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INSIDE THIS ISSUE:

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The Necessity of Measuring Energy Use

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INSIDE

NAVIGATING THE FUTURE OF ENERGY AND WATER MANAGEMENT

The landscape of energy and water management is undergoing a major transformation. With evolving regulations, unpredictable pricing, and increasing pressure to meet decarbonisation goals, businesses must take a more strategic approach to procurement and consumption. Failure to adapt could result in rising costs, operational challenges, and reputational risks. In this shifting environment, organisations that make informed decisions about their utility management will gain a significant competitive advantage.

To support businesses in these critical areas, MEUC is hosting its next Buying and Using Utilities Live conference and exhibition on 26 March 2025 at the IET, Savoy Place in London. The event will focus on risk management, cost optimisation, and sustainability, offering insights into the regulatory and economic trends shaping utility markets.

Taking a day to attend an event is a commitment, but the rewards are significant. MEUC's events deliver high-value insights and actionable strategies that make time away from daily operations worthwhile. Through expert discussions, market intelligence updates, and peer networking, attendees gain tools to cut costs, boost efficiency, and enhance sustainability.

"In today's volatile marketplace, knowledge isn't just power—it's profit. That's why Buying and Using Utilities Live is dedicated to delivering the insights, connections, and strategies you need to manage energy and water costs, stay ahead of new regulations, and build resilience. I look forward to welcoming you on the day and exploring how MEUC can support you in tackling these challenges head-on." ***Robin Hale, Chief Executive, MEUC***

A COMPREHENSIVE AGENDA ADDRESSING KEY MARKET CHALLENGES

The morning sessions will look at the most pressing market developments, from imminent regulatory shifts like REMA reforms to updates on the capacity market, which influence procurement decisions. Attendees will explore how to integrate risk management with sustainability goals, with a particular focus on using PPAs to stabilise energy costs. Another session will address the challenges of water and energy resilience in an increasingly resource-scarce world, covering rising water costs, stricter regulations, and geopolitical factors that may disrupt supply chains.

The afternoon will highlight innovations shaping the future of energy management. Experts will explain the implications of Market-Wide Half-Hourly Settlement for metering infrastructure and explore on-site generation solutions that drive both cost efficiency and carbon reduction. A session on data analytics will reveal how real-time insights can guide more strategic decision-making. The conference will conclude with an integrated look at energy and water issues, offering a holistic perspective on emerging technologies and case studies that translate industry best practices into actionable strategies.

BRIDGING STRATEGY AND INNOVATION: THE EXHIBITION EXPERIENCE

BUU Live is more than just a conference – it's an opportunity to connect directly with top suppliers, service providers, and innovators. The exhibition will showcase the latest advancements in procurement, monitoring, and resource management. Delegates can network, explore new technologies, and discuss metering, contract strategies, and energy services with experts. Attendees find these conversations key to clarifying their next steps and streamlining decision-making.

PEER LEARNING AND COLLABORATIVE SOLUTIONS

Equally valuable is the opportunity to connect with industry peers facing similar challenges. Energy managers, procurement specialists, and sustainability leaders attending will each bring unique insights and experiences. Interactive Q&A forums will facilitate open dialogue, enabling participants to compare strategies, uncover hidden efficiencies, and establish professional connections.

For major energy users, utility decisions extend far beyond immediate cost savings. Increasing regulatory scrutiny, ambitious net-zero commitments, and shifting global dynamics place growing pressure on procurement and operational strategies. BUU Live offers a full day of expert analysis, peer-driven learning, and actionable solutions that aim to enhance both cost efficiency and long-term resilience.

THE IMPORTANCE OF STAYING INFORMED AND CONNECTED

MEUC is renowned for uniting industry leaders, policymakers, and technology pioneers at their events. Whether your organisation aims to reduce costs or accelerate sustainability, this event offers the insights and knowledge needed to build a solid, future-ready strategy.

By aligning financial goals with sustainability commitments, organisations can establish a foundation for ongoing success, ensuring that they stay ahead in a constantly evolving sector.

IS ATTENDING WORTH YOUR TIME? ABSOLUTELY.

With rising energy prices, stricter regulatory requirements, and growing sustainability expectations, staying informed is no longer optional – it's imperative. Event attendees will benefit from market intelligence, expert insights, peer discussions and key connections that could directly influence procurement decisions.

Join us at Buying and Using Utilities Live to gain the knowledge, strategies, and connections necessary to optimise your organisation's utility management. Visit **https://meucnetwork.co.uk/events/buu-live-spring25/** to learn more and register.

THE FUTURE OF NON-DOMESTIC ENERGY: PRICES, FLEXIBILITY AND INNOVATION

Mudi Abeysekera, Advisor – Decarbonisation of Complex Sites. Energy Systems Catapult

Energy markets are changing rapidly due to fluctuating prices, new regulations, the push for sustainability, and advancements in technology. In recent years, organisations have faced rising energy costs, affecting their operations, profitability, and financial sustainability.

The energy market is becoming more flexible and dynamic, with the recent Review of Electricity Market Arrangements (REMA) signalling major reforms that will help to build a cleaner, more affordable, and secure electrical power system. Innovations in energy markets are reshaping how organisations buy, manage, and consume energy. The rollout of smart meters and the shift towards digitalisation are fuelling innovation, empowering retailers to offer a broader range of flexible, data-driven products and services tailored to consumer needs.

In this article we explore key developments that may change the way non-domestic customers interact with the energy markets in the coming years.

TIME-OF-USE TARIFFS

Time-of-use (TOU) tariffs offer different prices for electricity based on the time of day, encouraging organisations to use more energy during off-peak periods when prices are lower. Traditional TOU tariffs, like Economy 7 and Economy 10, have long provided cheaper electricity rates at night. However, newer, more advanced TOU tariffs are now becoming available, adjusting prices in real time based on market conditions. For example, Octopus Energy's Shape Shifters-Agile tariff offers half-hourly pricing linked to wholesale rates, allowing non-domestic consumers to optimise their energy usage and reduce costs

TYPE-OF-USE TARIFFS

A **type-of-use** tariff is a pricing plan that offers different electricity rates based on how the energy is used, rather than the time of day. These tariffs are designed for specific technologies or appliances, such as electric vehicle (EV) chargers, heat pumps, or battery storage. For example, OVO Energy's **"Drive Anytime"** tariff provides a lower rate for domestic customers charging EVs with a smart charger. While similar options are not yet widely available for non-domestic consumers, they could become an important way to reduce costs and support the shift to smart, low-carbon energy solutions.

TIME-MATCHED TARIFFS

Time-matched tariffs ensure that the renewable energy you procure corresponds to your actual electricity consumption for each half hour period. This half-hourly time matching is crucial for truly reducing the carbon footprint across the energy system, supporting grid stability, and making the most of renewable energy when it's available. This not only lowers costs across the energy system but also **ensures your energy is genuinely green**, giving organisations full transparency and control over their sustainability efforts.

POWER PURCHASE AGREEMENTS (PPAS)

PPAs are increasingly being adopted by public sector organisations and large businesses seeking long-term price stability and renewable energy sourcing. These agreements allow businesses to procure electricity directly from renewable generators, locking in competitive rates for up to 25 years. While long-term contracts dominate, shorter-term PPAs (2-5 years) are also becoming available for operational assets, offering organisations greater flexibility.

LOCAL ENERGY CLUBS

Local community energy clubs are groups that bring together communities to invest in local renewable power generation. These clubs can help domestic and non-domestic customers in the local area access cheaper, green energy from nearby sources. Participants of these schemes contribute to local environmental goals, promoting local energy independence and reducing reliance on centralised energy systems. See **energylocal.org.uk** for case studies of local energy clubs.

SMART ELECTRICITY EXPORTS

Onsite renewable generation can produce valuable surplus energy, which can vary significantly in market value based on the selling method used. With growing interest in self-electricity generation, organisations with solar panels or other renewable assets can now participate in rewarding energy export schemes. Companies like Open Power and other initiatives enable businesses to secure better returns on surplus energy exports.

ENERGY MARKET INTERMEDIARIES

Given the increasing complexity of the energy market, many non-domestic customers are turning to market intermediaries to navigate energy procurement decisions. These intermediaries offer market intelligence, price comparisons, collective/auto switching, contract negotiation, and risk management services, helping businesses secure the best deals while aligning procurement with sustainability objectives. As these energy market intermediaries are poised to play a growing role in the future energy retail market, it's encouraging to see that Ofgem, the UK's energy regulator, is considering regulatory oversight for these entities.

FLEXIBLE POWER SCHEMES

Demand response and grid flexibility services, once the domain of large industrial users, are now opening up to SMEs and public sector sites with flexible energy assets. Companies like KiWi Power aggregate energy flexibility, enabling smaller organisations to participate in flexible power schemes and benefit from financial incentives. These programs allow organisations to generate an additional revenue stream by adjusting consumption during peak grid demand periods and managing on-site power generation using assets like batteries for power grid needs.

CONCLUSION

Energy markets are undergoing a profound transformation, driven by digitalisation, flexibility, and the push for sustainability. Innovations such as advanced tariffs, local energy clubs, PPAs, and smart electricity exports are reshaping how non-domestic customers engage with energy. As regulatory reforms like REMA take shape, organisations that proactively adapt to these changes, leveraging new procurement models, market intermediaries, and demand flexibility, will be best positioned to control costs, reduce risk, and meet their sustainability goals. To stay competitive, organisations must embrace these innovations and actively participate in shaping the future of the energy market.

www.es-catapult.org.uk

POWER TO THE PEOPLE: HOW IDNOS CAN SUPERCHARGE THE PUBLIC SECTOR'S PATH TO NET ZERO

With net-zero deadlines fast approaching, the UK public sector faces a paradox: big targets with small budgets. Despite bold goals, much of the sector remains unaware of key tools that could transform the electrification journey. The recent Vattenfall Networks seminar revealed an astounding gap in awareness – of the attendees, only one of 15 had heard of IDNOs. Yet IDNOs might just be the accelerant needed to bring the Public Sector's green ambitions to life.

As councils and NHS trusts strive to meet net-zero targets, many are only just discovering the role that Independent Network Operators (IDNOs) could play in their journey. According to the UK Government's Net Zero Strategy: Build Back Greener, the public sector is expected to lead by example, transitioning to sustainable energy solutions across all infrastructure projects. However, with government funding spread thin, reaching these ambitious targets demands creative, cost-effective solutions, like IDNOs. Brent Council's Francesca Campagnoli captured the current knowledge gap perfectly: "This was all completely new to me". With so much at stake, the public sector's introduction to IDNOs is long overdue.

THE KNOWLEDGE GAP

This lack of familiarity with IDNOs isn't just surprising – it's a barrier. The Public Sector Decarbonisation Scheme (PSDS), which has allocated over £1 billion to assist public bodies in reducing emissions, has been crucial but still leaves funding gaps. Jacob Kupferberg, from Brent London Borough Council, highlighted these challenges: "The two main obstacles are governance and funding". Limited resources and complex bureaucratic processes slow down decarbonisation efforts, while public scrutiny adds pressure to perform efficiently.

IDNOs like Vattenfall Networks are designed to bridge some of these gaps, offering a lifeline through both funding and project acceleration. Their Asset Adoption Value (AAV) payments, a concept new to most public sector organisations, can significantly reduce upfront infrastructure costs. By reducing initial project expenses, AAV payments ease budgetary pressures, helping councils and trusts improve the economics of their electrification projects.

Suzanna Lashford, Head of Business Development at Vattenfall Networks, explained the rationale: "The public sector is under pressure to deliver ambitious net-zero goals with limited budgets. IDNOs can be the key to unlocking these projects, giving councils and NHS trusts the financial support to move forward with electrification". With increasing emphasis on decentralisation and local accountability, as noted in the government's Ten Point Plan for a Green Industrial Revolution, partnerships with IDNOs align with these goals by offering flexible, localised solutions.

FROM THEORY TO PRACTICE: BEYOND FUNDING

IDNOs offer more than just funding. They bring a streamlined, end-to-end approach to grid connections, which many organisations discovered could fast-track their projects. Francesca observed, "If IDNOs have priority on highway permits, it means they can perform grid connections more efficiently". For councils managing time-sensitive projects, this competitive edge is a game-changer, particularly in urban regeneration or infrastructure-heavy initiatives where delays are common.

Severine Turgis from Central London Community Healthcare NHS Trust emphasised how IDNOs simplify project delivery: "Knowing that they [IDNOs] help with applications and follow through on commitments gives me confidence when I pitch the idea to my directors". This full-cycle support fills critical resource and expertise gaps, allowing public sector teams to focus on the bigger picture of decarbonisation without being weighed down by logistical barriers.

For many, learning about IDNOs was eye-opening. Joy Olokpa, Carbon Zero Program Manager at Hammersmith and Fulham Council, valued IDNOs' comprehensive support, noting that they could "relieve some of the burden on us by managing every step". The Public Accounts Committee recently pointed to the need for better infrastructure management within the public sector, emphasising that streamlined processes and external expertise could enhance project efficiency. IDNOs, with their holistic approach, seem well-suited to meet these recommendations.

A CALL TO ACTION FOR THE PUBLIC SECTOR

If public sector organisations are serious about meeting net-zero goals, IDNOs need to be part of the conversation. This starts with educating key stakeholders – energy managers, sustainability directors, and facilities teams – on the advantages IDNOs offer. The UK public sector is at a critical crossroads, balancing ambitious net-zero targets with tight budgets and limited awareness of key solutions. IDNOs present a promising path forward, offering both financial and operational support that can help councils and NHS trusts navigate the challenges ahead. It's time for the public sector to recognize the value of IDNOs, unlocking a partnership that could prove vital to achieving a sustainable future. **www.vattenfall.com**

INSIGHTS AND IMPLICATIONS OF UK WHOLESALE ELECTRICITY PRICES FOR BUSINESSES

UK wholesale electricity prices has been a focal point of discussion and analysis, especially given the recent volatility and price fluctuations. In this article, Service Delivery Director at TEAM Energy, Graham Paul delves into the trends and their implications for UK businesses.

The UK wholesale market energy crisis has been a challenging period for businesses, marked by increased costs and operational difficulties.

RECENT TRENDS AND MARKET INSIGHTS

Over the past year, the UK wholesale electricity market has exhibited notable trends:

- Price Peaks and Troughs: Prices spiked during high demand and low renewable generation periods, while dipping during high renewable output and lower demand.
- Increased Renewable Generation: The growing integration of renewables has contributed to a more sustainable energy mix, stabilising prices despite their inherent volatility.
- Impact of Fuel Prices: Fluctuations in natural gas prices have significantly influenced electricity prices, underscoring the interconnected nature of energy markets.

IMPACTS ON UK BUSINESSES

The energy crisis has profoundly affected UK businesses:

1. Higher Energy Bills: Increased costs have eroded profits and raised operational expenses.
2. Price Increases: Businesses have had to raise prices, potentially impacting sales and profit margins.
3. Operational Adjustments: Some businesses have reduced hours, closed temporarily, or laid off staff to manage rising energy costs.
4. Delayed Investments: Higher costs have led to delays in planned investments and growth initiatives.
5. Competitive Disadvantage: Energy-intensive businesses have faced a competitive disadvantage compared to those with lower energy needs.

LABOUR GOVERNMENT'S KEY ENERGY POLICIES AND ACTIONS

The Labour government has introduced several key energy policies:

KEY ENERGY POLICIES

1. Net Zero by 2030: Aiming for a net zero electricity system by 2030, increasing renewable energy sources.
2. Great British Energy: Establishing a public energy company to control UK energy production.
3. Energy Efficiency Upgrades: Upgrading homes to improve energy efficiency and reduce fuel poverty.
4. Onshore Wind and Solar: Lifting the ban on new onshore wind farms and promoting rooftop solar to triple capacity by 2030.
5. National Wealth Fund: A £7.3 billion fund to support energy projects.
6. Planning Reforms: Easing the building of energy infrastructure.
7. Onshore Wind Taskforce: Collaborating with industry to overcome barriers to wind farm development.
8. Onshore Wind Industry Taskforce: Collaborating with industry and regulatory bodies to overcome barriers to wind farm development.

CHALLENGES AND RISKS OF INCREASED RENEWABLE ENERGY

Renewable energy sources like wind and solar are intermittent, leading to price volatility in the wholesale market. The UK uses a marginal cost pricing system, where the price is set by the most expensive method needed to meet demand, often natural gas. This can still influence wholesale prices despite cheaper renewable production.

Here's how it works:

1. Electricity Generation Mix: Electricity is generated from various sources, including natural gas, coal, biomass, nuclear, hydro, wind, and solar. Each of these sources has different production costs.
2. Demand and Supply Matching: To meet the electricity demand at any given time, the grid operator dispatches electricity from the cheapest available sources first (e.g., wind, solar). If demand exceeds the supply from these cheaper sources, more expensive sources (e.g., natural gas) are brought online.
3. Setting the Price: The price of electricity for all suppliers is set by the cost of the last (most expensive) unit of electricity needed to meet the total demand. This is known as the "marginal cost."

Integrating more renewables requires costly grid upgrades. Energy storage solutions and balancing mechanisms are needed to mitigate intermittency, adding to overall costs. Ensuring policies and regulations keep pace with renewable growth is crucial to avoid uncertainty and hindered investment.

While renewable energy offers long-term benefits for sustainability and cost reduction, addressing these challenges is essential to ensure a stable and efficient wholesale electricity market.

GEOPOLITICAL EVENTS IMPACTING UK WHOLESALE ELECTRICITY PRICES

The UK wholesale electricity market is interconnected with global energy markets, making it susceptible to geopolitical events that cause price fluctuations. Key factors include:

- **Russia-Ukraine Conflict:** One of the most significant events to impact the UK energy market, this conflict led to a 12% surge in gas prices in January 2025 due to disrupted gas exports via Ukraine. The increased competition for LNG in Europe has driven up prices globally.
- **Middle East Instability:** The Middle East remains a major source of global energy supply, producing nearly 30% of the world's oil. Tensions in the region caused Brent crude oil prices to rise by 4% in late December 2024, impacting gas and electricity costs.
- **US Energy Policy:** In December 2024, President Biden banned new offshore oil drilling in US coastal waters to tackle climate change, reducing future US oil production and potentially straining global supply. The US has been a key LNG supplier for Europe and the UK since the Ukraine crisis. President Trump plans to reverse this ban, aiming to increase oil and gas production by unfreezing offshore drilling and lifting fossil fuel restrictions. These policy changes can influence global oil prices, market dynamics, and international relations.
- **Sanctions:** These can significantly impact energy markets. For instance, Western sanctions on Russia after the 2014 Crimea annexation hindered their energy infrastructure investments, raising natural gas prices due to perceived risks. Ongoing sanctions related to the Russia-Ukraine conflict continue to influence energy prices, contributing to market volatility.

IMPACT OF OFGEM'S MHHS PROGRAMME ON UK WHOLESALE PRICES

The Market-wide Half-Hourly Settlement (MHHS) Programme aims to create a more flexible, efficient, and accurate electricity market by settling all trading based on half-hourly data. This can lead to:

1. Efficient Market Operations: Reducing discrepancies and improving market operations
2. Accurate Price Signals: Reflecting the true cost of serving customers at different times.
3. Reduced Price Volatility: Leading to more stable prices.
4. Innovative Solutions: Enabling new products and services like time-of-use tariffs and vehicle-to-grid solutions.

Image by Tom from Pixabay

MHHS BENEFITS FOR BUSINESSES

Businesses in the UK can expect several benefits from the MHHS Programme:

1. More efficient market operations and accurate pricing can lead to lower energy costs for businesses
2. Access to detailed half-hourly consumption data allows businesses to better manage their energy usage and identify opportunities for savings.
3. The programme will support the development of innovative energy solutions, such as battery storage and smart appliances, providing businesses with more options to optimise their energy consumption.
4. By enabling a more flexible and efficient energy market, the MHHS Programme supports the UK's transition to a low-carbon economy, helping businesses meet their sustainability targets.

MHHS PROGRAMME RISKS

The MHHS Programme, valued at £1.6 billion in net benefits from 2021 to 2045, aims to improve market efficiency, reduce costs, and enhance flexibility. However, several risks need effective management:

1. System Changes: Transitioning to half-hourly settlement involves complex changes, potentially causing delays and increased costs.
2. Data Privacy: Handling large volumes of consumption data raises privacy and security concerns.
3. Market Readiness: The readiness of suppliers and network operators to adopt new processes is crucial.
4. Financial Costs: Implementation costs may exceed initial estimates.
5. Regulatory Compliance: Ensuring compliance with regulations throughout the process is vital.
6. Stakeholder Coordination: Effective engagement with industry participants and consumers is necessary for smooth implementation.

CONCLUSION

The UK wholesale electricity market has seen significant changes over the past year due to fuel costs, renewable energy integration, weather conditions, geopolitical events, and regulatory changes. Businesses must stay informed about these trends to make strategic energy procurement decisions and optimise their energy strategies. For more detailed insights on wholesale electricity prices visit **https://www.teamenergy.com/discover/wholesale-market-review/**

Organisations in the UK face growing pressure to meet net zero targets. Energy efficiency has the greatest potential to make the biggest impact on organisations' emissions, energy use, and costs in the shortest amount of time.

According to the International Energy Authority (IEA), over the last two decades, global energy efficiency measures have halved the amount of carbon emissions that would have otherwise been released due to population and income growth. Between 2000 and 2022 alone, energy efficiency measures have helped reduce the energy intensity in buildings and transport by 35% globally.

Many organisations haven't done the basics of energy efficiency improvements, which means each one has a wealth of untapped potential for carbon reductions and energy savings. **www.teamenergy.com**

RINNAI INTRODUCES NEW INNOVATIONS IN UNVENTED WATER HEATERS & INDIRECT STORAGE SOLUTIONS

Rinnai is introducing a wide and comprehensive selection of unvented water heaters to add to and complement the existing range of cylinders solutions.

To learn more visit **https://www.rinnai-uk.co.uk/products/electric-storage-hot-water-solutions**

Key features of the Rinnai unvented water heaters are:

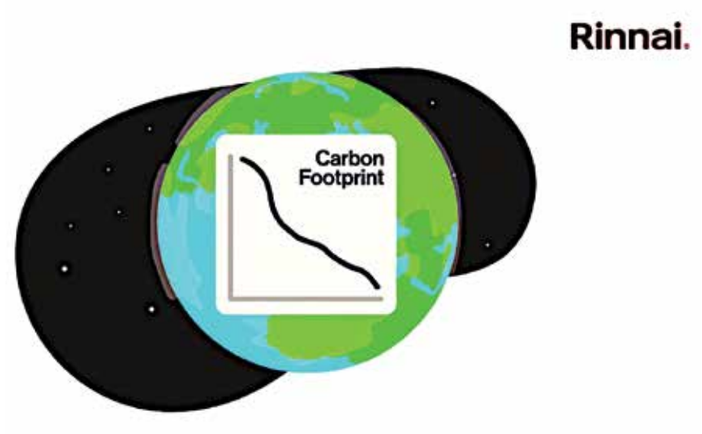
- **Venturi Technology:** The units use patented Venturi technology to minimise expansion, ensuring minimal ongoing maintenance and optimal performance.
- **High Efficiency:** Engineered to give maximum energy efficiency.
- **Durability:** Built with high-quality Duplex stainless steel, the cylinders are designed to last, giving long-term reliability.
- **Ease of Installation:** With a user-friendly design, the installation process is straightforward, saving time and effort.
- **Safety First:** Equipped with advanced safety features, including a factory-fitted 7bar/90ºC pressure and temperature relief valve.
- **Eco-Friendly:** Featuring CFC/HCFC-free thermal insulation, our cylinders are designed with sustainability in mind.

Rinnai continuously expands and updates its entire product offering to include all fuels and appliances for installation as stand-alone units or as part of hybrid systems for larger commercial sites.

The range is available in a wide selection of capacities – from 80–500 litres and in the following model types – built in expansion, Solar, Slimline, SuperSlimline, Horizontal, Heat Pump and in Heat Pump 28.

Rinnai's extensive product range includes a wide selection of electric technologies. Rinnai's Infinit-E range is an optional three-phase all-electric water storage heater for commercial hot water applications.

All units are fitted with between one and six titanium elements. The KW rating of the Infinit-E range is scalable from 12kw to 72kw ensuring that all units are suitable for a wide variety of applications. All electrical elements can be fitted to a single-phase supply, should site limitations dictate.



Each element within the appliance range has its own controllable thermostat with a temperature range of between 49 and 90° Celsius. All elements are fuse protected and there is no need for expensive sacrificial anodes due to a tough stainless-steel build.

Each cylinder unit in either unvented or indirect version is manufactured with stainless steel adding durability and enabling extensive warranties. The use of stainless steel also makes the Infinit-E range lightweight and easily manoeuvrable and handled when compared to glass-lined variants. The empty weight of the Infinit-E is 54kg maximum.

Rinnai offer sizing and design support for all heating and hot water heat systems – simply contact the design team today for support on your latest project

Find out more about Rinnai electric storage heaters today: **www.rinnai-uk.co.uk/products/electric-storage-hot-water-solutions**
www.rinnai-uk.co.uk/contact-us/help-me-choose-product

UK energy strategists believe that clean and sustainable electrification is presently one of the best modes of reducing carbon emissions, maximise efficiencies and to also lower end-user customer costs.

Rinnai is determined to offer UK customers assorted options of carbon reducing technology that ensures an improved healthy lifestyle. Rinnai is also keen on informing all UK customers in major changes and developments concerning the international energy market that may affect purchase or power options in the near and far future.

THE BENEFITS OF A 'WHOLE-BUILDING' APPROACH TO INSTALLING HEAT PUMPS

Jordan Noffke,
energy and carbon analyst, Salix

Decarbonising the buildings sector is a key task in our responsibility for tackling the climate crisis. At Salix, we're privileged to work alongside governments across the UK to deliver energy efficiency schemes and help navigate the ambitious net zero targets.

Whilst the UK overall has committed to reach net zero by 2050, Scotland has set its headline task of reaching net zero by 2045 – a full five years ahead of the wider UK target of 2050.

And as the Scottish Government notes, the buildings sector contributes up to 40 per cent of all the UK's carbon emissions. It is clear that emissions reduction should be high on the priority list for every building energy manager.

Although a lot has already been achieved, there is a long way to go.

Our teams are proud to work on delivering inspiring net zero projects in Scotland. We've supported Scottish Government to deliver a number of energy efficiency schemes over the years. These have included, the Recycling Fund, Scotland's Public Sector Heat Decarbonisation Fund, The Scottish Public Sector Energy Efficiency Loan Scheme and Scottish Funding Council schemes.

We are committed to supporting organisations to consider their buildings when addressing climate change issues.

As a key part of government policy via building regulations is the conservation of fuel and power. In recent years (for example, the February 2023 Energy Standards in Scotland), updates to these building regulations have further emphasised the importance of a whole-building approach to reduce energy demand before energy sources are decarbonised.

Standards are set that certain elements of the building fabric must meet when they are renovated, including by specifying minimum U-values and basic insulation improvement measures to take. In the context of decarbonising a building's energy use, a whole-building approach looks beyond the single component of the heat pump, instead prioritising factors such as insulation, air tightness, ventilation, and the thermal performance of windows, walls, and roofs.

In many cases, interventions here can be incredibly cost-efficient.

As part of my work at Salix, I am heavily involved in the Public Sector Decarbonisation Scheme. This is a highly popular funding programme for England which we've been delivering on behalf of government since 2020. Our webinars and guidance strongly emphasise the importance, indeed, necessity, of a whole-building approach.

It's something we talk about all the time across the sectors.

Whilst I'm sure many of our readers will be aware of the importance of a whole-building approach to installing heat pumps, for example, to enable lower flow temperatures, and of course our regulatory responsibilities, I would argue that implementing net zero in the buildings sector via a whole-building approach is both more nimble and more reliable at reducing emissions.

A whole-building approach can help mitigate the 'rebound effect'. The rebound effect is a known behavioural phenomenon that is often associated with efforts to improve sustainability. It refers to a tendency for gains from improvements in efficiency to be lower than expected. The most often cited reason for this is that the cost reductions brought by a technological improvement or efficiency improvement are negated by usage increases that take advantage of this cost decrease, thereby negating some of the consumption reductions.

In the case of an office that might attempt to save energy by reducing the internal set-point temperature of its heating system, a new heat pump might encourage its occupants to raise the set-point temperature slightly to a more comfortable level, their guilt about any planetary impact assuaged by the heat pump's climate-friendly credentials. A whole-building approach that replaced the office's leaky single-glazed windows with new double-glazed units would reduce the total energy demand of the building and help offset any carbon emissions increased associated with a higher set-point temperature.

Taking a country-wide view, a whole-building approach helps mitigate any delays to grid decarbonisation. While heat pumps produce no direct emissions, there may still be emissions associated with the electricity they consume.

As noted by the Treasury's Green Book, the carbon factor for the UK's grid in 2024 is about 0.15kgCO_2e/kWh, which is expected to decrease to 0.05kgCO_2e/kWh by 2030. This is a significant fall that requires a very rapid addition of renewable generation capacity over the next five years.

The UK has decarbonised its grid very rapidly recently, but there are still bottlenecks, particularly around planning permission for large renewables installations, and for grid connections. While renewable-only tariffs are an option for an organisation counting its Scope 2 carbon emissions, reducing energy demand is a sure way to reduce emissions at source and mitigate any slow-down in the grid's decarbonisation. A building that installs cavity wall insulation to reduce its overall heat demand alongside a new heat pump will end up saving more carbon – and faster – than a building that installs only a heat pump.

Those of you who have installed equipment that has radically increased the electricity consumption of their buildings will likely have encountered the issue of upgrading your site's electricity supply. Our experience at Salix in delivering the Public Sector Decarbonisation Scheme indicates that delays in electrical connection upgrades can, at times, hit building decarbonisation projects unawares.

Distribution Network Operators (DNOs) face long queues of connection upgrade requests as building occupants race to decarbonise their sites. A heat pump installation can easily double the power required by a building at peak load. It is not unusual for capacity upgrades to take upwards of two years from initial inquiry to the point of connection.

A whole-building approach could reduce the total size of the heat pumps required, which could in turn increase the amount of heat pump capacity that can be installed without an electricity supply upgrade. It's not quite skipping the queue, but realising you no longer need to be in it.

A whole-building approach to reducing energy demand before the installation of a heat pump has clear cost benefits and is promoted by government guidance, but brings carbon reduction benefits beyond these, including mitigating the rebound effect and any slowdown in grid decarbonisation, as well as potentially reducing the reliance on Distribution Network Operators to deliver electricity upgrades to decarbonise.

What's the saying – change starts at home?

www.salixfinance.co.uk

RINNAI AIR SOURCE HEAT PUMPS SOLUTION FOR HEATING & HOT WATER TO SURREY SPORTS PAVILION

Rinnai has given a local community's much-loved sports pavilion a replacement DHW system which upgrades from its old cylinder system and provides the same peak-time capacity with significantly reduced energy costs along with much lower emissions through utilising the Rinnai R290 heat pump system.

Rinnai offered a choice of solutions all with capital, operational and carbon modelling as part of the offering, so that the decision makers could select the optimum solution for their needs. Based upon the data the site specifically requested an Air-Source Heat Pump replacement.

As a part of the bespoke design service offered by Rinnai three possible solutions were put forward, each with differing recovery times ranging from between two and four hours, with the 2000L in storage staying consistent with the old system's capacity.

After full consultations with the site and the contractor, the system chosen was the 40kW R290 air source heat pump system. Despite the two other possible systems offering quicker recovery periods the client opted for one single heat pump unit. An additional factor governing the decision was the fact that the 40kW R290 system, incorporating 2 x1000 L cylinders, emitted less carbon and was more economical to run in the long term

Figure 1 shows the cumulative running costs of each of the three possible systems across a 5-year period. As shown from the data the original system is significantly more expensive to run compared to the H3 systems. With a £46,772.13 or 170% increase compared to the 23kW R290 systems and a £48,251.10 or 186% increase compared to the 40kW R290 system by year 5.

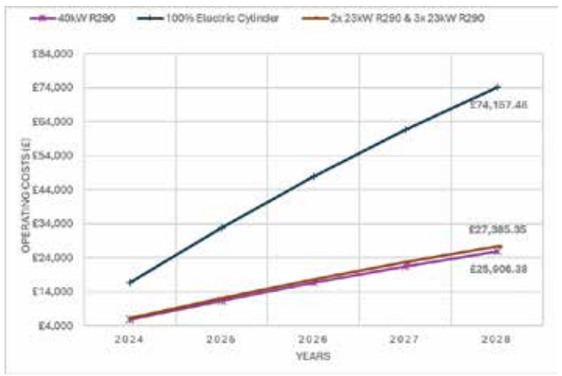


Figure 1: Cumulative Running Costs (OPEX) comparing a H1 and a H3 system for DHW

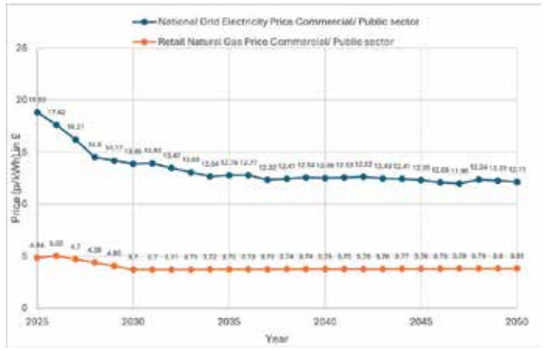


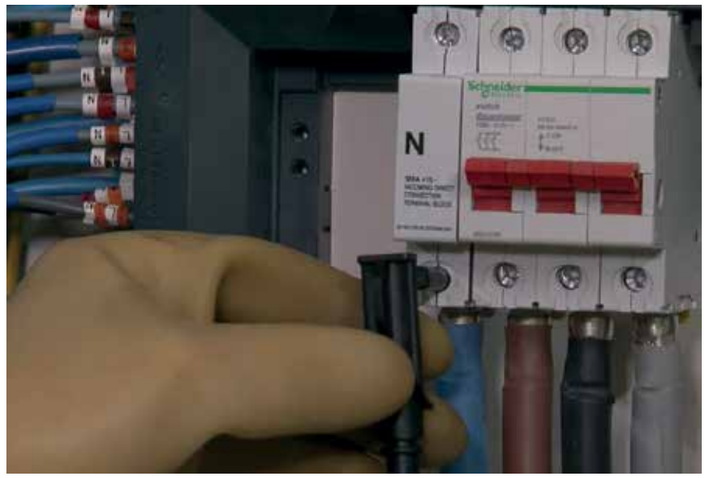
Figure 2: Comparison of Energy Prices of National Gas and National Grid Electricity Between 2025 & 2050

For bespoke design support services contact Rinnai today:
www.rinnai-uk.co.uk/contact-us/help-me-choose-product

The successful implementation of the Rinnai R290 air source heat pump system at the Surrey Sports Pavilion demonstrates the effectiveness of Rinnai's bespoke design services and complete packaged solutions. By upgrading to a more efficient and environmentally friendly system, the pavilion now enjoys reduced carbon emissions, while maintaining the necessary capacity for peak-time demand. This project highlights Rinnai's commitment to providing tailored solutions that meet the specific needs of all type of buildings to experience this service for your next project contact us today.
www.rinnai-uk.co.uk/contact-us/ask-us-question

THE NECESSITY OF MEASURING ENERGY USE

Elliott Ajose, Regional Sales & Technical Manager for Chauvin Arnoux UK, highlights the most common inefficiencies found in industrial installations today and discusses the instruments available to engineers and maintenance staff to identify and address these issues.



Monitoring energy consumption is no longer an option but a necessity for those looking to reduce spending and operational costs, especially with electricity prices continuously rising.

Tracking power usage in a facility can help identify hidden inefficiencies that impact both operational and environmental quality. It can pinpoint reasons for higher-than-expected energy costs and reveal underlying causes of frequent equipment repairs and replacements.

Studies by the Carbon Trust indicate that energy savings of up to 20% can be achieved by replacing inefficient equipment and implementing energy-efficient measures such as installing variable-speed drives for fans, pumps, and motor-driven systems. Additionally, a British Gas survey of smart meters across 6,000 UK SMEs found that "out-of-hours" electricity usage accounted for 46% of total consumption. This was due to lighting, heating, and IT equipment being left on in unoccupied offices, as well as car park lighting operating around the clock.

Office equipment plays a significant role in energy consumption. Simply turning off non-essential equipment at the end of the day can result in 12% energy savings. Moreover, leaving office equipment on standby during weekends and bank holidays can cost an average SME up to £6,000 per year.

While many businesses have already benefited from switching to LED lighting, further savings can be achieved through occupancy sensors, which can cut electricity use by an additional 30%. Using daylight sensors or photocells to adjust artificial lighting based on natural light availability can lead to another 40% reduction in electricity consumption.

Beyond efficiency measures, 50% of UK industrial facilities still suffer from poor Power Factor and load balancing. Power Factor measures how efficiently electrical power is used, while load balancing ensures an even distribution of electrical loads across the three supply phases. Both factors contribute significantly to increased energy losses and higher consumption.

Identifying and addressing these inefficiencies requires a Power and Energy Logger (PEL). Whether troubleshooting specific problems or proactively optimising power distribution, PELs should be as essential to a building maintenance technician as a multimeter or thermometer.

Modern PELs are compact, lightweight electronic instruments designed to collect electrical data efficiently. They can be temporarily installed in distribution panels or various locations within a facility without interrupting the mains supply or shutting down operations. This makes them invaluable for ongoing monitoring and energy audits.

PELs are highly versatile, capable of monitoring specific equipment or entire departments. They use Rogowski coil current sensors that loop around conductors, and magnetic voltage probes that attach to MCB screw heads, ensuring a completely non-intrusive installation. Importantly, PELs can be installed by a qualified electrician without requiring them to switch off the power.

PELs gather and log critical electrical parameters such as three-phase current, voltage, power, and energy consumption over customisable periods ranging from seconds to months. Advanced models, such as the Chauvin Arnoux PEL113, also measure Power Factor, Total Harmonic Distortion (THD), and individual current and voltage harmonic levels, storing millions of data points accessible locally or remotely via USB, Wi-Fi, Ethernet, or internet connections.

Once local monitoring is complete, some PELs can be semi-permanently installed inside cabinets at the main supply point. They can be self-powered from the installation itself and, when connected to a local network, allow continuous monitoring with configurable alarms for immediate issue detection.

For businesses requiring permanent energy monitoring, retrofitting older installations with panel-mounted equipment often involves costly downtime and extensive modifications. Instead, semi-permanently installing a PEL can be a cost-effective alternative, offering real-time monitoring from a PC. This enables businesses to track energy usage, Power Factor, and harmonic content over time while setting up alerts for potential issues.

A well-implemented PEL solution provides an efficient and flexible approach to energy management, helping businesses reduce costs and improve operational efficiency.

To learn more about optimising electricity consumption and cutting expenses, visit **https://cauk.tv/**

BREATHE EASY – THE IMPACT OF POOR AIR QUALITY ON HEALTH AND WELLBEING

It might surprise you that, in some cases, indoor concentrations of pollutants like particulate matter, volatile organic compounds (VOCs) and biological aerosols can exceed outdoor levels, often as a result of activities like cooking, cleaning and the use of certain products. Here Claire Robinson, sales director at IAconnects, a specialist in IoT monitoring solutions, explores the risk that poor air quality poses for employees, and the role facilities managers play in mitigating this.

There are several studies evaluating the impact of air quality on productivity, with a clear link between the two. Research suggests that poor air quality can reduce productivity by up to ten per cent. This, combined with the higher rate of sick days seen in environments with poor air quality, is estimated to cost the global economy over £178 billion annually.

However, there are even more serious implications of poor air quality. Exposure often leads to reports of headaches, eye irritation and fatigue amongst employees. It's even linked to heightened stress and anxiety levels.

Long-term effects include the increased risk of chronic respiratory conditions, such as asthma and, more recently, it's been reported that there could be a potential link between poor air quality and dementia.

In 2019, the Alzheimer's Society brought together a roundtable of experts in neurology, epidemiology and environmental risk, and the behaviour of metals in the brain. They agreed that more research is needed but confirmed that poor air quality has a definite impact on the heart, and there's a strong link between heart and brain health. So, it's possible that long-term exposure to air pollution could increase the risk of developing dementia.

Clearly, this is extremely disturbing for employees, who have very little control over the quality of air they breathe in while in the office.

A NATIONAL MOVE

In the UK alone, there are several initiatives aimed at improving air quality in workplaces. For example, The Air Quality Grant Scheme provides funding to local authorities, supporting projects that raise awareness and reduce air pollution.

Recent projects include initiatives to educate schoolchildren, provide e-cargo bikes for businesses and train healthcare professionals to help vulnerable populations reduce exposure to air pollution. Over £53 million has been awarded to more than 500 projects since 2010.

There are also more targeted programmes like Schools' Air Quality Monitoring for Health and Education (SAMHE), which encourages the use of digital tools for monitoring indoor air quality.

While this project focuses on schools only, it can provide valuable insights applicable to office environments.

MAKING A CHANGE

Tenants must be familiar with the impact that certain products and practices can have on air quality. According to studies by environmental agencies, cleaning products are responsible for 20 to 30 per cent of indoor VOC emissions – this increases to 50 per cent in offices during and immediately after cleaning has taken place.

This also applies when choosing paints, carpets and even furniture. If chemical products, like paints and solvents, are stored on-site, they should be in ventilated areas away from occupied spaces.

One way that employees can have a direct impact is by limiting indoor pollutant sources. This includes restricting activities like burning candles or using aerosols. Burning a single paraffin candle for one hour can emit up to 10 mg of particulate matter, depending on the type of wax and wick used. Disturbingly, this level is comparable to second-hand smoke in a confined space.

On a positive note, there are natural ways to reduce carbon dioxide and VOC levels, such as incorporating plants into occupied spaces. Of course, it's important to be aware of employees' allergies when doing so.

Facilities managers (FMs) also play a critical role in improving air quality within buildings, but before they can tackle the problem, they must know where they currently stand. This is why technology that enables accurate, real-time monitoring is key to improving air quality over time.

FMs can take responsibility for air quality by ensuring that their sites are equipped with IoT monitoring solutions that enable tenants to have a clear view of their air quality, and how this changes over time. With this information, they can start to make informed decisions – for example, about the types of products that they want to use.

The average person spends approximately 90,000 hours at work over their lifetime – a percentage of which is usually spent in an office environment. FMs have a significant role to play in improving air quality and, in turn, employee health.

Discover your air quality monitoring potential – visit the IAconnects website, fill in its questionnaire and get a personalised score: **https://iaconnects.co.uk/indoor-air-quality-scorecard/**

IS A FIXED INTERNET CONNECTION A NECESSITY?

Adam Newman,
Insite Energy

In January 2027, the UK's copper-based ADSL network will be powered-down permanently. Moving forwards, the nation's landlines and internet connections will all run on full-fibre-optic broadband, which is much faster and more secure than copper, as well as being less prone to interference.

For anyone still relying on ADSL, time is running out to upgrade equipment and connections to avoid system failures and data losses. This is particularly important for heat network billing and management systems as the copper switch-off coincides with a strengthening of regulations designed to ensure greater protection, fairness and charging transparency for heat network consumers. Heat suppliers and heat network operators could face penalties if residents are incorrectly billed, not to mention a host of messy administrative issues.

Any building that is more than 10 years old could be one of the approximately 30% of UK properties still using a legacy copper-based connection. You can check this online at **openreach.com/fibre-broadband**. If so, you can request a fibre connection from your internet services provider (ISP); it should take around 10 days to two weeks, including installation of an optical network termination (ONT) device, if not already present.

Modern developments and those already served by full-fibre broadband (as indicated on their contracts and bills) won't be impacted by the demise of ADSL. However, that doesn't necessarily mean they'll have the consistent and reliable connections they need for essential services across their site, particularly if they're relying on wireless solutions.

COMPLETE SECURITY AND RELIABILITY

The only way to ensure robust, uninterrupted, real-time data communication for efficient metering & billing operations is to install a fixed internet connection (FIC) between your energy metering system and your heat network service supplier's billing and payment infrastructure.

This should be a permanent, hardwired link, ideally in the form of a high-speed FTTP (full fibre to the premises) cable with a fibre-based router connecting to the building's ONT. Other approaches are possible too, including using existing on-site internet solutions, such as Hyperoptic or local area network (LAN). However, they're less reliable and cost effective than FTTP.

The FIC should also be a dedicated connection, meaning it's not shared with other building services such as CCTV, which can consume a lot of bandwidth. For maximum security, connectivity and stability, the solution should also include a static IP address which won't change each time a device connects to the network, ensuring continuous access to data loggers and pre-pay equipment. And the whole thing should be backed up by a failover 4G multinet roaming SIM for total 24/7/365 resilience.

INTERNAL UPGRADES

In older properties, it's possible that some rewiring of legacy copper connections will be needed within and around the site too. Although any internal ADSL network can theoretically still function until 2030, it will be transmitting data at a much slower speed than the fibre link to and from the building.

Therefore, although it can be difficult and costly to replace, because it's likely to involve removing and refitting fire-stopping materials, it's a good idea to do it as soon as possible. Situating equipment such as data-collection devices as close as possible to the ONT will help to minimise disruption, but the more work that's likely to be involved, the more important it is not to leave it to the last minute.

PERFORMANCE MONITORING

It's not only metering & billing systems that need a failsafe internet connection. Accurate, timely and detailed data from meters and sensors across a heat network is the bedrock of managing energy efficiency.

If there are periods when consumption and performance data is not transmitted, real-time monitoring software won't work properly, meaning faults and inefficiencies may go undetected for long periods, with costly consequences.

MANAGING YOUR FIC

It might make sense to hand over the management of your FIC account to your metering & billing provider. They can ensure it's paid correctly, automatically reacting to any pricing changes without you needing to notify them, with the costs recovered via residents' energy services tariff. You're also likely to get things fixed a lot faster if a fault occurs.

It's worth noting, too, if you're commissioning a new FTTP connection, your metering and billing provider may be able to do this for you at a lower cost via an ISP broker, meaning the total outlay is the same as commissioning and managing the service yourself.

However you go about it, the process of fitting compliant FICs will be far smoother, quicker and more efficient when done in a considered way. It therefore pays to review your connectivity equipment sooner rather than later to see what upgrades, if any, are needed in the next two years. **https://insite-energy.co.uk**

ENERGY MANAGEMENT IS A JOURNEY, WE NEED TO TAKE 'BABY' STEPS

Paul Webb,
MEI Chartered
Energy Manager,
B2B Energy

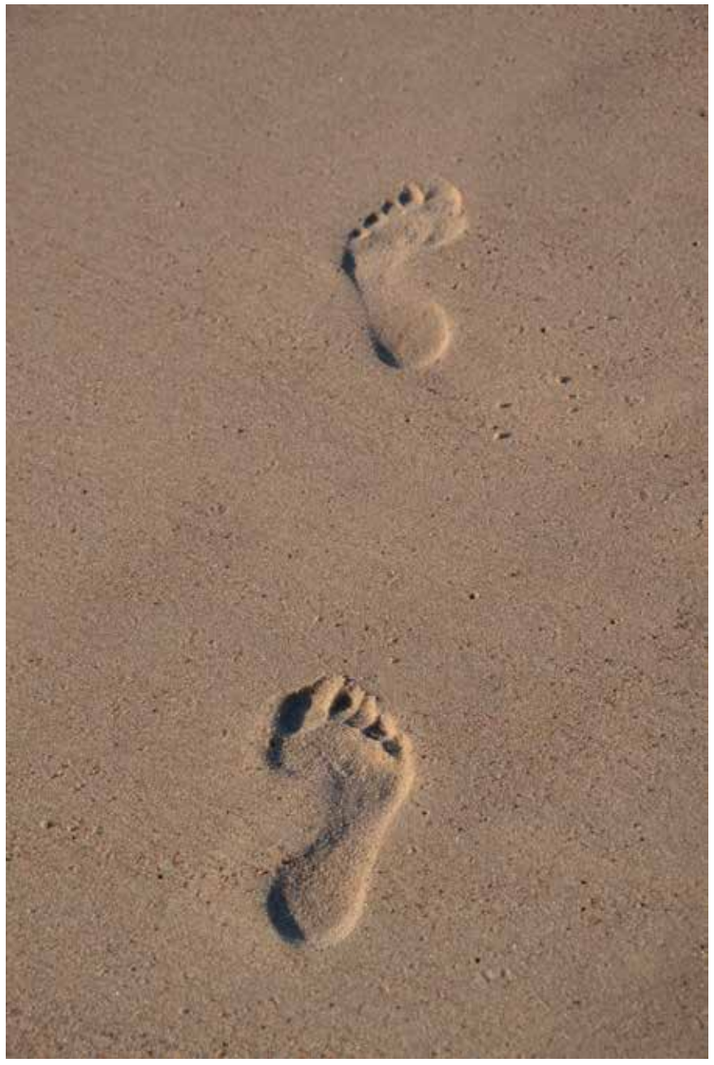


Image by kropekk_pl from Pixabay

Far too many times when I am first speaking to organisations they are insistent that they want to jump straight into putting solar on the roof, deploying batteries and then saying we need heat pumps. My response is "Stop, energy management is a journey, we need to take baby steps". This is always met with barriers and obstacles but once I explain the principles of Review, Realign, Reduce and Report the organisation starts to see the light. The organisation then says "You are absolutely right".

When we talk about taking 'baby steps' in the context of energy management or any personal journey, it's not about underestimating the ambition or courage involved. Instead, it's a metaphor for starting with small, manageable actions to gradually build confidence and momentum.

Babies may not overthink their goals, but they do exhibit courage and determination in their quest to achieve them. In energy management, taking 'baby steps' signifies a proactive and determined approach. It is about having a goal, reducing energy consumption, and being courageous enough to begin the journey, no matter how small the first steps may be.

This initial action is like a baby's first steps, as they establish a foundation for more significant changes down the road. Over time, as you become more comfortable and skilled in managing energy efficiently, you can take bigger and more impactful steps to achieve your goals. So, 'baby steps" are not a sign of weakness but a symbol of determination and the courage to start on the path to success.

Energy management is like raising a little energy-efficient toddler. You wouldn't expect a baby to run a marathon? They start by crawling, then they take their wobbly first steps. You start small with energy-saving habits that grow as your knowledge and confidence do.

Failing to take baby steps in energy management can have significant consequences. Without gradual improvements and adjustments, businesses and individuals miss out on the opportunity to identify and address energy inefficiencies. This can lead to higher energy costs, increased environmental impact, and a missed chance to reduce carbon emissions.

Additionally, neglecting energy management can result in missed financial savings, reduced competitiveness, and a failure to adapt to evolving energy regulations and consumer expectations. In essence, without those initial small steps, the journey toward more efficient, sustainable, and cost-effective energy practices may remain stagnant, hindering both financial and environmental progress.

By taking these baby steps, you not only ease into a more energy-efficient lifestyle but also inspire others to join the journey.

Remember, every small step counts on this exciting adventure towards a greener, more sustainable future.

The bigger picture of delivering a successful energy management program extends far beyond immediate cost savings. It encompasses a holistic approach aimed at achieving several critical goals.

First and foremost, a successful energy management program reduces energy consumption and associated costs. It contributes to a company's financial health by optimizing energy use, improving operational efficiency, and enhancing competitiveness.

Beyond the bottom line, it also aligns with sustainability and environmental objectives. Reducing energy consumption means fewer carbon emissions, which is vital for combating climate change. This commitment to sustainability can enhance a brand's reputation and meet regulatory requirements.

Moreover, a successful energy management program fosters a culture of responsibility and accountability within the organisation. It empowers employees to identify opportunities for energy conservation and encourages the adoption of best practices, creating a sense of shared purpose.

In the long term, it enables a company to future-proof its operations. As energy costs continue to rise and environmental concerns grow, businesses that invest in energy management gain a competitive advantage by demonstrating resilience and adaptability.

Ultimately, delivering a successful energy management program is about achieving a balance between financial prosperity, environmental stewardship, and operational excellence, ensuring that an organisation thrives today and remains sustainable for future generations.

In conclusion, the concept of 'baby steps' in energy management serves as a powerful metaphor for embarking on a journey towards greater efficiency, sustainability, and success. Just as a baby's initial steps lay the foundation for future progress, taking small, manageable actions in energy conservation can lead to significant changes over time. It's about fostering courage, determination, and resilience in the pursuit of energy efficiency. Failure to take these small steps can result in missed opportunities, higher costs, and environmental consequences. However, by embracing the journey of energy management, organisations can secure not only financial prosperity but also a more sustainable and responsible future. It's a journey that transcends immediate gains, fostering a shared sense of purpose and long-term adaptability.

Image by Hans Benn from Pixabay

Just like raising a toddler, energy management starts with baby steps that pave the way for a greener, more prosperous, and resilient future.

If you enjoyed reading this article or want to provide feedback, please contact Paul Webb at **www.b2benergy.co.uk**

WHERE COMFORT MEETS CARBON GOALS – RETHINKING INDOOR SPACES FOR NET ZERO

Tom Garrigan,
Technical Director,
BSRIA

Indoor environmental quality (IEQ) is a crucial determinant of health, comfort, and productivity. In the UK, where people spend approximately 90% of their time indoors, ensuring optimal IEQ should not be considered a luxury but a necessity. As we move towards achieving decarbonising the built environment, the sector faces the significant challenge of improving indoor comfort while drastically reducing carbon emissions.

To understand how this can be done, we first need to drill down into the critical components that make up optimal IEQ.

GOOD FOUNDATIONS, GOOD ENVIRONMENT

Optimal IEQ depends on several interrelated factors, including thermal comfort, air quality, acoustics, and access to natural light. Together, these elements contribute to towards the physical and mental well-being of occupants.

The drive for energy efficiency, however, can risk compromising these factors. For example, measures aimed at reducing heating and cooling demand can inadvertently lead to issues like poor air circulation or inadequate lighting. This highlights the importance of a tailored, holistic strategy for building design and operation.

OVERCOMING MISCONCEPTIONS

A common misconception is that prioritising decarbonisation goals inevitably means sacrificing comfort or operational quality. Well-designed operational and control strategies can enhance both IEQ and energy efficiency. Achieving this dual goal requires careful planning and the adoption of integrated design principles.

For instance, a fabric-first approach – which prioritises the energy performance of the building envelope – can significantly reduce energy demand. However, neglecting aspects such as moisture control and thermal bridging risks creating problems like condensation or mould, which can harm both buildings and their occupants. Holistic design methodologies that integrate a whole building approach can mitigate such risks, ensuring that decarbonisation and IEQ objectives are met in tandem.

MEASURING UP

One often-overlooked aspect of improving IEQ and energy performance is thorough diagnostics. To effectively address the unique needs of each building, it's essential to measure and track performance metrics. As the saying goes, "you can't manage what you don't measure."

By employing robust diagnostic tools and methods, building operators and designers can identify specific areas for improvement, enabling precise data-driven and meaningful interventions. This not only supports the delivery of decarbonisation targets but also ensures long-term occupant satisfaction and operational efficiency.

Embarking on the decarbonisation journey with the target of achieving Net Zero presents an opportunity to rethink traditional approaches to building design and management. By prioritising integrated design strategies, and enhanced collaboration among stakeholders which considers how a building will be used, the industry can create spaces that are both sustainable and comfortable.

Achieving this vision requires a shift in mindset, emphasising the interconnectedness of energy efficiency and IEQ. With time running out to address the climate emergency, the construction sector must seize this moment to deliver buildings that meet the needs of both people and the planet. **https://www.bsria.com/uk/**

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This course is suitable for professionals, researchers, policymakers, and students who are interested in the energy sector and want to learn more about the latest developments and trends in the realm of AI integration.

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NAVIGATING RISING WATER TARIFFS: WHAT BUSINESSES CAN DO TO MITIGATE THE IMPACT

Water tariffs across the UK are set to rise significantly in April 2025, with price increases ranging from 25% to 50%, depending on region and tariff types. This price increase comes from the recent water price review (PR24) – a process carried out every five years by the water regulator, OFWAT.

Furthermore, water companies are challenging the final OFWAT determinations to appeal for higher increases. This is to support quadrupling of new investment in the water sector over the next five years.

In preparation, water wholesalers have front loaded some of these 5 year rises into April 2025 tariffs. These forward increases exclude factors like the Retail Price Index (RPI), and external circumstances, such as the energy crisis, which can prompt wholesalers to revisit and potentially request even higher price hikes.

Due to these cost increases and major water sector changes, it is crucial for businesses to understand their usage in more detail and implement effective water strategies to mitigate price rise impacts.

WATER EFFICIENCY: A STRATEGIC FOCUS

As water costs rise, improving water efficiency becomes a key focus. Technologies like Water AMR (Automatic Meter Reading), allow for remote data collection and monitoring, helping businesses detect leaks or inefficiencies more quickly.

Whilst not yet widespread, Water AMR is an essential tool for businesses looking to gain a more granular understanding of their water usage and identify potential savings.

Robin Gregory, Head of Water Audit at Inspired, suggests that conducting water efficiency audits at selected sites can identify areas where consumption can be reduced.

This could include installing water-saving devices or identifying leaks that have gone undetected due to infrequent meter readings. These selected sites will likely see immediate savings and can be used to inform further water efficiencies throughout your estate.

With the current state of the market, Robin emphasises the importance of the age-old saying – "you can't manage what you can't measure". Despite improvements in technology, the water market remains behind compared to other utilities in terms of digital monitoring, leaving gaps in data that can lead to costly inefficiencies.

Aldi UK has already recognised the potential of Water AMR. Working collaboratively with Inspired through a cost-benefit analysis and pilot scheme, Aldi UK is rolling out a nationwide Water AMR program, which will provide remote weekly reads for its stores.

This initiative, in partnership with Inspired, will enable Aldi UK to track water consumption more efficiently, identify high-consumption stores, and flag potential wastage or leaks. These readings will also be shared with Aldi UK's water retailer, ensuring accurate monthly billing.

MOVING TOWARDS SUSTAINABLE WATER USAGE

As the sector evolves and businesses continue to focus on sustainability, improving water usage will likely become an integral part of broader environmental goals. By reducing water consumption, businesses can also lower their carbon footprint, which is increasingly relevant as environmental mandates expand beyond energy use to include water.

In addition to reviewing tariffs, businesses should also consider water-saving projects like rainwater harvesting or the installation of boreholes. "With the rising cost of water, these options are becoming more financially viable," says Robin. Rainwater harvesting can be an effective way to reduce dependency on mains water and lower overall water bills, while boreholes can provide a reliable, long-term water supply for businesses in areas where water costs are escalating.

Aldi UK, in addition to its AMR rollout and tariff audits, is continually looking for ways to enhance its water stewardship practices as part of its broader sustainability goals.

Robin Gregory

Amy Dalton

IDENTIFYING OPPORTUNITIES TO MITIGATE COSTS

Amy Dalton, Head of Water Procurement at Inspired, explains that a significant portion of businesses have yet to fully engage with the water market, despite deregulation in England in 2017.

"Many non-household customers have not switched their water retailers, which limits their ability to take advantage of potential savings," Amy says.

"A competitive tender process is more crucial than ever, especially with rising prices. While savings from switching have historically been modest, the current tariff hikes mean the benefits of market switching could be substantial."

The impact of these price changes will be felt across all sectors, but those in industries with high water usage – such as manufacturing or large facilities – will experience the most significant financial burden. Many of these businesses may be on complex tariffs, meaning this is a good time for them to review whether they are on the correct tariff to begin with.

Aldi UK, for example, has incorporated regular water tariff audits at its sites, with a particular focus on new stores to ensure it is not overcharged. This proactive approach helps Aldi UK stay ahead of rising costs and avoid potential billing errors.

Robin recommends pursuing a "no-win, no-fee" water audit, as it can be an effective way to ensure a business is paying the correct amount for its water consumption. Audits can help identify discrepancies, potential refunds, and opportunities for tariff optimisations that can lead to meaningful cost reductions and unlock funds to be reinvested in further projects.

For businesses that consume significant volumes of water, further steps can be taken to ensure that water consumption is optimised. Aldi UK, for instance, have implemented devices at their Regional Distribution Centres to provide half-hourly data due to the larger scale of water usage at these sites.

This article was written by the water monitoring experts at Inspired PLC; the UK's leading energy and sustainability advisor. Want help managing water and wastewater services? We provide a range of solutions to help optimise your water strategy.

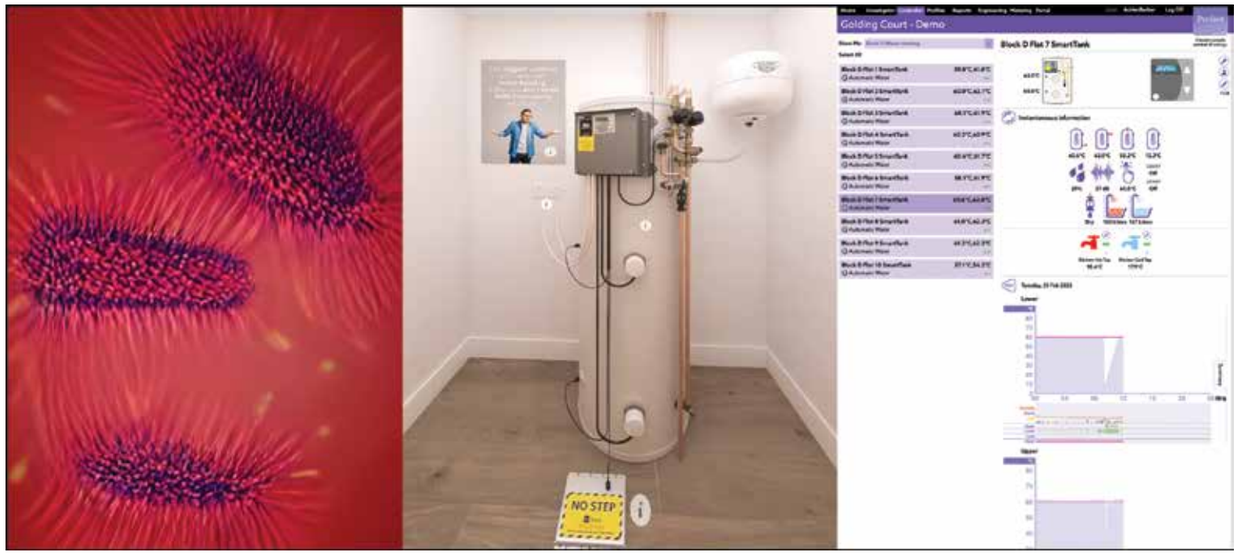
Visit inspiredplc.co.uk/how-we-help/water/ for more information.

KEEPING PACE WITH MARKET CHANGES

Finally, Amy stresses the importance of businesses continuing to engage with the water procurement market, even if they have already made the switch to a competitive contract with a water retailer. "Price comparison is crucial, and even if you're satisfied with your current retailer, it's important to regularly benchmark offers to ensure you're getting the best deal," she advises.

For Aldi UK, regular reviews and innovations, such as the ongoing Water AMR rollouts and smart data monitoring, will play a key role in helping it mitigate the impact of the rising water costs. These projects, along with the ongoing tariff audits, are setting Aldi UK up for long-term cost management success.

In conclusion, while the upcoming price hikes may be challenging, there are numerous strategies that businesses can employ to mitigate the impact. Aldi UK's strategic initiatives – such as market switching, tariff reviews, AMR adoption in the UK, and water-saving projects – demonstrate how businesses can stay ahead of rising water costs while contributing to sustainability goals. By taking action now, businesses can reduce the financial burden of increased water tariffs and ensure they are well-positioned to manage future changes in the market.



SmartTank tackles Legionella concerns – Remotely

The SmartTank system is designed, to save water and energy. But it also helps with Legionella compliance. Providing real-time data, predictive insights, and automation to manage water temperature and overall system performance. It is particularly effective in student accommodation and buildings of multiple occupancy, where Legionella risks must be carefully monitored and mitigated.

REAL-TIME TEMPERATURE MONITORING

Legionella bacteria thrive in water temperatures between 20°C and 45°C, with the optimal growth rate around 37°C. With standard cylinders it is impossible to measure temperatures precisely. Using pocketed sensors SmartTank continuously monitors at the core of the cylinder, ensuring the danger zone is avoided.

AUTOMATED ALERTS AND NOTIFICATIONS

The system provides automatic alerts. This helps ensure operators or maintenance staff are notified of unusual activity and excessive consumption, allowing them to take prompt action to correct issues. Alerts can be customised based on the facility's needs and compliance requirements.

DATA LOGGING AND REPORTING

The Irus Portal keeps comprehensive logs of water temperature, flow, and tank status. These are used for audit trails and to demonstrate compliance with Water Safety Plans. The data is available in real-time, making it easy to access historical data, generate reports, and comply with regulatory inspections.

REMOTE MONITORING AND CONTROL

The systems remote monitoring, means compliance is maintained even when on-site personnel aren't available. It can be remotely accessed via online devices to check conditions, adjust settings, or receive alerts.

OPTIMISED TANK PERFORMANCE

SmartTank monitors cylinder parameters to ensure optimal operation and water safety. Keeping the system running efficiently helps prevent conditions that could foster Legionella bacteria growth, such as stagnation or insufficient circulation.

PROACTIVE MAINTENANCE

Through the combination of predictive analytics and continuous monitoring, the system predicts potential issues before they occur, helping to schedule preventative maintenance. For instance, the system identifies trends that suggest insufficient water temperatures are being met, or potential malfunctions, such as escape of water.

COMPLIANCE WITH REGULATIONS

UK regulations require frequent checks and records for Legionella control. These include keeping water temperatures within safe ranges, performing risk assessments, and conducting periodic testing. These tasks can be simplified by automatically generating data that demonstrates compliance with Water Safety Plans, such as those from HSE (Health and Safety Executive), ACOP L8 (UK).

The system's ability to document temperature trends, risk assessments, and corrective actions helps student accommodation providers meet their regulatory obligations.

EASY INSTALL

Factory fitted with on-board controls, pre-wired and pre-plumbed, SmartTank arrives on site ready for efficient, consistent installation. Connection to the cold water supply, hot output, and electrical wiring to the mains makes the fitting process time effective and efficient.

SAVINGS

Recent studies have demonstrated that standard hot water cylinders use 1.5 times more energy than SmartTank, to achieve the same results. This is primarily due to tighter temperature control. Management of over-heating, over consumption, and identification of leaks and water wastage, quickly contribute to even greater savings.

In conclusion, the Irus SMART Tank supports Legionella compliance by combining real-time monitoring, automated control, and data logging. It ensures that water temperatures and quality are managed within safe parameters. It reduces the risk of Legionella growth, and simplifies the compliance process with automated alerts and reports. This makes it an invaluable tool for maintaining a safe water system in multi-occupancy accommodation.

SMART Tank recently won the ENERGY SAVING AWARDS, Water Saving Commercial Product of 2024 category.

www.prefectcontrols.com

ADDRESSING WATER LEAKAGE: THE ROLE OF IOT AND SUB-GIGAHERTZ CONNECTIVITY IN THE UK

Gareth Mitchell, UK Partner Manager, Heliot Europe, and Andy Welch, Business Development Manager, LeakSafe,

discuss how the integration of Internet of Things (IoT) technology and sub-gigahertz connectivity is emerging as a pivotal tool in improving leak detection and prevention, and transforming traditional water management processes.

Water leakage is a critical issue affecting residential and commercial properties across the UK, with severe financial, environmental and operational consequences. The rising cost of water bills, paired with the prevalence of insurance claims for water damage, highlights the urgency of finding innovative solutions to detect and manage leaks more effectively.

THE WATER LEAKAGE CHALLENGE

In the UK, over 1 trillion litres were estimated to have been lost last year due to leaks – and 51 litres of water is wasted per person, per day in England and Wales, according to Ofwat. Much of this loss is attributed to aging infrastructure, where corroded pipes, weather-related damage, and gradual structural shifts contribute to undetected leaks. This has two significant impacts: property owners face costly repairs and escalating insurance premiums, while the environment at large suffers from wasted resources.

Identifying leaks before they cause serious damage is notoriously difficult, especially in older buildings where leaks may develop silently under floors or behind walls. Traditional methods of detection – visual inspections or waiting for signs of water damage – are reactive and often come too late. By the time a leak becomes noticeable, issues like damp, weakened structures, and extensive water damage have already set in, resulting in costly remediation efforts.

The age and condition of some of the UK's infrastructure only compounds this issue. Many properties were built decades ago, making them particularly vulnerable to leaks that go undetected for extended periods. For property managers and councils responsible for large portfolios of aging buildings, the need for more efficient and accurate leak detection has never been more pressing.

A TECHNOLOGICAL SOLUTION

Instead of relying on infrequent manual inspections or reacting to a burst pipe, IoT technology and sub-gigahertz connectivity offer a promising solution to this problem. By deploying sensors that monitor moisture levels, flow rates, and pipe integrity, leaks can be pinpointed at their earliest stages – and long before they become visible to the naked eye. These sensors can be installed in new and existing properties, ensuring broad applicability across residential, commercial and public sector buildings.

Low Power Wide-Area Network (LPWAN) connectivity, operating below 1GHz, provides a critical advantage over traditional cellular and Wi-Fi networks in this space. These sub-gigahertz technologies allow for long-range communication capabilities, deep penetration of building materials like steel and concrete, and reliable transmission from underground installations. What is more, due to the lower power consumption of these devices compared to alternatives, they can last much longer in the field, which is crucial for devices which are buried underground or under floorboards, which require significant maintenance work to check and replace.

Beyond early detection, these systems can also automate immediate responses. For instance, when a leak is detected, sensors can activate an electro-mechanical valve to physically shut off the water supply instantly, preventing further damage. This process can even be done remotely using an app, giving users precise control over water flow within their property. By integrating IoT and LPWAN technology, these systems offer a proactive, hands-free solution to a problem that has long relied on reactive methods.

BENEFITS FOR PROPERTY MANAGEMENT AND INSURANCE

The shift from manual inspection to automated monitoring brings significant benefits for property managers and insurers alike. IoT-enabled sensors can continuously monitor water systems, providing real time alerts to enable swift intervention before a minor problem escalates into a major one. This reduces the need for routine physical inspections and allows facilities teams to manage multiple properties remotely, improving efficiency.

In the insurance sector, advanced leak detection technologies are increasingly recognised for their ability to prevent leaks and reduce claims. Insurers in the UK today currently pay out an estimated £1.8 million per day for water related claims. By installing or retrofitting these leak detection systems in both commercial and residential properties, insurers can reduce the frequency and severity of claims, leading to lower premiums for property owners. This creates a mutually beneficial situation, where insurers minimise losses while property owners gain protection and peace of mind.

ADDRESSING ENVIRONMENTAL AND CONSERVATION IMPLICATIONS

Beyond the financial and operational benefits, IoT and sub-gigahertz connectivity have an important role to play in addressing wider environmental concerns around water wastage too. Water conservation is becoming an urgent priority in the UK, especially in the context of climate change. Current projections suggest that by 2050, the UK will need an additional 5 billion litres per day to meet demand. It is therefore no surprise that the Environment Agency has identified smart meters as becoming the standard in this field in the future, on the road to ensuring long-term sustainability.

Consider, for example, a historic building in central London. Due to its age, the building's plumbing system has developed a slow, undetected leak in a pipe running beneath the floorboards of a tenant's flat. Without IoT-enabled sensors, this leak would likely remain hidden for months, only becoming apparent once extensive water damage had compromised the structural integrity of the floor. By this point, the cost of repairs and insurance claims would be substantial, and a significant amount of water would have been lost in the process.

However, with IoT sensors installed, the system detects abnormal moisture levels almost immediately, triggering an alert to managers. The issue is then swiftly addressed before the leak has a chance to escalate, saving both the property and water resources. This proactive approach highlights how this technology can transform leak detection, particularly in older properties that present significant maintenance challenges. Moreover, in urban areas, where infrastructure is more complex and difficult to manage, these technologies can pinpoint issues in specific locations – whether an old listed building in London, or a newly constructed development in Manchester. Such precision allows for more effective conservation efforts, helping to protect what is fast becoming a scarce resource.

CONCLUSION

IoT and sub-gigahertz connectivity offers a modernising approach to addressing water leakage issues in the UK. By embracing these technologies, property managers and insurers can mitigate risks, reduce costs, and contribute to the conservation of the UK's water resources. As the country continues to modernise its infrastructure, these solutions will play a vital role in shaping the future of water management and enhancing the resilience of buildings nationwide.

https://www.heliotgroup.com/en/
https://leaksafe.com/

PREVENT MAJOR DAMAGE WITH A LEAK DETECTION SYSTEM

Chris Potts, ANT Telecommunications

For the majority of people, the start of the new year is filled with hope and positivity. However, for those unfortunate British businesses at risk of water leaks, the early months of the year can often be filled with anxiety and dread.

The wettest months in the UK tend to be at the start and end of the year with highs of 213mm of rain, meaning business owners are often affected by leaks on a much larger scale. These leaks can be caused by anything from gaps in a roof, a faulty faucet, blocked drains, worn seals or even faulty appliances. What's worse, small leaks can often occur in hidden places and can go unnoticed by manual searches, causing extensive damage before the leak is even realised.

Chris Potts, Marketing Director at ANT Telecom, believes that neglecting to address leaks promptly can lead to severe repercussions and can cause structural damage to the premises with wood rotting, metal structures corroding as well as damaging building materials like drywall and insulation. He advises how businesses can protect themselves against the risks of water damage, particularly during the wetter months of the year.

REDUCE THE RISK OF LEAKS

It's estimated that businesses in the UK spend more than £730 million a year to repair damage caused by water. So, having an early warning when leaks occur could be crucial to saving businesses money and preventing major damage and disruption.

There are a few ways to combat leaks. The first is to regularly inspect vulnerable areas like roofs, pipes, and appliances for signs of wear and keep drains and gutters clear to prevent blockages. Additionally, maintaining building infrastructure, installing water pressure regulators, and training staff to identify early signs of leaks for a proactive approach to minimising risks of leaks. However, these suggestions aren't 100% reliable and do come at a cost, not to mention the time commitment it requires from employees.

Because small leaks often occur in hidden areas and can go unnoticed, they can cause extensive damage before they are discovered. And, even if staff are checking specific areas manually, a business is still in danger of missing damage caused in difficult-to-spot areas – which can significantly harm operations. This is why it's recommended to implement a leak detection system to provide a more reliable, cost-effective solution that continuously monitors high-risk areas 24/7, instantly alerting businesses to potential issues from the get go.

HOW DOES A LEAK DETECTION SYSTEM WORK?

Leak detection systems use wireless sensors with conductive cable attached to monitor leaks to equipment or a specific area. When water hits the cable, it is detected by the sensor, and an online monitoring portal is updated, automatically alerting a business's response team by phone, SMS, or email. The alert message details which sensor triggered the alert and by reviewing a site map in the portal, the responders can see the sensor and the location of the leak. If required, the solution can also automatically turn water valves off to ensure no further damage is sustained while the team attends to and assesses the situation.

The conductive cable can come in different forms and lengths depending on the application. For instance, to detect leaks in a roof, a wire mesh material that spreads out on the floor to cover a section directly underneath the roof space can be used. Similarly, to detect the presence of water in a particular area of a room, a cable that runs around the perimeter, close to the appliance or in an electrical riser can be used to detect any unwanted water.

The sensors are wireless, making them easy to install, all of which helps to keep the costs down as they don't need expensive energy or network cabling for power or connectivity. These sensors are low-powered, which means batteries last a long time, approximately 2-3 years and can transmit data to an online portal via a 4G gateway. The long-range capabilities of the sensors makes it possible to cover large areas with a small number of gateways and monitor areas where there is no access to 4G, WIFI or the corporate network.

SAVING STAFFS' TIME

A big part of any leak monitoring solution is ensuring alarms are dealt with and managed effectively. By installing a leak detection system, businesses don't need someone sitting idly monitoring a screen and manually distributing alerts to a response team. This can all be done automatically. Businesses that incorporate this system will have access to a secure online portal, which can be accessed through any web browser on a PC, laptop, or smartphone. This means registered users can monitor live sensor statuses via a comprehensive site map, instantly identifying active (water detected) or non-active (no water detected) sensors. Additionally, detailed charts and reports provide historical data, showing the frequency and location of detected leaks over time. All of this essentially means that staff can spend their time focusing on other more pressing tasks through the day.

Not only this, businesses can save time by deciding which member(s) receives which alarm and how they get it. All alarm information is also logged and timestamped on the system, detailing when the team acknowledged and closed them. This makes it possible to review how alarms are handled and where improvements can be made. It's also recommended to choose a provider that can easily expand the solution, and other sensors, such as temperature, CO_2, energy, power, vibration, sound, light, etc. By doing so, business can collect data and remotely monitor the condition its environments, equipment and appliances all from one single application.

CONCLUSION

In the spirit of "New Year, New Me," businesses are encouraged not to let water damage disrupt operations or lead to unnecessary expenses in 2025. For teams that spend time checking for water damage, worry during heavy rainfall, or wonder about the potential impact of leaks – especially when water penetrates critical areas like electrical risers – there is a solution. A leak detection system can help save time on manual monitoring and reduce risks to facilities and contents by delivering instant alerts.

https://www.anttelecom.co.uk/

NEGOTIATING POWER PURCHASE AGREEMENTS – IT STARTS WITH EFFECTIVE PREPARATION

Andy Archibald, Senior Consultant at Scotwork UK

Most weeks, I observe and analyse negotiations. As a Consultant at Scotwork, a world-leading negotiation consultancy, it's my job to work with our clients to develop the negotiation skills of their negotiators and navigate complex negotiations.

Any time a negotiation concludes or deadlocks, the first part of the process I analyse is what preparation was done beforehand and was it effective in providing the foundations to a successful outcome – because effective preparation is the foundation of any negotiation and makes it vastly more likely that the outcome will be a successful one.

Sadly, however, all too often the preparation before a negotiation is no more than a bit of number crunching and a strategy consisting of 'let the other side speak first and we'll go from there'. Preparation is vital in any negotiation and is the most important step in the negotiation process, including Power Purchase Agreement (PPA) negotiations between businesses and renewable energy generators. It covers a wide agenda of what negotiators must consider in advance. And the more complex the negotiation, the greater the need for effective preparation.

Negotiating PPAs can seem a complex process, with negotiators required to navigate multiple challenges including terminology, regulatory requirements and changes, fluctuating market prices, shifting demand requirements, and many more. This article therefore explores three things those negotiating PPAs can do to be better prepared: doing your research, setting objectives and having a strategy. Effective preparation won't guarantee success, but it will help mitigate these challenges, enabling you to enter negotiations with confidence.

DO YOUR RESEARCH

The world of PPAs can seem complex and confusing. Do your research and market analysis to understand what you know and what you don't know before the negotiation begins. Doing so will confirm the information you already have, what information you can gather before the negotiation, what assumptions you are making and what information you need to get from the other side at some point. Information will of course differ whether you are negotiating the buyer or supplier side of the agreement, covering the entire potential structure of the contract, including the expected energy requirement and terms and conditions.

BE CLEAR ON OBJECTIVES AND PRIORITIES

Before entering negotiations, be clear on the objective you are trying to achieve, what you expect the negotiable variables to be, and what your priorities are. Having a well-defined objective and set of variables allows you to articulate your needs clearly, stay focused during discussions and trade value during the process, avoiding haggling over the most difficult variables, which is usually price.

DETERMINE YOUR STRATEGY

You know the objective and you know what you know and what you don't. The strategy is how you are going to achieve your objective and fill in the gaps in your knowledge. Consider the following: How will you manage the negotiation process? How will you structure the other side's expectations? What is your power in the negotiation and how will you leverage it? What questions will you ask and at what point in the negotiation? Are you going to make the first proposal in the negotiation or invite the other side too? How will you identify and deal with negotiation tactics the other side use? How will you deal with the inevitable obstacles during the process?

CONCLUSION

While it won't guarantee you'll always get everything what you want from your PPA negotiations, effective preparation is the foundation of any negotiation and being prepared is more likely to lead to a successful outcome. Doing the research, being clear on the objective and having a strategy beforehand positions you for favourable outcomes. As the UK continues to transition towards a sustainable energy future, the PPA market will continue to grow and the importance of preparing effectively for these negotiations will only become greater. Invest the time and effort to prepare and you will be better equipped to navigate the complexities of the energy market and forge agreements that meet your strategic goals. **https://www.scotwork.co.uk/**

COMPLEXITIES OF UK ENERGY PROCUREMENT

Chris Goggin observes how the UK procures its energy and the complexity in which it is then distributed and reacquired. As the UK progresses towards NetZero Rinnai looks to assist the industry in understanding what roles specific energies will fulfill and what approach the UK utilizes towards both the national and international energy markets.

UK domestic energy procurement and distribution is a complex process that is reliant on a number of separate countries, huge commercial enterprises and separate forms of energy. The UK currently imports and cultivates energy from a tangled mass of outlets and prime suppliers. For example, we have electricity from interconnectors held by Belgium, Denmark and The Netherlands, LPG from America as well as the extraction of Norwegian North Sea natural gas and oil.

UK Electrical power company Drax has recently issued a statement on its website stating in their headline: "UK Spends £250 million each month Importing Record Volumes of Electricity from Europe." This means that 20% of the UK's monthly electrical energy requirements are wholly reliant on outside influence.

Extensive outside ownership heavily contributes towards meeting the UK's power demand: one of the UK's largest energy suppliers is Scottish power who distribute gas and electricity to over 5 million private households and commercial premises. Scottish Power is a subsidiary of global Spanish energy company Iberdrola.

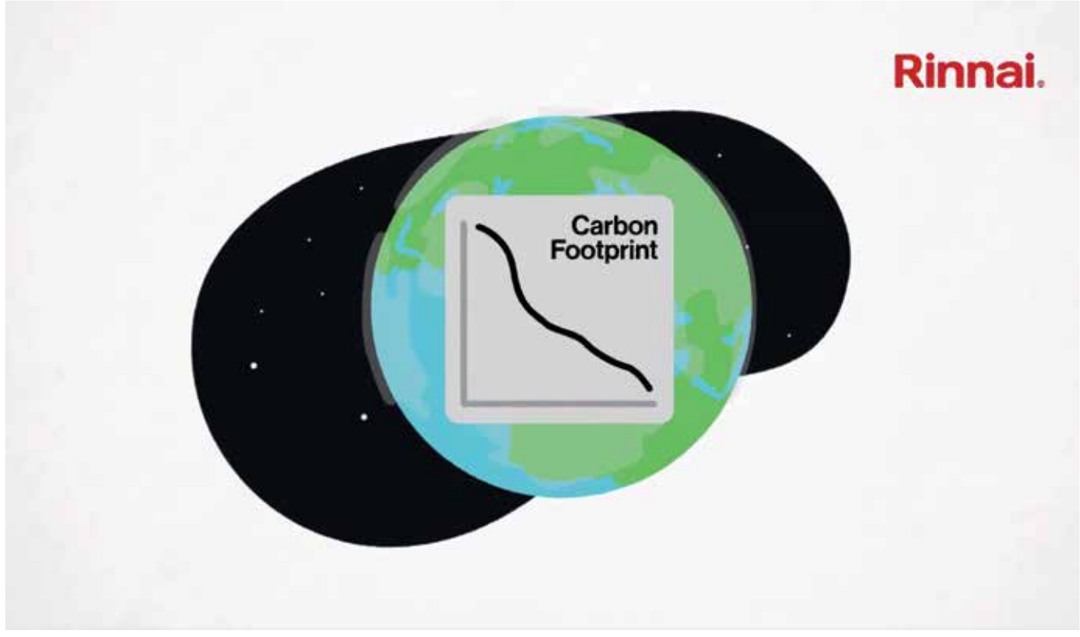
State owned French electrical company EDF accounts for 18.5% of total UK market share in wholesale electrical generation. In 2023 EDF's nuclear facilities provided around 13% of the UK's total power demand. EDF supply energy to over 5 million UK customers.

Additional layers of complexity within the UK energy market become prevalent once scrutinised. Not all oil and gas extracted from UK North Sea territory is owned by UK companies but by private foreign investors. For example, the Rosebank oil field is owned by Norwegian state enterprise – Equinor. Norwegian gas reserves were responsible for satisfying 58% of the UK's gas demand during 2023.

Online non-partisan energy news outlet, Energy Monitor released a story in January 2024 stating that at least 40% of oil and gas licenses in the UK North Sea oil and gas fields were passed on to foreign investors.

Any profits earned by the investors do not enrich the UK treasury nor do investors have to follow NetZero guidelines; and any energy extracted from UK territory can be immediately sold on the open market to any bidder – NOT direct to the UK.

So, energy extracted in the UK by foreign investors is occasionally purchased by the UK government from the international market. To add further confusion to this scenario, UK companies that also acquire gas from home waters export 46% of their product to other countries. UK Domestic demand is ignored in favour of making bigger profits from the international energy market by UK companies.



International geopolitics heavily influences global energy prices and distribution routes as well as highlighting the commercially driven nature of the global energy market. The Ukrainian / Russian war exposed Shell for buying Soviet gas at cheap prices despite their being international financial sanctions placed on Russia. Shell continues to work with Russia due to preset contractual agreements.

As the intricacies of the present international energy market are complex and confusing, the UK is moving towards clean renewables that are not subject to cost spikes nor interfering geopolitics that beset fossil fuels. In 2023 the UK energy mix consisted of 36.7% renewables. In 2024 that share has increased to 43.1%.

The current plan by the UK government is to increase naturally sourced energy extraction such as solar and wind power and to eventually cease fossil fuels. UK oil and gas usage has discernibly dropped over the last decade, in 2014 the UK's energy mix included 58.1% of fossil fuels – in 2023 that number has dropped to 32.2%.

The UK government is particularly keen on introducing an age of cheap and clean electrical power and has very recently publicly released a document entitled: "Clean Power 2030 Action plan: A New Era of Clean Electricity." This governmental report details the UK government's ambition of fueling UK domiciles and commercial properties with green electricity at low cost.

This document also provides further objectives in adding clean power to the UK national grid. Renewables will increasingly play a huge role in the UK domestic energy mix; the UK government aims to increase overall and individual capacity of renewably sourced power. Offshore wind will be increased to 43 – 50GW, onshore wind will be expanded to 27-29GW, whilst solar power capacity will also be increased to 45 – 47GW.

A move towards renewables means that UK domestic energy security is strengthened whilst NetZero targets can be met whilst customer costs will lower in time. Modern energy extraction and distribution is a complex process driven by geopolitics and corporate commercial ambition. By expanding renewable capacity, the UK aims to reduce reliance on outside influences and to cease operating as a net importer of energy.

However, the UK approach to energy cultivation and distribution is heavily reliant on external players who do not necessarily have to abide by UK rules and regulations. Huge companies such as EDF and Scottish Power will have to follow instructions passed down by foreign organizations, a process that could harm the validity of domestic energy security and customer cost control.

Rinnai will continue to monitor global energy issues and deliver non-bipartisan news items that best represent the current machinations of the international energy market. Any change in legislation or market conditions that may affect product and energy options will be shared accordingly.

For more details of national and international energy and policy sign up to the Rinnai newsletter **https://www.rinnai-uk.co.uk/contact-us/newsletter-sign**

THE ROLE OF STEAM IN A NET-ZERO FUTURE

A NET-ZERO VISION

As industries worldwide strive to achieve net-zero carbon emissions, the role of energy systems is in the spotlight. Steam, a tried-and-tested utility for industrial processes, is often overlooked in conversations about decarbonisation. Yet, steam holds significant potential to contribute to a sustainable future when coupled with innovative approaches and modern technology.

This article explores the role of steam in a net-zero future, demonstrating how the decarbonisation of steam generation can unlock opportunities for efficiency, optimisation, sustainability, and innovation across industries.

STEAM: AN INDISPENSABLE INDUSTRIAL UTILITY

Steam has been the backbone of industrial energy systems for over a century. Its ability to transfer large amounts of energy efficiently and reliably makes it indispensable in sectors such as food and beverage, healthcare, pharmaceuticals, chemical manufacturing, and power generation.

KEY ADVANTAGES OF STEAM:

- Energy Transfer Efficiency: Steam's high energy density allows for the efficient transfer of heat and power.
- Flexibility: Steam systems can be adapted for heating, sterilisation, drying, and mechanical work, making them suitable for diverse industrial applications.
- Scalability: From small-scale operations to large industrial complexes, steam systems can be tailored to meet specific energy demands.

Despite these advantages, traditional methods of steam generation often rely on fossil fuels, presenting a significant challenge for industries aiming to achieve net-zero emissions.

DECARBONISING STEAM SYSTEMS

The path to decarbonising steam systems is multi-faceted, involving improved efficiency, the adoption of renewable energy sources, and leveraging emerging technologies.

1. ENHANCING SYSTEM EFFICIENCY

Optimising steam systems is the first step in reducing emissions. Efficiency improvements not only lower carbon footprints but also cut operational costs. Key strategies include:

- Reducing Heat Losses: Using advanced insulation materials for pipes, valves, and fittings can minimise energy wastage.
- Recovering Waste Energy: Implementing condensate recovery systems, flash steam recovery units, and economisers can significantly reduce fuel consumption by capturing and reusing waste energy.
- Upgrading Boiler Technology: High-efficiency boilers equipped with modern controls and automation systems ensure optimal fuel utilisation and minimise emissions.
- Conducting Regular Maintenance: Preventative maintenance schedules help identify inefficiencies and extend the lifespan of system components.
- Routine Audits – ranging from insulation surveys, to steam trap surveys – or full steam system audits to fully understand the process demand and seek ways to optimise

2. TRANSITIONING TO LOW-CARBON FUELS

Fuel choice directly impacts the carbon intensity of steam production. Transitioning to sustainable alternatives can drive significant emission reductions:

- Biomass and Biogas: Renewable fuels like biomass pellets and biogas are carbon-neutral options when sourced sustainably.
- Green Hydrogen: Produced using renewable electricity, hydrogen is an emerging zero-emission fuel for steam generation.
- Electrification: Electric boilers powered by renewable energy provide a direct route to decarbonisation, especially in regions with a green energy grid.

Consideration needs to be given to both the availability of fuel and also the infrastructure requirements.

3. INTEGRATING RENEWABLE ENERGY

Renewable energy can complement steam systems by reducing reliance on conventional fuels. Examples include:

- Solar Thermal Systems: Solar collectors can preheat water, reducing the energy demand on boilers.
- Geothermal Energy: Geothermal heat can serve as a sustainable source for low-temperature steam requirements.
- Aerothermal : Harnessing the natural power of the wind can be an attractive source of energy

4. LEVERAGING DIGITAL TOOLS

Digitalisation empowers industries to make real-time data-driven decisions for improved sustainability. Advanced monitoring systems, predictive analytics, and real-time performance tracking can optimise steam system efficiency and minimise waste. Technologies such as the Industrial Internet of Things (IIoT) enable smarter control and better integration of renewable energy sources.

THE BUSINESS CASE FOR DECARBONISING STEAM

Decarbonising steam systems is not only an environmental imperative but also a business opportunity.

Key Benefits Include:

- Cost Savings: Efficiency improvements lead to lower energy consumption, reducing fuel costs.
- Regulatory Compliance: As emissions standards tighten, decarbonising steam systems ensures compliance with evolving regulations.
- Enhanced Reputation: Demonstrating a commitment to sustainability builds trust with customers, stakeholders, and investors.
- Future-Proofing: Transitioning to low-carbon technologies safeguards operations against rising carbon taxes and fuel costs.

SPIRAX SARCO: YOUR PARTNER IN A NET-ZERO JOURNEY

At Spirax Sarco, we believe that steam has a vital role in the net-zero future. With decades of expertise, we provide tailored solutions to help industries:

- Optimise Steam Systems: Conducting system audits and implementing efficiency upgrades to maximise performance.
- Transition to Low-Carbon Fuels: Supporting the adoption of hydrogen, biomass, and electrification technologies.
- Leverage Digital Tools: Offering advanced monitoring and analytics solutions to optimise system performance in real time.

Whether you're just beginning your decarbonisation journey or refining existing systems, our team of experts is here to guide you every step of the way.

A SUSTAINABLE FUTURE WITH STEAM

Today's industrial landscape is vastly different from four decades ago, when many of our current steam systems were first designed and installed. In an era of abundant, low-cost gas and little concern for environmental impact, these systems served their purpose well. However, in our current climate of rising energy costs and urgent sustainability targets, some might question whether steam remains a viable solution.

The truth is that steam itself isn't inefficient – it's still one of the most effective methods of heat transfer and process control. What's needed is a modern approach to steam system optimization that aligns with contemporary efficiency standards and environmental goals.

By updating and fine-tuning existing steam infrastructure, organisations can maintain the inherent benefits of steam while meeting today's demanding performance and sustainability requirements.

Achieving a net-zero future requires innovative thinking and a commitment to change. Steam, with its unparalleled efficiency and versatility, can remain a cornerstone of industrial energy systems when decarbonised effectively.

By investing in modern technologies, adopting renewable energy sources, and partnering with experts like Spirax Sarco, industries can harness steam's potential to drive sustainability while meeting operational and financial goals.

Together, let's make steam part of the solution for a greener tomorrow. Contact Spirax Sarco today to learn more about decarbonising your steam system. **www.spiraxsarco.com**

THE DECARBONISATION DILEMMA: NAVIGATING THE ENERGY CRISIS

Matthew Everett,
Energy and Carbon Analyst, Salix

In an increasingly volatile world, energy markets are facing relentless pressure. Geopolitical tensions, economic uncertainty, and shifting regulatory landscapes are driving price fluctuations and supply chain disruptions. The ongoing war in Ukraine continues to impact global gas markets, while conflicts in the Middle East threaten oil and liquefied natural gas supply chains, particularly through key maritime routes. Meanwhile, political shifts in major economies, including the US and EU, are reshaping energy policies.

For organisations across all sectors, these challenges translate into rising operational costs and increased exposure to energy market volatility.

Among those most affected by the many external factors, are public sector bodies which must not only absorb rising energy costs but also work towards ambitious decarbonisation targets. In the UK, we have a legally binding target to achieve net-zero greenhouse gas emissions by 2050. The clock is ticking.

The UK public sector manages the largest property portfolio in the country with more than 300,000 individual properties. However, most public sector buildings still rely on burning fossil fuels for heating, contributing to approximately 2% of the UK's total greenhouse gas emissions. Meeting these targets is no small task, but dedicated funding mechanisms exist to support the transition.

At Salix, we support the public sector in securing government funding to deliver ambitious decarbonisation projects, ensuring that financial barriers do not stand in the way of meaningful progress. We're proud of the strides we've made in our mission to help save the planet, working across the public sector and housing. Yet, the scale of the challenge remains vast, and the need for coordinated action is greater than ever.

The government aims to cut greenhouse gas emissions from public sector buildings by 75% by 2037 compared to 2017 levels. Achieving this requires significant investment in energy efficiency upgrades, low-carbon heating, and renewable technologies – all while operating within severe financial constraints.

Inflation has exacerbated these demands, with 76% of councils expressing concern over the impact of rising costs on project deliverability within the restrictions of national schemes, according to a 2024 report by the Local Government Association.

With the energy market prone to uncertainty, it is critical for public sector bodies to have effective procurement strategies to achieve their decarbonisation goals. Well-structured procurement approaches may ensure energy is secured at favourable rates while also facilitating the adoption of low-carbon technologies, energy efficiency and fabric improvements, consultant support services and contractor implementation.

However, procurement may be another hurdle that the public sector must face. Unlike private businesses, and with good reason, public sector organisations operate within rigid procurement frameworks. While these frameworks promote transparency, fairness, and accountability, there can also be, challenges such as complex compliance requirements, lengthy approval processes and restricted supplier options. Procurement policy is often price-driven; for instance, public sector procurement requires a value-for-money approach, which could, some argue, compromise on quality.

Decarbonisation adds further complexity due to the evolving technology landscape, market uncertainties, limited expertise within procurement teams, and the need for integrated solutions that take a whole building approach. Sustainability teams, where they exist, at times may be under-resourced and lack the expertise to navigate complex decarbonisation projects.

This challenge is reflected in a 2024 Local Government Association survey, which found that 60% of councils have been deterred from applying for government grants due to the substantial time and resources required for applications. Decarbonisation efforts remain fragmented, with nine in ten councils stating they lack a sufficient financing plan to reach net zero by 2050. The longer these projects are delayed, the more emissions continue to accumulate rather than decline.

We believe that targeted funding mechanisms like the Public Sector Decarbonisation Scheme play a crucial role in supporting the public sector, ensuring they have the financial resources required to deliver their decarbonisation projects. The scheme provides grant funding for heat decarbonisation and energy efficiency measures for public sector buildings and has already allocated £2.5 billion in grant funding, excluding the current Phase 4 of the scheme.

For more information on the schemes, visit **www.salixfinance.co.uk/**. To learn about the impact of our work on local communities, check out our news area **www.salixfinance.co.uk/news**.

The ongoing energy crisis, combined with a lack of expertise, limited resources, rigid procurement frameworks, and unpredictable funding, makes decarbonisation an even greater challenge for the public sector.

Initiatives like the Public Sector Decarbonisation Scheme provide crucial financial support in meeting the net zero targets. The high demand for Public Sector Decarbonisation Scheme funding highlights its necessity, with applications often exceeding available resources.

Beyond enabling immediate carbon reductions, the Public Sector Decarbonisation Scheme funding drives long-term impact – stimulating demand for contractors, consultants, and technical expertise while strengthening the low-carbon economy. By investing in decarbonisation today, the public sector can drive immediate carbon reductions while building the skills and supply chains essential for a more resilient energy future – leading by example in the transition to net zero.

To discover more about our work at Salix, visit: **www.salixfinance.co.uk/**

ORGANISATIONS' LACK OF DATA POSES MAJOR CHALLENGE TO DECARBONISATION: SIEMENS STUDY

Siemens Smart Infrastructure has published a new report entitled "*Digital Transformation, Sustainable Returns: The New Pathway of Infrastructure*". It is based on a survey of 650 senior executives and explores how digitalisation can be harnessed to accelerate decarbonisation and transform the world's infrastructure – particularly in energy, buildings and industrial operations. The findings highlight how smart infrastructure enables decarbonisation, resource efficiency and collaboration to achieve sustainability goals. However, whilst there has been significant progress in recent years, there is still an immense untapped potential, especially when it comes to data-driven operations.

DIGITALISATION IS A KEY ENABLER OF DECARBONISATION

The main insights include the extent to which digitalisation enables more sustainable infrastructure, the importance of the right data to inform decision-making on the path to net zero, and which technologies leaders expect to have the greatest positive impact. Digital platforms are also seen to be an advantage for businesses, with respondents rating the top five benefits of their adoption as scalability; time and cost efficiency; faster implementation; reliability; and interoperability.

"Digitalisation is a powerful enabler of sustainability, and decarbonizing our buildings, grids and infrastructure is within reach with solutions that exist today. For example, with IoT driving down the cost of smart building technologies, we can connect systems, reduce energy use, and unlock massive savings," said Thomas Kiessling, CTO of Siemens Smart Infrastructure. "To accelerate decarbonisation and meet critical climate targets, we must harness digital technologies like AI and IoT in a more transformative way. The solutions exist, the savings are clear – there is no reason not to act now."

Digital technologies were found to play a critical role in reducing carbon footprints, optimizing resource use, and integrating renewable sources. 55% of respondents said that digital technologies have a significant or massive potential to advance the decarbonisation of their operations. However, with 45% stating they see little or no such potential, many may not fully appreciate the links between digitalisation and decarbonisation.

DATA GAPS POSE A MAJOR CHALLENGE

Smarter, connected infrastructure is key to energy management. Even though 54% of those surveyed say their organisations are mature or advanced in the data-driven management of their operations, the research also finds that one of the major challenges to decarbonisation efforts is data availability. A considerable proportion of respondents say they have little or none of the data they need in areas that are key to improving decarbonisation and resource efficiency: 44% lack emissions data, 46% lack plant and machinery performance data, and 30% lack energy consumption data.

Respondents also face hurdles in leveraging data even when it is available due to limitations in their organisation's abilities to effectively integrate, manage, and analyze data coming from a variety of sources. There is a recognized need across organisations to increase the volume, improve the quality, and enhance the availability of their data assets if they wish to make informed decisions and achieve better efficiency and sustainability outcomes.

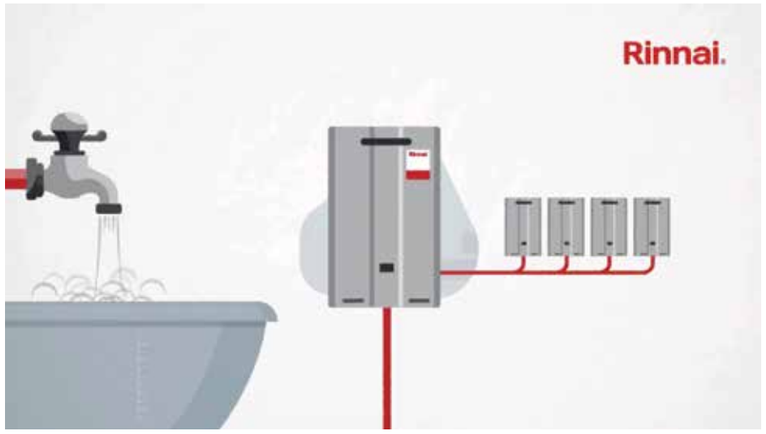
AI COULD BE KEY TO THE ENERGY TRANSITION

Based on the results of the survey, it is clear that AI is the technology expected to have the most positive impact on decarbonisation and resource efficiency: 33% of respondents believe AI to have the biggest impact in the next three years. However, for now, other solutions contribute significantly to emission reductions, including IoT, digital twins, smart grids, and edge technologies.

www.siemens.com/global/en/company/about/businesses/smart-infrastructure.html

RINNAI TO INTRODUCE NEW E-SERIES

Rinnai is introducing the updated Rinnai E-Series early in 2025 with the 17CE Condensing External Water Heater. This upgrade ensures UK customers can benefit from the latest advancements in hot water heating technology.



For a brochure on this new range of external water heaters contact Rinnai today by following the link **https://www.rinnai-uk.co.uk/contact-us/request-brochure**

Each unit is designed to reduce customer costs and provide continuous hot and clean water upon demand. The gas-fired water heaters are lightweight so there is no need for heavy lifting gear. The continuous flow water heaters are powerful yet diminutive with a max flowrate of twenty litres per min making them an ideal water heating solution where space is limited.

Inclusion of microprocessors enables the customer to pre-set water temperature delivered accurately to +1 / -1 degree of the set point helping eradicate legionella proliferation and delivery temperature inaccuracies that can create discomfort or scalding.

Rinnai's continuous flow hot water systems will only use the required amount of energy to increase water temperature whilst supplying multiple litres of clean hot water. Continuous flow systems do not require energy consumption whilst not in use, meaning that the customer does not pay any costs when the system is not operational.

Both models – the 17CE are an ideal solution for glamping sites, leisure facilities, festival ablutions, small commercial outlets and where there is a requirement for cost effective and durable condensing water heaters.

The 17CE model weighs just 18kg and the unit is compact ensuring easy installation that requires far less space than alternative systems. The range of temperature is between 37 and 65 degrees Celsius, whilst hot water delivery capacity is twenty litres per minute. Gross efficiency is measured at 93%. Further additions include direct electronic ignition and frost protection.

The 17CE condensing water heater is a Bio-LPG ready water heater and the Natural gas continuous flow water heater is I2HY20 ready for Hydrogen blends of 20%. The range of temperature is between 37 and 65 degrees Celsius. Hot water delivery capacity is seventeen litres per minute.

Rinnai understands the UK customer requirement for cost effective and robust appliances that consistently deliver clean hot water and heating to domestic and commercial buildings across the UK. Rinnai are committed to offering UK customers low cost and practical solutions that cover all energy options.

For design support and assistance contact the Rinnai design team today **https://www.rinnai-uk.co.uk/contact-us/help-me-choose-product**

www.rinnai-uk.co.uk/products/domestic/e-series-external-condensing-water-heaters

VERSATILE ESS OPTIONS FROM ECOBAT BATTERY

By offering viable solutions that address the power storage requirements of both commercial and residential sectors, Ecobat Battery, in conjunction with the appropriate Pylontech products, can provide a tailored package that makes on demand energy deliverable, in whatever situation.

RESIDENTIAL SOLUTIONS

The driving factors behind installing an ESS, whether part of the development of an existing property, or incorporated into the design of a new build, is to save both energy and money

Ecobat Battery's role is twofold: as Pylontech's UK distributor partner, it is able to deliver it products, but of equal importance, with more than 70 years of battery power storage experience and a team of knowledgeable professionals, it can not only work with its customers to define the ideal product solution, it can also provide the necessary back-up and service arrangements to keep it in peak condition, which are invaluable attributes that are difficult to replicate.

With design and aesthetics in mind the Pelio system is a modular solution that is stackable to up to four units high and subsequently provides from five to 20 kWh capacity from the same footprint.

The Pylontech Force series is another modular system, although this solution takes things to another level, both in terms of the number that can be stacked together (up to seven), and their individual capacity. It also opens up the options on the high voltage side of the equation, as the series is available in low voltage L1 and L2, and high voltage H1, H2 and H3 derivatives.

In addition to these existing models, Ecobat Battery will, in the first quarter of 2025, have another powerful product in its armoury with the introduction of the Force H3X, which is an all-in-one modular system that incorporates four models addressing both single and three-phase requirements.

COMMERCIAL SOLUTIONS

For large scale utility, commercial or industrial facilities, the options are no less compelling, with air cooled and liquid cooled alternatives, in both cabinet and container formats.

For further details, please visit Ecobat Battery at: **www.ecobatbattery.com/applications/energy-storage-solutions/**

RINNAI LOWER COSTS AND ENVIRONMENTAL IMPACT FOR EXPANDING LAUNDERETTE GROUP

Rinnai has recently provided a high efficiency water heating solution to a South Wales launderette which needed to replace its old gas boiler as the property wanted to lower operational costs and drive down emissions.

The new owner wants to install new coin-activated washing machines and increase its capacity for more customers. The increase in customers would logically mean an increase in peak demand loading for the hot water delivery system.

The launderette has planned to have 10 washing machines in total but with 2 different models differing in size and hot water consumption.

The site currently employs a low Kw rating gas boiler with 144 liters of built-in internal storage. The current system is only capable of providing 154 liters of peak demand. The new additions of coin-operated washing machines see peak demand increase the loading of hot water delivery to a requirement of 276 liters

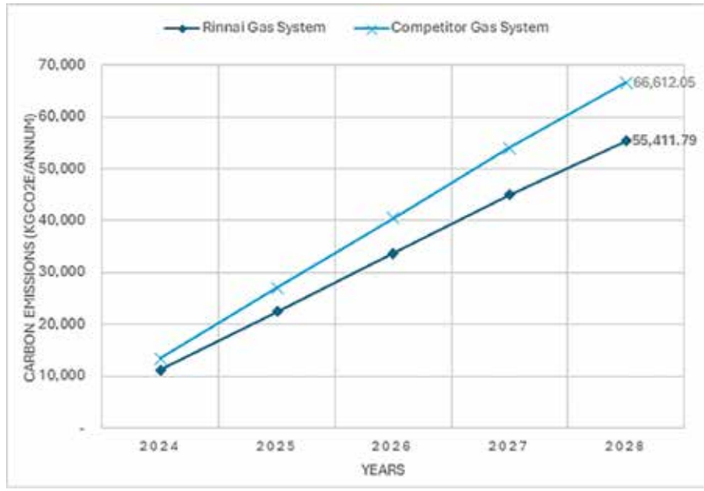
The new hot water delivery system needed to reach 276 liters on demand and be able to recover from peak demand conditions within 40 minutes – the average cycle of a coin operated commercial washing machine.

With a peak demand of 276L already determined, Rinnai UK was able to propose a system consisting of an N1300 continuous flow water heater with an additional 300L storage buffer to hold the peak demand for the washing machines. This system can recover the entire buffer in as little as 23 minutes, meaning this system is also able to cope with any further expansion by the customer as the buffer exceeds the peak demand.

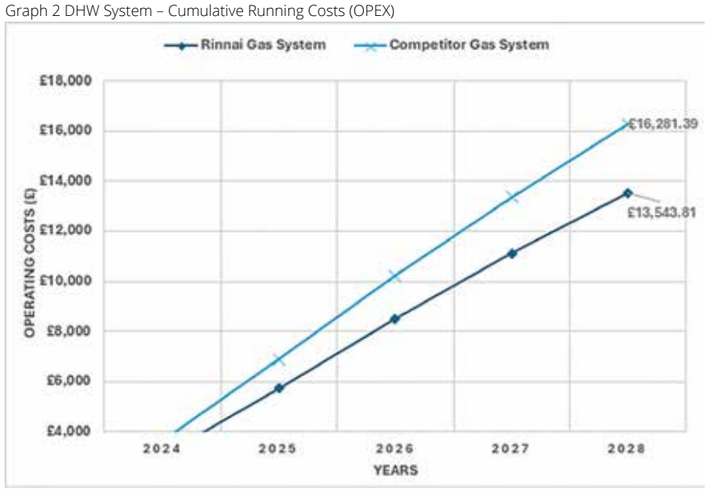
Rinnai can demonstrate the benefits of the N1300 system with the pictured graphs. One highlights the reduction of harmful emissions whilst the other graph proves the financial benefits of purchasing a Rinnai N1300 system. Both graphs measure the benefits over a 5-year period.

Graph 1 details how much less emissions are released by the Rinnai N1300 system when compared to the currently installed system.

Graph 1 DHW System – Carbon Emissions Lifecycle



Graph 2 DHW System – Cumulative Running Costs (OPEX)



Retail Natural Gas Price (p/kWh)				Natural Gas Carbon Factor (kgCO2/kWh)
Year	Domestic	Commercial/ Public sector	Industrial	
2023	11.30	8.92	8.24	0.203
2024	11.25	6.40	5.64	0.189
2025	8.57	3.31	2.47	0.189
2026	5.22	3.02	2.19	0.189
2027	4.91	3.09	2.27	0.189
2028	4.92	3.12	2.31	0.189
2029	4.92	3.16	2.34	0.189
2030	4.93	3.19	2.38	0.189

Graph 3 Gas – Prices & Carbon Factor

Graph 2 illustrates the difference over 5 years when comparing Rinnai's N1300 to the currently installed system in terms of OPEX costs (cumulative running costs). The Rinnai N1300 will require £13,543.81, whilst the competitor system will cost £16,281.39. Over five years Rinnai's N1300 offers a 17% decrease in costs.

This means Rinnai can reduce 5-year operating costs by 17%.

These are the forecasted gas prices as provided by the Department for Energy Security and Net Zero. More can be seen using the following link: **https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal**

Rinnai will continue to provide low cost, feasible and technical solutions for any commercial premises aiming to maximise daily operations. Rinnai technology is designed to produce total system efficiency meaning that commercial operators can rely on Rinnai systems to elevate operational output at a reduced cost. **www.rinnai-uk.co.uk**

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