

INNOVATIVE ENERGY MANAGEMENT TECHNOLOGY CAN HELP GOVERNMENT CUT COSTS WITHOUT CUTTING SERVICES - ECOSYNC

THE CHALLENGE

The UK government has announced that energy bill support for businesses will be decreased after March 2023 to reduce the cost to the treasury. Instead of wholesale costs being capped, a new scheme will be introduced that offers a discount on wholesale prices. This leaves businesses and government departments exposed to higher costs and needing to find solutions to reduce their consumption. Can the government lead the way when it comes to managing energy use on its own estate?

The public sector estate is vast and includes not just offices, but also defence estate, courts and tribunals, prisons, hospitals, schools, job centres, port facilities and museums, encompassing every type of building occupancy from accommodation to catering and teaching spaces or offices. Many of these buildings are old and energy inefficient. At a time when all eyes are on the energy crisis, the government is conducting a review to inform the consolidation of their property portfolio, whether owned or occupied. The end purpose is to shrink the public sector estate's size and optimise its use.

The total office space used by government is 2,712,000 m² operating at a cost of £1.5 billion according to the government's State of Estate report 2019-20. Reducing the energy consumption across these spaces presents a big opportunity for public sector savings and is critical if government organisations are to become more efficient with their utilities. This is their opportunity to show leadership by setting the example for the reduction of energy use and costs as well as the management of public money spend.

WHY ENERGY MANAGEMENT TECHNOLOGY IS ESSENTIAL

Energy management technology is dynamic, which means it can be adjusted to suit the needs of not only individual buildings, but specific rooms.

As the government consolidates its

property portfolio in 2023, public buildings are set to be shared or have multiple uses. Room-by-room control, as opposed to the central on/off heating systems currently in use, is critical to ensure rooms are being heated to necessary requirements.

This will provide significant energy savings and is therefore being referred to as the equivalent of changing bulbs to LED's. At present up to 99% of commercial buildings are heating empty rooms, wasting money, energy and emitting unnecessary CO₂ into our atmosphere. This practise must stop.

In addition to optimising energy use in each room, EcoSync's dynamic energy management system can sub-meter usage, meaning that heating costs can easily be allocated to departments.

The solution is also a non-permanent change. EcoSync's technology can be lifted and taken where needed – rather than being fixed to one specific building. So even if the building is not owned, property managers can still invest in energy management technology and save on their energy bills safe in the knowledge that they can take their investment with them if they move. The payback period for the technology is between 1-3 years, and therefore a viable option even when operating within a tight budget.

LEVERAGING NEW CLEAN TECHNOLOGY

In the UK, cleantech is growing at pace and is bringing solutions to the energy and climate crisis. The government must engage with these UK-based small to medium-sized enterprises (SMEs) using 'innovation calls' to explain the type of technology solutions they are searching for. EcoSync, a start-up out of Oxford



University, has developed an affordable, easy-to-install dynamic energy management technology that only heats up rooms if they're occupied by providing an innovative approach to occupancy tracking. It has already been proven to reduce energy cost and use by up to 50% in the public sector.

The technology intelligently adapts temperature controls according to a change in occupancy levels, driven by real time data collection. Building owner operators are given room-by-room level control, enabling them to build operational schedules in line with building usage. Additionally, its unique QR code gives occupants a degree of control as they can adjust the temperature within pre-determined parameters, to suit their comfort needs.

WHY THE GOVERNMENT NEEDS TO ACT

The Autumn Budget announced £28 billion in public spending cuts as the government tries to decrease the country's large deficit with many departments now allocated budgets far less than in 2010, despite inflation rates at record highs. At the same time, the government is also committed to reaching net zero by 2050. Public sector buildings account for 2% of total UK CO₂ emissions, according to the National Audit Office.

This means saving costs and conserving energy are both mission critical.

While schools are currently protected from intended cuts, they are already suffering significantly because of the energy crisis, with price hikes of up to 587%, a report from Schools Week has shown. With over 21,500 state schools in the UK, there is real concern that reduced support from the government will leave many schools unable to heat their buildings and pay their energy bills or with no choice but to cut staff. Without adequate government support, some schools say they will be forced to turn down the heating and raise class sizes, and others are considering a three- or four-day week. This will have a huge impact on society as seen during the Covid crisis and will negatively affect the education sector as they grapple with the rising energy bills.

Without urgent action from the government, spiralling costs will inevitably lead to resource and staffing cuts across the public sector. The government needs to be more ambitious, using new technology and data-led strategies. Upgrading legacy central on/ off heating systems with dynamic energy management systems, is a quick win that can drive quick progress.

WHAT THE GOVERNMENT NEEDS TO DO

This will require the government to follow their own advice, with stopping the heating of empty rooms listed as one of the best ways to reduce energy consumption in their recent public awareness campaign.

To do this, they will need to engage with innovative technology companies that have the solutions they need.

The Government Property Agency (GPA) is also committed to becoming a great place to work. The comfort of staff is crucial to enabling this, both from a heating point of view, which is why giving occupants some control over heating levels is so important, but also from a sustainability perspective with more and more of our workforce driven by environmental factors.

With the saving potential across UK's commercial buildings as high as £1.8 billion a year, EcoSync's innovative technology can help the government save a substantial amount of money on the running of public sector buildings at a time when budgets are tight and risks high.

It can also support the government may quick wins and quick progress on their net zero goals making it a no-brainer for early 2023 investment.

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FROM MINING COMMUNITY TO NET ZERO: STAFFORDSHIRE SCHOOL LEADS THE WAY

The Hart School in Rugeley has recently completed a new, highly-efficient development with sustainable experts, Net Zero Buildings. This huge investment for the local community offers additional capacity for the growing school, as it becomes a part of a net zero future.

As a result of the new building's A+ energy efficiency rating, the school will save an estimated £30 per m² per year. This will see an approximate saving of up to £11,500 on energy bills this winter.

PIONEERING CHANGE FROM MINING ROOTS

Less than two miles from Lea Hall Colliery, a disused mine that produced over one million tons of coal per year on several occasions between 1970 to 1980, The Hart School is leading Rugeley into a new era by committing to its net zero in operation expansion.

As a part of the Creative Education Trust, this development, which was completed in October 2022, is a part of a larger scheme to encourage net zero school buildings across the country.

"We've had net zero aspirations for a long time," comments Jon Ward, director of estates and facilities, Creative Education Trust. "But when the local authority asked us to take on additional children at The Hart School, these aspirations became more urgent, as we needed to continue to provide an excellent and sustainable learning environment for the children of Rugeley."

DEVELOPING NET ZERO

Net Zero Buildings designed a sustainable solution for the Trust to replace the existing 1960s single-storey building, which offered much-needed teaching spaces within the existing group of buildings.

The 385m² project supports the school in handling increasing student numbers – with 147 more students starting in 2022 than three years ago. It includes a new teaching block, made up of five classrooms, as well as female, male and accessible toilets, which is connected to one of the school's existing buildings, ensuring seamless transitions for staff and students between the old and new.

The new building uses a combination of sustainable technologies to reach an A+ energy efficiency rating:

Externally, design choices include a roof covered in photovoltaic (PV) panels and super-insulated timber-faced panels, which are extremely airtight for minimal heat loss.

Internally, the building uses mechanical heat recovery ventilation



and sensor-controlled low-energy lighting, while maximising natural daylight, to create a sustainable, yet comfortable, internal environment.

This combination of lean, green and clean technology results in a highly sustainable building, with an air permeability value of 1.73m³/(h.m²) at 50 Pa, which is much lower than the typical value of 5 for a building like this.

The Creative Education Trust chose Net Zero Buildings to deliver the Hart School extension, as it was able to deliver a highly-sustainable solution that reflected the school's net zero carbon ambitions. This means in operation, the school will generate more electricity than it uses, reducing running costs and helping to offset its carbon – which is more important than ever, given the current economic climate.

A FLEXIBLE SOLUTION

The Trust chose to build using offsite solutions as it's highly-sustainable, reducing carbon emissions, construction waste and energy consumption during the construction stage. Offsite also meant the new school building could be in operation up to nine months quicker than traditional construction methods. It also enabled a more cost-effective build, with Net Zero buildings completing the project under budget.

The environment did present some challenges, with varying ground levels in the site's southeast corner making installation difficult. To address this, Net Zero Buildings first levelled out slopes to ensure the extension could be installed with ease. It also adapted the building's design to suit, as the varying levels meant the southeast corner wasn't able to use photovoltaic panels for solar gain. As a result, Net Zero Buildings incorporated larger windows, which will account for any shading that may reduce the building's natural sunlight.

For more information on how you could deliver sustainable solutions for the next generation of students and teachers, visit <https://netzerobuildings.co.uk/> or call 01638 596 155.