborough, the comprehensive training was based on a 'seeing it in action makes it easier to understand' philosophy, and included use of a complete test rig for assembly and disassembly, and simulated blockages, making use of the clear design whereby all content and processes can be observed throughout the entire application.

Forging the right relationships

ERIKS and Hydromarque have a long-standing relationship in delivering the right solution to customers. Based on their previous experiences, the customer was adamant they knew the requirements to gain the best results, but by putting their heads together, with impartiality at the forefront of the decision, that little touch of know-how and expertise added real value to the customers process and made life a whole lot easier for the future.

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Reducing risk, increasing yield, delivering innovation

Martin Gingles
Industrial Sealing Manager
ERIKS

Fitting unsuitable materials to any application will have negative effects, right? And when it comes to your sealing applications, it's no different. Different sealing technologies serve different purposes, so ensuring that the right material is fitted against the correct media is essential to avoiding failure.

One major energy recovery facility was faced with continuous issues due to lack of knowledge and high stock levels confusing the situation even further. ERIKS Sealing and Polymer were called in to suggest a solution.

Prior to ERIKS visit, the customer was stocking multiple material grades on-site, and was having to check their suitability for the application each time. Stockholding included 16 varying grades and styles, and 11 different media types.

The current process was very slow and ineffective, and unnecessarily tied up the company's capital.

It's all in the knowledge

Sharing their vast technical materials knowledge, and supporting literature, in this case the Engineered Gaskets Brochure, the ERIKS Sealing & Polymer specialist suggested to the customer that they could cut down the various grades held on-site from 16 to just three, explaining that the selected materials would cater for all processes required on the plant.

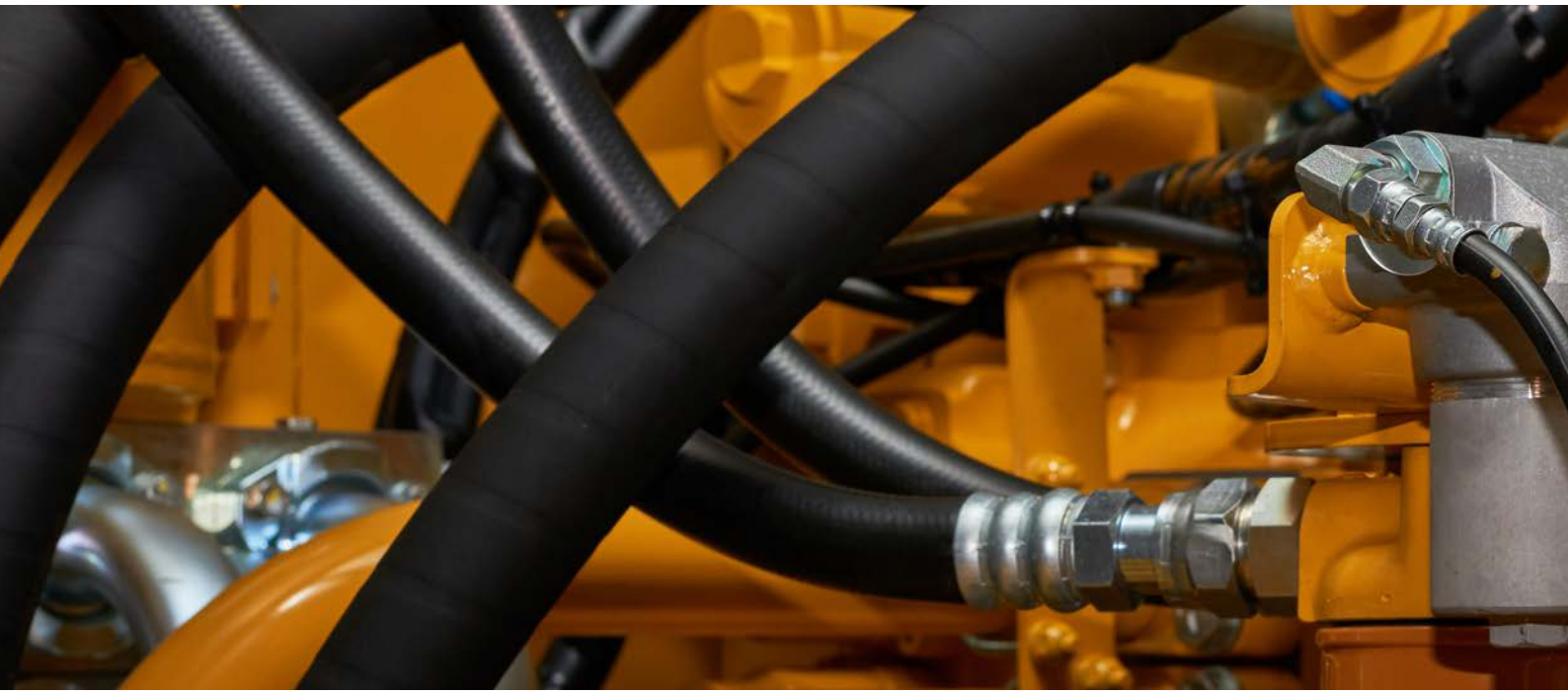
The new process makes it much simpler for engineers to choose which type of gasket to use, vastly reducing the risk of fitting unsuitable material grades to specific application media. In the long-term, by reducing the risk of gasket failures, there is ultimately less chance of plant downtime, increasing production output.

With the new process in place, and the time taken to select the appropriate materials significantly reduced, on-site engineers are able to spend more time on other pressing concerns across the facility, increasing productivity.

A stamp that ensures quality

Included as one of the newly stocked items was Clipperlon 2135 from Leader Gaskets. Innovatively designed, this gasket material comes embossed with the signature Leader logo, safeguarding against counterfeit products being supplied to the customer.

In addition to the suggested materials, the site has made an order for six sheets of 1.5mm Clipperlon 2135 and 12 sheets of 1.5mm N-Graph. Since the initial visit, the feedback received from the customer has been truly positive, reiterating that the new process has been a great success, and moving forward, more gasket opportunities will be handed to ERIKS.



Let's talk about dirty oil...

Shaun Skilton
Product Manager - Hydraulic and Industrial Process Filtration
Parker

Dirty hydraulic oil might not be the first thing on your mind, but when you hear that it's the cause of more than 80% of system failures, it will certainly make you take a deep breath.

Hydraulic oil is often described as the lifeblood of your machines. And just like your own blood, if its contaminated it can have devastating knock-on effects. In your case, throughout your whole body. In the case of your equipment, throughout your whole system.

That's why effective filtration is so important to total system health – and especially in aggressive environments. Fortunately from forestry to mining, and in the marine, oil, gas and renewable energy sectors, Parker Filtration offers a total system solution with three key elements: prevention, diagnosis and treatment.

Prevention – it's better than cure

If your hydraulic oil gets contaminated, then often the only way to cure it completely is a shut down. Which means lost production, and inevitably lost profits too. So the most effective way to maintain productivity and profitability is to prevent the contamination in the first place.

In extreme conditions, where even carrying out an inspection can be a health and safety risk, gathering relevant information for the kind of analysis that can flag up problems is a challenge in itself. But using the most up-to-date filtration technology, Parker Filtration can help you spot potential problems before they affect your oil and everything it flows through.

Successful prevention starts with choosing the most appropriate and effective filtration solution, backed-up by on-line sensors and on-site testing technology.

The result will be early warning of issues, so you can take appropriate action to avoid component deterioration or critical failure, and the equipment shut down that could follow.

Treatment

Diagnostics

Prevention

> Prevention, diagnosis and treatment

Diagnosis – before it's too late

Even in the most well-regulated working environments, if they're inherently dirty and aggressive then contamination can sometimes occur. Once it does, then the longer it goes undetected and undiagnosed the more damage it can cause: from a minor issue to a critical failure, and from a short period of downtime for maintenance to a complete shut down for repair or component replacement.

Parker Filtration systems don't just filter, but monitor too – so you can be alerted to a problem and diagnose the cause before it goes too far. The insights Parker Filtration systems provide into equipment health are based on identifying the smallest changes. Then the systems can trigger crucial interventions, before what starts as a minor issue develops into a major problem.

Diagnostic capability from Parker Filtration includes a combination of sensors and diagnostic tools, plus circuit filtration and off-line systems. Together they provide machine operators with real-time insights into changing machine health.

With all the facts at your fingertips, it's easier to make truly effective decisions, to improve uptime, minimise downtime, and optimise productivity.

Treatment – the last, or first, resort?

For humans, treatment is what happens when you're already sick. For your equipment, it's what happens to make sure it doesn't get "sick".

Using up-to-date filtration technology to "treat" your hydraulic oil will help to keep systems clean and fully functional, for greater reliability. As an added bonus, it will also help your oil to last longer. That in turn extends the time between routine drain and change procedures, with resulting increased uptime, reduced waste, and lower costs for disposal, lubricant and labour.

Correct and effective treatment of hydraulic oil can also reduce the time – and money – needed for maintenance. And when your equipment is running smoothly, with clean oil flowing through your system, unplanned stoppages are reduced to a minimum, and performance and efficiency are optimised.

Total system healthcare

You can rely on Parker Filtration technology to:

- provide valuable insights to help you optimise performance, streamline maintenance and improve reliability
- identify potential issues before they become real problems
- keep your oil – and your systems – contamination free.

In other words: prevention, diagnosis and treatment.

Put them together, and you have a total system healthcare solution that means you never have to talk dirty oil again. And even in today's highly competitive industrial environment, you can clean up.

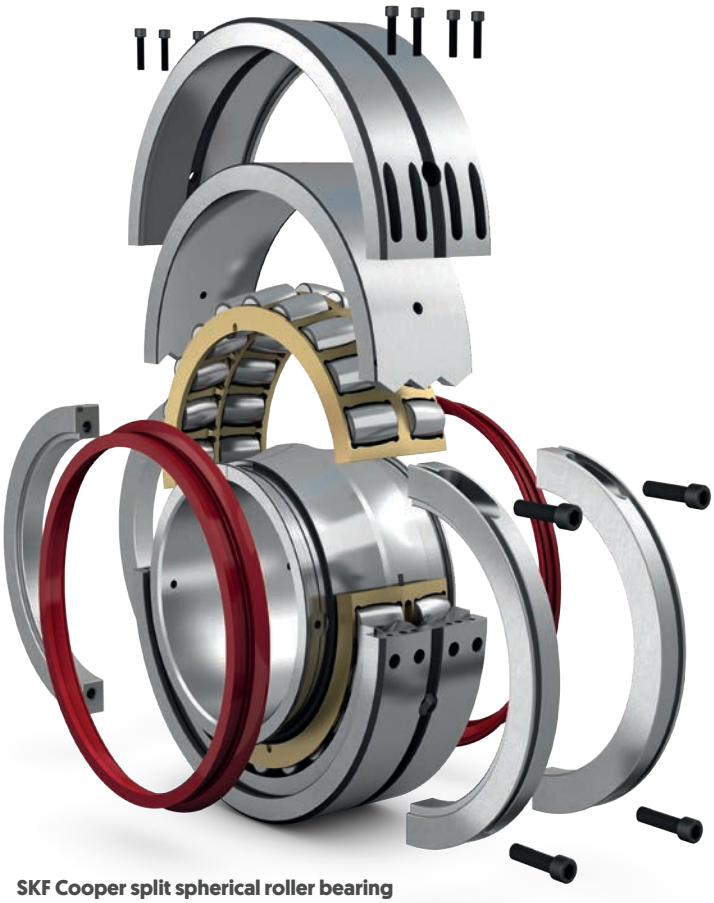
> Improve uptime, minimise downtime, optimise productivity

If you need help finding the right solution for your business, why not try the range of online tools at your disposal. Easily find and select quality hydraulic and lubrication filter products at filterselector.com, or if you're looking to identify and order replacement interchangeable elements faster and easier, use the Par Fit™ selector at pakerhfde.com/toolkit, where you can simply search by part number, application or visual reference.

Support Tools

Want to hear a secret?

Sealed bearings extend conveyor lifecycles



SKF Cooper split spherical roller bearing

David Oliver
Channel and Platform Manager
SKF

Aggressive industries such as quarrying, and mining are highly demanding. The rigorous nature of the processes. The ever-changing environment. The unpredictability. The combination of these factors makes achieving efficiency difficult, particularly when you take into consideration elements such as contamination which is unavoidable.

But what if we let you into a little secret? Choosing the correct type of sealed bearings will help extend the lifespan of critical machinery such as your conveyors.

Conveyors are among some of the most critical applications in the mining and quarrying industry, used to move extracted minerals to the next phase of the process. But in order to achieve maximum productivity, your machinery must operate efficiently and reliably.

However, these extreme conditions pose multiple issues. Take excessive dust particles for example, these will cause inevitable premature failure modes in bearings when they progress into the bearing enclosure, leading to expensive and time-consuming maintenance.

Here's where SKF's comprehensive selection of sealed bearings come to the rescue, helping to resist ingress and keep your assets running smoothly.

More barriers. More protection. Better performance

Typically, the machinery used in quarrying adopts open bearings, which are located in a grease-filled, sealed housing, providing only two barriers to ingress. However, using this technology still requires the bearings cavity to be periodically purged of contaminants – a task that requires excessive amounts of grease.

> "SKF has developed an alternative approach"

SKF has developed an alternative approach, which adds an additional barrier of protection and avoids purging completely. The ready-to-mount Three-Barrier Solution replaces the troublesome open bearing with sealed SKF Explorer spherical roller bearing (SRB), which separates the barrier grease from the bearing grease.

The units are factory-filled with the exact amount of lubricant required and are protected by integrated double-lipped nitrile rubber seals on either side of the bearing. Building in such features as standard extends the life of bearings and keeps the need for maintenance to a very minimum.

The bearings themselves are too upgraded SKF Explorer performance class. Building on improvements in bearing geometry, materials and manufacturing methods seen in SKF Explorer, the upgraded variant features a combination of higher-quality steel and an improved heat treatment process. Upgraded SKF Explorer spherical roller bearings offer further improved performance under poorly lubricated or contaminated conditions.

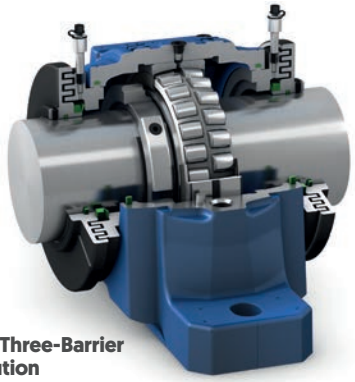
Reduced maintenance. Increased safety

Conveyors are widely known in the quarrying industry as the most difficult to maintain, with the most common problem lying in excessive grease consumption. Generally, conveying systems use standard open-pulley bearings that require large amounts of grease to purge contamination. But open-pulley bearings have a relatively short service life and don't last as long as the pulley lagging itself.

With short service life comes frequent repair and replacement. Increasing costs even further. Not only are costs driven up, but health and safety risks are increased, as often, these bearing types are inaccessible. They must be hoisted into position during replacement, which increases danger levels for those involved.

SKF Cooper Split spherical roller bearings have been designed to solve this issue. Replacement is quick and easy, reducing maintenance costs, risks and downtime. The sealed variant resists contamination and greatly reduces the need for lubrication.

> "Designed with an angled base to simplify the fitting"



SKF Three-Barrier Solution

More recently, the SKF Cooper SNQ pedestal, or plummer block as commonly known, has been introduced for further convenience. Designed with an angled base to simplify the fitting of the bearing units, the angled joint allows the pedestal to be slid under the shaft without tools or a hoist to lift the shaft.

The design builds on the concept of quick, easy and safe assembly, and removes barriers to conversion. The combination of identical base-to-centre heights, distance between bolt holes, and angled pedestal simplifies the process of changing the arrangement.

Although a bespoke solution, the SNQ pedestal is now available across the standard range of SN and SD equivalent pedestal housings.

Sealed SKF Explorer spherical roller bearing

Positive insert

Quick and easy shaft mounting is a feature of SKF's Insert Bearings, previously known as Y-bearings. Based on 62 and 63 Series Deep Groove ball bearings, they come equipped with an extended inner ring with specific locking device and feature a convex outer ring.

Supplied capped on both sides and greased, Insert Bearings do not require lubrication, even if the grease life exceeds the rating life of the bearing. However, if relubrication is required, the job is further simplified with the inclusion of purpose-designed lubrication holes.

These bearings can also accommodate initial misalignment, caused by the housing tilting, while resisting contamination ingress, maximising service life.

> "Offer optimised protection against contamination"

Locked tight

SKF's UC Range of ball bearings offer optimised protection against contamination, and washdown processes, and are highly recommended for conveyors.

The pioneering sealing system comprises an integral single-lip inner seal, plus external deflector, which is fitted to the inner ring for enhanced sealing. They are also designed with a 120° grub screw angle locking system for applications that require precise shaft balance at high speeds or environments where their exposed to systematic vibration.

Built with a solid base and feet, the smooth design further reduces the possibility of contamination build-up, which is particularly important on a conveying line. Vibration resistance is also improved thanks to the solid base and feet, while the chance of dirt collecting underneath the housing support significantly reduced.

Available with flanged and take-up housings to comply with ever-changing health and safety regulations, UC bearings can be supplied with hydrophobic polypropylene end covers as additional extras.

It goes without saying that aggressive environments of any kind, in this case mining and quarrying, shorten asset lifecycles, with contamination even further increasing the risk. In their mission to be the leader in bearing solutions, SKF's sealed bearings have a track record for reducing risk, reducing maintenance and increasing service life of applications across a wide variety of industries.

Excelon® Plus
Modular Air Preparation in Two Body Sizes

Rotating Safety Shut-off Valve

Quater turn easy to operate full flow device

Easy to isolate system with no reduction in performance

No compromise on Robustness

Metal construction – where it matters most

Quality synonymous with IMI Norgren brand

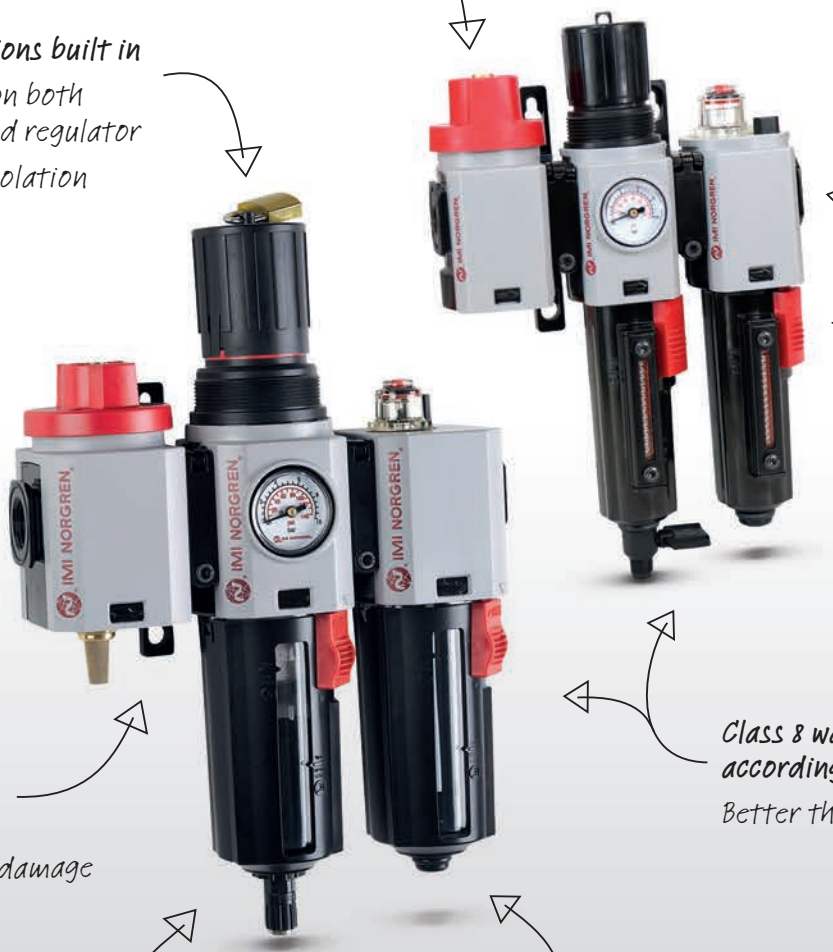
Tamper proof options built in

Padlock features on both shut-off valves and regulator

Guarantees safe isolation of machines

Port sizes

1/4", 3/8", 1/2" or 3/4"



Double safety lock on bowl

Bowl clip that clicks, plus safety detent when pressurised

Impossible to remove the bowl when in use

Flush mounted integrated gauge

Easy to read

Less vulnerable to damage

Dual scale

Class 8 water extraction according to ISO 8573-1

Better than 95% @ 100% flow

Easy filter maintenance system

Element is removed together with the bowl for faster and cleaner servicing

Best in the market with only 25mm bowl clearance required[1]

Compact size and optimised weight

Maximises machine real estate

Smaller and lighter than its predecessor

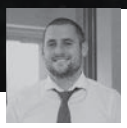
Engineering GREAT Solutions

[1] The nearest market equivalent is 40mm

IMI Precision Engineering

IMI NORGREN®

What's getting up your nose seal?



Patrick Dowen
Applications Engineer
IMI

If you operate a pneumatic actuator in an aggressive environment, you may think cylinder failure is part of the deal. A new nose seal solution from IMI Norgren proves it doesn't have to be.

Wash-down fluids, cement dust, sugar, gypsum and similar substances can really get into the nose seal of your pneumatic actuator's piston rod. Aggressive fluids can cause the seal to deteriorate and fail, and sticky substances can lead to it being pushed out of the end cover. In all cases, cylinder service life is reduced.

To add insult to injury, the use of aggressive wash-down fluids will almost certainly invalidate the cylinder's warranty.

Because the cylinder has to be removed and taken away for repair, replacement is a time-consuming task. So extensive downtime means you'll certainly have to fit a spare.

> "Prolong cylinder service life"

But a new solution from IMI Norgren can help to prolong cylinder service life, reduce maintenance, and maximise uptime.

Sacrifice the seal, not the cylinder

The problems start when the cylinder's primary nose seal fails or is pushed out of the front end cover, for the reasons outlined above.

IMI Norgren's solution is a pneumatic actuator with a small piston rod extension and a screw-on front cap, which holds a second "sacrificial" nose seal. This has three major advantages.

> "Three major advantages"

Firstly, it protects the primary seal from aggressive wash-down liquids and sticky dust and dirt. Secondly, it reduces the frequency of unplanned maintenance. Thirdly, when the seal does eventually need replacing, maintenance is quicker and easier, so downtime is reduced.

Instead of a complete cylinder strip down and removal of the rod to replace the failed primary seal, replacing the sacrificial seal is simply a matter of:

- Disconnecting the rod from its connected equipment
- Manually retracting the cylinder
- Removing the seal carrier
- Swapping-out the old seal
- Reinstating the seal carrier and reconnecting the rod

This can all be carried out by a maintenance engineer in just a few minutes – which can be as much as 90% faster than repairing a standard cylinder with a failed seal.

> "Up to 90% faster than repairing a standard cylinder"

Seal the deal

This IMI Norgren solution is based on a standard pneumatic actuator with a small piston rod extension. To order, you simply need to specify the stroke length and choose the bore size you require (currently 80, 100, 125 and 160mm bore sizes are available).

If you are in any doubt whether the required 10mm piston rod extension can be retrofitted to your application, get in touch and an engineer from IMI Precision Engineering will be able to support.

Lock efficiency in its place

Bob Orme
Senior Technology Specialist
LOCTITE

Maintenance engineers across the country are continuously attempting to identify new ways to achieve savings throughout their facilities. But what good are cost savings if low efficiency levels are driving them back up?

Traditional mechanical locking devices, such as split pins and tab washers, are repeatedly used in plants far and wide, but these conventional methods come with their constraints. For example, split pins and washers are only suitable for nuts and bolts. Friction devices provide a level of resistance to vibration, but do not perform well under extreme conditions. They serve a purpose, but true efficiency is limited.

So, is there a method that provides better results with higher levels of efficiency? Yes. Liquid threadlocking.

Leading the way

Threadlocking adhesives are today taking the place of traditional mechanical locking devices, offering a greater level of all-round efficiency. And leading the way is LOCTITE®, pioneering the concept of anaerobic threadlocking through continuous development and innovation.

For example, the popular medium strength threadlocker LOCTITE 243 has recently been upgraded to offer good bond strength on contaminated surfaces, providing higher temperature resistance and performing well on passive metals without an activator.

Filling the gaps

Originally, mechanical locking devices were developed to solve the common problem of loosening that occurs in most threaded assemblies. But the reality is, due to the increasing demands of industry, and continuously changing conditions whether that be excessive vibration, thermal expansion or improper torque, they don't maintain clamp loads.

Threadlocking adhesives, such as those from the LOCTITE range, effectively prevent unwanted movement, vibrational loosening, leaks and corrosion.

> "Adhesive cures in the absence of air"

They come as single component liquids or semi-solid adhesives, which cure at room temperature to form a hard-solid thermoset plastic when applied to a variety of surfaces such as steel, aluminium and brass. The adhesive cures in the absence of air, completely filling the gaps between the mating threads, uniting the threads and joints.

LOCTITE threadlockers also boast excellent anti-corrosion properties, particularly useful when assembling through-bolts in oil reservoirs for example. Due to their clamp load retention capabilities, assemblies remain sealed and leak-proof for their entire service life, while the liquid film prevents friction welding or galling.

With unrivalled durability, LOCTITE threadlockers are the most versatile and inexpensive option for ensuring a reliable and corrosion resistant assembly.

> "Sealed and leak-proof for their entire service life"

> "One bottle for multiple tasks"

One bottle fits all

Keeping track of a large inventory can be stressful. Hundreds, if not thousands, of individual components, some large some small. You need to know what's located where, at all times. But what if you were told you could reduce your inventory significantly?

In the past, double nutting has been the preferred method of reducing vibration. But not only does this method not completely fill the gaps necessary to eliminate vibration, it doubles the cost. It may not seem much, but the reality is, it's adding to your bottom line. Regardless of component size, two items are being placed into operation, when one is sufficient for the task.

Switching back to a single nut but securing with a LOCTITE threadlocking adhesive will reduce your inventory, thus lowering costs. As previously mentioned, LOCTITE threadlockers are extremely diverse and compatible with a variety of surfaces, meaning that only one bottle is required for multiple tasks. Shelf-space is reduced, and it can be effortlessly carried around in the engineer's pocket or toolbox for added convenience. There's no need to be without it.

Brand security

Counterfeit is a word of horror in industry, with several high-quality products being imitated with cheaper alternatives, but with popularity comes increased risk.

Counterfeit products provide lower levels of performance, nullifying the very reason for purchasing the product in the first place. Not only that, but results could be catastrophic, endangering engineers' safety.

> "Design is very difficult to replicate"

To safeguard from this ongoing problem, LOCTITE have introduced a new patented bottle design. The distinctive shoulder and foot rims boast textured edges, while the LOCTITE branding is recessed into the shoulder moulding. The refreshed design is very difficult to replicate and is to be introduced across the whole range.

Increasing the efficiency of your plant, reducing its costs and inventory, and guaranteeing reliability is only one bottle away. ERIKS is currently stocking the new style of LOCTITE packaging, so you can rest assured that you are buying a quality product, from a knowledgeable supplier. Contact your local ERIKS Lubrication Representative for further details.

Don't wash money down the drain

Shaun Heys
Marketing Communications Manager
ROCOL

Frequent wash-downs are a common feature in many aggressive industrial environments. A necessary evil, if you like. Necessary because they remove whatever contamination is present. Evil because they also strip away lubrication from bearings. So how do you make them less of a drain on your finances?

One solution is to completely encapsulate the bearings in standard grease. The more there is in the first place, the longer it will take to wash away. Even so, it will need relubricating eventually – and in the meantime large quantities of grease will have been washed away: potentially to contaminate the environment.

Alternatively, instead of relubricating you could change your lubricant completely. But not after every wash-down.

Simply change it once, from a lubricant that can't resist frequent or caustic wash-downs, to one that's water-, oxidation- and high temperature-resistant. In other words, change it to a PFPE grease like one from the ROCOL range.

Perfluoropolyethers – or PFPEs for short – are highly inert. When they're used as the basis for a grease, the resulting lubricant is resistant to all the things that cause other types of lubricants to fail. When the situation is reversed and it's the conventional greases that are too aggressive for a delicate environment, then the inertness of PFPEs means they're ideal here too.

PFPEs also stay in place during wash-downs. Which means less relubrication, less lubricant consumption, and less potential environmental contamination.

There's another advantage PFPE greases have over conventional lubricants.

Lubricate a bearing with conventional grease and you'll need to fill around a third of the bearing for effective lubrication. With a PFPE grease, you'll only need to fill around a

fifth. So not only do you use less lubricant, but there's also less to wash away into the environment.

With some PFPE greases, even just a smear of lubricant around the inner and outer bearing race is enough. If you are used to applying grease in much larger quantities this is a big change, but a big saving too. And if the only lubrication method possible for your application is via a grease nipple, a ROCOL PFPE grease is perfectly suitable for that too.

As you've probably guessed, there's a premium to pay for choosing a PFPE grease. But there's a price to pay for not using it.

> "Water-resistant, oxidation-resistant, high temperature-resistant"

When wash-downs or a water-based environment drive out grease, or very high operating temperatures melt grease away, relubrication is essential and frequent. But they can only happen when you are aware of the problem. If loss of lubricant isn't spotted in time, bearing failure can occur before relubrication can take place.

With PFPE lubricants, on the other hand, the grease stays in place, the bearing wears normally over its normal service lie, and maintenance can be planned.

Since bearings are often in critical components, and often hard to access, a bearing failure can lead to a lengthy shut down for repair or replacement. Which means loss of production on top of the costs of resolving the bearing issue.

> "70% of bearing failures are due to lubrication errors"

This kind of application failure is one of the biggest costs for a manufacturer. One of the leading causes is the failure of a bearing. And 70% of bearing failures are due to lubrication errors – most of them related to over-lubrication. So a lubricant that can be sparingly applied, with predictable performance, starts to make even more financial sense.

Lower lubricant consumption. No critical failures. No lengthy unplanned shutdowns. Fewer repair costs. Less lost production. And less money down the drain.

The bitter taste of fried bearings

A major manufacturer's fryer application contains 15 bearings, which were lubricated with standard bearing grease. Bearing failures were occurring every three weeks.

- Cost of each bearing: £82.56
- Replacement: up to two hours each bearing
- Total cost of bearing replacement: £63,158.40 p.a.

ROCOL recommended SAPPHIRE® Endure PFPE grease and – because the high-performance characteristics of the grease made it possible – proposed a change to a more cost-effective bearing. The solution resulted in:

- Cost of each bearing reduced to: £16.12
- Labour reduced from 34hr to 12hr p.a.
- Increased OOE due to improved machine efficiency
- Cost savings for bearings alone: approx. £20,367 p.a.

> "Less relubrication, less lubricant consumption, less potential contamination"

Letting off too much steam

Bill Gibson
Technical Manager Valves
ERIKS

Michael Waller
Flow Control Application Engineer
ERIKS

When looking to reduce energy consumption, identifying inefficiencies across your production line should be the first step in your action plan. In many of your production processes, diagnosing and resolving issues can be done quickly, but in the case of steam systems, it's far more difficult.

Due to slower rates of efficiency deterioration and reduced levels of performance, inefficiencies in your steam systems are not so obvious. In fact, previous research has suggested that steam systems which haven't been surveyed for more than five years could have up to 30% of their steam traps leaking or blocked.

The good news is, an expert Steam Trap Survey from ERIKS can help identify any high-risk areas. And with inefficiencies at an all-time high, and costs significantly rising, one large steel manufacturer took the opportunity to discuss the ways in which ERIKS Flow Control could support their steam operations.

Not good reading

Initial conversations got underway in September 2019 and a steam trap survey was performed across certain parts of the steam line. A report was produced, and it wasn't great reading for the customer. The report summary highlighted the following:

- 140 steam traps identified as not working
- 3,701,031kg of steam lost p.a.
- 604,305kg of CO^2 emissions
- £55,516 financial loss p.a. caused by failing steam traps

At first examination of the report, it was easy to see that the biggest problem was in the amount of non-operational steam traps. 248 steam traps were tested, and a staggering 140 were identified as not working. That total's a 57% failure rate. Extremely high compared to normal failure rates which lie somewhere between 10 and 20%.

And to make the statistics even worse, only approximately 20% of the site had been surveyed, so these figures didn't reflect the overall efficiencies – or inefficiencies – of the very old site.

Problem after problem

Beyond the obvious financial implications, steam loss comes with a variety of concerns. Leaking steam pipes are hazardous and can endanger the safety of employees. Steam leaks tend to be invisible and only detectable by a whistling sound, but in a loud production environment your hearing is impaired, therefore making them extremely difficult to identify.

The implications of steam-related injuries can be catastrophic. At minimum, a steam leak will cause severe burns, cauterizing the skin, which as you can appreciate would be very painful. But worst-case scenario can be death.

Steam leaks also produce condensate,

which can cause pools of water. This creates slip and trip hazards with slippery surfaces, whilst also increasing the negative effects on groundwater and drainage systems. The prior accounting for millions in compensation globally.

Finally, we have the severe impacts steam loss has on our environment. This is an issue that has become an even more pressing concern over the years, and companies are now pushed to take a more active approach to eliminating these effects and responsibility to ensure the environment is better safeguarded.

Out with the old. In with the new

With the high-risk areas identified and an action plan agreed, ERIKS teamed up with a partner supplier, widely respected in the area of steam systems, to devise a solution that would offer significant improvements.

As with all projects, quick turn-around was required, as major disruptions would have catastrophic consequences for the customer. The solution was to provide complete steam trap assemblies, ready-to-install that could be retro-fitted into the current pipework system.

The new steam trap assembly package included PN40 piston valves with carbon steel constructions that could operate to a maximum working pressure of 25 bar; ¾" 20mm 'Y' Type carbon steel strainer; and ¾" 20mm PN40 stainless steel traps, suitable for superheated steam.

All products were prefabricated, assembled, tagged, tested and certified prior to the installation. The assemblies were compliant with all current health and safety Pressure Equipment Directive (PED) and Pressure Systems Safety Regulations (PSSR) 2000.

The new assembly also provides double proven isolation, allowing maintenance of the strainer and trap without engineers having to shut down the steam system.

To date, ERIKS have already received orders for 36 assemblies for superheated steam and saturated steam requirements, with another 20 assemblies to be ordered shortly after.

Increasing understanding

The success of the new steam trap assemblies has secured savings of over £50,000 for the customer. And that's just on steam loss alone.

With the long-term now a focus, the customer is looking to achieve even more energy savings, by utilising ERIKS' knowledge of steam, and how to better understand steam traps, their usage, how to effectively maintain high efficiency, and what effects poor steam traps pose.

There seems to be a real underlying issue with lack of knowledge and confidence on the subject of steam, with opportunities not claimed due to lack of understanding. Luckily, for customers who operate with steam systems, ERIKS wants to raise awareness on steam and address these issues by offering training, and simply getting people to talk about steam.

For more information on ERIKS Steam Traps or steam services offering, please give us a call on 0121 508 6000 and one of our technical experts will be on-hand to discuss your options.

Bearing the brunt of aggressive environments

Callum Miller
UK Aftermarket Manager
NSK

The steel industry can be one of the most volatile and unpredictable industries, with machinery at the peril of ever-changing conditions and increasingly high demands. Therefore, selecting the right product for the right application is vitally important for ensuring unplanned downtime can be eliminated, and high efficiency levels maintained.

Continued production rests on the performance and reliability of your bearings. Particularly in aggressive environments. Keeping your bearings running is a task in itself, and a tough battle at that, particularly when operating in the face of unavoidable contamination, temperature extremes, differing shock loads, variable speeds and changing levels of vibration.

But in a bid to support the needs of aggressive industries such as steel manufacturing, NSK has developed a range of bearing solutions that keep operating at optimal levels, even in the most challenging conditions.

Steering off line

An annealing line – which facilitates the change of the crystal structure of steel sheeting through heat treatment to improve

> “Costs associated with lost production rise quickly”

properties such as hardness, strength and elongation – is a vital application in the process of steel manufacturing, and costly if placed out of production. And it's here that one major steelworks was really suffering.

Unplanned downtime rising to 17 hours a year was being endured on the steel strip annealing line. 17 hours out of 8760 doesn't sound much. But when the process is intended to be continuous, the costs associated with lost production rise quickly.

Not only were lower production levels increasing losses, but heavy lifting tackle and additional maintenance support were required to resolve the issue, further adding to the costs by the minute. To put this into perspective, costs were hitting an eye-watering €21, 915 per hour. Got your attention now, right?

> "A menu of engineering services and solutions"

Adding true value

Introducing NSK's Added Value Programme (AIP) - a suite of engineering services and solutions aimed to improve efficiency and reliability, enhance technical knowledge and lower Total Cost of Ownership.

Generating more profit by saving money at every step of the process, the AIP was applied to the customers process, with detailed analysis performed by an expert NSK engineer on the failed bearings, with both bearing type and seal arrangement identified as inadequate for the application.

> "Minimise grease leakage and increase resistance to water ingress"

The report showed significant fatigue on the ball bearings, from excessive exposure to heat and contamination, while lubrication issues were also pinpointed.

Keeping it moving

Taking into consideration the variable high and low speeds of the application, switching to NSK's innovative multi-row sealed cylindrical roller bearings (CRB) for crane sheaves was recommended.

Purpose-designed for quarries, ports and construction sites, the high-load capacity and advanced sealing of CRB's also makes them ideal for operation in demanding areas such as steel making.

NSK's full complement cylindrical roller bearings offer an advanced system of contact seals that minimise grease leakage and increase resistance to water ingress and other foreign particles. Their capacity to provide unrivalled reliability in arduous conditions is further enhanced by machined holes on the inner and outer rings, aiding the replenishment of lithium grease in situ. These relubrication holes support easier maintenance and grease replenishment, while the highly corrosion resistant phosphate coating offers additional protection from the harsh conditions.

Trial leads to success

Installing NSK's cylindrical roller bearings on an initial trial, bearing condition analysis was performed at the mid-point to determine the effectiveness of the solution in such a harsh environment. The results were extremely positive, revealing no signs of fatigue.

Additional analysis was performed post-trial, and once again, no signs of bearing damage. In fact, the bearings have been in full operation for more than three years of service, completely eliminating the high annual costs, reaching in excess of €300,000.

Time to think positive

Jon Whitehouse
Director, Industrial MRO & Safety
ERIKS

Maximum productivity is the aim. Or it should be. But to achieve this, there are many considerations. Is your machinery suitable for the application? Is it running efficiently? Is your equipment being maintained correctly?

But beyond the hardware of your plant lies a more important factor. Your employees. So, surely the safety and satisfaction of your staff should be a top priority too. After all, without them, what can you really achieve?

With that being said, increasing the safety and comfort of your team, and preventing or minimising the associated risks, is vital to attaining your productivity goals. And there are two 'floor'less solutions to ease their concerns: ergonomic matting and ergonomic flooring.

The Monday blues

I think we speak for most when we say that many of us aren't overly keen on Monday mornings. After a nice relaxing weekend, imagine knowing you're walking into a workplace where you're going to be uncomfortable for a minimum of eight hours. Doesn't sound too appealing does it?

A previous study from Wearwell indicated that one subject was experiencing issues with high injury rates and high rates of absenteeism - particularly on Monday mornings where it was as high as 10% -even though it was the largest and best in terms of wages and employee benefits within a 48km radius.

So, what was the issue? Common responses included: the quality and hardness of the work surface; level of fatigue during and after shifts; and discomfort of joints during and after work.

Ergonomic matting was installed, and the workers were requested to report back at regular intervals over a one-year period. And the results spoke for themselves. Perceptions quickly changed, with employees reporting less fatigue during and after work, and sensitive areas of the body – feet, knees, legs and lower back – feeling much less strained.

This resulted in higher levels of productivity - an estimated 2.2% - based on lower absenteeism and injury, and a reduction of approximately £38k in insurance premiums. An overall annual saving of £228,060 was achieved over the course of the study (1 year).

> "Different products suit different areas"

Is it right for you?

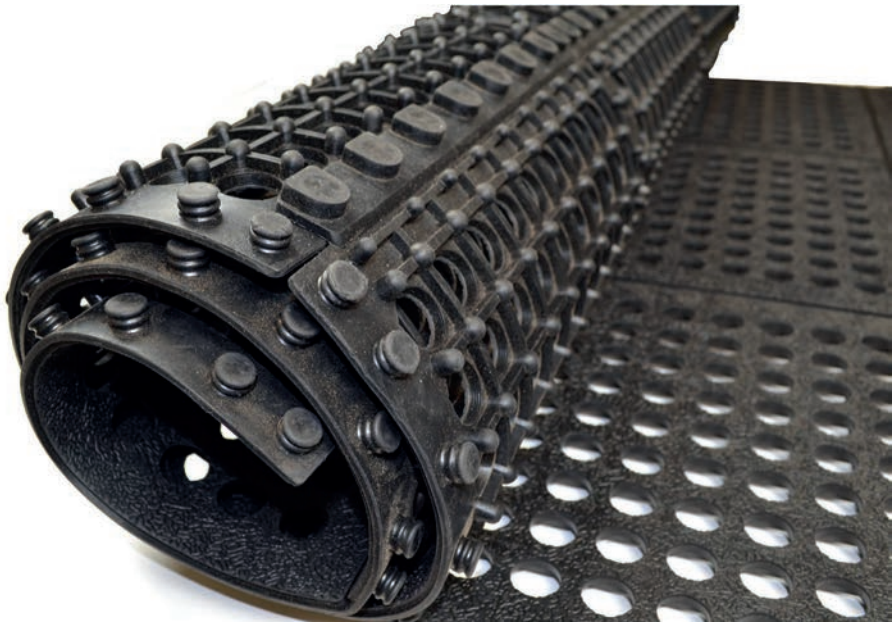
Making the right decision on your ergonomic matting or flooring isn't easy. Different products suit different areas. They all have different benefits. The unfortunate fact is that the majority of mats and flooring are black, but don't be fooled. Not all products are the same.

At Wearwell, great due care and attention is taken to ensure that products are fit for purpose. For example, you have the Locksafe® Solid and Drainage, suitable for different environments; you have the NBR (Nitrile Rubber) and GR (Grease Resistant) compounds, suitable for different surfaces; and you have products with or without GRITSHIELD™ designed for extra traction.

Traditional rubber products operate with a passive lay-in system, where the connectors nest inside one and other. This can cause endless problems, by providing only minimal security. Any upward movement, for example, a slight kick, pivoting traffic, a missed step, and certainly picking up the mats, the connection

would be lost, tiles would separate, and a trip hazard would be formed.

Que 24/Seven® LockSafe® from Wearwell.



> “Designed with both male and female connectors”

Lock it. Leave it.

A forward step in safety, the difference with 24/Seven® LockSafe® is in the connections. We're positive.

The patent-pending Positive Interlock System is designed with both male and female connectors that feature a flange that seamlessly locks together – delivering a secure connection in all directions. This means that each section of the mat will not come apart or loosen – unless you intend it too, of course.

Installation has also never been easier. With the flooring, simply connect the tiles and trim them to accommodate your space. The simple ramp system is provided in separate sections, allowing the sides and corners to be quickly and effortlessly adjoined with the need for adhesives and fasteners removed. Yes, it's time to scrap those annoying cable ties forever.

> “Lay it down and roll it out like a rug”

And for the matting, you lay it down and roll it out like a rug. It can even be made to specific lengths, widths and shapes.

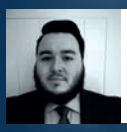
Easy to maintain

Thanks to the simple locking design, maintenance is effortless. As individual tiles can be removed, should a section of flooring become damaged, it can be switched out in the blink of an eye. This offers savings in terms of replacement materials, as just the single panel needs exchanging; installation costs, as minimal time is required; and increased productivity.

Overall, choosing to opt for ergonomic matting or flooring certainly comes with its positives. Providing the comfort that ultimately leads to better morale, higher levels of productivity, health and well-being and increased savings.

What more could you ask for than a happy workforce and lower costs?

Decision-making by numbers



Alex Mills
Product Manager, Gearboxes, Motors & Drives
ERIKS

One of your critical electric motors has failed. Production's ground to a halt. The pressure is on you to get operations back up-and-running as quickly and cost-effectively as possible. A quick price comparison of various new motors, a quote for a repair, and the numbers seem to make it clear which is the cheapest way to go. But is it the right way in the long-run?

The problem with basing your decision on the numbers on the price tag is that they don't tell the whole story – because the most scary part has been left out. The purchase price is a mere 1% of the Total Cost of Ownership (TCO) of any electric motor. Maintenance adds another 2%. But the remaining, frightening, 97% of the TCO is entirely down to the cost of electric energy.

> "You're buying an iceberg"

So you're making a purchasing decision based on just 1% of the relevant information. In other words: you're buying an iceberg.

But a new online tool from ERIKS means the number's up for short-term thinking and inefficient electric motor purchases.

Efficient – by law

Clued-up purchasers like you are not the only ones looking at the operating costs, energy consumption and carbon emissions of electric motors. Governments are well aware that these motors in industrial applications represent 65% of all energy consumption. And where energy goes in, CO_2 emissions tend to come out.

In one year alone electric motors in the EU have consumed 1,425TWh of electricity, which corresponds to 560 tonnes of CO_2 emissions.

That's why legislation around electric motors is changing, with new efficiency ratings gradually being introduced and less-efficient motors being phased out. Ultimately, the effect will be to reduce electrical energy consumption and CO_2 emissions in industry. But in the meantime, with so many different efficiency ratings and motor options available – not to mention the option to repair – it's made it even harder for you to be sure you're making the right choice for overall cost- and energy-efficiency, and to meet any energy-saving and emissions reduction KPIs you may have.

The new ERIKS Total Cost of Ownership Calculator is the answer.

It not only gives you the right numbers. It also lets you see how they all add up, to help you make the correct motor choice for the long-term.

> "Make the correct motor choice for the long-term"

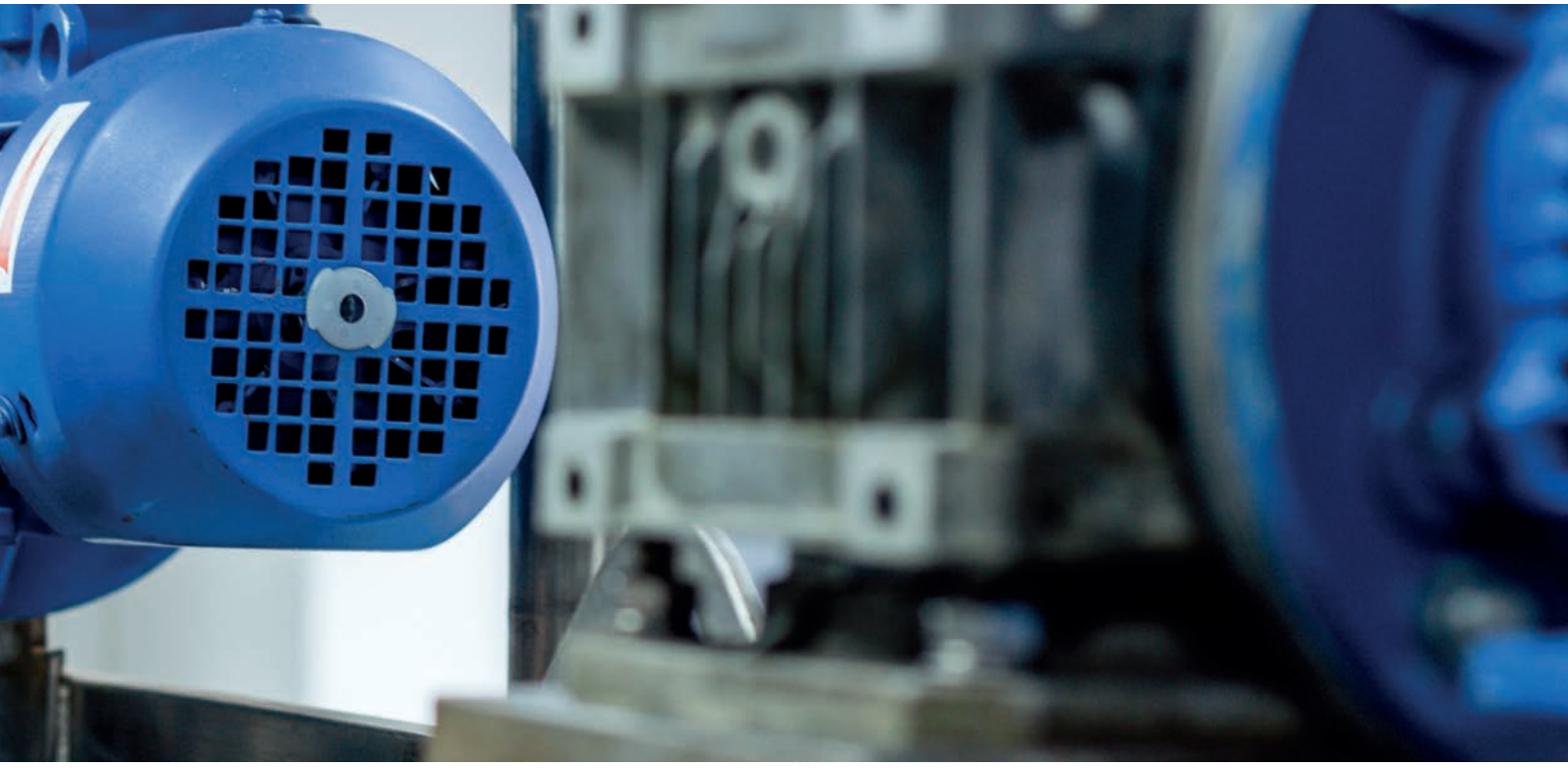
Tailored TCO calculations

Every electric motor application is different. So there's no real benefit from a one-size-fits-all calculation of the cost of ownership. That's why the ERIKS online TCO Calculator bases its results on a whole range of factors unique to your specific application.

The TCO Calculator allows you to input your unique figures for:

- running hours
- energy costs and
- repair cost

This means the answer the TCO Calculator gives you will be 100% relevant to your specific application.



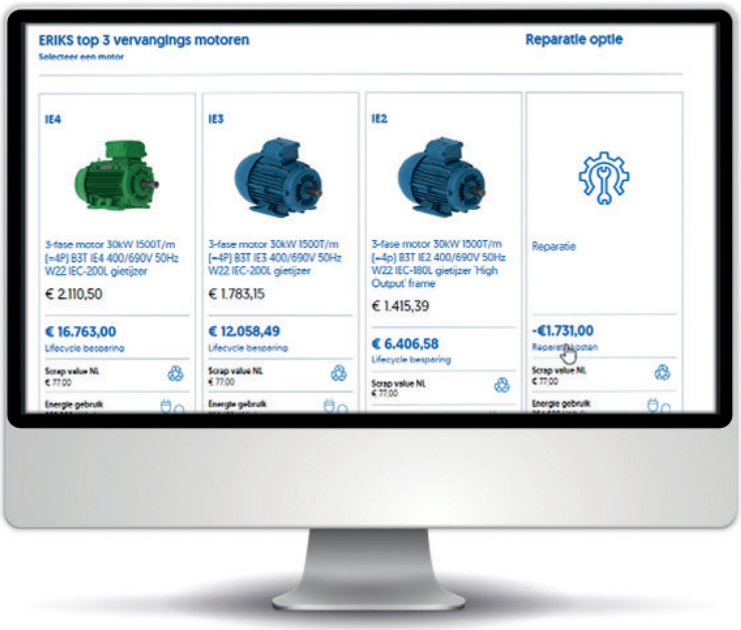
> “Results based on factors unique to your specific application”

When a motor has a design life of 15-20 years, incorporating these detailed figures into your purchasing considerations has a major influence on the TCO, and highlights even further the significant difference between what the motor will cost you to buy and how much it will really cost you to own.

ERIKS’ repair/replace neutrality also means the calculator provides costs for basic repair (if possible). These take into account the fact that a non-standard motor may be quicker to repair than replace, but at the same time allow for the likely lower energy-efficiency of a repaired motor – compared with a new one of the same or higher efficiency rating.

Calculate, choose, click – and buy

Although the ERIKS TCO Calculator has been operational for a while, the latest update offers even greater functionality.



It’s now hosted in the ERIKS Webshop, so you can make your decision and then make your purchase with just a few clicks. One click will reveal the full specification of the suggested replacement motor, and you can then click to buy. Alternatively, you’re only a click away from arranging a repair, if that’s your preferred option.

So now, making a well-informed, cost-effective decision about your next electric motor is quicker and easier than it’s ever been.

Cutting out the dust

Paul Dunne
Sales Engineer
Filtration Group

Dust in industry isn't something you can deal with using a feather duster or a vacuum cleaner. And it's not just something unsightly. It can be a danger to health, as well as a potential fire risk, depending on what kind of dust it is. Using a high-quality industrial filter is essential to eliminate the risks, as a manufacturer in Austria producing cutting dies discovered.

> "Dust which has proved to be highly flammable"

As part of the process of making sophisticated punching tools, this Filtration Group customer operates laser-assisted laminated wood processing to produce cutting dies. This can involve a variety of carrier materials, such as wood, aluminium or plastic.

When wood is being used, the process generates sticky wood dust, which has proved to be highly flammable. In fact, there have been three fires at the customer's plant, directly caused by the dust resulting from the process. With a minimum ignition energy of > 10mJ – a standard measurement of the minimum energy required to ignite the dust when mixed with air or oxygen – it was clearly essential for the dust to be extracted, before it could become a fire hazard.

The customer asked Filtration Group to find the most appropriate and effective filtration for their specific dust problem.

> "Recommendations for optimum filtration"

Filtering better, for longer

After a thorough assessment of the customer's specific dust problem, Filtration Group experts made a number of recommendations for optimum filtration.

The first was to employ conical filter elements, as these offered the optimum shape for the customer's particular filtration application. The second was to employ a Ti 15 polyester fleece as the filter material, due to its key properties [see box-out]. In particular, the Ti 15 fleece is characterised by excellent separation efficiency, and a high level of air permeability.

However, the solution didn't stop there.

Knowing the sticky dust was likely to prematurely age the filter elements, Filtration Group also recommended feeding filter aids onto the filter elements, to form an additional filtration layer. This is done via an SDG 100 dosing unit. The result is improved cleaning behaviour of the sticky wood dust, more reliable operation of the filter, and a longer service life for the filter elements.

Prevention is better than fire

After suffering three fires at their plant in the past, the customer was understandably concerned about fire risk. Filtration Group's solution was to equip the dedusting system with both spark pre-separation and a spark extinguishing system.

The customer's process occasionally creates glowing particles, which can enter an unprotected filter unit. Spark pre-separation is designed to prevent this as far as possible. However, it can never be 100% effective, which is why a spark extinguishing system is also part of the installation.

This system detects sparks entering the unit, and extinguishes them before they have time to ignite a fire or spark an explosion.

> "Spark pre-separation and extinguishing system"

Monitoring done and dusted

As well as designing and engineering a highly effective filtration system for the customer, Filtration Group have continued taking care of it after installation, using remote condition monitoring.

This Industry 4.0 system monitors important parameters such as differential pressure, pressure, humidity, temperature and so on, and transmits the data over an internet connection directly to the Filtration Group service team.

If the monitoring throws up any issues, the team will immediately alert the customer. Fast mitigating or remedial action can then be taken by making any necessary adjustments to the filtration system. The result is uninterrupted and optimum operation for longer – meaning no unexpected, unplanned downtime.

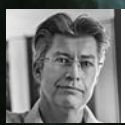
Because no-one wants an asset to be just gathering dust.

The optimum filter choice

The Ti 15 polyester filter media has a number of advantages which made it a particularly suitable choice for this customer's filter application:

- improved separation efficiency
- high air permeability
- low pressure loss
- exceptional stability
- high mechanical strength (elongation at break 70 %)
- smooth surface
- good cleanability
- resistance to a large number of chemicals
- hydrophobic properties aiding wet cleaning

When is it time to go beyond standard?



David Moore
Product Engineering Manager
RENOLD
Superior Chain Technology

It's safe to say that no two working environments are the same. And it's the varying demands of industry that dictate how our applications need to perform. On many occasions, standard products are more than suitable, but there are certain instances where standard isn't quite enough if you're aiming to deliver maximum efficiency.

So, the question is, when is it time to go beyond standard? The answer is simple. When reliability and performance are at risk.

In the case of chains, standard chains have the capacity to deliver the required level of performance to ensure cost-effective and reliable operation. However, sometimes a standard chain just won't cut it in harsher environments or against stricter production guidelines.

Selecting a chain that cannot cope with the demands of its application is a dangerous game, and encourages reduced wear, shorter lifecycles and unscheduled maintenance, which will inevitably lead to elevated costs.

Therefore, choosing a chain that has been designed to meet the specific challenges it faces, is a fail-safe way to guarantee higher levels of efficiency and productivity, reduced maintenance and keep costs to a minimum.

Here, we outline three common problems that are easily overcome by simply selecting a solution chain rather than one designed for conventional operating conditions.

> "Standard chains aren't designed to withstand exposure to dirt"

Dirt and debris exposure reduce wear-resistance

Most standard chains aren't designed to withstand regular exposure to dirt and debris, never mind continuously. So, it goes without saying that this has detrimental effects to the health of your chain, and expected lifecycles will be significantly reduced. But in many cases, this is unavoidable. Take the construction industry for example.

> "Set the benchmark for chain performance with little or no lubrication"

Opting for a solution chain, such as the Renold Sovereign, will assist in overcoming these issues.

Developed for abrasive environments where dirt and dust ingress are commonplace, Renold Sovereign offers up to four times longer wear life, reduces pin wear and is suitable to withstand high-speed and heavy load applications.

It's also able to provide enhanced abrasion resistance thanks to its special surface treatment and pins that are optimised for hardness, making it ideal for situations where maintenance is particularly challenging.

Lack of lubrication

This is a tricky one. A catch-22 you might say.

In normal environments, regular lubrication is required in order to optimise the wear cycle of most standard chains. But this is a problem in industries such as food and beverage or pharmaceutical, where lubricating causes fear of contamination. So, what do you do? Risk contamination or let your chains wear out.

Well, a lubrication-free, dry-touch solution, such as the Renold Syno Chain, eliminates both issues and will keep your production line in operation for the longest time possible.

Designed utilising unique Renold technology, the Syno Chain has set the benchmark for chain performance with little or no lubrication. These chains feature an innovative bush that releases lubricant onto the friction surfaces only when the chain is in operation. As soon as the chain stops, the lubricant remains within the confines of the chain, eliminating contamination risks.

Too much cleaning is corrosive

Corrosion damages the surface of a chain, therefore compromising its integrity and reliability, leading to repeated failures and downtime. It becomes a vicious cycle.

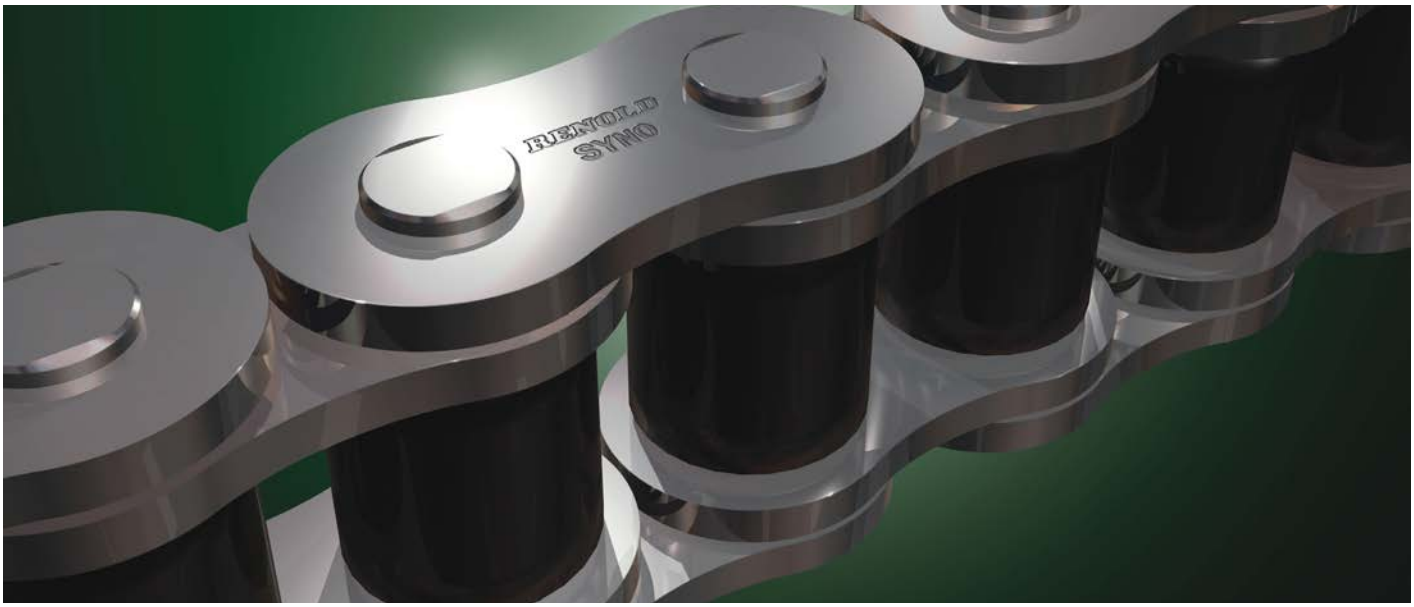
Standard chains aren't usually designed to be used in environments where exposure to water is a regular occurrence. These include food, beverage and pharmaceutical where thorough washdowns are paramount, or outdoor environments where the natural elements are out of human control.

The issue is easy to overcome by installing a chain that has a been surface treated. The Renold Hydro-Service is a prime example.

Delivering superior corrosion resistance which lasts up to 30 times longer than standard carbon steel, each component is individually treated prior to assembly to ensure optimal resistance to unwanted corrosion, extending service life.

Looking into these three common issues, there are multiple considerations that need to be addressed when choosing the right chain for your application. Renold has created a product selection guide, available via www.renold.com, that will help you make the right decision and improve the efficiency of your chain.

> "Offers up to four times longer wear life"



Optimise your pump technology

Mark Nearey
Industry Sales Manager
Continental CONTITECH

Improving the efficiency of your plant is the driving force for all managers and engineers across industry. Better efficiency will increase output and improve the reliability of your production. But there are many factors that need to be considered in order to truly optimise your production – performance, maintenance, installation requirements, health and safety.

But what if your rotary lobe pump applications could achieve all the above by making a switch to a timing belt instead of the traditional timing gear? Yes, it really could be that simple.

> “Production efficiency can be significantly boosted”

Standard rotary lobe pumps use a timing gear, but by introducing a heavy-duty timing belt from Continental’s Synchroforce family, production efficiency can be significantly boosted.

Innovatively transmitting the torque from the motor to the two rotors, while synchronizing their rotation simultaneously, the introduction of a timing belt means your pumps can operate entirely without oil.

Removing the requirement of oil or lubricant comes with many positives; a reduction on your bottom line, reduced stock holding, and lower maintenance requirements. The soft contact between the timing belt and pulley also allows for a more robust, reduced maintenance solution with less wear and tear on vital components.

With no need for oil changes or lubrication, potential contamination of the conveyed material and pollution to the working environment are also ruled out, which eliminates health and safety risks such as slip hazards.

> “Your pumps can operate entirely without oil”

Added robustness, reduced maintenance

Introducing a Continental belt drive adds robustness to your pump application, with the hard-soft contact between the belt and sprockets ensuring very smooth operation. But nevertheless, should a fault occur, the belt can be easily removed in a matter of minutes without the requirement for specialist tools. Simply loosen the two bolts and replace, once again lowering maintenance times, and freeing engineers to focus on more vital elements of the production process.

> “Simply loosen the two bolts and replace”

The drive form of a rotary lobe pump is designed with a very compact stature, thanks to its belt drive, and offers a very low weight and extremely shallow depth. This is particularly useful within the food and beverage industry, where space can be very limited.

Keeping it fizzy

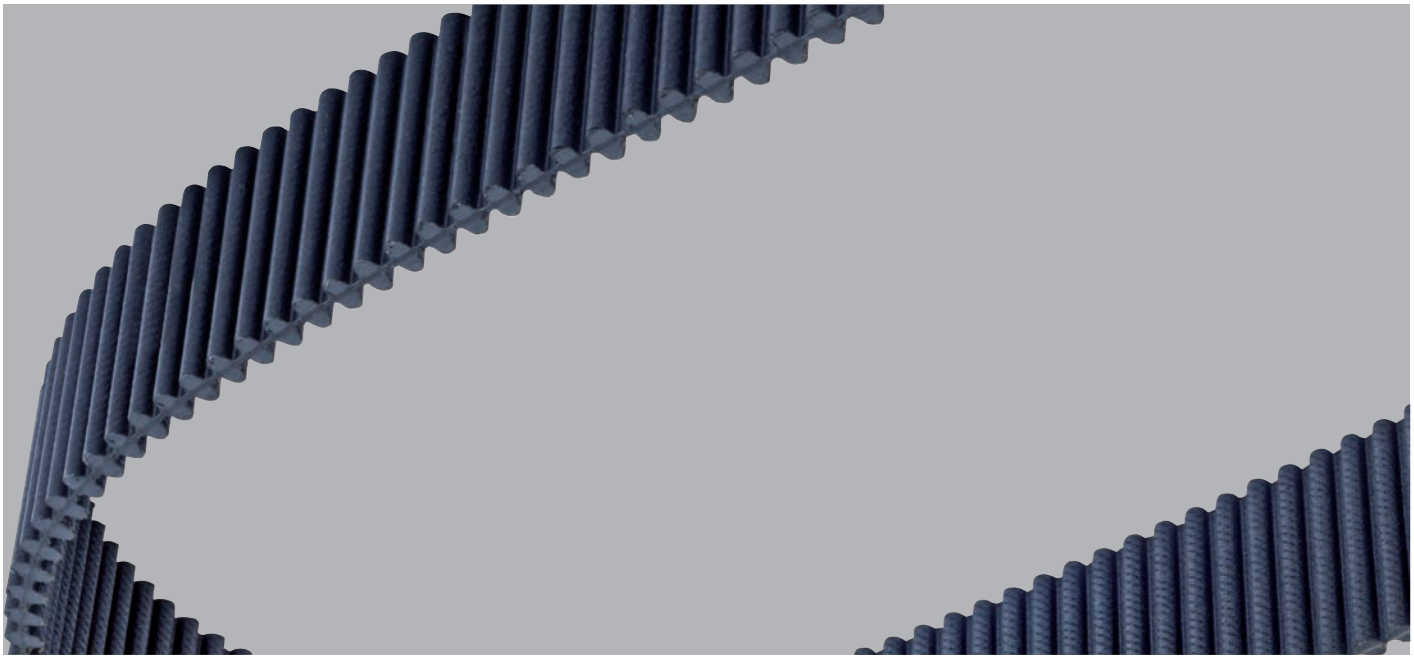
The low-pulsation rates also enable precise metering which is essential when bottling, for example, water, wine or other liquids. The high performance of a rotary lobe pump installed with a Continental timing belt ensures a gentle, continuous material flow over the entire conveying route, eliminating any possible pressure fluctuations or turbulence.

This allows any sensitive product, such as wines, to be conveyed gently, maintaining their quality and integrity from the storage vessel through to the filtration or bottling line, whilst also meeting the industry standard of 11,000 bottles per hour. Even champagne or other sparkling liquids can be conveyed gently, retaining the pressurised carbon dioxide.

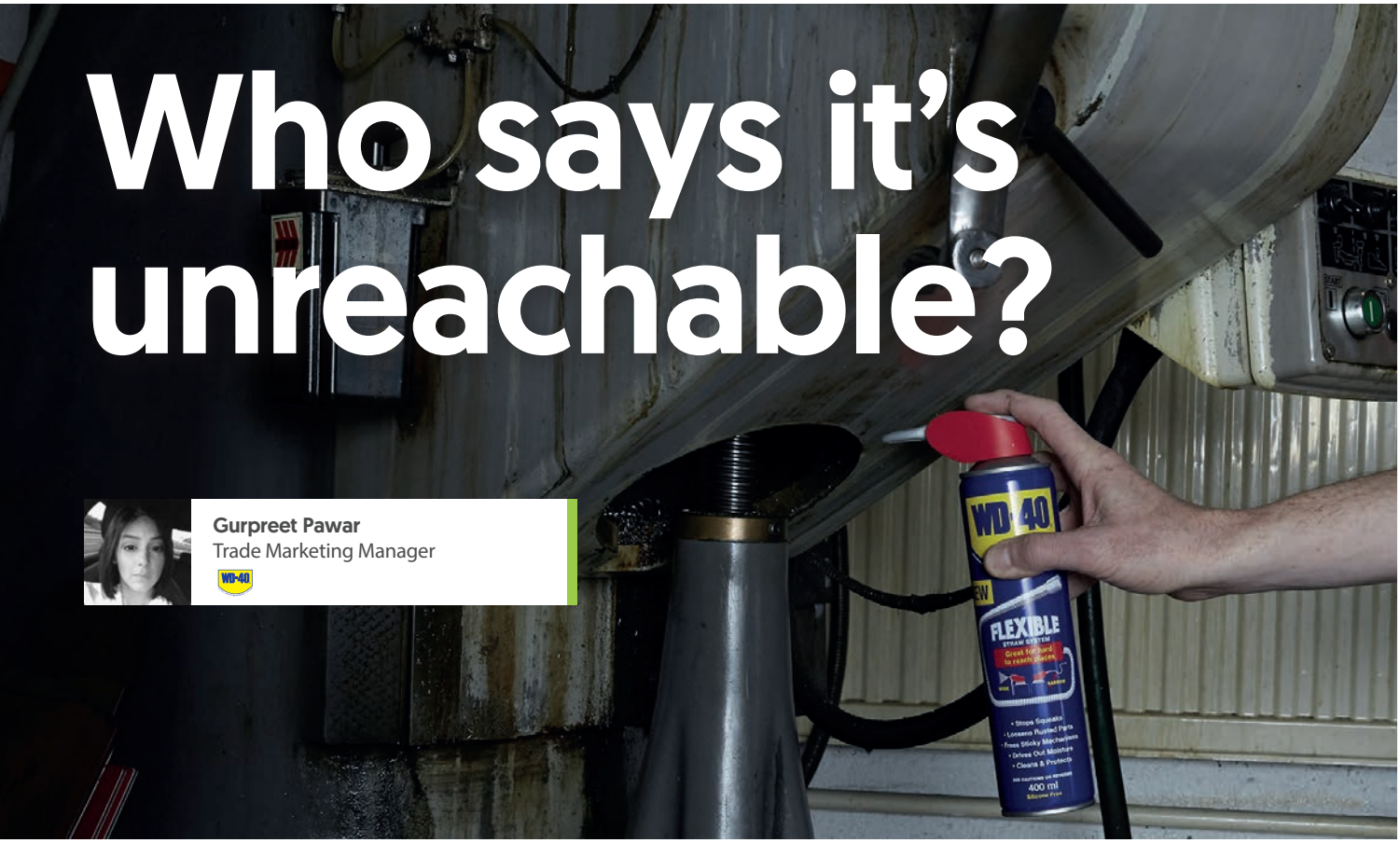
> “Gentle, continuous material flow over the entire conveying route”

As previously pointed out, the compact dimensions and lightness of a timing belt driven pump, means that it can also be used in mobile applications, a facility that is heavily used across many wineries and breweries.

Optimising your pump technologies is no longer a pipe dream thanks to Continental’s commitment to research and development. By introducing belt drives into your pump applications, you’re opening new levels of increased performance, which can ultimately be transferred to countless industries and applications. The path to greater efficiency and production is right in front of you.



Who says it's unreachable?



Gurpreet Pawar
Trade Marketing Manager

Hitting those hard-to-reach places is a bug that we've all had to bear across all industries and it goes without saying that it can be extremely frustrating, sometimes unbearable. But jumping to the rescue and catering for the varied and changing demands of industry is WD-40.

For years, WD-40 has been an invaluable companion for most tradesmen – engineers, electricians, carpenters, plumbers – and even around the home. It's the can with a thousand uses.

Over time it's become even more versatile with the inclusion of the Smart Straw for added precision. But now, it's taken a further significant stride forward. Introducing WD-40 Flexible.

> "Evolved with a more convenient delivery system"

A Game Changer

Whilst Smart Straw enables users to target areas that they need to quite easily, the new Flexible Straw has increased accuracy, further evolved with a more convenient delivery system.

The hard-wearing metal straw is highly bendable and can be shaped to hit any angle, corner or hidden target. Not only that, but it holds the shape it's moulded too, to allow single-handed use. This provides even more precision and convenience in incredibly tight, intricate areas such as around pipework and behind panelling.

At 400ml, the new can is also taller and thinner than ever before, to accommodate the longer straw. In fact, at 185mm, it's a third longer than that of the Smart Straw. The new design has retained its 'Spray 2 Ways' technology, giving users the option of a flip down straw applicator for accuracy, or apply a wider spray for maximum coverage. The 360° valve also allows the product to be applied, even when the cannister is upside down.

Multi-use by name and nature

In real-life scenarios, radiator nuts are now easier to loosen for plumbers, unlocking friction rings or lubricating valves near an engine is easier for mechanics. The possibilities are endless with benefits to match.

But beyond the changing aesthetics and new features, the formula has remained the same. True to its origins.

> "The formula has remained the same"

More flexibility and convenience have been added to your toolbox, but you still know what you're getting. It's still great for displacing moisture and preventing rust. It's still great for removing oil and grease with ease. And it's still great for penetrating seized parts and lubricating equipment. It's just now more precise and convenient.

As industry continues to develop in all areas, WD-40 leads the way in pioneering the famous 'multi-use product.' Continuing a mission to supply ingenious solutions for all your maintenance problems, we're positive that WD-40 Flexible will aid both professional and non-professional users more efficiently and reliably than ever before.

Removing risk by forecasting it.

Ian Hodkinson
Technical Sales Office Manager
piab

The Fourth Industrial Revolution, or Industry 4.0 as its commonly known, has been in development for several years, with the aim of assisting businesses in making their production lines smarter. But this is far from a short-sighted journey. Companies far and wide are continuing to develop new and existing technologies to aid in smarter production and proactive maintenance.

Previously, predicting when maintenance was required was somewhat a guess, but today, Industry 4.0 is providing a gateway to higher productivity and lower risk of failure. Performance levels and equipment condition can be constantly monitored during operation, so simply providing an efficient and reliable product is no longer sufficient.

Driving Industry 4.0

With Industry 4.0 functionality support and predictive maintenance key drivers, Piab have recently redeveloped their flagship piCOMPACT® vacuum pump series, enabling connectivity between devices through IO-Link, with additional sensors collecting valuable process information via integrated intelligence.

> "Read and write parameters during regular operation"

The latest connectivity developments of the piCOMPACT® 23 SMART enable communication with other devices, and the Cloud, via an IO-Link, which is an extension of existing, tried-and-tested connection technology suited for sensors and actuators. The automated parameter settings provide operators with the ability to read and write parameters for multiple features, even during regular operation.

This real-time process means that potential production issues can be identified and resolved before any critical impact on production can occur. The opportunity for system diagnosis also allows issues to be identified and corrected prior to catastrophic failure.

Increasing foresight

To further aid early issue identification, IO-Link offers a data storage function. This is particularly useful for scenarios when operation failures occur during overnight production, when maintenance and site managers are unavailable. This technology makes it feasible to identify the root cause of the failure, whether that be a faulty device or simply a loose electrical connection.

Additionally, if a new, identical substitution device is connected, the previously installed parameters automatically transfer, saving on installation time, in turn increasing production.

> Action can be taken fast avoiding production downtime"

Maintenance planning is also eased, by enabling operators to set self-determined trigger points, so that when data deviates from normal parameters, this is seen as an indication that critical maintenance is on the horizon. This reliable process means that maintenance engineers can be fast-acting if, for example, a specific component needs replacing, ordering can be completed earlier, and potential production downtime is avoided.

> Monitoring the entire automation system"

Thanks to stringent research and development, Piab have equipped the new piCOMPACT® 23 SMART with multiple diagnostic sensors that have the capabilities to measure processes such as system temperature, voltage, acceleration, cycle counter and system self-check features. By monitoring the activity of such processes, further problems can be indicated, even if something else is broken in the robot cell or plant. This means that the piCOMPACT® 23 SMART assists in monitoring the entire automation system, while providing operators with an increased understanding of how the pump is functioning.

Through the continuous development of the piCOMPACT® 23 SMART, predictive maintenance is now a viable option, leading to not only increased machine output and uptime of your vacuum system, but also of the associated automation system and environmental conditions that influence your systems performance. With such visibility, production time and profitability can be at an all-time high.

Struggling or ignorant?

Is the UK recycling infrastructure struggling?

More recent times have seen local authorities ramp up their focus on recycling, with strict instructions being issued to the public on correct procedures, in order to meet nationwide recycling targets. Word on the grapevine has been that some local bin men have been advised not to process household waste if items aren't correctly disposed of. Understandably.

But contrary to the changing demands in recycling, reports have suggested that the incineration of waste continues to rise in the UK. So, the question we pose is, although consumers are being urged to be more proactive in attempts to recycle, are the authorities matching our enthusiasm for a greener planet, or are they simply struggling with the demands?

Targets set by ECP (Circular Economy Package) require the UK to achieve a recycling rate of 65% by 2035, but as the current situation stands, we're not set to reach this figure until 2048 – a staggering 13 years later.

So why such a delay? Well, lack of investment in recycling across the board of UK councils seems to be the biggest culprit, with many areas adopting an incineration regime. For example, in London, the West Midlands and North East, waste incineration in excess of 10 million tonnes has been recorded, which far outweighs current recycling rates. Truly concerning figures.

But is it as transparent as lack of investment? It seems to be the go-to excuse for underachieving on our targets, but surely there are other areas that can be addressed to aid in combatting this continuing trend.

Considering a change of approach, could introducing statutory recycling rates and legislation with hefty fines upon failure improve on the current figures? Or a push on labelling to enhance visibility on correct procedures. Something needs to change because we're going to be left with more recycling facilities than waste to recycle.

Changes in our personal lives could also help. Many of us probably won't remember the pre-e-commerce era, but our recycling infrastructure was implemented far before that time. And perhaps it hasn't evolved with the modern era, but even taking a closer look at our online purchasing trends could reduce waste. Just look at the amount of additional packaging when buying from an online retailer. It's never just a single bag.

> "Waste incineration in excess of 10 million tonnes has been recorded"

The bid for a cleaner, greener planet is well underway, but all areas must be addressed. Both the Government and general public need to take more responsibility if targets are to be achieved. Remember, we all play a vital role.

> "It's never just a single bag"

In a tight situation?

SKF Cooper split bearings: The ideal solution for inaccessible or trapped locations

SKF Cooper bearings are 'split to the shaft' and disassemble into smaller components, easing the task of lifting and handling, and making assembly or changeout simple. 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 bearings and two types of split tapered roller bearings. The standard range is available for bore diameters 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.

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