



Europe's Most Efficient Transformer

See page 14



WILSON
e⁴AMORPHOUS
ULTIMATE LOW LOSS

INSIDE THIS ISSUE:

7

Local energy:
Innovation
can power a
fairer future

17

Retrofit
battery
storage
solutions

34

Hydrogen – a
Sustainable
Choice?





STEAM CONSULTING FROM **spirax sarco**



FOCUS ON DELIVERING VALUE TODAY

FOR A SUCCESSFUL AND SUSTAINABLE TOMORROW

To engineer a more efficient, safer and sustainable world you need the right steam and thermal energy partner. Whatever your key drivers, Spirax Sarco have you covered.

Find out more at spiraxsarco.com/advance



EM Magazine

APRIL 2024

PUBLISHER: Ralph Scrivens
ralph@energymanagermagazine.co.uk

PRODUCTION: Sarah Daviner
sarah@energymanagermagazine.co.uk

ACCOUNTS: accounts@energymanagermagazine.co.uk

PRINT: Mixam Print

ENERGY MANAGER MAGAZINE is published 10 times a year by Energy Manager.

www.energymanagermagazine.co.uk

42 Wymington Park, Rushden, Northants, NN10 9JP

Email: mail@energymanagermagazine.co.uk

REGISTRATION: Qualifying readers receive Energy Manager free of charge. The annual subscription rate is £80 in the UK, £95 for mainland Europe and £115 for the rest of the world.

Single copies £10.

Some manufacturers and suppliers have made a contribution toward the cost of reproducing some photographs in Energy Manager.

PAPER USED TO PRODUCE THIS MAGAZINE IS SOURCED FROM SUSTAINABLE FORESTS.

Please Note: No part of this publication may be reproduced by any means without prior permission from the publishers. The publishers do not accept any responsibility for, or necessarily agree with, any views expressed in articles, letters or supplied advertisements.

All contents © Energy Manager Magazine 2024

ISSN 2057-5912 (Print)
ISSN 2057-5920 (Online)

FRONT COVER STORY:

Europe's Most Efficient Distribution Transformer

See page 14

www.wilsonpowersolutions.co.uk



INSIDE

- 4 News
- 9 Exhibition News
- 10 Monitoring & Metering
- 14 Cover Story
- 16 Energy Storage
- 18 Heating
- 22 Heat Networks
- 28 De-carbonisation
- 32 Energy Management
- 34 Renewable Energy
- 36 Training
- 37 Legislation
- 38 Water Management

THE LOCAL ENERGY MARKETS ALLIANCE

The Local Energy Markets Alliance (LEMA) is a pioneering business-led initiative to develop a commercially viable market for consumer-facing Local Energy Systems (LES).

The energy transition is placing an increasingly complex burden on the grid leading to growing congestion and politically unacceptable connection queues. LES trials have demonstrated the technical ability to mitigate this congestion. What is needed now are the market structures to deliver commercially viable LES at scale.

This initiative will enable our industry to step up to collectively 'simplify the energy burden and unlock commercial growth'. It is about us taking action now.

LEMA was established by Gemserv, a Talan Company and The Traxis Group Ltd to drive forward the wide-scale benefits of LES as a part of the broader field of distributed energy and flexibility.

The scaled deployment of LES holds significant potential to deliver flexibility to the grid, alongside the benefits and energy security offered through local energy independence.

However, the realities are that, for LES to be viable, long term, they are still

yet to be evidenced as commercially sustainable across the value chain; chiefly falling short of providing a compelling customer proposition, giving wide-spread confidence to investors, and the operational certainty of mitigating local congestion.

We recognised that for LES to thrive, the foundational elements of a viable, structured 'market' are required, where the broad organisations and stakeholders that sit across the value chain could coalesce, finding confidence through the development of common approaches, frameworks, templated agreements and considered business models. Without these, it could be the case that LES struggle to break out their confinement to localised projects and trials.

LEMA seeks to achieve its goals and objectives through the collaboration of like-minded organisations across GB and Europe. LEMA invites interests from across the market, including commercial companies, facilitators, not-for profits and representatives of key market functions, to join as members, coming together to deliver its collectively agreed work-plan.

LEMA additionally welcomes engagement from Government and regulatory bodies, but central to our approach, we do not



seek to rely upon centralised facilitation, rather focussing on a business led and market approach to progressing opportunities in LES. Working with these stakeholders, LEMA has established its headline work-plan to achieve commercially sustainable and scalable LES.

LEMA and its members aim to develop the LES propositions across 2024, move towards the development of common structures and contractual frameworks across 2025, seeking to prove approaches in the market through live LES deployments by 2026.

LEMA has benefited from being formalised as an organisation and has successfully onboarded founding members that are playing a critical role in shaping the detailed workplans aimed at achieving the integrated propositions, enhanced business models, baselined frameworks, agreements, contracts and policies necessary to deliver commercially sustainable and scalable LES. <https://linktr.ee/lema.literature>

Bradford courts will become two of the first in England to be heated by renewable energy

The Bradford Combined Court Centre and Magistrates Court will become two of the first court buildings in England to be heated by renewable energy after signing a landmark deal to connect to the city's new heat network.

HM Courts and Tribunals Service has signed a 20-year agreement to connect the city's courts to the pioneering Bradford Energy Network, a new £70m development which will become one of the UK's largest low-to-zero carbon district heating network when it starts generating heat in 2026.

Over the course of the two-decade deal, the two buildings are expected to save 8,000 tonnes of carbon dioxide (tCO₂) by connecting to the network.

The government believes heat networks are vital to making net zero a reality in the UK, as they are often the lowest cost, low carbon heating option for high density urban areas which includes cities like Bradford.

The government's ambition is for heat networks to supply 20% of buildings nationally by 2050, up from 3% today.

Bradford Council granted planning permission for the Bradford Energy Network last September. In its initial phases, it will include 8 km of underground pipework that

will supply up to 30 major buildings in the city centre.

The network will be one of the largest in the country to use air source heat pumps. An 8 MW heat pump will be housed in a new energy centre, being built at the junction of Thornton Road and Listerhills Road. The pump can generate enough heat to supply 10,000 homes.

When the network first becomes operational, gas boilers will accompany the heat pump, providing additional heat on the coldest days of the year and acting as back-up and resilience. However, as part of a commitment to make the Network net zero carbon by 2030, the boiler heat will be replaced by alternative low-carbon heat within four years.

According to the World Green Building Council, buildings are currently responsible for 39% of global energy related carbon emissions. When the Bradford courts connect to the Bradford Energy Network in 2026, the use of back-up gas boilers in the energy centre means that carbon emissions related to heating will be reduced



by 75%. However, these emissions will be eliminated entirely when the network becomes net zero four years later.

Directors of 1Energy, the company behind the Bradford Energy Network, say that connecting to the network will be the most cost-effective way for organisations in Bradford city centre to decarbonise the way they heat their buildings.

To help cover the costs of connecting to the heat network, 1Energy and their technical partners, Fairheat, supported the HM Courts and Tribunals Service to secure a £3.5m grant from the Public Sector Decarbonisation Scheme.

The Public Sector Decarbonisation Scheme is delivered by Salix Finance and is run by the Department for Energy Security and Net Zero. salixfinance.co.uk

ANTI-GREENWASH LAWS: What they mean for your business

The European Council has adopted a directive to give consumers greater clarity on the true environmental impact of products and services. Directive 2022/0092, *Empowering consumers for the green transition*, updates the rules about unfair commercial practices and consumer rights. It aims to tackle misleading claims that could discourage sustainable consumption choices.

Directive 2022/0092 received final approval on 20 February 2024 and will now be adopted by member states. The thinking behind it is clear: consumer choice loses its power to effect change when consumers are confused by poor information. It should be much easier to reward businesses for doing the right thing and hit them in the pocket when they don't.

The directive is part of a wider push from the EU to support the green transition through clearer information. It complements the forthcoming Green Claims Directive (2023/0085), currently making its way through the European Parliament.

The legislation gives some (non-exhaustive) examples of claims businesses will have to avoid. Much of it looks like common sense. For example:

- Don't boast that your product is "free" of an ingredient that it was never likely to contain anyway;
- Don't make vague claims like "kind to animals" without backing them up with data;
- Don't imply you're doing better than your rivals on a sustainability metric without giving evidence.

The wording of the directives don't specifically mention energy, but here is a trap some businesses may unwittingly fall into. If your site's energy comes via a green tariff or renewable CPPA, it may seem uncontroversial to describe the business as "powered by renewable energy". But the reality is that 24/7 clean energy sourcing isn't possible for anyone yet. If your business trades in the EU, claims like this could fall foul of the new legislation and land you a hefty fine.

The directives obviously don't apply to companies with no business in the EU, but the UK has its own legislation designed to protect consumers from misleading claims. The Green Claims Code requires marketing to "tell the whole story" without hiding any caveats. The true story of standard

"renewable" tariffs is that this sourcing is opaque and businesses on these tariffs are overestimating their environmental credentials.

Providing accurate information is the only way to stay on the right side of any anti-greenwash rules. It is also the best move for the credibility of your business. If you actually know how much of the energy powering your business comes from renewable sources, you can quote that figure with pride.

Here's where the ENTRNCE Matcher comes in. It lines up half-hourly data on the mix of energy in the grid and checks it against the consumption of your business – again, in half-hourly chunks. This gives a highly granular picture of where the energy powering your business is coming from. Many businesses find that their clean energy score from the Matcher is much lower than they imagined. But this figure can then be the starting point for genuine progress in decarbonisation – and the Matcher can help with that too.

The crackdown on greenwashing means that businesses need to arm themselves with data to stay ahead. For a peek at your true clean energy score visit <https://www.entrnce.com/transparent-energy-matching>

Empowering and enabling the UK to meet ambitious net zero goals



How we're inspiring local and national climate action.

At Salix we're passionate about delivering decarbonisation projects across the UK on behalf of the Department for Energy Security and Net Zero, the Department for Education (DfE) and the Scottish and Welsh Governments.

Our expert teams work with the public sector and housing throughout the decarbonisation journey, sharing knowledge and experience.

We also run regular webinars, offer a variety of useful tools and guidance and tackle challenges together.

Our schemes include:

- › Public Sector Decarbonisation Scheme
- › Low Carbon Skills Fund
- › Social Housing Decarbonisation Fund
- › Home Upgrade Grant
- › Scotland's Public Sector Heat Decarbonisation Fund

salixfinance.co.uk

Visit our website to find out more about our projects and our highly skilled workforce



IDEAL HEATING LAUNCHES CIBSE ACCREDITED HEAT NETWORKS & HIU CPD

Ideal Heating – Commercial Products has introduced a new CIBSE accredited CPD to its collection, on Heat Networks and Heat Interface Units.

The new CPD provides an overview of the benefits of heat networks and the role that Heat Interface Units (HIUs) play in ensuring the thermal comfort of the end user and the efficient operation of the network.

Predominantly a beginner's guide to heat networks, aimed at those who have a basic knowledge but little first-hand exposure, the new CPD describes the concept of heat networks and their key benefits. It goes on to focus on HIUs, explaining their role as the appliance that transfers the thermal energy

from the network to provide heating and hot water for the end user. The basic principles of HIU operation, along with common components and some typical mechanical and electronic functions for HIUs are addressed.

To ensure the network and the HIUs are operating in harmony, at their optimum, there are aspects that installers should consider when choosing an HIU, as well as things to avoid. The new Heat Networks and Heat Interface Units CPD provides invaluable advice on these, gained from Ideal Heating's extensive experience in heat networks with its own POD HIU range.

The hour long Heat Networks and Heat Interface Units CPD can be delivered

online or in person, either at a customers' premises or at one of Ideal Heating's Centres of Excellence in Hull and Leeds. These premises have recently been completely refurbished to convert them into state of the art training facilities, with Ideal Heating's commercial products installed so attendees can get interactive, hands-on training. The CPD can also be tailored to suit specific businesses and their requirements.

To view and book any of the Ideal Heating CPDs available, go to <https://idealcommercialboilers.com/cpd-courses> or contact Ideal Heating's training team direct via enquiries@expert-academy.co.uk

Delays, uncertainty and a looming general election burden all strands of UK energy market

Chris Goggin looks at the current state play in the UK energy, heating and hot water provision marketplace

Commercial heating and hot water provision sectors currently exist in a state of uncertainty in relation to customer costs, outside investment, future direction and implementation of national legislation that encourages decarbonisation. Further turbulence will be exacerbated by the certainty of a UK general election and a possible change of government which could signal a redrafting of national energy policy.

Over a year the current UK government and opposition parties have reneged on several ecological pledges and appears to have lost momentum in implementing national decarbonisation. Shifts in policy has resulted in creating confusion for investors inside the UK energy market. And, in the meantime, life goes on as the population still requires heating and hot water provision, through new build and replacement. UK national energy acquisition, property regulations and UK gas boiler manufacture are areas of the UK energy market that have experienced recent reversals in terms of active or in-coming legislation.

One of the UK's biggest insurance company's – Aviva – was quoted in The Times as saying: "the government increasingly focuses on short-term energy security over long-term sustainability."

As European and American big business have embraced large renewable projects, UK political indecision, ever rising global energy costs and the question of supply security has led to a lack of investment within large scale UK renewable projects. Also published in the same Times article as above, Aviva believe that "the recent dilution

in government net zero targets is an even bigger challenge and creates uncertainty."

The Energy Transition Readiness Index 2023 is a measurement of a regions ability to transition towards NetZero. It is a report compiled for potential investors to evaluate a country's viability towards profiteering from renewable electricity. The latest report believes that investors will only be attracted towards UK projects if they can observe clear and succinct governance as well as regulatory stability. Presently there is not enough evidence of either to entice outside capital investment.

The UK government has had to offer £800 million to support new offshore wind farms as the amount of capital incentives offered in the previous round of CfD offshore wind auctions failed to attract a single bid.

Concurrent with this is the MEES situation. These are regulations which ensure that all buildings are in ownership of an EPC (Energy Performance Certificate) with an "E" as its lowest rating. Further amendments drafted in 2021 aimed for Minimum Energy Efficiency Standards to be raised to "D" in 2025 and "C" in 2030.

This would have meant that landlords who privately own and rent property across the UK would have had to legally meet energy efficiency standards to continue renting to customers.

However, the UK government has scrapped these plans as implementation would have meant extra costs to both landlord and property rental customer. A redrafting of MEES regulations is



expected and will likely impose clean energy standards on rented property.

Also, there is the 'ban' on gas boilers being installed at off-grid sites has been lengthened from 2026 to 2035. The "boiler tax" has also been delayed. This proposed tax system would have been imposed on gas boiler manufacturers that failed to substitute several percentage points of boiler sales for heat pump sales, resulting in a £3,000 fine for each missed installation.

A potential new government later this year could also introduce further change to the UK energy market by way of a new direction in policy and cost. As one observer said about the current parlous state of play in the UK now as being akin to 'all the runners are lined up for a sprint start to a very quick finish line'.

Specifiers, contractors, installers and UK property owners should seek manufacturers of hot water and heating products that can offer a wide range of appliances in the variety of energy vectors to produce low carbon solutions for all residential, industrial and commercial properties. It is likely that the UK will hold on to natural gas for the moment whilst purposely manoeuvring different energies and production into play on a mass scale – be they wind, solar, DME, BioLPG. www.rinnaiuk.com

LOCAL ENERGY: INNOVATION CAN POWER A FAIRER FUTURE

Dr Stephen Hall, Head of Ashden Awards

Across the UK, 'local energy' is on the rise. We've seen work to maximise the potential of small and medium scale renewables like solar and wind, through the roll out of electric heating, the electrification of transport, and the connection (via WiFi) of everything from your fridge to your car.

It seems to make intuitive sense. All these technologies together can act as lots of little batteries to store and release energy when needed. They can respond by using more or less power when the energy system needs it. Because 'we' can buy and own all this technology, 'we' can also gain some control over the energy system itself.

This opens up all sorts of possibilities – such as the creation of tiny energy markets, where individuals can trade surplus and storage, or even gift them to others. But a key outcome could be new initiatives and services benefiting social housing tenants, and others facing danger from energy price shocks and fuel poverty.

Local energy can power a fairer society – but only if regulations and policies work towards that goal. For example, by making sure cheap local energy isn't limited to those with the resources to buy up new generating systems and only share that energy among themselves. This scenario would leave the less well-off missing out on the benefits of new technology, but potentially also paying a higher price to keep our 'legacy' energy network on its feet.

What we need, are ways to maximise the benefits of local energy to everyone, so all homes can benefit from energy innovations. This is where a new crop of social, technical and commercial innovations come in which could mean

a 'tipping point' for local energy. Here are just a few examples.

Emergent Energy (<https://emergent.energy/>) are the UK's first company to crack the problem of sharing solar power between flats. In the past, solar could be installed on flats and other multi occupancy buildings but could only power communal areas like stairwells and lifts, a solution that didn't really work for anyone. Emergent Energy have been able to combine metering solutions, a private microgrid, and regulatory innovations, to ensure building owners can install solar on flats and residents can benefit from cheaper cleaner electricity. Emergent Energy will be expanding this model through the coming year and this quiet revolution could change the energy options for flats and multi-occupancy buildings forever.

Energise Barnsley (<https://www.energisebarnsley.co.uk/>) are another example of where a little innovation can go a long way. Energise Barnsley are the largest local authority and community energy rooftop solar PV project in the UK and have been able to provide battery storage along with solar to residents of social housing. By provisioning battery storage as well as solar generation, far more of the energy generated locally can be used by the homeowners, leading to bigger bill savings and further opportunities for social housing to participate in smart energy markets such as demand side response.

Meanwhile, The Housing Associations' Charitable Trust (<https://hact.org.uk/>) are bringing the costs of energy retrofits and smart energy technologies down by using their 'retrofit credits' scheme. This scheme goes to voluntary carbon markets, and allows companies to offset their emissions by buying credits which go directly to retrofitting social homes. These credits can be applied across the housing sector to bring the costs of clean energy technologies down even further.

What stands out from these three cases is not only the individual contribution they can make but how,



together, they can lead to a tipping point in local energy where solar and other clean energy generation can be stored, traded, even shared and gifted so that energy innovation can benefit all communities.

It's important to recognise the many benefits local energy schemes can bring, if action is targeted in the right way. These benefits go far beyond lowering our carbon emissions – they include better health and action on fuel poverty, as well as creating good green jobs in marginalised communities. For councils and housing associations in particular, these are all good reasons to be proactive in supporting local energy.

The challenge for energy regulation and energy innovation funding is to find new market models and regulation that can make space for these innovations to thrive and benefit the missions of families in fuel poverty across the country, as well as the middle-class smart energy consumers currently spearheading consumer engagement with local energy.

The Ashden Awards will take place on the evening of Thurs 27 June in London during London Climate Action Week. Bookings: <https://ashden.org/awards/ceremony/>

Steve leads the development and delivery of the prestigious Ashden Awards which explore the latest challenges for global climate action and search for the best solutions in the world. In his previous work in academia he published extensively on sustainable energy systems, energy transitions, sustainable cities and climate policy and economics.



INVESTORS ARE CONFIDENT, BUT DEVELOPERS SHOW CAUTION, ACCORDING TO NEW RESEARCH

Burges Salmon launches latest Net Zero report and gathers insights from investors and developers of heat networks projects

Looking into the opportunities presented by heat networks, a new report paints a contrasting picture amongst investors and developers. Commissioned by independent UK law firm Burges Salmon, the research reveals that 69% of investors see heat networks as attractive prospects, and 61% are confident of the returns they can generate.

Conversely, the data suggests developers are more cautious in shaping up risk profiles, with only 45% believing heat networks to be attractive and just 41% expecting to see them generate sustained investment.

The report, *Getting to Net Zero – The potential for heat networks in our communities*, collates the views of 80 UK-based investors and developers, as well as in-depth interviews with Equitix, Related Argent, Hemiko, SSE and Asper, to gather insights and experiences of funding and developing heat networks projects in the UK and Europe. The report comes at a time when the Government is preparing to publish the findings of its public consultation on heat networks zoning proposals in England, to attract investment and allow local communities to access, at pace, cheaper, greener heat.

New legislation putting investors at ease

With around one-fifth of UK carbon emissions coming from heating, the opportunities presented by heat networks

to reduce emissions have formed an important part of the Government's Net Zero strategy and new legislation introduced in the Energy Act 2023 has brought some much-needed clarity.

The changes have been welcomed by many and optimism about their impact is high among investors who are far more encouraged by the new legislation: 60% say that it will stimulate funding into heat networks and over a third say they view clean heat mandation (the requirement to connect certain buildings within prescribed zones to a new heat network) as the best way of ensuring success in the longer term, making investment into heat networks more attractive. The appointment of Ofgem as the new heat networks regulator is also a move that has been hailed as a positive step change.

Whilst Government mandates are boosting investor confidence, the report shows over half of investors, 53%, are seeing bigger government incentives and larger margins as the most effective ways of encouraging heat networks investment.

Developers finding project delivery challenging

Whilst data points to high confidence amongst investors, developers have a more modest outlook on the potential for heat networks, with only 41% viewing it as good or excellent. This more cautious

attitude may be influenced by their experience to date of getting projects off the ground as they're having to navigate complex and time-consuming planning and construction pitfalls and upskill a workforce that lacks the design, mechanical and engineering know-how needed to deliver profitable heat networks projects.

60% of developers also cite a strong supply chain as vital to encourage investment and over half, 52%, claim that the UK's current weakness in this area is the top risk for the development of heat networks. Developers' first-hand experience of the fragmented nature of supply chains, which continue to feel the impact of labour and material shortages and higher inflation rates, may well explain their reluctance to take on the risks.

Collaboration, the solution for success

As investors and developers weigh up their respective risk profiles, both agree that strong and effective collaboration is essential in navigating the intricate planning, financing, and execution issues involved in heat networks projects.

Pooling their resources, public and private sector organisations working together are better placed to successfully deal with technical complexity, mitigate risk and engage with communities as well as ensure alignment with national and local policies, such as net-zero targets. www.burges-salmon.com

Heat pump sales fall by 5% while EU delays action

Heat pump sales in 14 European countries fell by around 5% overall in 2023 compared to 2022, from 2.77 million to 2.64 million. This reverses the trend of the last decade, where combined sales increased annually. The slowdown is already forcing manufacturers to cut or reduce jobs.

France, Italy, Sweden, Finland, Poland, Denmark, Austria and Switzerland all saw heat pump sales drop last year. While they increased in Portugal, Belgium, Norway, the Netherlands, Spain and Germany this was not enough to offset the overall decrease. What's more, even in many countries that saw overall growth, quarterly sales declined towards the end of 2023. Market analysts expect this downwards trend to continue way into 2024.

Very new figures from the UK, not yet included in the graphs or overall calculations,

show national sales growth of 4% last year.

The dropping sales come as the EU's Heat Pump Action Plan, due to be published in early 2024 to support the sector, is delayed by the European Commission until 'a time to be decided'. In the meantime, high interest rates and changing national policy measures are unsettling investors and consumers. Governments increased support for people investing in heat pumps in 2022 following the energy crisis triggered by the Russian invasion of Ukraine. In 2023 much of that support was restricted or removed. This was the case in Italy, which saw one of the biggest drops between 2022 and 2023 sales, for example.

The slowdown in heat pump sales puts the EU's climate and energy targets at risk. This includes the 2030 target of 49% renewables in heating and the 60 million

heat pumps to meet REPowerEU.

Bringing stable policy support and ensuring electricity is around twice the price of gas – for example through a carbon price and tax breaks – are crucial to turn "the cost of heat pumps" into an investment that enables continuous savings on heating. This will trigger end-user demand and bring more heat pumps to decarbonise the heating and cooling sector and support greater EU energy independence.

Publishing the EU Heat Pump Action Plan rapidly – as called for by over 60 CEOs and a wide group of associations in letters to Commission president von der Leyen – is the essential first step.

EHPA is expecting total sales for 2023 to bring the total heat pump stock to around 23 million in Europe (EU 27 + UK, Norway and Switzerland). <https://www.ehpa.org/>

BUYING AND USING UTILITIES LIVE, MEUC'S SPRING CONFERENCE AND EXHIBITION

In today's rapidly evolving landscape of energy and water management, staying ahead requires not just adaptation, but proactive engagement with the latest innovations and strategies. Fortunately, MEUC's Buying and Using Utilities Live event, taking place on Thursday, April 25, 2024, at the prestigious IET Savoy Place in London, offers a unique opportunity to do just that.

This premier event, part of the esteemed "Buying and Using Utilities Live" series, promises attendees a deep dive into the cutting-edge developments shaping utility management. From insightful presentations to invaluable networking opportunities, here's why you shouldn't miss out on this empowering experience.

Insightful Content: With a lineup of industry leaders and policy experts, MEUC's event offers a comprehensive exploration of the future of energy and water management. From discussions on achieving a 100% renewable future to insights into carbon reporting best practices, attendees will gain invaluable knowledge to steer their utility management strategies toward success.

Networking Opportunities: Connect with peers, experts, and solution

providers to exchange experiences and forge collaborations. MEUC's event provides a fertile ground for sharing ideas, exploring partnerships, and uncovering new opportunities in the realm of utility management.

Actionable Strategies: Leave equipped with practical tools and knowledge to enhance your utility management approach. Whether it's optimising energy procurement in volatile markets or leveraging emerging technologies for sustainable energy and water management, MEUC's event ensures attendees walk away with actionable insights ready for implementation.

The event's agenda is packed with thought-provoking sessions featuring industry veterans and sustainability champions. From discussions on green hydrogen and renewable energy growth to navigating energy markets in times of uncertainty, each session promises to deliver invaluable insights and strategies.

Session titles:

- The Future of Energy: Navigating a Net-Zero World
- Embracing the Green Transition: Charting the course for a 100% renewable future.
- Carbon Reporting: Best

Practices and Compliance

- From Reporting to Real Impact: Driving Transparency and Action in Carbon Reduction Initiatives
- Effective Energy Procurement in Volatile Markets
- Stability in the Storm: Navigating Energy Markets in Times of Political and Economic Uncertainty
- Emerging Technologies in Energy and Water Management

Moreover, MEUC's exhibition features companies providing supply, procurement, and management expertise and services. With a curated list of supporters, attendees will have access to a wealth of resources to support their utility management endeavours.

Don't miss out on this opportunity to empower your utility management journey. Register now to secure your place and take the next step toward shaping a sustainable and efficient future in energy and water management. Join us on April 25 at the IET Savoy Place in London, and be part of the conversation driving innovation and progress in utility management. Invest in your future today. Register now: <https://meucnetwork.co.uk/>

Buying and Using Utilities

LIVE
25 April 2024
IET, London

MEUC's Spring Conference and Exhibition
meucnetwork.co.uk/events/spring-conf24

Calling all Large Energy and Water Users

This premier event, brings together industry experts, policy makers, and major energy users to explore the latest trends, innovations, and strategies in utility management.

Why Attend?

Insightful Content:

Learn from industry leaders.

Networking Opportunities:

Connect with peers and experts.

Actionable Strategies:

Leave with practical knowledge.



event partner:



event supporters:



powered by:



THE CRUCIAL ROLE OF DATA INSIGHTS THROUGH STEAM METERING IN INDUSTRIAL PROCESSES

In today's industrial landscape, efficiency and sustainability have become paramount. As organisations strive to optimise their operations and reduce energy consumption, they are increasingly turning to technologies that can help them achieve these goals.

Steam, a ubiquitous source of energy in many industrial processes, is no exception. Steam metering, a practice that involves measuring and monitoring the consumption of steam, is playing a vital role in improving energy efficiency, reducing costs, and minimising environmental impact. In this article, we will explore eight key reasons why steam metering is essential in industrial processes.

1. Energy Conservation

One of the most compelling reasons for implementing steam metering is the need to conserve energy. Steam is a valuable resource that often accounts for a significant portion of a facility's energy consumption. Without proper measurement and monitoring, it is challenging to identify and address inefficiencies in steam usage. Steam metering provides real-time data that helps operators and engineers identify areas where energy is being wasted, enabling them to take corrective actions promptly.

2. Appropriate sizing of carbon reduction solutions

Accurate metering data will demonstrate the benefits of any energy conservation system improvements. This same metering data can help you to review and assess base and peak loads. Peak loads, and the reduction of them where possible, play a key role in accurately sizing and selecting the most suitable and efficient, carbon reduction solutions.

3. Cost Reduction

Efficient energy management goes hand in hand with cost reduction. Steam metering allows organisations to track their steam usage accurately and, in turn, allocate costs more effectively. By



pinpointing excessive consumption or leaks, organisations can make informed decisions to reduce operational expenses, ultimately contributing to higher profitability.

4. Process Optimisation

Steam plays a pivotal role in many industrial processes, such as heating, sterilisation, and power generation. Precise measurement of steam usage enables organisations to optimise their processes, ensuring that they receive the required amount of steam at the right time. This optimisation can lead to improved product quality, reduced production time and enhanced overall productivity.

5. Emissions Reduction

Steam metering not only aids in energy efficiency but also contributes to reducing carbon footprints. By minimising steam wastage and overuse, organisations can significantly lower their greenhouse gas emissions. This aligns with global efforts to combat climate change and adhere to regulatory requirements.

6. Maintenance and Reliability

Steam metering can serve as an early warning system for maintenance needs. By monitoring steam consumption and pressure levels, organisations can detect potential equipment issues or steam leaks, allowing them to address problems before they

lead to costly breakdowns. This proactive approach enhances the reliability and longevity of steam-related assets.

7. Accountability

Steam metering enables organisations to track and allocate steam costs accurately, making departments and individuals aware of their consumption. This can motivate better energy management practices at all levels of the organisation.

8. Compliance and Reporting

Many industries face strict regulations and reporting requirements related to energy consumption and emissions. Steam metering provides the necessary data to meet these compliance standards and simplifies the reporting process.

Steam metering is an indispensable tool for modern industries seeking to improve energy efficiency, reduce operational costs, and minimise environmental impact. With the benefits of energy conservation, cost reduction, process optimisation, emissions reduction, maintenance and reliability, accountability, and compliance, steam metering has become an essential component of efficient and sustainable industrial processes.

To explore steam metering solutions, visit <https://www.spiraxsarco.com/global/en-GB>

PEL 103 | Power & Energy Logger

Bridge the **energy gap** between today and tomorrow. **Increase** energy efficiency and **reduce** your costs.

Our future energy needs are changing and businesses need to improve their energy efficiency. You can reduce required power generation, save money and increase productivity.


Gain a competitive advantage now with the PEL 103.

The key to a **reduced carbon footprint & improved energy efficiency.**

Measure and monitor power usage. Identify inefficiencies and out of hours use. Discover power factor, phase balance and harmonic issues.

Contact us to learn more



CHAUVIN ARNOUX UK Ltd | 125 YEARS IN BUSINESS | 30 YEARS IN THE UK 
1 Flagship Square | Shaw Cross Business Park | Dewsbury WF12 7TH | T: 01924 460494 | E: info@chauvin-arnoux.co.uk

Putting the App into Happy Housing

The smart way to meter, measure and manage energy resources for councils and residents alike.

What's the simplest way for you to offer residents a simple but secure opportunity to pay for their gas or electric? The smartest solution undoubtedly comes from Chris Smith, Energy Controls MD: making it easy for customers to pay for their energy while they're taking it easy.

And it couldn't be more straightforward or more rewarding.

Pay-as-you-go

Whether you're looking to streamline your energy overheads with automated meter readings or be paid upfront with the latest prepayment system, Energy Controls has the products and expertise to help. With a fully hosted, web-based software solution linked to market-leading PayPoint, it allows you to offer residents the perfect 24/7 pay-as-you-go service. Energy Controls' award-winning SMART meters are ideal for all types of sub-metering applications, ranging from blocks of flats to travellers sites and housing associations. And they're backed by Chris and his team's over thirty years of tried and tested experience.

An E470 GSM SMART meter offers the most flexible metering solution to give complete control of your energy resources.



Business booster

As the UK's premier operator of prepayment metering services to the landlord sector, Energy Controls has invested heavily in an IT infrastructure that delivers a secure, reliable and robust online payment solution. It gives the council and residents alike immediate access to their energy usage data around the

clock and payments can be made online anytime from anywhere using the free smartphone app. And who doesn't have a smartphone these days!

"The prepayment opportunity that our SMART Meters offer our customers provides an instant boost to cash flow" **Chris Smith, Managing Director.**



- Approved to new Measuring Instruments Directive (MID) standards
- Prepayment of your electricity supplies
- Exclusive access to PayPoint retailers
- Top-up online or via our FREE app
- Friendly disconnection override
- Remote supply disconnect/reconnect
- As installed by British Gas and other major energy supply companies



Happy residents

Energy Controls' SMART meters come equipped with many customer-friendly optional settings designed to prevent out-of-hours power loss. These include **pushbutton emergency credit and disconnection override periods** as well as **predefined holiday dates** when power will remain on even if the credit expires. Not only do these settings reassure consumers, they also take the pressure off the re-selling of energy, leaving you free to get on with running your business.



Happy customers

But you don't have to take Chris's word for it. Simply read what the Gypsy and Traveller Team Manager for West Sussex County Council had to say:

"Working with Energy Controls, we have introduced a new cashless PayPoint system for the SMART meters at our Traveller Sites. This system has been a huge improvement for the Council because not only does this mean our staff no longer have to handle cash, the PayPoint service gives our residents greater flexibility and independence. I would not hesitate in recommending Energy Controls and their products and services."

The Manager at Southend YMCA went even further:

"Energy Controls supply 21st century thinking and a great web based service, with lots of useful functions, allowing you to see how much energy has been consumed on an individual basis. We highly recommend Energy Controls to any business. The whole experience of having the latest metering system installed was too good to be true and very straightforward."

Fit for FREE

Energy Controls is happy and well equipped to offer a complete service from free survey to installation, together with full training and after-sales support.

Why not call Chris Smith on **0345 230 4535** now to see if you qualify for a 'Fit for FREE' supply and installation service. It could be the happiest move you ever make!

0345 230 4535
sales@energycontrols.co.uk
www.econtrols.co.uk



ENERGY
CONTROLS

EUROPE'S MOST EFFICIENT DISTRIBUTION TRANSFORMER

The European Commission estimates that 2.9% of all energy generated across EU27 and the UK is wasted through transformer losses.

This amounts to 93TWh which is equivalent to the electricity consumed in Denmark over three years.

Network losses account for 1.5% of the UK's greenhouse gas (GHG) emissions. 25% of these emissions are caused by distribution transformer losses. Due to the inefficiencies of old transformer designs and the level of losses associated with them, Ecodesign regulations were launched to minimise the energy waste of transformers.

ECODESIGN REGULATIONS FOR TRANSFORMER LOSSES

EU Commission Regulation (EU) No 548/20141 and Amendment (EU) 2019/17832, which were then adopted by the UK, introduced requirements for Load and No-Load Losses for distribution and power transformers placed in the market or put into service within the region. Tier 1 came into effect in 2015 and Tier 2 followed in 2021 with stricter energy loss requirements ensuring that transformers installed on the network are built with efficiency in mind.

Wilson Power Solutions, a transformer manufacturer based in Leeds, launched **Europe's most energy-efficient distribution transformer** last month. Wilson e4 Ultimate Low Loss Amorphous® Transformer is a breakthrough in transformer efficiency introducing **27% lower combined losses than Ecodesign Tier 2**.



All new transformer installations in the UK have had to follow Ecodesign Tier 2 standards since July 2021. Upgrading to the Ultimate Low Loss transformer incurs additional CAPEX investment but that is offset in a two-year payback period based on a 70% load factor and £0.25/kWh. Payback calculations are recommended and there are many online tools to help organisations look at the full lifetime costs of owning that transformer. The paybacks are generally more favourable with transformers that are highly loaded

or with organisations that pay more electricity tariff than others.

AMORPHOUS METALS EXPLAINED

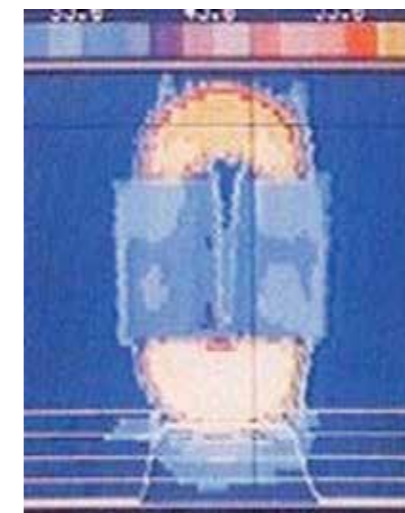
The traditional transformer core technology consists of stacks of laminations that are made from silicon steel with an almost uniform crystalline structure, referred to as Cold Rolled Grain Oriented Silicon Steel (CRGO). CRGO transformers have reached their full potential making it difficult

Transformer Rating (kVA)	Pre Ecodesign (early 2000s)		Ecodesign Tier 1 (2015)		Ecodesign Tier 2 (2021)		Wilson e4 (2024)	
	NLL (W)	LL (W)	NLL (W)	LL (W)	NLL (W)	LL (W)	NLL (W)	LL (W)
315	600	5350	360	3900	324	2800	215	1940
500	900	7400	510	5500	459	3900	295	2750
800	1150	11000	650	8400	585	6000	425	4265
1000	1350	12500	770	10500	693	7600	460	5610
1250	1575	16000	950	11000	855	9500	570	6930
1500	1700	21000	1125	13140	1015	11285	625	8630
1600	1800	21700	1200	14000	1080	12000	675	9170
2000	2300	24000	1450	18000	1305	15000	815	11475

Table 1: No Load Loss (NLL), Load Loss (LL) pre Ecodesign regulation, as per the regulation and Wilson e4 Ultimate Low Loss Amorphous® Transformer



Amorphous infrared image



CRGO infrared image

to further reduce the losses without incurring significantly higher costs.

Amorphous metals are made of alloys that have a random molecular structure caused by the rapid cooling of molten metals that prevents crystallisation and leaves a vitrified structure in the form of thin strips. Due to the random molecular structure, friction is reduced in the magnetisation and demagnetisation of the core resulting in less heat dissipation which boosts the transformer's overall efficiency.

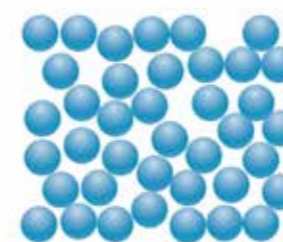
TRANSFORMER LOSSES

Energy waste through transformers is mainly split into two main types: Load Losses and No-Load Losses. It is pertinent to address both to improve the efficiency of the transformer. Load Losses are sometimes referred to as winding losses and are a result of the load on the transformer. These losses

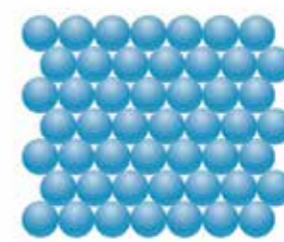
depend on the current flow through the transformer windings and occur due to their resistance. No-Load Losses are dependent on the core material, and they are present 24/7 from the moment of energisation regardless of the load.

Due to the random molecular structure of Amorphous metal core, there is less friction during the magnetisation and demagnetisation resulting in less energy waste in the form of heat. This results in less hysteresis losses in the transformer.

The resistivity of the core is proportionate to the square of the thickness of its laminations. The strip thickness of Amorphous laminations is 0.025mm (10 times less than CRGO) and has a 0.32g/cm3 lower density compared to conventional CRGO. This results in less Eddy Current Losses which are caused by the induced currents of the transformer core due to alternating magnetic fields.



e4 Amorphous Core



CRGO Crystalline Core



10 sheets of AMT



1 sheet of CRGO

Transformer Construction	Combined Losses (W)	Energy Savings PA (kWh)	Carbon Savings PA (tCO ₂ e)	Financial Savings PA (£)
1950s Hot Rolled Steel	18,495	64,100	17.6	£16,025
1970s Early CRGO	16,864	52,184	14.3	£13,046
1990s Modern CRGO	14,525	40,492	11.1	£10,123
2015 Ecodesign (Tier 1)	11,270	23,705	6.5	£5,927
2021 Ecodesign (Tier 2)	8,293	10,583	2.9	£2,646

Table 2: Energy, carbon, and financial savings of replacing old transformer with Wilson e4 (combined losses of 6070W). Based on a 1000kVA transformer, 70% load factor and 25p/kWh.

Author:
Ayah Alfawaris,
Head of Group
Sustainability & Marketing



UNTAPPED DECARBONISATION POTENTIAL

Through a Freedom of Information request we submitted to Ofgem, we found out that **the average age of a distribution transformer in the UK is 63 years old**. Despite durable design capabilities allowing transformers to live much longer than anticipated, older designs paid no regard to efficiency. Conventionally, the older the transformer, the more energy it wastes.

Looking at the Life Cycle Assessment (LCA), on average, 95% of carbon is emitted during the operational and maintenance phase of the transformer. Hence, the energy efficiency of the transformer design is paramount to decarbonisation. And this means old transformer assets have a significant role to play through upgrading and replacement programs.

When conducting a life cycle cost analysis associated with replacing old transformers, it is important to understand that the benefit goes beyond the financial feasibility extending to carbon reduction and reliability advantages. The table below shows the potential energy, carbon, and financial savings from replacing old transformers with Wilson e4 Ultimate Low Loss Amorphous® Transformer.

www.wilsonpowersolutions.co.uk

AI TECH TO BUOY UK BESS INVESTMENT POTENTIAL

Despite structural challenges in the UK, market-ready AI technology offers a game-changing stimulus for BESS operators and investors

Flux in the global energy market has become normalised during the past two years, reducing the clarity of the role of renewables in the energy mix. And over this period of volatility, clean energy has been regarded as everything from strategic imperative for energy security to being too long-tail to offer remediation to the threat of immediate supply-side shortages.

Despite this, a new normal has begun to take shape with many economies deploying significant subsidies to stimulate renewable energy investments. While China has been busy incentivising its entire renewables supply chain for years, the Biden Inflation Reduction Act and its 'matching' by the EU just over 12 months ago brought the world's three most significant trading blocs into broad, subsidising alignment in each of their respective economies.

Meanwhile, one of the first mover markets in renewable power generation, the UK, has been pegged back in the absence of comparable investment incentives. Without equivalent subsidies, the UK has dropped from a leadership position to eighth in EY's latest Renewable Energy Country Attractiveness Index.

The report cites the 'failure of Contracts for Difference (CfD) Round 5 to attract new offshore wind capacity, plus the diminishing of green policies, leaving investors with reduced confidence in UK renewables'. And industry agrees too. The UK Sustainable Investment and Finance Association, which represents £19 trillion of investments, reports that 87% of UK energy businesses agree that changes to policy are essential to make the UK an attractive investment location for green energy.

With the UK languishing in the global marketplace while US customers benefit from battery packs discounted by an effective 45%, technologists point to other ways to sharpen up the sector's competitive edge without waiting for government handouts. While renewable energy generation technologies have become progressively more optimised, the same cannot be said for the essential – but sometimes overlooked – energy storage technologies that constitute a critical part of



the investment case for both operators and investors. And that criticality is growing as the grid struggles to contend as new renewable capacity comes on stream. This has been drawn into sharp focus by data from the electricity system's balancing market platform, Elexon, that showed in 2022 how the National Grid spent £215m paying wind generators to stop generating power while turning on gas-fired power at an additional cost of £717m.

Stationary storage is therefore an essential component to buffer energy generation from supply and provide a controllable way to balance the renewables contribution to the grid.

So, while the role of storage is incontestable, it had until recently been something of a spanner in the works for investors. That's because the grid-scale batteries that make up stationary storage don't last as long as the systems they power. Much to investors' and operators' distaste, the only solution to this functional shortcoming is to either oversize the capacity of battery storage solutions at the point of commission by an order of 30 to 50%, or augment deteriorating battery capability partway through the storage facility lifecycle. According to the National Renewable Energy Laboratory, this adds 20 to 30% to a storage project cost – or in hard numbers, another \$58.2m to supplement a typical 400MWh, 4-hour system.

However, this challenge has been addressed by market-ready tech that embraces AI to significantly mitigate the oversizing conundrum. Adrien Bizeray, Co-Founder and Chief Data Scientist at Oxford-based Brill Power explains:

"Artificial intelligence has a crucial role to play in enhancing the efficiency of battery systems. By identifying latent weaknesses within battery energy storage systems, our AI system mitigates factors that impair overall system performance. Acting as a vigilant monitor, this allows us to detect anomalies early and enables more effective management of conditions that could compromise battery performance."

Bizeray points to independent validation of Brill's battery management toolset that can significantly reduce \$58m of battery augmentation needed to make a battery last as long as the systems it powers by intelligently managing the load and discharge cycles of the battery. The full suite of Brill technologies provides up to 46% better battery performance, up to 60% longer battery life, and 30% lower lifetime costs.

For investors seeking to avoid the 'black box economics' of BESS systems, Bizeray adds: "AI models also contribute to a deeper understanding of the cost dynamics associated with energy storage asset usage. By providing insights into battery degradation and remaining useful life of systems, owners can make better-informed decisions about usage strategy, improving margins and boosting ROI."

As storage assets become increasingly more important to solve strategic grid problems while the market simultaneously demands end-to-end efficiency from renewables, optimising the performance of BESS using homegrown AI technology looks to be one route to the UK reasserting some form of leadership in the eye of the renewables investors. <https://brillpower.com/>

RETROFIT BATTERY STORAGE SOLUTIONS FROM ECOBAT BATTERY

The production and storage of energy, particularly electrical energy, is of increasing concern to both building developers and environmentally conscious home owners, but how is it best achieved?

Despite the often windy conditions and comparative lack of sunshine compared to our southern European neighbours, in the majority of locations, solar remains the most practical solution for harvesting electrical energy and with the ongoing technical development that increases the efficiency of every new panel being brought to market, it becomes an increasingly attractive option.

However, to ensure the system is complete, the storage of the energy is equally important as its generation and thankfully, due to its specialist knowledge and diverse product portfolio, Ecobat Battery can offer an incredibly wide range of power storage solutions, to address each application.

At the forefront of power storage technology is EcoFlow, an innovative specialist that has a wide range of products that offer an alternative power storage solution to a traditional battery.

In the domestic new build/renovation environment, the EcoFlow PowerOcean

DC Fit is a persuasive option as it sits between the solar panels and an existing inverter. This is made possible by its unique coupling technology and means that it can be seamlessly installed without any extra certification and instantly add a power storage capacity to the home, maximising the efficiency of the user's existing solar system, which can be called upon for instant power, stored for later use or sale back into the national grid.

The PowerOcean DC Fit is a modular system available with one, two or three advanced 5kWh LFP battery packs, each of which has an 800V high voltage battery to independently start both single-phase or three-phase solar inverters. With trusted LFP battery chemistry from CATL and a comprehensive range of active and passive safety measures, it delivers unrivalled battery reliability and performance.

Utilising EcoFlow's pioneering self-adaptive control algorithm, the PowerOcean DC Fit solution also smartly mitigates the risk of oscillation between the solar coupled battery system and the third party solar inverter, with up to 15kW solar input bypass power per string.

In addition, unlike many other battery

solutions on the market, the PowerOcean DC Fit connects its batteries directly

to solar ports, and as there is no need to replace the existing solar inverter or change the wiring on the AC side, the entire system is unparalleled in its ease of installation.

As well as being quick to install, it can be located inside or outside and features Smart monitoring via a web portal or an App, has an integrated battery management system, is equipped with an auto heat module to ensure efficient winter operation and has fire suppression built in.

In short, for installation in applications that produce solar energy for domestic consumption and sale to the national grid, the EcoFlow PowerOcean DC Fit is a truly great solution as it enables the effective and efficient storage of excess energy that can be used either for resale or for periods when solar production is not possible.

Further information can be found at: <https://www.ecobatbattery.com/ecoflow-power-ocean-dc-fit/>



EcoFlow PowerOcean DC-FIT

An easy and cost-effective retrofit battery storage solution for a residential PV system.

ECOFLOW

With EcoFlow's unique PV-coupling technology, the PowerOcean DC-Fit enables direct connection of the battery to the solar system on the PV side, eliminating the need for an additional storage inverter.

VISIT US AT [ECOBATBATTERY.COM](https://ecobatbattery.com)

5 Little Park Farm Road, Segensworth West, Fareham, Hampshire PO15 5SJ, United Kingdom
paul.smith@ecobat.com | +44 (0)7808 760420



Scan to visit our site

Rinnai.



INSTANTANEOUS ELECTRIC WATER HEATERS IN 21, 24 & 27KW COMING SOON

Rinnai continues to expand products for heating and water heating in all fuels – gas, electric and renewables

Rinnai's new range of instantaneous electric water heaters are suited to all commercial and domestic applications that require decarbonising technology capable of delivering domestic hot water needs.

Rinnai's innovative approach to producing decarbonising technology has resulted in a DHW electric water heater that has been designed to offer direct heating capability. The technologically advanced bare wiring technology rests in the water enabling the system to achieve the pre-set water temperature quickly and accurately. The electric on demand water heaters are lightweight (less than 4kg) and diminutive (450 x 235 x 94). Rinnai is continuing to provide UK customers with an array of products that cover a range of energies.

For a brochure on the Rinnai range of electric on demand water heaters and low carbon technologies visit <https://www.rinnai-uk.co.uk/contact-us/request-brochure> and receive a goody bag.

The KW rating within the Rinnai instantaneous electric water heater range is scalable from 21kw, 24kw and 27kw ensuring suitability for a wide variety of applications. A compact design allows easy installation and is proven to increase energy efficiency and therefore reducing operational costs. Ease of installation and handling are a major feature.

Rinnai's instantaneous on demand electric water heater range can maintain an adjustable temperature range from between 20 and 60 degrees Celsius and that can be digitally increased



in 0.5 degree increments. All units can also accept preheated water.

Other features that the Rinnai instantaneous electric water heaters include:

- overheat protection
- multi-functionable display
- full electric control
- rapid heat up capability

- quick reaction to sudden shifts in grid capacity output.
- solar compatible.

All models have LCD screens that provide visual information on current water temperature, operational performance and Eco Mode – which supplies confirmation of the appliance operating economically and therefore reducing unnecessary energy wastage and costs.

Rinnai's instantaneous electric water heater has a renewable system operation setting that recognises incoming water temperatures more than 30 degrees Celsius, then applies only the correct amount of energy to achieve the required temperature uplift making them an ideal solution to use in conjunction with solar thermal and renewable systems.

The product is timed to coincide with UK plans to reduce electrical costs to be the lowest in Europe by 2035. UK energy strategists believe that clean and sustainable electrification is presently the safest way to ensure lower customer costs and carbon emissions.

Rinnai has anticipated this announcement and has accordingly adapted its product offering of low carbon commercial and domestic products to include technologies that support electrification.

This launch follows an ambitious and innovative programme of launching several new products within its H1 – Hydrogen and DME ready water heaters, H2 – Hybrid systems and H3 – Low-GWP heat pumps product categories. These new products will all ensure the company offers a comprehensive range of appliances and systems for heating and hot water suited to both commercial and residential applications.

The programme commenced with the launch of the new low-GWP air source heat pumps with R290 refrigerant. There will also be a new and innovative range of electric cylinders of multiple sizes. Also there will be the introduction of the KCM and E Series of condensing gas-fired water heaters for light commercial and residential applications.



Later in the first quarter of the year will see the launch of plate heat exchangers for larger commercial and industrial sites. Rinnai is determined to provide UK customers with cost effective low carbon solutions towards commercial hot water and building heating provision. www.rinnai-uk.co.uk

ecoStat3 is the new generation of intelligent thermostatic controls.

Suitable for both electric and wet heating systems, this cleverly simple control ensures energy is not used unnecessarily.

The microwave sensor* detects absence, lowering heat input when rooms are unoccupied. Window-open technology means heat isn't escaping, and a dedicated infrared programming handset, for building managers, prevents any tampering with settings.

Easy to install and simple to operate, ecoStat3 is the most affordable way to keep rooms comfortable while making significant energy savings.



Designed for multi-occupancy dwellings, HMOs, Student rooms, Hotels, Hostels, Holiday Lodges, Airbnbs, etc.

ecoStat 3



Cleverly simple control of energy.

prefectcontrols.com

* The PRE5203EC3 model has integrated microwave occupancy sensor. PREFECT ecoStat is a registered UK trade mark owned by Prefect Controls Limited, with trade mark number UK0003943747

RINNAI'S COST EFFECTIVE AND LOWER CARBON HOT WATER HEATING SOLUTION FOR SURREY CARE HOME

A large 72 room care home in Surrey with a 123-person occupancy needed to reduce its operational carbon emissions by 20% but maintain a generous hot water supply during peak periods. The owner-operators also needed to re-structure both the operational costs and energy usage.

The Rinnai Design Team sized this commercial care home site by taking into account the peak periods of hot water usage in the morning and early evening. The Rinnai Design Team provided the customer with three options based on the carbon production, energy usage and operational costs. The new options were also compared to the existing, traditional storage system.

The options included a Rinnai H1 gas-powered system of three N1600 Continuous Flow Water Heaters. Secondly, a Rinnai H2 hybrid system, made up of two 21kW heat pumps and three continuous flow N1300s. Thirdly a Rinnai H3 all-electric solution that utilizes two 50kW heat pumps and two 48kW E-cylinders.

Over five years the costs of each hot water system were clearly shown:

- the Rinnai H1 natural gas system is the most cost effective at £52,806.30.
- the Rinnai H2 hybrid system is at £56,745.84.
- the Rinnai H3 all electric system amounted to £149,666.32 – The huge gap here is explained by electricity costing around 300% more than gas.

In Figure 1, Rinnai's decarbonising hot water solutions are represented in the colours grey (H3 all electric), orange (H2 hybrid) and blue (H1 natural gas), whilst the currently installed gas system is highlighted in yellow. The first graph demonstrates the operational costs associated with each system.

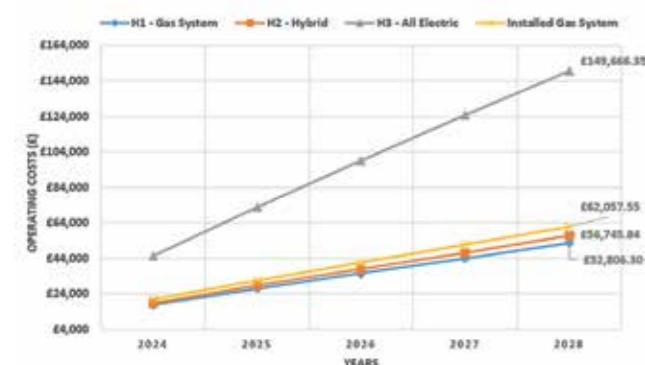
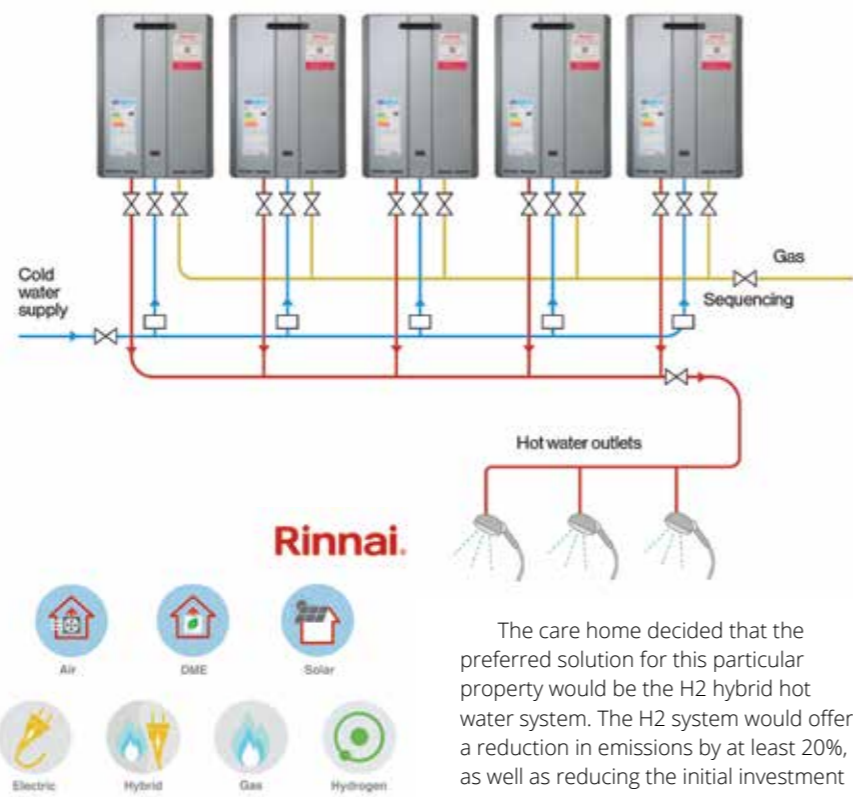


Figure 1



As reducing 20% of emissions was a key part of the customers 'must-do' objectives, all suggested systems are proven to perform to a cleaner standard than the existing traditional system. The Rinnai H1 natural gas, Rinnai H2 hybrid and Rinnai H3 all electric systems offer carbon reductions of 14.9%, 30% and 67.5% respectively.

Figure 2 depicts the energy savings to be made:

- the Rinnai H1 natural gas system offers a 14.9% reduction.
- the Rinnai H2 hybrid system sees a 27.1% reduction.
- the Rinnai H3 all electrical system yields a 39.7% reduction.

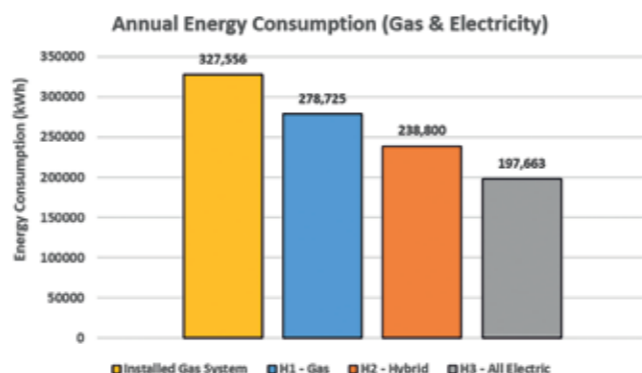


Figure 2

CUTTING UNNECESSARY USE – AN 'EASY WIN' IN REDUCING ENERGY COSTS

With the ongoing energy crisis and costs still high, there has been a growing demand by providers of student accommodation, to manage heating more effectively.

Too often in HMOs, the complexity of thermostat operation means the 'constant mode' is permanently engaged. As many controls are easily tampered with, 'maximum heat' is modus operandi. Windows are opened to provide heat regulation!

Restricting tenants heating is not ethical, and legal requirements stipulate the ability of rooms to maintain temperature levels. However, heating rooms that are empty, or when windows and doors are open, is simply wasted energy.

Automating efficiency takes the onus off room occupants and assures bill-payers that energy is not used unnecessarily.

Intelligent thermostats that manage individual rooms are the cost-effective solution. A new UK designed and manufactured generation has just been launched by Perfect Controls.

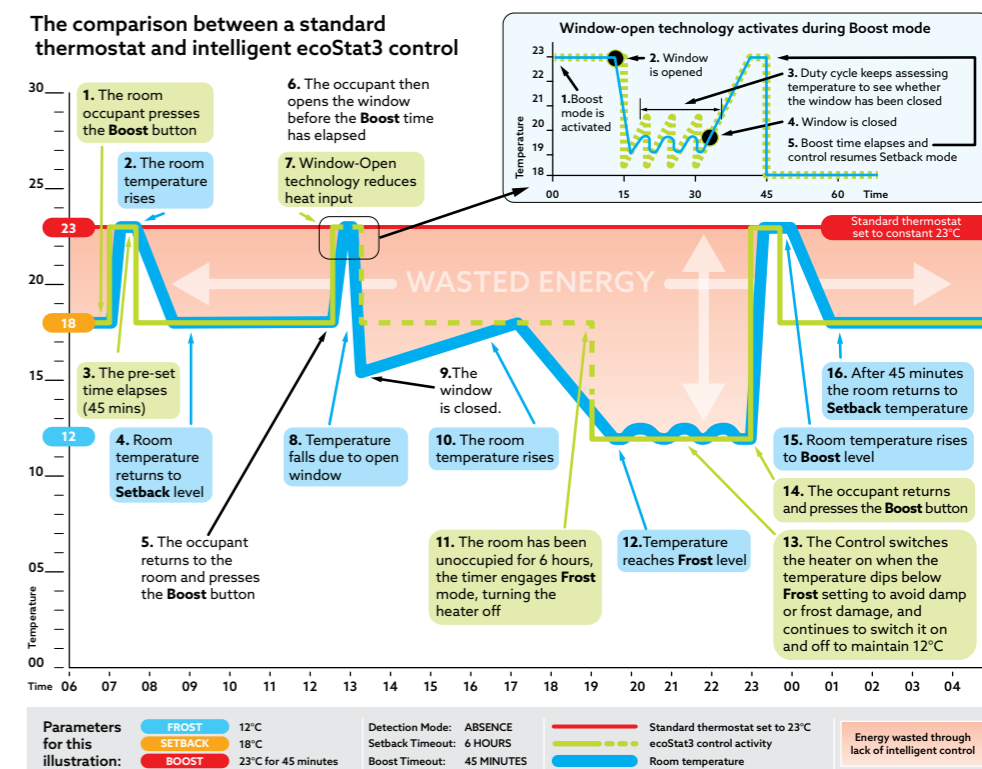
Simplicity of use (just Boost and Down/Off buttons), robust design and manufacturing, and impressive energy saving has made ecoStat popular with end users and installers since its introduction 25 years ago.

ecoStat3 builds on this performance by integrating a microwave occupancy sensor, along with other technical, performance and usability enhancements.

Developed for student accommodation, ecoStat has also proved popular in HMOs, hotels, hostels, holiday lodges and caravan parks. It is designed to deal with challenging environments. The evidence – 200,000+ fitted controls, still in operation.

The principal behind ecoStat3's energy saving is the 3-mode profile – Setback-Boost-Frost modes. This ensures occupants enjoy a comfortable environment (Setback), while giving them the capability to increase temperature (Boost), but for a pre-set time. When rooms are unoccupied or ambient temperature is equivalent to setback, heaters boilers, or wet radiators are

switched off, becoming active again only if there is the possibility of material damage from damp or frost (Frost). Settings are infinitely changeable, but a typical profile is Setback: 18°C. Boost: 23°C for 45 minutes. Frost: 12°C.



switched off, becoming active again only if there is the possibility of material damage from damp or frost (Frost).

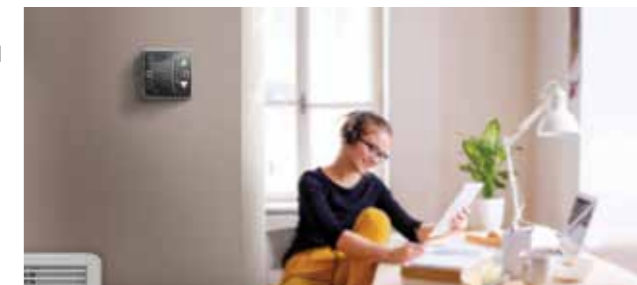
Settings are infinitely changeable, but a typical profile is Setback: 18°C. Boost: 23°C for 45 minutes. Frost: 12°C.

ecoStat3 is always striving to reduce heat input, while keeping rooms comfortable. This typical profile maintains 18°C. Should the occupant press to request Boost, 23°C is met for 45 minutes. When Boost time elapses Setback re-engages, room temperature returns to 18°C. Should the occupant leave during Boost time, Setback re-engages. If windows are opened, heat input is reduced.

When vacant for longer periods, the heater turns off, and the control enters Frost mode.

Heating controlled by ecoStat delivers average savings of 20-30%. These savings are not made by restricting tenants access to heat – it is energy that would have heated empty rooms, or worse still, escaped through open windows.

Thermostats cannot be tampered with as the occupant has no access to programming. All parameters are set by authorised personnel using



a dedicated infrared handset.

The all-new programming handset has been redesigned for ecoStat3 but has backwards compatibility with previous ecoStat ranges. The user interface is intuitive and the handset ergonomic. Profiles input on the handset, are then pointed and 'sent' to ecoStat3. For convenience, the handset features NFC (Near Field Communication) where simply holding it close to the control updates parameters.

The two new models operate and perform in the same way, the only difference being the integration of a microwave occupancy sensor, affording greater savings.

Reducing waste without compromising comfort must be the sensible approach to reducing energy costs. www.perfectcontrols.com

THE GOVERNMENT'S NATIONAL HEAT NETWORK PLAN: WHAT'S IN IT FOR COMMUNITIES?

Richard Lane, Community Energy Consultant. It's well known that the government is looking to increase the number of heat networks in the UK, but there has been little coverage of the plans for exactly how. At Sharenergy, we are calling for community and social benefit to be at the front and centre of the Heat Network Transformation Programme and are taking action through our Community Heat Development Unit project.

The Department for Energy Security and Net Zero (DESNZ) recently held a consultation on proposals to create heat network zones across the country which could then be licensed for development, in a similar way to the PEDL licensing system for companies wanting to look for fossil fuel reserves.

The benefits of heat networks are clear: they can offer heat potentially at far lower costs than individual heat pumps and offer a route to decarbonise heat whilst avoiding extensive, expensive and disruptive retrofit. They can allow households to benefit from heat that would otherwise be wasted from



industrial or commercial sources like data centres or – unsustainable as they are – waste incinerators. Further decarbonisation advantages are available through centralised heat storage, which offers the chance to shift times of demand and thereby support intermittent renewable electricity generation. Hot water tanks are an order of magnitude less expensive than chemical batteries and don't require exotic minerals with dubious supply chains.

SHARENERGY'S COMMUNITY HEAT DEVELOPMENT UNIT PROJECT

Sharenergy is a community energy consultancy based in Shrewsbury but active nationwide, with extensive experience supporting communities to develop renewable energy projects. We have helped to secure over £30 million in community energy investments, through over 10,000

individual investments by members of the public. We are a co-operative and have a strong social purpose.

We are working on a Community Heat Development Unit (CHDU) project which brings a data-led approach to identifying where the best chances for successful community heat networks are – drawing on existing experience but adding the crucial element of community ownership and representation that is Sharenergy's specialism. This 18-month project, running in partnership with Community Energy England and the Marches Energy Agency, will develop a business model that can operate in these 'sweet spots', as well as a Community Heat Delivery Unit to support the development of locally-owned networks.

We want communities all over the country to be able to take control in the effort to decarbonise their heat needs. Hence it was essential that we spent some time understanding the consultation proposals and their implications for communities.

WHAT'S BEING PROPOSED?

The proposal that went out for consultation is that DESNZ, as "Central Authority", will identify areas in which a heat network has the potential to offer cheaper low-carbon heat than would be achieved through every property installing an individual air-sourced heat pump. Each such area becomes a "designated zone", and is licensed to a developer by a local "Zone Coordinator". The coordinator may be the local council, a regional body or combined authority, or DESNZ itself. Zones are licensed through a "competitive and open process", and four preferred commercial delivery models are given, three of which involve partial ownership by the local authority.

Within a designated zone, many nondomestic properties are likely to be compelled to connect to the heat network. The same would apply to existing communal heating systems, and new buildings are likely to be required to be "heat network ready" on construction.

As a heat network expands within a zone, the developer has the power to compel more nearby sites to connect to it. This applies both to consumers and sites on which significant amounts of heat are generated, such as waste incinerators, which would be identified as potential heat sources by the Zone Coordinator.

The powers being conferred onto these licensed zone developers

are significant – both the powers of compulsion and also the monopolistic position they then occupy, able to set the price of heat for buildings that are likely to be reliant on the network. No details on the planned zones are given, but a map showing the output of a preliminary zone modelling exercise appears to show several thousand heat network zones across the country. The Committee for Climate Change (CCC) suggested that heat networks could supply 18% of UK heat demand by 2050 – equivalent to 5 million households and 387,000 nondomestic properties.

The licensing work is due to get underway next year (2025) and will require local authorities selected as Zone Coordinators to work with DESNZ to agree heat network zones. Each zone will be consulted on with the intention of developing a pipeline of heat network builds for the next 10-15 years, with each awarded through a "short competitive process".

OUR QUESTIONS AND CONCERNS

We have three major causes for concern with this process, but all basically boil down to the total neglect of communities from any part of this process. Oversight (via elected politicians) and consultation are not the same as community engagement, and we're seeing far too many cases where net zero infrastructure is seeing its social support eroded as a result of a failure to address communities' needs meaningfully.

Our three main questions are:

What lessons have been learnt from previous experiences of licensing monopolistic infrastructure to private operators via a competitive process?

The issues surrounding the operation of the rail and water systems should give us pause for thought before embarking on more of the same to supply buildings with heat for the next 40-50 years. Competitive processes reward back-loading of costs and the loading up of infrastructure with debt. Partnership working between the public and private and/or third sector organisations could have a better chance of growing the sector and retaining wealth in our communities. We also think that underlying the whole process should be an understanding that the infrastructure will come into public ownership in the future, after an initial operational phase.

Why is social benefit not considered?

Even within a purely privately owned model, the social offers of heat network developers can vary massively. Zone Coordinators must have a mandate to provide benefit to their communities when acting as regulators. Governance should be a legitimate consideration when awarding licences – social enterprises with community purpose are already running theatres, libraries and leisure centres very successfully all over the country.

What is expected to happen for residential properties?

No requirement is proposed for residential properties to connect to heat networks within zones, nor any obligation for heat network developers to enable their connection. Domestic properties represent 60% of our heat consumption nationally - it is very conspicuous that no provision is made for them. If it's too politically difficult, doesn't that say something about the process they're proposing? The regulations should encourage, possibly oblige, developers to offer connections to domestic properties and regulate how these connections are treated. Why do half the job?

The amount of infrastructure to be built under these regulations is immense, yet they have not featured on the radar of public political debate. The potential for community benefit – and indeed harm – is great.

To keep up to date with our CHDU project visit <https://www.sharenergy.coop/community-heat-development-unit/> and sign up for our newsletter.

EM
Magazine

To receive Energy
Manager Magazine
FREE of charge,
please visit:

energymanagermagazine.co.uk/
subscribe

HEAT NETWORK FOR UK DECARBONISATION: THE ROLE OF HEAT NETWORKS FOR DECARBONISING PUBLIC BUILDINGS

While the imperative is to stop climate change, heat networks emerge as a requirement in the pursuit for decarbonising public buildings.

At Salix we consider heat networks as playing a pivotal role within the framework of the low-carbon solutions grant funded by the Public Sector Decarbonisation Scheme (PSDS). This is just one of several schemes we administer on behalf of the Department for Energy Security and Net Zero. Other funding mechanisms managed by Government such as the Green Heat Network Fund (GHNF) also focus on heat network project based on low carbon heat generation.

HEAT NETWORKS: A CATALYST FOR BUILDING DECARBONISATION

At the forefront of the transition to decarbonise heating, heat networks serve as a tool for reducing carbon emissions of public buildings. By aggregating heat generation and distribution, they enable the seamless integration of renewable energy sources, thereby mitigating direct carbon emission from fossil fuel source such as gas. Moreover, the scalability and flexibility characteristic in heat networks facilitate the adoption of energy storage solutions, supporting resilience and efficiency in the face of fluctuating demand and supply dynamics.

Heat Network designers and constructors play an important role in improving the efficiency of the whole system and with some specific focus on the distribution and reduction of losses during the transmission of heat supplied to buildings within the district area. This is a challenge given the dimension of these connections and the complexity of managing different building demands.

Underpinned by the Public Sector Decarbonisation Scheme, a cornerstone funding initiative managed by Salix, public sector entities are empowered to embark on ambitious decarbonisation endeavours, including the deployment of heat networks. By leveraging Public Sector Decarbonisation Scheme funds,

Davide Natuzzi, Assistant Director Energy, Carbon & Technical, Salix Finance



numerous good projects have happened, highlighting the important impact of local low-carbon infrastructure applied to public buildings. These initiatives are reinforced by fabric improvements, one major Public Sector Decarbonisation Scheme criteria, and other energy efficiency measures aligned with the principles of a holistic building approach.

Within the purview of the Public Sector Decarbonisation Scheme, funds have been allocated to a numerous of projects involving both connection to existing district heat networks or the establishment or connection of on-site heat networks. While the former streamlines energy distribution and minimises infrastructure duplication, the latter creates bespoke solutions tailored to the unique needs of individual sites such as Hospitals or Universities.

Our own Energy and Carbon Technical Team, supported by technical partners with expertise in heat networks, have reviewed funding submissions of excellent projects since Public Sector Decarbonisation Scheme Phase 1 to the current Phase 3c.

More than £130 million in total capital value of heat network projects have been partially supported by Public Sector Decarbonisation Scheme funding from Phase 1 to Phase 3b. This emphasises the resounding commitment to low-carbon solutions aimed at decarbonising buildings.

This substantial investment not only signifies the scale of support for heat network projects but also attests to the enduring viability and efficacy of these initiatives in driving the energy transition. Good work has been achieved by policy makers to promote and support this solution.

In recognition of the priority to decarbonise district heat networks, governments have also instituted dedicated funding mechanisms such as the Green Heat Network Fund supporting

investment in low carbon heat source infrastructure and emissions reduction initiatives.

In tandem with governmental initiatives like the Public Sector Decarbonisation Scheme and the Green Heat Network Fund, compliance with regulatory frameworks such as the CP1 Code of Practice for Heat Networks stands as a requirement in the endeavour to decarbonise district heat networks. CP1, shaped by the Chartered Institution of Building Services Engineers (CIBSE), sets out complete guidelines for the design, installation, operation, and maintenance of heat networks.

By highlighting accurate heat metering, system monitoring, and customer engagement, CP1 ensures the integrity, efficiency, and transparency of heat network operations. This adherence not only fosters regulatory compliance but also enhances the reliability and sustainability of heat network projects, thus synergising with broader objectives of energy efficiency and decarbonisation. This synergy ensures a higher level of confidence and value for money when allocating government capital funding for these projects, as demonstrated by our practices here at Salix.

As public authorities handle with the dual challenges of climate change and energy transition, heat networks emerge as essential in the pursuit of heat decarbonisation. Through initiatives like the Public Sector Decarbonisation Scheme and funding mechanisms such as the Green Heat Network Fund, stakeholders are stimulated to invest in transformative infrastructure projects. By embracing storage energy solutions, monitoring, metering technologies, and stringent UK regulations, heat networks are ready to catalyse the transition to a low-carbon future and increase their presence in the government capital funding budget. www.salixfinance.co.uk



WHAT DO WE DO?

We represent more than 160 organisations from across the energy system, bringing together businesses, local authorities, academics and more to advocate on the priorities for the UK in achieving net zero and boosting energy security.

We believe that an energy system designed around the user's needs, enabling the right technology choice in the right place, serves everyone better.

At the ADE, our activities include:

- Hosting a busy calendar of industry-leading events
- Advising Government on energy policy
- Briefing members on policy developments
- Using our in-house research team to fill evidence gaps for industry and policymakers
- Speaking to politicians, the public and the press on the role of decentralised energy technologies.

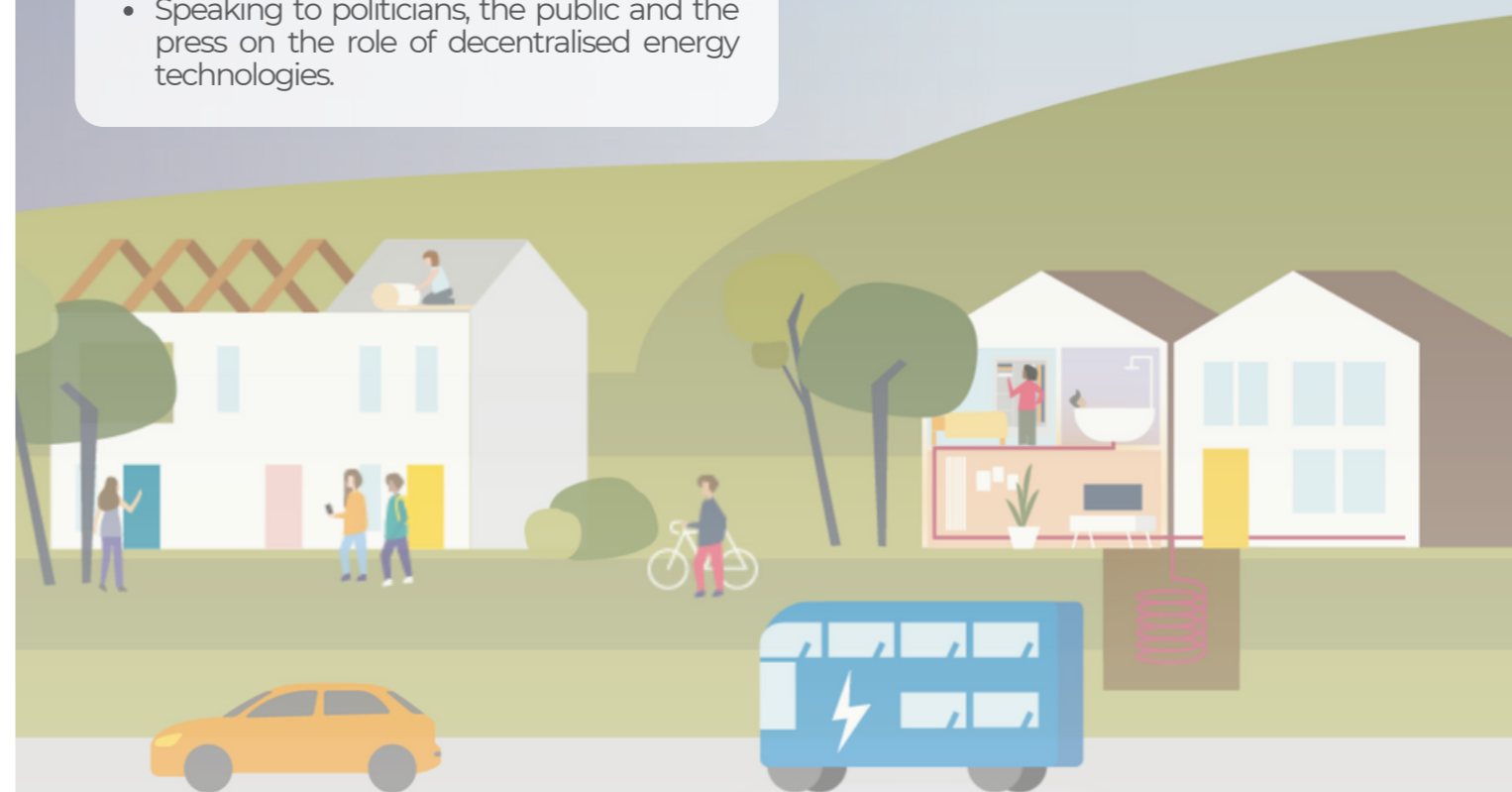
WHAT TECHNOLOGIES DO WE REPRESENT?

Heat Networks can heat homes and businesses much more efficiently by using a network of insulated underground pipes to transport heating and cooling out from a central energy centre hub.

Energy Efficiency in buildings reduces demand for heating and power in indoor spaces - measures include insulation, draught proofing and LED lighting.

Flexibility means adjusting the grid's electricity supply and demand up or down at different times to meet different needs and balance the grid. Consumers, businesses and electricity generators can be paid to turn up or turn down usage, depending on if more or less electricity is needed on the grid.

Industrial Energy refers to the energy used by heavy industry, which is generally where raw materials such as chemicals, iron, steel, minerals and paper are produced. Energy supply is a critical aspect of industrial competitiveness, and there are several solutions which are helping to guarantee affordability and reliability on the road to delivering net zero by 2050.



If you are interested in learning more about what we do and the benefits of becoming a member, please contact our Director of Business Development, **John Bryant**, at john.bryant@theade.co.uk.

DECARBONISING LEARNING – HOW HNES IS SUPPORTING THE EDUCATION SECTOR

Education can change the world and is the starting point for some of the world's best innovators, leaders, reformers and creators. The UK's educational institutions are uniquely placed to harness knowledge, influence the world to make a difference, and nurture the future generation of climate experts. Indeed, it was professors from University College London who, most recently, have been developing a trailblazing solution to save the Arctic's sea-ice from rising temperatures due to global warming¹.

However, as education shapes the next generation of sustainable pioneers, how can we ensure that the sector is practicing what it preaches?

The build environment accounts for 19% of the UK's emission levels, and domestic energy consumption is a huge barrier to the UK realising its Net Zero ambitions². Research from the University of Leeds, alongside 536 other institutions, has found that universities and colleges alone emitted more than 18 million tonnes of carbon dioxide equivalent into the environment in 2020/21³. This represented around 2.3% of the UK's overall carbon footprint. Students must observe that the very institutions educating them on the dangers of climate change and contributions from human behaviour are doing their part to mitigate their own carbon footprint.

Cutting energy bills and carbon emissions in the public and higher education sectors was seen as particularly important by the UK Government, after financial benchmarking revealed that in 2019 schools alone were spending around £630 million each year on energy⁴. Since then, energy bills have soared, alongside the rising cost of living. As schools and universities increasingly feel the squeeze, the sector needs further support to decarbonise buildings and increase energy efficiency levels.

¹ Climate change: The 'insane' plan to save the Arctic's sea-ice - BBC News

² The real carbon footprint of universities | Times Higher Education (THE)

³ Analysis reveals scale of tertiary education's carbon emissions - Priestley Centre for Climate Futures (leeds.ac.uk)

⁴ Sustainability and climate change: a strategy for the education and children's services systems - GOV.UK (www.gov.uk)



Heating consumption is a large cost for energy managers across educational facilities. Some of these estates will be connected to a district or communal heating system which distribute heat and cooling from a central source. The technology is a vital aspect of the UK's transition to Net Zero, often providing the lowest cost, most efficient option for large spaces and high-density areas.

Through its Heat Network Transformation Programme (HNTF), the Government has recognised the role heat networks have to play in the energy transition and has already invested over half a billion pounds to help expand the sector. Gemserv is playing a large role in helping to deliver the HNTF and is the appointed delivery partner to deliver the Heat Network Efficiency Scheme (HNES), just one of the schemes that form part of the programme.

HNES realises that, whilst the Government must continue to support the creation of low and zero carbon heat networks, older networks across the country may not be operating at their optimum efficiency levels and cannot be forgotten. Ensuring that the UK's existing heat network infrastructure is reliable, cost-effective and keeping occupiers warm and comfortable is crucial to build trust in the technology. HNES has already supported numerous educational institutions to increase the efficiency of their heat networks and

has the potential to provide significant cost and energy savings to institutions connected to these heating schemes.

Throughout Rounds 1-4, HNES has funded both capital infrastructure improvements and optimisation studies for existing heat networks connected to the Universities of Plymouth, Leicester and Liverpool, Lancaster University, and the Royal Agricultural University⁵. The University of Wales Trinity St Davids has also received capital funding to improve the efficiency of their heat network.

Alongside this, HNES has supported heat networks connected to teaching hospitals across the country, creating an energy efficient space to train future and current health professionals across the NHS.

So far, with the support from HNES, heat networks across the country will save over 97,000 tonnes of CO₂e per year, benefitting 32,700 residents, students, teachers, and private and public sector workers. Smaller efficiency improvements to existing networks, alongside new low carbon infrastructure is crucial to ensure an effective energy transition that benefits everyone and shows that Net Zero does not mean higher bills.

You can find out more about the Heat Network Efficiency Scheme at <https://gemserv.com/heat-network-efficiency-scheme-hnes/>

⁵ Heat Network Efficiency Scheme HNES | Gemserv Delivery Partner

DRIVING NET ZERO WITH CAMPUS HEATING

With NHS emission reduction target dates looming, hospital trusts need to act now to achieve their sustainability goals. Campus heating solutions could play an important part in the Net Zero strategy, says Stephen Hart, Baxi's Director of Integrated Solutions.

As part of its commitment to tackling climate change, the NHS has outlined targets for reaching net zero from its directly controlled emissions by 2040, and the emissions it can influence by 2045. Achieving its ambition to become the world's first-ever net zero health service will require action across all areas, but decarbonising its buildings is identified as one of the greatest opportunities. More specifically, changing the way in which its hospital estates and facilities are heated will be essential to meet its first target of an 80% reduction in emissions between 2028 and 2032.

The vast scale of the NHS estate, the diversity of buildings and the differing heating systems make the decarbonisation challenge particularly complex for its energy and estates managers. Implementing a highly-efficient centralised campus heat network to deliver reliable heating and hot water to multiple buildings and facilities would provide an effective solution to the problem.

CAMPUS HEATING AND HEAT NETWORKS

Heat networks have been identified as having a crucial role to play in decarbonising heat in UK buildings. The government's ambition is for 20% of UK heat demand to be supplied from heat networks by 2050, up from an estimated 2-3% today. Government and private sector funds are available to help increase uptake rate.

A heat network provides hot water and/or space heating to consumers in multiple buildings (district heating) or consumers in multiple dwellings within a high-rise tower block (communal heating).

Campus heating is a subdivision of district heating and operates in the same way. Where it differs from a district heating system is that the heat generator is also the owner of the buildings which are connected by underground pipes to a central energy centre.

So what compelling benefits do campus

heating systems offer NHS energy and estates managers on the pathway to net zero? First, they are well suited to highly populated areas with high heat demand such as hospital facilities. Added to this is their ability to facilitate mass decarbonisation while providing greater energy security. As such, they provide an effective solution to the NHS's heat decarbonisation challenge within a hygiene and mission-critical healthcare environment.

Third, looking ahead, there is the potential to scale up and become a heat network hub for the local community, unlocking additional future opportunities.

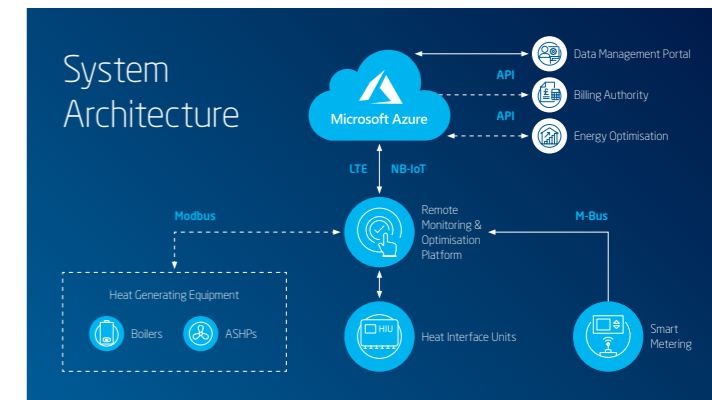
DESIGNING FOR RESILIENCE

When it comes to design, many new heat networks use low-carbon heat sources such as heat pumps or renewable heat such as biomass. They can also use heat recovered from industry or urban infrastructure such as factories or mines and rivers.

Interestingly, CIBSE Code of Practice CP1 suggests that a hybrid engineered approach would reduce CAPEX, making more projects commercially viable while ensuring greater reliability and security as demand on the electrical grid intensifies.

In a typical scenario, 80% of the annual heat might come from the heat pump(s) and the remainder from boilers. However, to achieve the necessary resilience and network reliability that hospitals require, redundancy might need to be as high as 100%. This would mean that 3 MW of air source heat pump capacity, for example, should also have 3 MW of boiler capacity. Heat pump uptime and carbon intensity would be prioritised without the heat network encountering a heat out. And as future-proofed natural gas boilers installed today could run on biofuel tomorrow – and potentially on site-generated green hydrogen in the future – full decarbonisation is still ultimately achievable.

According to a 2022 government



survey of 130 heat network operators, 48% said they would likely switch to a low-carbon heat source at the end of their generation asset lifetime. This supports the view that, rather than focusing on the carbon intensity of the technology at the outset, the priority should be to create the heat network infrastructure and ensure resilience.

PROJECT STAGES

Let's consider the stages involved. The first step is to carry out feasibility and design studies. Consider working with heat experts who can offer digital tools to provide precontract design advice and engineered solutions based on low carbon technology generators to support funding applications.

At the build stage, evaluate the latest manufacturing techniques to make installation as smooth as possible. For example, when designing the energy centre, a prefabricated packaged plant room might be considered the best solution to meet all requirements. If this is the chosen approach, look to partner with heating solutions providers who can supply full in-house offsite manufacturing and engineering capabilities as well as all the products.

Optimise system performance and drive efficient maintenance through wireless remote monitoring and control. A 24/7 real time monitor will enable engineers to diagnose any fault remotely and ensure first time visit success while analysing energy data will help identify opportunities for system optimisation. The aim should be sustainability at no cost to resilience.

In summary, campus heating systems offer a technically and economically feasible opportunity to drive the NHS net zero strategy, reduce its carbon footprint and improve financial sustainability, security and reliability. Partnering with specialists who can provide expert support at all stages will make the process more seamless and straightforward for optimal results. baxi.co.uk/baxi-packaged-solutions

SMART EDUCATION: INSPIRING A NEW GENERATION OF ENERGY MANAGERS TO HELP SCHOOLS HIT NET ZERO

According to the Council of British International Schools, the education sector is a significant emitter of carbon. In fact, schools in England alone are responsible for approximately 9.4 million tons of CO₂ equivalent per year.

It therefore comes as no surprise that in 2022, the Department for Education (DfE) launched 'The Sustainability and Climate Change Strategy'. The aim was for the UK to be the world-leading education sector in sustainability and climate change by 2030.

Fast forward to last November, the environmental audit committee (EAC) cautioned that by 2050 a mere 20 per cent of schools in England will reach net zero compliance. It's clear much more needs to be done.

The need to decarbonise their estates may be high on the agenda for Trusts, Governing Boards, Parent Teacher Associations and head teachers, not to mention their pupils. After all, they all want to ensure that their schools provide the very best environment for learning. However, what cannot be ignored is the financial obstacles that many schools face when it comes to investing in sustainability measures. Ironically, this includes the crippling high cost of energy experienced by schools over the past two years.

While schools clearly face a huge challenge to decarbonise, there are relatively simple and affordable steps that they can take towards lowering their energy emissions. Introducing smart meters and basic energy monitoring tools, for instance.

In order to encourage more schools to begin adopting such measures, the DfE recently set out that every school in the UK must produce its own action plan for how they will begin to transition their school, and this is now aligned with the national curriculum.

This provides a fantastic opportunity for children to build and champion their schools' own energy and carbon reduction efforts. Involving and engaging pupils throughout this process is a brilliant way for schools to begin lowering their consumption and costs through creating informed awareness amongst the school's main users – the students themselves – to drive action.

Running in parallel with this is the fact that it can teach students invaluable skills, potentially inspiring them to become the

Tom Woolley, Smart Product and Strategy Director at SMS Plc



energy managers, engineers, and environmental advocates that our society will so desperately need in the future as we continue to combat climate change.

One particular initiative that has seen success through following this student-led approach is the Energy in Schools (EiS) programme – a joint collaboration between the DfE, MyUtilityGenius, and SMS plc. <https://energyinschools.co.uk/>

There have already been successful trials carried out in selected schools, with the programme now being rolled out nationwide following very positive early results.

The starting point is to provide schools with a clearer understanding of their energy usage across their buildings. This is first achieved through the installation of smart meters, and then by giving teachers and students access to Microbits – small devices that can be programmed to capture consumption data and record it accurately in near real time. The students are taught how to do this through interactive lesson plans that are a fundamental part of engaging them with the EiS programme.

While the smart meters can give schools an oversight of overall energy usage, Microbits can show exactly when and where buildings are being inefficient – providing a deeper, granular level of insight. This insight, combined with smart meter data, can then help the school make more informed decisions about where energy efficiency improvements are needed around the building – such as introducing soft close doors, double glazing, or better insulation.

What's significant about this model is that it's the children themselves who are empowered to lead this change through lesson plans that engage them on the impact of their school's energy consumption, as well as their own.

Of the 20 different schools involved in initial trials, 85 per cent of participants reported more confidence in their knowledge across energy and climate topics with a better understanding of

how much energy they used and how to reduce it. 89 per cent were motivated to take action to reduce energy consumption, incentivised by the metrics provided by the EiS platform. The schools also achieved a 7 per cent reduction in energy usage from the behavioural change that the monitoring provoked. The results speak for themselves, and prove that this type of model can be easily replicated in other schools across the country.

Imagine the full potential of savings – both financially and carbon related – resulting from programmes like these if it included the installation of on-site solar panels, battery storage, heat pumps, or cavity wall insulation. That's a story for another day, particularly when greater funding is made available for retrofitting creaking school buildings, or indeed the much-needed construction of newer energy-efficient properties.

And there's also the wider benefits to the community that programmes like these can bring. For example, children educating their parents about the importance of getting a smart meter at home, and being cautious about their own energy usage. Indeed, there is an exciting opportunity for children to become the energy champions of their own households and wider communities, as well as their schools. After all, behavioural change so often begins with the younger generation.

Nevertheless, it's clear that schools and those responsible for managing and governing them must urgently put the stepping stones in place to achieve meaningful decarbonisation, and there are many ways to go about it. Educating, empowering, and inspiring our children to take the lead is proving to be highly successful in this regard. The model for such a novel approach is now proven, and it should be used to replicate success right across our education sector. <https://www.sms-plc.com/>

REFLECTIONS ON PUBLIC SECTOR DECARBONISATION

COMMENT by Stephanie Parker, Senior Advisor
Decarbonisation – Complex Sites at Energy Systems Catapult.



Decarbonising the public sector estate was never going to be a quickfire success. We knew when we launched the Public Sector Decarbonisation Guidance that we'd need to reflect on what was working, what needs tweaking, and what more can be done to respond to the pain points, challenges, and successes experienced by public sector organisations, their supply chain, and leading bodies such as the Net Zero Hubs and Salix.

To further our understanding, we carried out two listening surveys and offered respondents the opportunity to speak to us directly. These surveys reached over 230 colleagues across the public sector and the supply chain, and we directly spoke with 37 respondents to gauge their views on decarbonisation on the front line. One was aimed at early users of the Public Sector Decarbonisation Guidance, the other was aimed at the wider sector.

I've crunched the numbers, listened to what was said, and put together my top five takeaways from the survey, giving us a brilliant temperature test on the state of public sector decarbonisation in 2024.

Public sector colleagues are passionate about tackling climate change

When we set out to do the surveys, we wanted to supplement the results with face-to-face conversations to add colour and vital information, not just for us and our programme, but also for the Department for Energy Security and Net Zero (DESNZ) who fund our work.

We had no idea how great the response would be, with over half of respondents saying they would be willing to talk to us! In the end we couldn't speak to everyone, but I'd like to extend my personal thanks to those who offered to speak with us and to those we did speak to. The conversations were invaluable and demonstrated the passion that public sector colleagues have for decarbonisation.

To shift the dial, we need to tackle four common challenges

Unsurprisingly, access to funding came out on top as the most pressing challenge facing all organisation types. This common thread unites colleagues from across the

public sector. However, there is more to the story and more other common threads than you might imagine. Procurement and finding the right delivery partners, the need for upskilling and moving from developing your strategy into undertaking feasibility and design studies, or 'knowing where to start' were flagged up most commonly by survey respondents.

Insight like this helps us to continue targeting the Public Sector Decarbonisation Guidance so that it is tackling the big issues and helps us work out who we need to partner with to shift the dial.

The need for upskilling

This is the topic where the discussions with survey respondents were so valuable, and a few issues rose consistently to the top. Colleagues are struggling to get buy in and sign off for decarbonisation projects and felt they needed upskilling to enable them to convincingly make the case for decarbonisation to senior decision makers. We are writing new guidance to address this, watch this space! It covers the common types of decarbonisation projects, their benefits and considerations and support to help you influence across your organisation, as well as tips to help you gain sign off.

Colleagues also felt that engaging with the supply chain was challenging. In particular, making sure they had the skills and knowledge needed to write clear tender documents for support or solutions they needed. Additionally, they felt they lacked the technical skills needed to be able to challenge solutions and options presented by consultants and others in the supply chain. We are prioritising work in this area too!

Decarbonising complex public sector buildings is really hard

The conversations with respondents brought to life the challenges of making decarbonisation happen at scale and

Top decarbonisation barriers



83%

Face external and/or internal funding issues



58%

Lack skills



49%

Struggle with procurement



pace. Longstanding challenges such as the age and condition of the estate, complex stakeholder relationships to manage, the sheer variety of public sector buildings, and the vital services that are delivered from them day in day out and often 24/7 all make prioritisation, and then delivery of, decarbonisation projects a huge challenge.

Now more than ever we need bold strategies, backed up with ambitious projects led by enthusiastic, skilled people. Hats off to those already making it happen on the ground.

Public Sector Decarbonisation Guidance is shaping the pursuit of Net Zero

Here at the Catapult, we try to be as user-focused as possible and produce impactful material that drives the UK towards Net Zero. It's still nerve wracking when you directly ask for feedback! Thankfully, we seem to be doing the right things. 93% of early users who had used our guidance said they would recommend it to their peers, 86% said the resources couldn't be improved and 84% said that they had made progress thanks to the guidance.

If this prompts your thoughts, or if you have feedback on how we can improve our Guidance further, please email:

psdecarbguidance@es.catapult.org.uk

For more information, check out the Public Sector Decarbonisation Guidance: <https://es.catapult.org.uk/tools-and-labs/public-sector-decarbonisation-guidance/>

DEMYSTIFYING THE UK'S CURRENT POLICY LANDSCAPE SURROUNDING THE DECARBONISATION OF HEAT

Neil Saunders, Sales & Marketing Director at Vokèra by Riello, Carrier GCS Europe, elaborates on the UK's current policy landscape surrounding the decarbonisation of heat, highlighting key strategies and technologies aimed at reducing greenhouse gas emissions associated with heating.

The United Kingdom stands at a pivotal moment in its journey towards achieving net-zero carbon emissions by 2050. As part of this goal, the UK government has enacted various policies and initiatives to decarbonise the economy, with a particular focus on the heating sector.

A PARADIGM SHIFT IN HEATING

Central to the UK's decarbonisation efforts, is the overhaul of the Energy Performance of Buildings Directive (EPBD)¹. The agreement requires the phase-out of gas boilers, a cornerstone of traditional heating systems. In November 2020, the government made a groundbreaking decision to ban the installation of new gas boilers in new-build homes by 2025².

This marked a significant departure from the UK's reliance on fossil fuels and underscores the urgency of transitioning to low-carbon heating alternatives.

¹ <https://eibi.co.uk/news/fossil-fuel-boilers-to-be-completely-phased-out-by-2040-in-epbd-revamp/>

² <https://www.independent.co.uk/climate-change/news/gas-boiler-ban-heat-pumps-b1941255.html>



Among the alternatives to gas boilers, heat pumps have been advocated as a primary contender. These innovative systems extract heat from the air, ground, or water, offering a sustainable and efficient heating solution for homes and businesses.

The UK government has introduced incentives – such as grants and subsidies³ – to encourage the uptake of heat pumps,

³ <https://hoa.org.uk/advice/guides-for-homeowners/for-owners/heat-pump-grants/#:-:text=The%20government%27s%20Boiler%20Upgrade%20Scheme%20offers%20grant%20to%20cover%20part,of%20low%20carbon%20heating%20technologies.>

recognising their potential to significantly reduce carbon emissions in the heating sector. At Vokèra, we have created a training programme⁴ to ensure we have the skilled workforce needed to support the planned growth of the heat pump market.

Hydrogen holds promise as another viable option for decarbonising heat. Through its hydrogen strategy⁵, the UK government aims to develop hydrogen

⁴ <https://www.vokera.co.uk/skilled-workforce-needed-to-boost-heat-pump-rollout/>

⁵ <https://assets.publishing.service.gov.uk/media/65841578ed3c3400133bfcf7/hydrogen-strategy-update-to-market-december-2023.pdf>

production, distribution, and utilisation infrastructure. Boilers that can use 100% hydrogen, which produce heat through combustion with oxygen and only produce water vapour as a result, present a potential alternative to natural gas boilers, offering consumers a familiar, yet low-carbon heating solution.

Plans to upscale hydrogen production, transport and storage could potentially deliver over 12,000 jobs and up to £11 billion of investment across the UK by 2030⁶. We have products in development which are engineered for the use with 100% hydrogen via a conversion kit that is under development.

Scaling up sustainable infrastructure through initiatives such as district heating systems⁷ – which supply heat to multiple buildings from a centralised source – offer a scalable solution for decarbonising heat. By utilising heat sources such as waste heat, geothermal energy, or biomass, these systems contribute to reducing reliance on fossil fuels and lowering carbon emissions in urban environments. Currently, only 2% of UK homes are connected to a district heating network⁷, however, more are expected to come online as the UK transitions to net zero over the coming decades. Continued government support through funding and incentives will be critical for the expansion of district heating networks across the UK.

Utilising organic materials like wood pellets to power biomass boilers, or photovoltaics like solar thermal systems – harnessing sunlight to generate heat – provide additional renewable heating options for consumers. These technologies offer opportunities to diversify the UK's heating mix, particularly in rural areas or locations with abundant biomass fuel sources and ample sunlight.

As the UK transitions to low carbon heating technologies, safeguarding energy security remains paramount. While renewable energy sources offer environmental benefits, maintaining a reliable and resilient energy supply is essential. Policy measures must prioritise energy security alongside sustainability to mitigate risks and safeguard against disruptions in heating provision.

EMPOWERED DECISION-MAKING

Recognising the diverse needs and preferences of consumers is crucial in the transition to sustainable heating. Providing consumers with a range of options and empowering them to make informed choices aligns with principles of consumer sovereignty. Factors such as upfront costs, operating efficiency, reliability, and personal preferences should be considered in shaping policies and incentives for low-carbon heating technologies.

THE ROLE OF MANUFACTURING

Manufacturing plays a pivotal role in the transition to low-carbon heating solutions. By embracing a technology-agnostic approach, manufacturers can drive innovation, optimise production processes, and meet evolving market demands. This strategy fosters innovation, collaboration, and cross-sectoral partnerships, propelling advancements in decarbonising heat. By embracing openness to new approaches and leveraging emerging technologies, the UK manufacturing sector can expedite its transition towards a sustainable and secure energy future.

TOWARDS A SUSTAINABLE HEATING FUTURE

The phase-out of fossil fuel gas boilers and the adoption of low-carbon heating technologies represent pivotal steps in the UK's journey towards achieving net-zero carbon emissions. Through bold policy measures, investment in innovative technologies, and engagement with consumers and industry stakeholders, the UK can achieve the goal of decarbonising heat.

At Vokèra, we are versatile in our approach and will adapt to the requirements of each project ensuring we specify the most reliable and efficient heating solution for your circumstances. By prioritising sustainability, energy security, and consumer choice, we believe the UK can meet the requirements outlined in the updated Energy Performance of Buildings Directive (EPBD) and build resilient and sustainable heating solutions fit for the challenges of the 21st century. <https://www.vokera.co.uk/>

⁶ <https://www.gov.uk/government/news/major-boost-for-hydrogen-as-uk-unlocks-new-investment-and-jobs>

⁷ <https://energysavingtrust.org.uk/what-district-heating/>

THE ONLY PUBLIC SECTOR ENERGY JOURNAL

Register now to receive your digital issue of Energy Manager Magazine **FREE** of charge

energymanagermagazine.co.uk/subscribe

Image © East Street Imagery



ENERGY MANAGER V'S SOFTWARE: WHAT'S THE RIGHT FIT FOR YOUR BUSINESS?

Energy is the lifeblood of all asset-intensive companies. However, managing this crucial asset has sometimes been overlooked.

Crisis like the pandemic and the energy market upheaval in 2022, as well as growing demands from sustainability-related legislation, have been a rude wake-up call to businesses who did not treat energy management as a strategic asset.

Equipped with the knowledge that investing in energy efficiency can set them apart, forward-looking businesses have invested in outsourcing energy management, resulting in more efficient energy use, cost savings, and sustainability goals.

Those now looking into outsourcing energy management will quickly realise that the question of how to do this effectively has its own challenges. Do you invest in an energy manager's expertise or lean into the digital precision of energy management software?

In this article, we're diving deep into the showdown between the two. We'll not only weigh the pros and cons, but also share success stories and practical

tips from businesses that have dealt with this strategic question successfully.

THE ROLE OF AN ENERGY MANAGER

Focused on technical leadership, Energy Managers spearhead initiatives aimed at enhancing energy efficiency. Put simply, an Energy Manager oversees the planning, monitoring, and optimisation of energy usage within an organisation, focusing on reducing costs, improving operational efficiency, and meeting sustainability goals.

To do this, they conduct energy audits, manage projects for energy conservation, and stay updated with the latest in energy technologies.

Thinking of working with an Energy Manager? Make sure your Energy Manager possesses a nuanced understanding of the motivational drivers within your organisation – be it operational excellence, cost reduction, or environmental stewardship. Look

for expertise that encompasses a broad spectrum of innovations, from the deployment of smart building technologies to the integration of renewable energy sources and carbon capture solutions.

WHAT IS AN ENERGY MANAGEMENT SOFTWARE?

An Energy Management Software is different to an energy manager, in that it presents a deep analysis of energy consumption and cost through data. This data, in turn, would then need to be analysed by the user.

However, unlike an energy manager, an Energy Management Software (EMS) offers a comprehensive view of energy use across all levels. Some (like our technology, ClearVUE.Zero) can analyse your data from global assets to site-specific circuits, segmented by energy type. Often, EMS have intuitive, customizable dashboards which

enable stakeholders to pinpoint their energy concerns swiftly, facilitating easy access to necessary reports.

The primary advantages of an EMS include monitoring energy usage, cost reduction, minimising energy needs, and decreasing carbon footprint, alongside promoting adherence to regulations, and fostering an eco-friendly mindset across teams.

Pro-tip: Opt for a cloud-based EMS, which enhances deployment speed, scalability, and remote access capabilities, supporting diverse devices and locations.

KEY DIFFERENCE AND SYNERGIES

To optimise energy management within an organization, both energy management software and energy managers play crucial roles and have unique benefits. Here's how they compare to each other:

ENERGY MANAGEMENT SOFTWARE:

- Automation: Automates energy consumption tracking and analysis.
- Customisable: Offers customisable dashboards and reports for identifying energy savings.
- Quick Compliance: Facilitates compliance with energy regulations through automated reports.

ENERGY MANAGER:

- Strategic Leadership: Expert in strategizing and implementing energy conservation initiatives.

- Capitalising on Software: Utilises software data for informed decision-making.
- Technical Leadership: Leads energy optimisation projects and manages stakeholder engagement.

CHOOSING THE RIGHT SOLUTION - What Questions Should a Business Ask Before Making Its Choice?

Answer the questions below to see which tool would be the most effective for your organisation's needs:

- Do we have the in-house expertise to analyse and act on energy data?
- Can existing IT infrastructure support or provide energy insight?
- How complex is our energy use and infrastructure?
- What specific return on investment (ROI) objectives are you aiming to achieve?
- What level of customisation and scalability do we need?
- How important is real-time data and remote access for our operations?

If you have in-house expertise and existing infrastructure that provides insight, and do not require massive scalability (e.g. across multiple sites), then you might want to consider working with an Energy Manager.

However, if you require a large-scale solution that can be accessed remotely, an Energy Management Software might be a better alternative.

THE BEST OF BOTH WORLDS

Both solutions offer unique insight that can propel your energy management savings. For an ideal solution, considering combining an energy management software's data analysis capability with an Energy Manager's strategic insights.

This enables a comprehensive approach to energy management, guaranteeing efficiency and sustainability.

At ClearVUE.Business, we've seen first-hand how this can result in operational efficiencies for several businesses.

For instance, the Morgan Motor Company used our innovative energy management software, ClearVUE.Zero, to measure their painting process, which relies on energy-intensive paint powder-coating ovens and other machinery.

Immediately when starting to use ClearVUE.Zero, the Morgan Motor Company identified machinery that had been powered on needlessly early in their daily production processes for years. Our Energy Managers suggested a simple adjustment – changing when they switched machinery on or off.

This resulted in the company being able to cut down on energy consumption and save significant sums.

Book a free demo to discover how our technology and energy managers can provide the best insight for your organisation. <https://clearvue.business/request-demo/>



A wide group of people working across all areas of the Public Sector – to educate, train, support and connect as we work towards a more sustainable future.

Join us today

www.pssa.info



HYDROGEN – A SUSTAINABLE CHOICE?

By Pete Seddon, Technical Manager, Rinnai

As global economies continue to identify and incorporate clean and sustainable energies into respective national options, hydrogen has emerged as a potential source of energy capable of decarbonising and delivering power to domestic and commercial applications.

Despite the Whitby and Redcar Hydrogen Village Trial cancellations the UK government has taken a strategic policy decision to support hydrogen gas blending of up to 20%.

But many people ask: Is hydrogen heating really the safe and sustainable choice for your DHW and commercial heating projects?

In order to achieve the lowest possible carbon outputs on a national, continental and global scale there will, inevitably, be significant changes to infrastructure – in such arenas as generation and distribution. These changes will take decades to implement. What is also inevitable is that shared technology-in appliances, fuels, and their variants - will end a reliance on the mass production of a major and singular energy source. Hydrogen, along with all other fuels, could play a major role.



Rinnai.



Hydrogen has some specific advantages over fossil fuels. Hydrogen produces zero carbon emissions and can be produced utilizing renewable resources such as wind and solar power. Hydrogen usage can assist in creating healthier local air quality and assist in the necessary reduction of UK fossil fuel reliance.

However, there are some real and perceived safety issues that surround hydrogen's mass deployment. Hydrogen is highly flammable and requires careful handling and storage, as do all domestic and commercially used gases worldwide.

Additionally, construction of hydrogen infrastructure is currently incomplete and could demand existing in-building pipework to be connected to existing commercial heating systems, meaning hydrogen may not be accessible or cost-effective for every building.

Due to concerns regarding hydrogen usage we move to explore the safety aspects of hydrogen heating.

UNDERSTANDING THE SAFETY OF HYDROGEN COMMERCIAL HEATING

There are numerous reports that both support safety risks and advantages associated with hydrogen heating. The UK government will decide on the feasibility of hydrogen heating in 2026, whilst the HSE (Health and Safety Executive) will provide an authoritative and impartial report on all safety aspects concerning 100% hydrogen distribution across Great Britain.

The support provided by the HSE will feed into Government policy decisions in 2026 based upon the HSE's 2023 call for evidence on hydrogen heating. The HSE will also work alongside OFGEM, gas operators and the Department for Energy Security and Net Zero regarding potential neighbourhood hydrogen heating trials and evidence supporting hydrogen usage across other regions in the UK.

The primary focus of the HSE is to ensure that network operators possess a full understanding of all risks associated with hydrogen heating, storage and distribution. The HSE has also set up a future hydrogen regulatory workstream to assess the suitability of HSE enforced regulations. This work will consider the regulatory and legislative changes that will be required to enable a potential larger roll out of 100% hydrogen for heating.

The HSE will also develop options for any necessary amendments to the health and safety regulatory frameworks. This will

contribute to potential policy options for future safety regulation in the final quarter of 2024, followed by written advice to the Department for Energy Security and Net Zero in March 2025 ahead of the final decision on hydrogen for heating in 2026. Therefore, if greater volumes of hydrogen do enter the UK gas distribution network it will only be after a complete safety review.

CASE STUDIES: SUCCESSFUL IMPLEMENTATION OF HYDROGEN HEATING AND HYDROGEN DHW

Two examples of hydrogen implementation case studies will be used to understand the practical applications and benefits of hydrogen heating. These case studies demonstrate that hydrogen heating is not just a theoretical concept, but a practical and viable solution for reducing carbon emissions and transitioning to a more sustainable energy system.

CASE STUDY 1: THE NETHERLANDS – WWW.HYSTOCK.NL

The Netherlands has taken a leading role in exploring hydrogen heating. The HyStock initiative aims to produce and store hydrogen using excess renewable energy. Stored hydrogen is used to provide heat and power during periods of high demand reducing national reliance on fossil fuels.

CASE STUDY 2: JAPAN

Japan can also be considered a global leader in hydrogen exploration as a sustainable heating solution. The city of Fukuoka has launched a pilot project in which renewably generated hydrogen provides properties both heating and hot water. The project has shown promising results in terms of reducing carbon emissions and increasing energy efficiency.

CONCLUSION:

Hydrogen heating has potential to be a safe and sustainable energy option, however a final decision will only be made after a robust and detailed safety review is presented alongside a comprehensive structure of regulatory framework. Hydrogen offers environmental benefits such as zero carbon emissions and renewable sustainability that reduces fossil fuel utilization, however safety considerations and limited infrastructure are areas that require further development and study.

For details on Hydrogen developments at Rinnai UK visit rinnai-uk.co.uk

Ask ME about decarbonising heating



Ecodan CAHV-R

Scan here



Decarbonising heating is now top of a Facility Manager's to-do-list. Our award-winning **Ecodan CAHV-R Air Source Heat Pump** makes switching from gas easy.

It's the key to reducing your building's carbon footprint, lowering energy consumption, and achieving your Corporate Social Responsibility (CSR) targets.

With our full service and maintenance solutions we go the extra mile. By proactively monitoring system performance for optimal efficiency through remote monitoring, you can ensure maximum performance throughout the life of your heat pump.

View our **Commercial Heating Brochure** and make an enquiry at: heatpumps.me.uk





The Renewable Energy Institute

Join professionals from over 150 different countries worldwide and enrol onto the Renewable Energy Institute's accredited training courses.

All courses are available to study Online, On-demand, providing flexibility to study whenever suits you best. All courses can be viewed at www.renewableinstitute.org

Some of our courses are available to study in the Live Virtual Classroom. The Live Virtual Classroom courses will run on set dates and will feature 1-2 full days (9am – 5pm UK time) of interaction and networking with the lecturer and other delegates. You will have the opportunity to sit the exam for the internationally recognised Galileo Master Certificate online at the end of the course.

All courses are accredited by the CPD accreditation service and count towards your professional development.

On completion of your studies, you will receive 1 year of complimentary REI membership.

For more information, please contact the REI on **+44 131 446 9479** or email us at training@renewableinstitute.org

www.renewableinstitute.org



Live Virtual Classrooms

DATE EVENT

23rd - 24th April	Renewable Energy Management and Finance
7th - 8th May	Hydrogen Energy
9th May	Developing Hydrogen Energy Projects
4th - 5th June	Global Energy Transition
23rd - 24th September	Carbon Finance
30th September	Carbon Capture and Storage

THE CRUCIAL ROLE OF ESG REPORTING TOOLS IN ACHIEVING NET ZERO TARGETS

Daniel Usifoh MSc, MCIPS, Co-founder, Gateway Procurement and AXIOM Sustainability Software



Addressing climate change through sustainability is one of the key business drivers in 2024 and beyond, with organisations in every industry – including energy management – under increasing pressure to transition towards more environmentally responsible practices.

Central to this transition is the concept of net zero – the balance between greenhouse gas emissions produced and removed from the atmosphere. However, achieving net zero isn't just about setting ambitious targets; it means tracking your emissions all the way down.

One of the keys to that is Scope 3 emissions – they're often given the least consideration due to their complex nature, but they make up 80% or more of the emissions for most businesses.

CHALLENGES TRACKING EMISSIONS

One of the primary challenges businesses face on the road to net zero is the manual tracking of metrics associated with environmental, social, and governance (ESG) performance.

From carbon emissions to social impact indicators, gathering and analysing the data can be daunting, especially for organisations with complex operations. The difficulty is exacerbated for Scope 3 emissions, which typically account for over 80% of total emissions. These include emissions from purchased goods and services, employee commuting, and business travel, and are critical to ESG reporting. They're also challenging to monitor and track.

Enter ESG reporting tools – digital solutions designed to streamline the process of data collection, analysis, and reporting related to ESG performance. By using automation and advanced analytics, these tools are a more efficient and effective way to manage a business's sustainability efforts. And, crucially, pinpoint areas of high energy consumption that can be tackled.

Where manual processes are prone to human error and inconsistencies, ESG

reporting tools allow energy management businesses to accurately track their environmental footprint, identify areas for improvement, and measure progress towards net zero targets.

At the heart of ESG reporting tools is their ability to simplify the complex task of sustainability reporting. By aggregating data from various sources and providing intuitive dashboards and analytics, these tools empower businesses to gain actionable insights into their ESG performance. From carbon emissions to water usage to diversity and inclusion metrics, energy organisations can now access a comprehensive view of their sustainability efforts, enabling informed decision-making and strategic planning.

SCOPE 3 EMISSIONS

ESG reporting tools are crucial in addressing the specific challenge of Scope 3 emissions. From initial calculation to ongoing monitoring and support, these tools allow businesses to engage directly with suppliers, identify emission hotspots within the supply chain, and implement targeted strategies for emission reduction. By integrating Scope 3 emissions into their sustainability initiatives, businesses can enhance their overall ESG performance and contribute significantly to the fight against climate change.

Identifying the low-hanging fruit is another area where ESG reporting tools excel. By analysing data trends and identifying areas with the greatest potential for impact, these tools help businesses prioritise their sustainability efforts. Whether it's reducing energy consumption, improving waste management practices, or enhancing supplier diversity, ESG reporting tools provide actionable insights that enable organisations to focus their resources where they matter most. This targeted approach accelerates progress towards net zero and maximises the return on investment in sustainability initiatives. And crucially, it reduces wasted time and effort, which can be a real risk for all sustainability programmes.

ESG reporting tools provide transparency and accountability – critical factors in building trust with stakeholders, including investors, customers, and regulators. By openly disclosing their ESG performance data and goals, businesses demonstrate a commitment to responsible business practices and invite scrutiny from external parties. This transparency helps build credibility and fosters a culture of continuous improvement as companies strive to meet and exceed their sustainability targets.

CONCLUSION

ESG reporting tools are indispensable assets for energy management businesses on the journey towards net zero. By automating data collection, providing actionable insights, and addressing challenges such as Scope 3 emissions, these tools empower organisations to make informed decisions and drive meaningful change. As sustainability continues to move to the forefront of corporate agendas, investing in ESG reporting tools is not just a strategic advantage – it's a pathway to a more sustainable future for all.

ABOUT THE AUTHOR

Daniel is an experienced, senior-level sustainable procurement professional passionate about helping organisations in the Humber region and across the UK achieve their sustainability objectives.

He's the Co-Founder of Axiom Sustainability Software. This innovative cloud-based platform helps businesses monitor, analyse, and improve sustainability performance in their organisations and throughout the supply chain.

ESG Reporting Software & Sustainability Tools | Axiom <https://axiom-sustainability.com/>

HOT TOPIC – WATER QUALITY IN THE UK

While water quantity has long been hitting the headlines as one of the main issues of the water crisis, with extreme weather events like droughts and flooding taking centre stage over the last few years, water quality on the other hand has been flying under the radar somewhat... until now that is.

Keeping rivers, lakes and streams healthy is an absolute must to sustain life on earth, but it seems that water pollution is a growing problem in many parts of the world – especially here in the UK.

Figures from the United Nations Environment Programme – highlighted by the University of Birmingham – show that 34 per cent of 130,000 water bodies around the world failed to achieve good chemical status in 2020.

Furthermore, 100 per cent of rivers in England, Belgium, Germany and Sweden failed to hit the standards required, while more than two-thirds of rivers in the US saw similar results.

Part of the problem now is that there are thousands of pollutants at detectable concentrations to be found in the natural environment, with the use of fertilisers, pesticides and pharmaceuticals increasing worldwide.

In addition, climate change and land use are both having an impact on the water cycle, with pollution transport accelerated by extreme storms and altered surface/subsurface drainage. Natural ecosystem removal processes are also reduced by pressures such as these, increasing the risk of pollution as a result.

SPOTLIGHT ON: THE UK

The level of pollution in the UK is such that the country consistently ranks as one of the worst in Europe for coastal water quality, while just 14 per cent of the nation's rivers are currently classified as being in good ecological health.

A recent parliamentary committee report described the rivers in England as a dangerous “chemical cocktail” of agricultural waste, sewage and plastic, all of which is naturally having a long-lasting impact on water quality, reducing biodiversity, affecting the ocean's ability to store carbon and creating massive algae blooms that put ecosystems and aquatic life at serious risk.

And, of course, the increasing amount of pollution in our waterways also puts human health at risk. Who can forget what happened in Sunderland back in August last year, where at least 57 people came down

with sickness and diarrhoea after competing at the World Triathlon Championship Series.

Sewage pollution in particular appears to be especially problematic, with recent research from the University of Oxford showing that sewage discharge into rivers has a bigger impact on water quality and local biodiversity than agricultural runoff.

It was found that treated sewage discharge was the best predictor of sewage fungus abundance, bottom-dwelling algae and high nutrient levels, regardless of whether land use was urban or agricultural.

HOW DOES SEWAGE POLLUTION HAPPEN?

Part of the problem in the UK is that our ageing infrastructure system is no longer fit for purpose, with much of it constructed during Victorian times.

Investments on the part of water companies have been insufficient to afford the natural environment the protection it needs, so instead sewer overflows (of which there are 18,000) are used to discharge raw sewage into coastal waters and rivers.

While these discharges are legally permitted during periods of heavy and intense rainfall to prevent sewage from backing up into properties, water companies have also been making so-called dry spills with increasing regularity, using combined sewer overflows for discharge when there has been no rain.

This, coupled with the fact that regulation is currently too weak to serve as any kind of real deterrent, means that there's no real pressure on water suppliers to make significant changes to their behaviour.

It's also just emerged that the government is delaying its pledge to bring an end to water companies being able to self-report environmental performances, which means that the system continues to be easily open to abuse.

WHAT ACTION IS BEING TAKEN?

Earlier this month (February 20th), the government announced that inspections of water companies will more than quadruple in a bid to crack down on poor environmental performance.

More than 930 such inspections of supplier assets have already been completed so far this financial year, but the aim is to increase this to 4,000 a year by the end of March 2025 and then up to 10,000 from April 2026.

An increase in unannounced inspections is also on the cards to strengthen oversight



of companies and drive down reliance on the self-monitoring programme, which was set up back in 2009.

Alan Lovell, chair of the Environment Agency, said: “Last year we set out measures to transform the way we regulate the water industry to uncover non-compliance and drive better performance.

“Today's announcement builds on that. Campaign groups and the public want to see the Environment Agency better resourced to do what it does best – regulate for a better environment.

“Proposals to get extra boots on the ground to increase inspection visits will help further strengthen our regulation of the industry.”

Other action taken to improve the water environment includes monitoring 100 per cent of England's storm overflows and removing the cap on civil penalties for suppliers while broadening the scope so that more immediate action can be taken against polluters.

The Storm Overflow Discharge Reduction Plan has also been expanded to improve protection for coastal and estuarine waters, while £60 billion has been made available over 25 years to refurbishing ageing infrastructure and reduce sewage spills by hundreds of thousands each year.

HOW CAN BUSINESSES HELP?

Including water quality management in your business practices means you can be part of the solution, rather than part of the problem. This can be achieved through developing supplier codes of conduct, training, awareness initiatives and contractual obligations across the supply chain.

The first step towards improving water management is to deepen your understanding of how you use water and where.

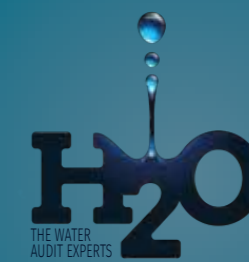
A water audit of your entire site will tell you what you need to know, allowing you to identify areas ripe for improvement. This in turn will ensure you're better protecting the environment and boosting your green credentials at the same time.

If you'd like to find out more, get in touch with the H2o Building Services team today. <https://www.h2obuildingservices.co.uk/>

PUBLIC SECTOR

WITH NO SIGN THAT THE SQUEEZE ON GOVERNMENT SPENDING WILL BE RELAXED ANY TIME SOON, PUBLIC SECTOR FINANCES WILL CONTINUE TO BE UNDER THE MICROSCOPE.

The challenge laid down to public sector bodies is simply this – find more efficient, cost-effective ways to spend taxpayers' money, while maintaining service levels. Waste is simply no longer an option, from procurement through to utilities.



H2O Building Services helps public sector bodies reduce unnecessary costs by cutting their water bills. By lowering water usage, improving efficiency and monitoring bills for overcharging, we save organisations an average of 30% on their water costs. When you are looking for ways to keep a lid on budgets, that is not to be sniffed at.



CUTTING WATER COSTS

Our professional consultancy team can draw on more than 30 years' experience' in the water industry. We understand water supply and sewerage services inside out and we specialise in managing costs across large, complex organisations.

We offer a complete end-to-end service for water cost reduction, from checking your bills are accurate and fair through to installing on-premise systems which will help save you money over time. We have earned a strong reputation for outstanding service and achieving impressive results for public sector clients.

Read about how we saved Haringey Council £40,000² after carrying out a full audit of water usage across all of its premises. Or find out how we saved HM Prison Service £57,000³ after identifying a water leak at HM Pankhurst, and also by cutting sewage charges for laundry effluent.

GETTING STARTED

In the first instance, we will ask a public sector client to supply water billing records for all of its properties, stretching back several years if possible.

We understand that public sector organisations are large and may operate a high number of premises. But this is a crucial step which can straight away help us identify whether charges look right for the type and use of the property.

After carrying out a thorough analysis of billing records, we will audit water use⁴, including carrying out site visits where we think it necessary. The water audit will form the basis of all recommendations we make for cutting water costs, from reducing water use to seeking refunds for overcharging, tackling leaks and waste to ongoing monitoring.

Share:



WATER BILL REFUNDS

If we spot mistakes in the water bills for any of your properties, we will advise whether they have led to you being overcharged. If you have paid too much for your water services, our experienced consultants will seek a refund on your behalf from your water supplier.



REDUCING WATER WASTE

One of the biggest causes of inflated costs on water bills is waste. If, for example, you have one or more leaks at any of your properties, you will be charged for that excess water which you never use. In addition, you could be incurring extra costs for water drainage, not to mention potentially massive bills for water damage repairs.

We offer full site surveys as part of our consultancy service, including water leak detection⁵. If we identify a problem, we will first compile a full report, outlining the size of the leak, the potential damage it might be causing, and the impact on your bills. We will then submit a cost proposal for repairs, aiming to achieve a robust, quality solution in the most cost-effective and least disruptive way possible.

We can also recommend installations aimed at improving water efficiency⁶ at your premises.

These include things like Flow-Tec P.I.R urinal flush controls, Pressure Reducing Valves (PRVs) and Aeroflow low flow showers. We can also advise on water recycling⁷ for using waste water in things like lavatory systems. Again, all proposals are fully costed, and we will also include an expected payback period, usually achieving an average of between 9 and 12 months.

1. www.h2obuildingservices.co.uk/about-us/
2. www.h2obuildingservices.co.uk/case-studies/haringey-council/
3. www.h2obuildingservices.co.uk/case-studies/hm-prison/
4. www.h2obuildingservices.co.uk/our-services/water-audits/
5. www.h2obuildingservices.co.uk/our-services/water-leak-detection/
6. www.h2obuildingservices.co.uk/our-services/saving-water/
7. www.h2obuildingservices.co.uk/our-services/water-recycling/
8. www.h2obuildingservices.co.uk/our-services/bill-validation/
9. www.h2obuildingservices.co.uk/our-services/amr/

ONGOING MONITORING

We understand that reducing costs is not a one-off exercise, but part and parcel of daily life for public sector organisations. We can help you keep on top of your water billing long term, making sure you are never charged more than you should be and keeping your water usage in check.



Through our water bill validation⁸, we will check each bill before you receive it, vetting it against actual usage and resolving any discrepancies with your supplier before it comes to authorising payment.

We also offer Advanced Meter Reading (AMR)⁹

a highly sophisticated water tracking technology, which can monitor water flow on an hourly basis. Any unusual spikes in water usage automatically trigger an alert, which we will pick up and respond to straight away.

Call a your public sector water experts now on

0845 658 0948

Alternatively, you can email us at info@h2obuildingservices.co.uk

Buying and Using Utilities

LIVE

25 April 2024

IET, Savoy Place, London

<https://meucnetwork.co.uk/events/spring-conf24/>

Calling all Large Energy and Water Users

This premier event, brings together industry experts, policy makers, and major energy users to explore the latest trends, innovations, and strategies in utility management.

Why Attend?

Insightful Content: Learn from industry leaders.

Networking Opportunities: Connect with peers and experts.

Actionable Strategies: Leave with practical knowledge.

Don't miss out on the opportunity to learn, connect, and collaborate with other professionals in the energy and water industry. Secure your place today.



event supporters:



event partner:



powered by:

