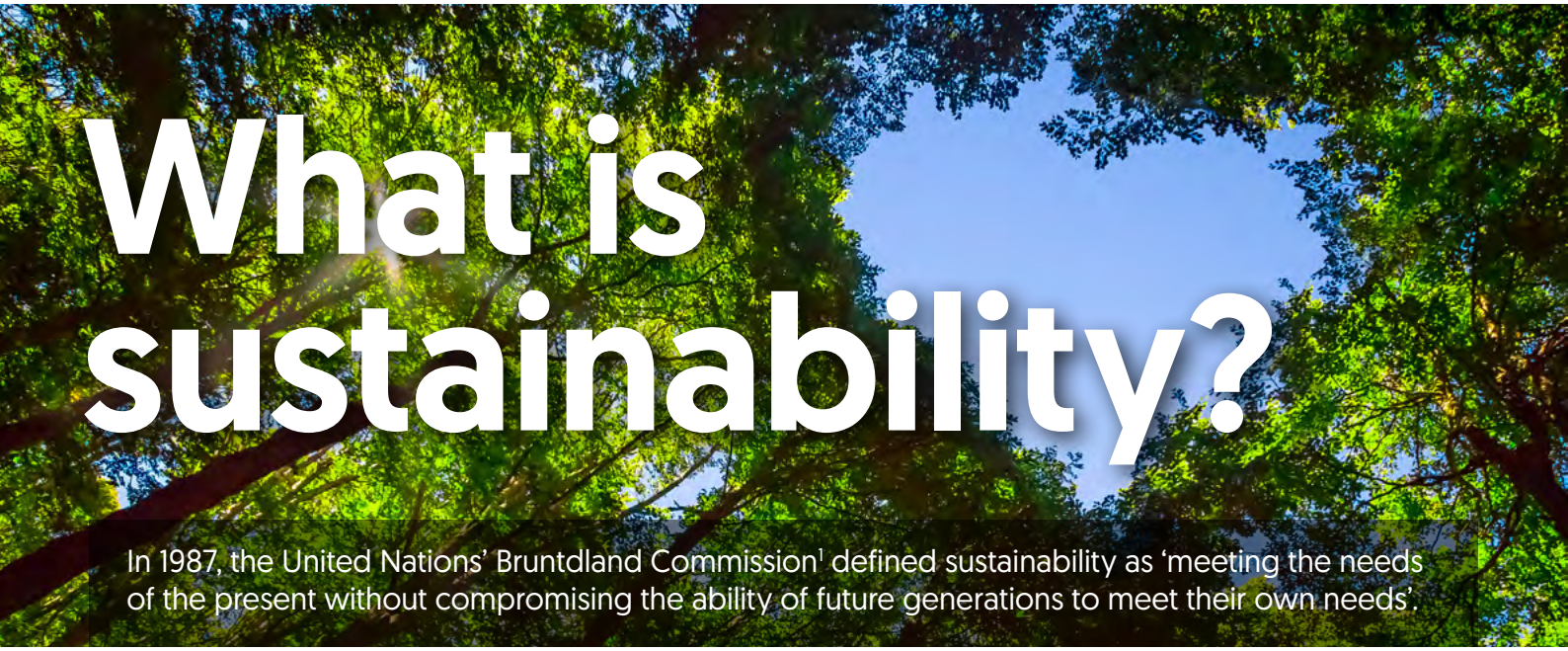
KNOW+HOW SUPPLEMENT

Building a sustainable future

First steps with ERIKS

ERIKS

Issue 46



What is sustainability?

In 1987, the United Nations' Bruntdland Commission[1] defined sustainability as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs'.

Although this definition remains valid today, the term sustainability has since become associated with a broad range of interconnected issues, from the extraction and use of natural resources, to economic prosperity, education and access to water and food.

The most critical issue, however, is global warming, as human activities that contribute to climate change alter the planet on which we all depend and thus affect our ability to develop a sustainable way of life.

There can be few people who are unaware of the impact of global warming or of the risks that humankind runs if the rate of warming it not brought under control in the coming decades.

In October 2021, the Boston Consulting group estimated that the global investment to bring the world to net zero by 2050 could be as high as $150 trillion2. To put that in perspective, GDP for the USA in 2021 was $23 trillion; global GDP for the same year was estimated at $94 trillion[3].

These figures are mind-numbing and indicate how tough it's going to be to reach global net zero by 2050. Despite this, we can no longer ignore these issues; we have to hope that governments play their part but for us individuals and businesses doing nothing is no longer an option.

> "Doing nothing is no longer an option"

The good news is that there are many measures we can take that will have a positive impact, both on the rate of global warming and on the quality of our personal lives and business operations.

1: https://www.un.org/en/academic-impact/sustainability

2: Time For Climate Action: https://media-publications.bcg.com/BCG-Executive-Perspectives-Time-for-Climate-Action.pdf

3: Global GDP analysis 2021 from Visual Capitalist: https://www.visualcapitalist.com/visualizing-the-94-trillion-world-economy-in-one-chart/

4: https://www.bcg.com/about/partner-ecosystem/world-economic-forum/ceo-guide-net-zero

Sustainability: cost or investment?

The challenge for many of us is to overcome our natural resistance to change. Our attitudes are often deeply embedded in the way we think and act, based on previous behaviours, or are enshrined in our business practices. There is also the fact that we've been conditioned to consider measures to combat global warming as a cost, not as an investment.

> "Delivering positive outcomes"

In reality, as a growing body of evidence demonstrates, initiatives to reduce the impact of climate change should be viewed as investments that deliver positive outcomes, for the planet, for our organisations and for us and our families.

Analysis by Boston Consulting Group based on official EU data4 shows that companies that transition to net-zero are reaping considerable rewards. They are for example attracting and retaining better talent, creating cost reductions, growing faster than their peers, reducing exposure to regulatory risks, becoming more competitive and benefitting from enhanced access to capital.

An important point is that, in common with all successful business strategies, developing a sustainability strategy has to be based on a holistic long-term plan, with short, medium and long-term tactical plans, milestones and KPIs. Simply taking one small step – installing energy efficient lighting, for example – and doing nothing further may in itself offer some immediate savings but will do little to deliver longer-term value or qualify as a true sustainability strategy.

It's also critical to recognise that sustainability isn't just for big organisations; it's equally important for all companies, large and small. It also needs to be led from the boardroom but be made the responsibility of each employee, while touching every aspect of business operations, from the shop-floor down through the supply chain.

For most companies, large or small, the greatest challenge is often knowing how and where to start.

Getting started on a sustainability strategy

The key to a successful sustainability programme is to understand where you are today, what your sustainability model will look like, and to have a clear set of goals, based on a solid plan and accurate data. It's often best to start small, perhaps reviewing a single operational unit or department, and then to build on each success until all aspects of your business have begun a transition to a sustainable model.

Keep in mind that the objective is not simply to cut costs but to develop a strategy that delivers tangible and long-lasting business improvements, while allowing your organisation to operate sustainably.

Although the definition of 'operating sustainably' will vary widely from company to company, it is essential to have a profound sense of vision and purpose, in terms of sustainability, as this will enable you to focus on the key issues that will make a real difference.

A helping hand from ERIKS

To help you with this process, we offer two sets of dedicated services: our unique Sustainability Design Sprint, and our energy management and sustainability initiatives, through our sister company EM3.

Our EM3 services offer an excellent starting point, as they are targeted at specific industrial processes, such as the operation of boiler, HVAC and compressed air systems.

This enables each project to be clearly defined, with an initial energy audit allowing resources to be focussed on delivering easily measurable energy efficiency savings. (See break-out panel to the right).

> "Step-by-step scalable model"

The advantage of this approach is that it offers a step-by-step, scalable model that allows you to understand the current situation and then evaluate the best options for short as well as long-term solutions.

Similarly, with the Sustainability Design Sprint, our experts work with your team to understand the current situation and identify areas where improvements can be made; they will then set the scope of each project, develop suitable change models, and help you deliver practical solutions that are specific, precisely costed and measurable.

A sustainability strategy will almost certainly encompass a wide range of factors, both strategic and tactical, and is likely to include benchmarking, impact assessments, cultural and behavioural change, training and performance measurement.

Ultimately, it's about taking measures that meet your defined goals. Although these measures can be many and varied, there is almost always a core set of activities that should be considered – 'the low-hanging fruit' that offer the greatest short-term potential.

EM3 boiler efficiency

A process facility, for a leading food and drink company, had two oversized steam boilers powered by heavy fuel oil. These boilers were inefficient by modern standards and produced emissions that were harmful to the environment. The plant also had available a free source of heat from a milk evaporator.

The project initially involved recovering heat from the evaporator condenser to boiler feedwater & CIP. The nest stage was to design a feedwater system where the waste heat from the steam generation could be used to reduce the parasitic steam used in the deaerator. These measures reduced the steam demand onsite.

With the reduced steam demand, it was then possible to upgrade the burners to smaller units that operated on Liquified Natural Gas (LNG). These smaller burners are more efficient, reducing costs and giving cleaner burning, which eliminated the majority of harmful emissions.
The boiler upgrades involved the installation of a boiler feedwater economiser, twin-stage flue gas economisers and upgrade of controls and ancillary components to the latest technologies.

- Energy saving: 8.58 G Wh
- Cost saving: €255,000
- CO_2 reduction: 3,255 tonnes

Energy Efficiency

Energy efficiency is generally the starting point for industrial companies. This is especially true in the current climate of ever rising energy costs, at a time where many businesses are still to see the benefits of switching to renewable sources of energy.

Although making greater use of renewable energy is essential if we're to minimise Carbon emissions, it is equally important to take steps to reduce energy-demand. This can be achieved far more quickly and will produce immediate savings in terms of both operating costs and emissions.

Reducing energy demand

Demand-reduction can be achieved in many ways, from improved building insulation and switching off computers and office equipment overnight, to the optimisation of machine control settings, to reduce operating temperatures, and the adoption of predictive maintenance practices that improve the efficiency of production systems.

The biggest short- and long-term savings, however, can often be found by reviewing the operation of electric motors. Most manufacturing and process facilities will normally have a large number of these devices driving fans, pumps and production equipment.

It's not uncommon to find that a large proportion of motors on any one site are of an uncertain vintage – often ten or twenty years old; although they may appear be running satisfactorily it is likely that they are consuming more energy than necessary and may no longer be compliant with the latest regulations.

Electric Motors

It's estimated that electric motors consume around 65% of all energy used by the industrial sector, with energy consumption accounting for 97% of the total lifetime operating cost of each motor; initial purchase cost and maintenance absorbing the balance of 3%.

> "IE4 motors can significantly reduce energy bills"

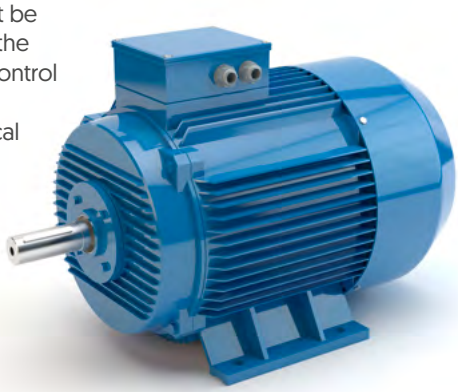
Replacing electric motors with modern, energy-efficient devices can significantly reduce your energy bills. Although it can be difficult to get sign-off on budgets to purchase new motors, there is a strong argument in favour of change.

Consider the fact that even an older low power IE2 compliant 7.5kW motor, which would have cost around £350 a few years ago, will if it's running continuously be consuming over £800 of energy each month. Replacing this device with a modern IE4 compliant motor, even one with a higher capital cost, will start to generate savings and an ROI within a few months; thereafter, the savings return directly to your bottom line.

In a facility with multiple motors, the savings can quickly stack-up – and of course it's not just cost savings but also genuine reductions in the emission of climate-warming gasses.

Motor refurbishment

A factor that is often overlooked is that motor refurbishment or rebuild can also play a valuable role in helping to reduce energy consumption. This is especially true of larger motors, where the replacement cost might be prohibitive. Upgrading the motor with a modern control unit and refurbishing its mechanical and electrical parts can improve its operational efficiency and extend its life still further.



Lighting

Although reducing energy demand can sometimes be as simple as turning lights off and making greater use of natural light, it's not always possible. Factories and busy distribution centres, for example, depend heavily on artificial lighting. Many organisations still use older incandescent, fluorescent and halogen technologies, which are inefficient and prone to frequent failures.

By comparison, modern LED light sources use minimal energy, do not generate heat and are generally guaranteed to have a life of at least 50,000 hours.

> "LED light sources guaranteed life of at least 50,000 hours"

Energy savings can also be realised by adopting effective lighting controls, ranging from simple motion sensors, so that lights automatically switch off if there is nobody in the vicinity, to sophisticated dimming and switching solutions. And of course, properly designed, energy efficient lighting will also help improve working conditions, with lighting colour and intensity that matches the work being carried out by your team.

Lighting Surveys

If you're uncertain where to start, or simply lack the time and resources, then our lighting survey offers a cost-effective solution. Our experts will assess your existing lighting systems, review the health and safety requirement of your staff, look at the available technologies and then provide a carefully costed package of sustainability measures that will help you reduce costs and your Carbon footprint.

Compressed Air

Commonly referred to as the 'forth industrial utility', compressed air is critical to almost all industrial process and operations. As energy costs rise, so too does the cost of generating compressed air.

Money escaping into thin air

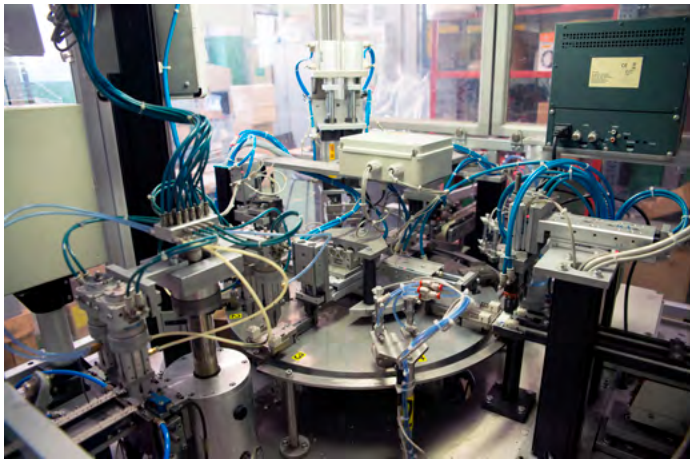
Despite this, the majority of compressed air systems suffer from high levels of leakage; for example, air escaping through leaks in pipes and fittings in a typical factory installation is often around 30% but can be as high as 60%, with a corresponding increase in energy bills. Bear in mind that along with higher operating costs, every kilowatt of energy wasted will generate another 0.5 kg of CO_2.

However, the problem doesn't stop there. It's common for compressors to be left idling, while continuing to consume energy, or being set to run at higher pressures than necessary, again wasting energy. As a general rule, reducing operating pressure by just 1.0 bar will cut energy consumption by 7%.

Helping identify areas for improvement

Clearly, fixing leaks in compressed air systems should be a priority. It's then possible to generate further savings and reductions in Carbon emissions by introducing intelligent control systems that monitor system performance in realtime and can accurately match supply to demand.

In each case, our compressed air experts can help you carry out a full audit, identify areas for improvement and provide the products and support to implement effective and sustainable solutions.



Steam Traps

Although not so widely used as compressed air, steam systems are still a common sight in many industrial facilities, being used for heating, power generation and process duties. Steam traps are widely used to remove condensate and non-condensable gasses. They are, however, often difficult to access and suffer from a number of issues: they can be incorrectly specified or installed, malfunctioning or leaking, or simply not working.

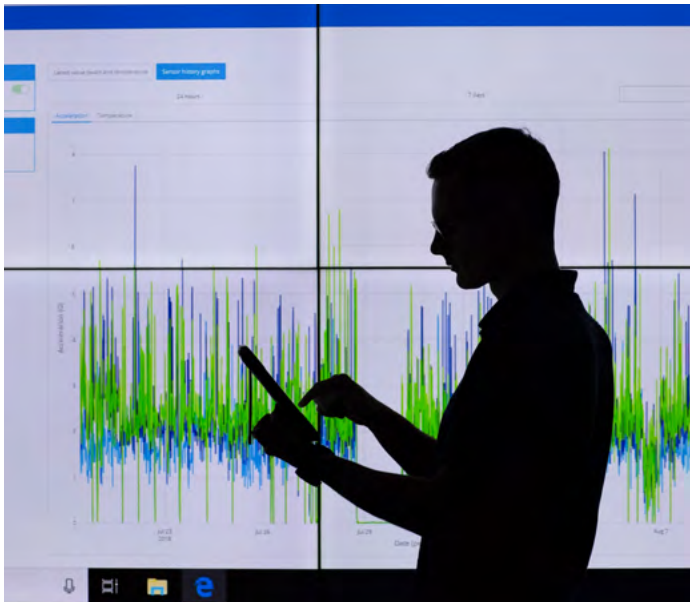
Thousands of pounds being wasted

Whatever the cause, the consequence will be wasted energy and higher than necessary emissions. Our engineers often visit sites where problems with steam traps are leading to thousands of pounds in energy costs being wasted every year, with additional risks to the performance, reliability and safety of other steam system components. Carrying out a steam trap survey will identify potential problems.

> “Enhance operational efficiencies”

We offer a dedicated service, with expert engineers using specialised equipment to investigate problems and offer effective solutions.

Although these might include repair, replacement or the addition of new technologies there will be considerable benefits: a reduction in water use, energy costs and harmful emissions; improved safety; fewer blowdowns; and an improvement in the quality of feedwater which will, in turn, enhance operational efficiencies still further.



Reliability Maintenance

Preventative and reliability maintenance form part of typical sustainability programmes. Ideally, these programmes should also include structured reliability maintenance regimes.

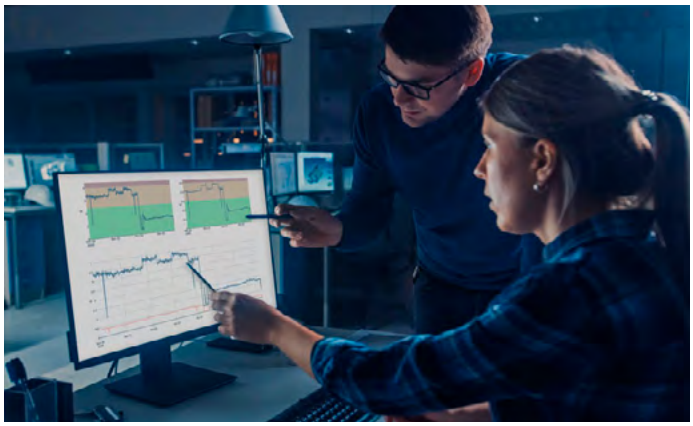
> “Achieve optimal operating status”

These will both help to identify possible issues with existing systems and, once these have been resolved, will ensure that optimal operating status is subsequently achieved.

Intelligent sensors and remote online monitoring

Modern digital technologies, with intelligent sensing and control devices, often with connections to remote monitoring centres, have simplified and automated the task of machine and system operation. With data being captured and analysed in real-time it becomes possible to take a proactive management approach to production processes, with the goal of meeting key sustainability, manufacturing and business objectives.

Our reliability maintenance team offers an integrated package of services, products and solutions to help you with essential monitoring tasks, such as vibration analysis, as well as developing a plant-wide preventative maintenance solution.



From aspiration to long term delivery

In recent years, sustainability has moved from an aspiration, discussed among a few advocates, to a core business discipline that is recognised as being of increasing importance by industrial companies of all sizes and type.

Developing a successful sustainability strategy takes time, energy and resources. It has to be realistic, measurable and adaptable as the needs of your business change. Crucially, it must be action-oriented; it is far better to take action, review the impact, learn from your successes and failures and then continuously improve as you move towards your ultimate goal.

Recognise that, for most companies, understanding, developing and implementing sustainability measures is an imperfect process. Also understand that you're not alone. Growing numbers of organisations around the world are addressing the same challenges; at ERIKS, for example, we're embarking on an ambitious sustainability programme that will transform our business over the next few years.

Success therefore depends on collaboration, knowledge sharing and working with experts to help you deliver real improvements that benefit you, your business, its stakeholders and the planet.

Wherever you are on your sustainability journey, we can offer know-how, advice and practical assistance. For more information talk to one of our experts today.

For more information and support with your sustainability goals contact your local ERIKS Service Centre.

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