

THE EMA MAGAZINE

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by **SCOTT ARMSTRONG**
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THE EMA MAGAZINE

Dear Reader,

For the first time in a long time, I am feeling very optimistic about the importance that organisations will place on energy efficiency and the wider sustainability agenda. 2019 could be a great year for our profession and for our credibility within our organisations, as energy efficiency becomes a Board agenda item.

The legislative landscape in 2019 has aligned to put this high on the Board priorities and more importantly, there is a realisation that cost management and changing consumer focus are adding greater importance to this area. It is a time that we, as Energy Managers, should be looking to capitalise on as we drive the right behavioural change across our businesses.

ESOS Phase 2 is now upon us and we are focussed on data reporting and auditing. Using fiscal metering and non-fiscal sub-metering to measure and manage consumption and the effectiveness of technology and behavioural change trials will determine our ESOS commitments. The biggest savings available are still through behavioural change which requires minimal capital to implement. The EMA are running training on behavioural change and accrediting ESOS Lead Assessors as well as auditing techniques. Book onto one of these to improve your skills to support the ESOS process and drive sustainable change.

Streamlined Energy and Carbon Reporting (SECR), the new carbon reporting regime, covered in this edition and going live this April, gives greater focus on our roles as company Boards are made responsible for understanding all principal energy efficiency measures their company is adopting. This becomes part of the annual audit process. Support your Boards and use this to increase the profile and the importance of energy management across your operations. Your value in your business is getting greater.

Changing consumer demand is something else that Boards are waking up to. Generation Z, (people born after 1998) who have grown up during an economic downturn, are placing greater importance on social and environmental responsibility. They are demanding that companies and brands with whom they trade reflect these strong values. These are our consumers of the future and will soon make up 25% of the consumer market.

Finally, in January Larry Fink, the CEO of Blackrock, one of the largest global investment companies, stated that within 5 years investors will measure a company's social, environmental and governmental impact when establishing its worth. The financial message is therefore growing more powerful, as if the impact of saving costs by being more efficient wasn't already strong enough!

This is a great time to be an Energy Management professional, capitalise on it, use the EMA's resources and build your networks to share best practice. Talk to us if you need support.



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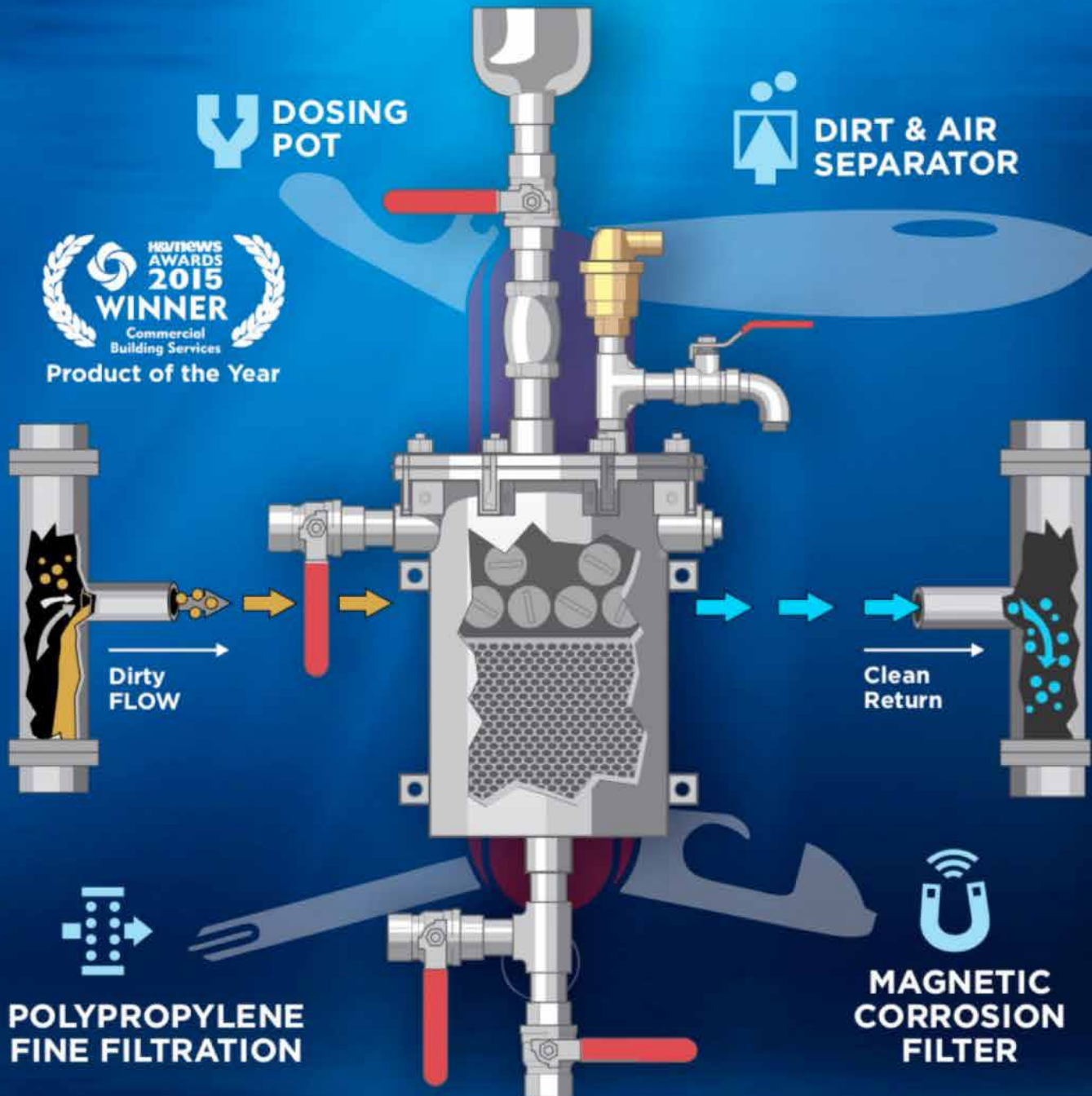
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What you Need to Know about SECR

In April of 2019, the UK Government's new Streamlined Energy and Carbon Reporting (SECR) framework will come into effect.

If you haven't heard of SECR, you are not alone. Although over 11,000 companies will need to start collecting data and reporting on their energy, emissions and energy efficiency measures, there has been little publicity on the regulation.

If you have undertaken CRC reporting then the emission element is broadly similar. However, around seven thousand companies in the SECR scope will not have reported on energy and carbon before.

Additionally, non-compliance could lead to fines, and in really exceptional cases a prison sentence for Directors. Although unlikely in reality, it is a good incentive to take SECR seriously.

The EMA has been involved with the development of SECR from inception. The genesis was David Cameron's 2010 "let's get rid of all this green crap" which led to the merging of most energy levies and taxes together, under one simplified regime.

The EMA views SECR as an excellent opportunity for increasing the importance of energy management in the UK's largest companies. The final report is a public document which in the future could be seen as not only a means of measuring a company's emissions but a

barometer on their climate change reduction credentials. Financial institutions and shareholders will use the report to gauge the risk profile of companies that ignore energy as a major financial risk.

What is SECR?

This regulation was created in order to replace the mandatory

information to underpin the transition to a global low-carbon economy.

Who needs to comply with SECR?

BEIS estimates that 11,900 companies across the UK will need to comply with the new regulation. That is a large increase from the approximately 4,000 companies

which were in-scope for the CRC Energy Efficiency Scheme. It also includes the approximately 1,200 quoted companies already under the mandatory greenhouse gas reporting requirements.

Businesses that need to comply will be classified as 'large' under the Companies Act

2006 and have at least two of the following:

- At least 250 employees
- Annual turnover greater than £36 million*
- Annual balance sheet greater than £18 million*

*Please note that the definition of 'large' companies is different from that of ESOS.

In addition, companies that have not previously been in scope, including large LLPs and unquoted companies, will need to report under SECR if they meet the criteria above. Low energy users (using less than 40,000kWh per year) will be exempt from reporting, however such an organisation is required to state, in its relevant report, that its energy and carbon information is not disclosed for that reason.

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greenhouse gas emissions reporting requirements for quoted companies and will come into effect immediately after the closure of the CRC Energy Efficiency Scheme for large UK energy users. It will operate in parallel with the Energy Savings Opportunity Scheme (ESOS) which also applies to large UK companies and will continue after the introduction of SECR.

The reporting itself has been developed by the Department for Business, Energy, and Industrial Strategy (BEIS) to align with best practice in the UK and internationally, and is intended to complement recommendations from the G20 Financial Stability Board's Taskforce on Climate-related Financial Disclosures (TCFD).

The recommendations aim to improve transparency and investor



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Public sector organisations will be exempt from SECR and will maintain commitments under CRC if in the current phase. However, public sector organisations must meet SECR obligations if they include limited company or LLP elements and meet above eligibility requirements.

Furthermore, UK subsidiaries will not have to report if covered by the parent company report. However, UK-based subsidiaries that are not covered by parent report will need to comply with SECR if eligibility requirements are met.

What needs to be reported?

The new SECR reporting requirement mandates that large non-quoted companies and LLPs in the UK must:

- Report on their UK energy use (electricity, gas, and transport);
- Report on their associated GHG emissions (scope 1 and 2 mandatory, scope 3 optional);
- Include a carbon intensity ratio in the report. The EMA is compiling a list of metrics that are most commonly used by different sectors and will make recommendations after consultation on which ratios should be used as best practice by different sectors.
- State the methodology they used in the report. There are a number of methodologies that can be used including the GHG Protocol, however the EMA has developed a methodology to provide consistency across the entire report. The methodology includes best practice across all reporting areas and is incorporated into an evaluation tool that is available for all companies to use.
- Report on all of their principal energy efficiency actions taken within the financial year.

Principal energy efficiency actions have a wide definition and this will be an area of considerable debate.

The EMA SECR methodology gives clear guidance on how to define principal measures, best practice to follow, and lists the main areas and processes that should be recorded in the report.

Quoted companies have been required since 2013, under mandatory greenhouse gas reporting requirements, to disclose their global scope 1 and 2 GHG emissions and intensity metric in their annual reports.

Therefore, reporting under SECR will add:

- Global energy use (electricity, gas, and transport);
- Report on all principal energy efficiency actions taken within the financial year.

How is the information reported?

The above information required by SECR will be reported by companies and LLPs in their annual director's report submitted to Companies House. The report must be approved by the board of directors (company) or a named partner (LLPs).

As the information is to be included in the annual report, it must also be included in the audited financial statements and be approved by the auditor. Auditors must approve SECR information:

- For consistency with financial statements;
- Consistency with knowledge acquired by the auditor in the course of performing the audit;
- Any need to further qualify the report.

Currently, electronic reporting to Companies House is voluntary from 2019, and it is not mandatory for directors' reports to be submitted electronically. However, this may become a requirement depending on the broader company reporting trends and context.

When will companies need to report?

Companies falling within the scope of SECR will need to report beginning on the first reporting period that falls after the April 2019 start-date.

Tax Implications

With the closing of the CRC Energy Efficiency Scheme for large UK companies, the government will base revenue collected on an expanded Climate Change Levy (CCL).

CCL is charged by the government on electricity, gas, and solid fuels and are listed on energy bills. The rates going forward are set out below.

Main rates of CCL (Source: HMRC 2018)

Taxable commodity	Rate from 1 April 2016	Rate from 1 April 2017	Rate from 1 April 2018	Rate from 1 April 2019
<i>Electricity (£ per kWh)</i>	0.00559	0.00568	0.00583	0.00847
<i>Natural gas (£ per kWh)</i>	0.00195	0.00198	0.00203	0.00339
<i>LPG (£ per kg)</i>	0.01251	0.01272	0.01304	0.02175
<i>Any other taxable commodity (£ per kg)</i>	0.01526	0.01551	0.01591	0.02653

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How can the EMA help?

As mentioned above, the EMA has developed the EMA SECR evaluation tool (SECRet) with the aim to assist companies with their SECR compliance. The tool reduces the time needed to complete the report through clearly setting out the steps needed to achieve compliance and record all the relevant data.

The report is in a format that can be used for independent verification, a service the EMA provides, and importantly easily audited by your accountants. The EMA is working with a number of the accounting firms to agree a standard format that will reduce the time taken to audit the SECR report, and therefore the cost.

The tool has been built around the EMA SECR methodology, which has been developed with some of our senior energy managers around the processes that companies have in place.

The tool focuses on the areas set out in the BEIS's SECR guidance and helps companies record their documented actions in an evidence pack. The EMA methodology is based around the GHG Protocol, is in line with ISO 50001, and sets out how to report on energy efficiency Principal Measures.

The process allows those compiling the report to not only record their actions but helps the company to identify energy efficiency measures and how to improve year on year.

The information compiled is lodged on a private cloud with the data owned by the reporting company to create a library of evidence to store corporate knowledge about energy efficiency that many companies find difficult to retain.

Further guidance is available through an EMA training course that provides an overview of the regulatory requirements and guidance on each stage of the process, including the information from carbon and

energy usage and energy efficiency principle measures, how to calculate the energy intensity ratio and how to present the report to the accountants, the company Board and what needs to be included in the company report.

The training session aims to prepare all trainees to report under SECR for their organisations or on a consultancy basis.

The EMA SECR Compliance course will be run in London on:

- 16th April
- 1st May
- 22nd May

For more information about SECR compliance and training, please contact Alex Ross alex.ross@theema.org.uk or call 0203 176 2834.



ESOS... a Little Less Conversation, a Little More Action Please!

The advent of the EU Energy Efficiency Directive and the subsequent creation of the Energy Savings Opportunity Scheme (ESOS) has been a positive step towards addressing rising energy costs and the pressing need to tackle climate change. Many organisations that have not previously engaged with the energy and climate agenda are now making positive steps in the right direction. For those organisations that were already on their own energy management journey, ESOS has provided a formal framework for accounting and reporting to their executive.

Notwithstanding the good progress to date, there is a widespread view that many ESOS audit recommendations simply don't get implemented; indeed some participating organisations view ESOS as a compliance burden rather than a business opportunity. If this view prevails, there is a risk that ESOS will be reduced to a reporting burden rather than an initiative that delivers bottom-line value to its participants. You may recall how EPC certification was going to revolutionise the energy performance of buildings by launching a wave of building energy retrofits... that's not how it worked out. Whilst many organisations will enthusiastically implement low cost initiatives such as controls tune-ups, it is often a challenge for them to implement more ambitious initiatives which require technology retrofits.

The reasons for inaction are manifold, and perhaps the most commonly

cited reason is a lack of funds. Whilst funding is obviously a factor, I have a suspicion that it is not the overriding reason why so many energy initiatives are often delayed or 'parked'. We have enjoyed an unprecedented period of low interest rates, and yet many organisations still struggle with initiatives that do not meet the oft-quoted 3 to 5 year payback period, effectively a return on capital of 20% to 33%. Whilst complex to implement and manage, performance contracting models, which remove the finance barrier, have also failed to make significant progress in the UK private sector market.

After many years working with multinational corporations through to SMEs, I suspect the reasons for inaction are much more subtle than

“ THERE IS A WIDESPREAD VIEW THAT MANY ESOS AUDIT RECOMMENDATIONS SIMPLY DON'T GET IMPLEMENTED; INDEED SOME PARTICIPATING ORGANISATIONS VIEW ESOS AS A COMPLIANCE BURDEN RATHER THAN A BUSINESS OPPORTUNITY. ”

the simple availability of finance. In a busy working week, we all apply our time and energy to those activities which will, in our judgement, make the biggest difference to our organisation and our own objectives. Managers in busy organisations tend to focus on what they must do rather than what they would like to do, and in the fierce competition for air-time

the energy agenda often gets pushed to the back of the queue. Whilst there are some signs that rising costs and CSR objectives are helping to change this, we still have a very long way to go.

Another barrier to action is the structure of the UK real estate market. In an effort to restructure their balance sheet, many private sector organisations now lease their real estate in the UK. The duration of leases has reduced in length and lease breaks are more common, thus allowing organisations to be more agile in a fast-moving world. This uncertainty results in a reluctance to invest in long term initiatives or in the retrofit of a landlord's property. Sectoral differences exist, whereby the retail sector often lease much of their real estate portfolio, whilst hospitals and universities are often long term owner occupiers.

So, why am I talking about all the challenges and impediments? Put plainly, if ESOS is to make a real difference, it is not enough to simply identify the energy saving opportunities and hope they will be seized upon by busy senior executives. It is equally important to understand why good initiatives are not being implemented; including many that yield a twenty

percent return on capital. Five years on from the introduction of ESOS, it is time to move the conversation onto implementation and thus the removal of the barriers discussed above. Despite an understandable reticence to meddle in business investment decisions, the Government now have a significant opportunity to incentivise businesses

to overcome the internal inertia and barriers which prevent action and this can be achieved through tax incentives.

The CRC Energy Efficiency scheme slowly lost credibility, and despite its honourable beginnings it was ultimately viewed as a tax raising scheme and a compliance burden. We need to ensure that ESOS treads a different path and one way to do that is by reducing taxation for responsible businesses that seek to reduce their energy and emissions. This is not a new idea, and many energy intensive industries already enjoy a significant reduction in the Climate Change Levy (CCL) by signing up to Climate Change Agreements (CCA); effectively a contract to reduce their energy intensity. With the closure of the CRC scheme, the climate change levy is set to increase and there are some signs that this will not be welcomed by business.

Climate change agreements are currently available to energy intensive industries such as ceramic or steel manufacturers and they have helped to significantly reduce the utility bills in these sectors. The opportunity exists for the Government to extend the CCA concept to all ESOS participants, thus allowing all corporations and SMEs to benefit from reduced CCL rates by implementing ESOS initiatives as part of an ongoing energy reduction commitment.

The option to secure a climate change agreement would help to overcome much of the business inertia and some of the barriers that prevent the implementation of energy savings initiatives. Climate

change agreements are easily understood and easily quantified and this means they are 'bankable' savings. This contrasts with many energy initiatives which are often viewed as a risky investment by non-technical staff. CCA agreements also require the approval of one strategic cost reduction initiative rather than the approval of many smaller initiatives which do not individually 'move the needle'. This in turn means the decision is made nearer to the board room than the boiler room, often involving the Finance Director.

“ FIVE YEARS ON FROM THE INTRODUCTION OF ESOS, IT IS TIME TO MOVE THE CONVERSATION ONTO IMPLEMENTATION AND THUS THE REMOVAL OF THE BARRIERS. ”

Once a climate change agreement has been entered into, it often provides the platform for the approval of all subsequent energy efficient investments. Indeed, the potential loss of a climate change agreement and associated tax reduction benefit often ensures that the executives are very supportive of the ongoing initiatives which are required to maintain the agreement and the tax reductions. In short, signing a CCA mandates that the participating organisation moves beyond audits and through to execution of savings, albeit on a voluntary basis.

There are several reasons why the Government may choose to adopt such a policy initiative. Firstly, whilst the idea of reduced tax receipts may not appeal to the Treasury, the

Department for Business, Energy and Industrial Strategy (BEIS) could rightly claim that they are delivering on elements of their industrial strategy, whilst also helping to tackle the dogged question of the UK's poor productivity.

Secondly, such a scheme could be based upon the proven mechanisms already implemented to manage Climate Change Agreements, and as a result it would cost little to implement and would have minimal political risk. Finally, the extension of the CCA scheme to ESOS participants would send a positive message to British business that energy efficiency pays and improves the bottom line. Such a move would empower businesses to reduce their energy expenditure in return for doing the right thing.

The advent of the new SECR regulations requires qualifying businesses to report annually on their energy consumption, together with an appropriate energy intensity metric. The reporting required to comply with SECR could also be used to satisfy any climate change agreement, which also requires annual energy accounting and an energy intensity metric to secure the ongoing CCL tax reduction.

Extending the CCA scheme to more businesses would be good for the environment, our national productivity and the energy efficiency sector. Moreover, it would ensure that ESOS is truly a savings opportunity scheme, and one that will last well into the future. It's time to look beyond audits; we now need to tackle the impediments and to start executing all those great ideas. The Government's FiTs and ROCs policy launched an explosion of renewable energy in the UK, and with a little more help from the Government we can do the same thing with energy efficiency.

Author's profile:

After many years managing power and energy projects in overseas markets, Ernie held several roles in Johnson Controls, including Director of European energy markets and EMEA VP for JCI's renewables and energy efficiency business. He now provides advisory services to large corporations and investors engaged in the clean technology markets.



Have you Got What it Takes to Become an ESOS Lead Assessor?

ESOS Lead Assessors play a fundamental role in the ESOS cycle by ensuring that organisations/clients complete their ESOS compliance project to budget and by its deadline. As the ESOS compliance deadline is looming closer (5th December 2019), the demand for these skilled professionals is increasing. But how do you increase your professional status to become a registered ESOS Lead Assessor?

The common path in becoming an ESOS Lead Assessor is to register with one of the Registers of ESOS Lead Assessors approved by the Environment Agency. Every Register has different conditions and stages of approving Lead Assessors. However, the common denominator for all is that they expect the candidates to demonstrate a minimum length of at least two years of good quality relevant professional energy assessment and energy audit experience relevant to the PAS 51215 competencies.

Required competencies of ESOS Lead Assessors as described in PAS 51215:2014

	Core competencies
A1	Understanding the operational context of the organisation being assessed
A2	Familiarity with, and ability to apply, the requirements of energy efficiency assessment methods
A3	Scoping an energy efficiency assessment, as applicable to the organisation being assessed
A4	Understanding, in detail, energy use and energy systems applicable to the organisation being assessed
A5	Managing energy efficiency assessment teams and budgets
A6	Understanding the techniques of measuring, sampling, sub-metering and establishing an energy balance
A7	Data interpretation, including analysis and scrutiny of energy use, energy consumption, and energy performance data
A8	Identification, quantification, ranking and prioritisation of opportunities for improvement
A9	Managing working relationships
A10	Preparation and presentation of a technical and non-technical report for an energy efficiency assessment

PAS 51215 Technical and Non-technical Knowledge and Skills

	Technical and non-technical skills and experience
B1-1	Understanding and application of material and energy balance
B1-2	Understanding and application of fluid flow
B1-3	Understanding and application of heat transfer
B1-4	Understanding and application of transport systems
B1-5	Understanding and application of electrical systems
B1-6	Measuring, sampling, sub-metering and interpreting results
B1-7	Understanding the role of operating procedures and their impact on energy performance

	Technical and non-technical skills and experience
B1-8	Conceptual design, technical and economic evaluation
B1-9	Project planning and deployment
B1-10	Understanding the importance of maintenance
B2-1	Communicating the outcome of an energy efficiency assessment
B2-2	Training
B2-3	Stakeholder engagement
B2-4	Managing change
B2-5	Economic valuation of opportunities for improvement
B2-6	Generating a business case for implementing identified opportunities for improvement

Any candidate who is able to demonstrate all or majority of the required competencies could certainly explore expanding their professional recognition toward becoming an ESOS Lead Assessor. Should candidates opt to contact the EMA to assist them with their registration, they will be following these steps:

Step 1 - Application Pack

Candidates are required to complete a detailed application form; prepare CV highlighting the relevant knowledge and skills and good quality energy assessment and energy audit experience; gather copies of relevant qualification certificates and agree to the EMA Code of Conduct.

Completing the application pack could be one of the most time consuming activities within the process of becoming a Lead Assessor, however it is important to get it right and provide relevant information. It certainly helps our panel of experts to process the application quicker, when reviewing the information and deciding if candidates demonstrate their good quality relevant professional energy assessment and energy audit experience to a sufficient level.

Step 2 – Training Course

Once the application pack has been submitted and approved by the EMA ESOS panel, the candidate will attend the EMA training course 'Become an ESOS Lead Assessor'. The course draws on the ESOS legislation, PAS 51215 best practice for a lead assessor, practical and professional practice of energy management and practical examples of ESOS audits. The material is updated frequently to reflect any learning from ESOS Phase 1 or information shared by the Environment Agency. The next EMA 'Become an ESOS Lead Assessor' course will take place on 4 April 2019 in London.

Step 3 – Post-course Assessment

The EMA 'Become an ESOS Lead Assessor' course is an intensive one day course. At the end of the training day candidates will be instructed to complete and submit a post-course assessment within 7 days of attending the course. The assessment feedback is offered within a few days and if successful, candidates can progress to a peer and technical review interview stage.

Step 4 – Peer Review and Technical Interview

The Peer Review and Technical Interview is conducted to assess candidates' competencies (as required by PAS 51215) and technical skills and experience. It reflects on the information provided in the initial application pack, and candidates are guided through questions covering ESOS regulation as well as practical energy assessment and auditing tasks to assure that candidates are competent to lead and deliver the ESOS compliance.

When all of the four steps described above are successfully completed, candidates will become Registered EMA ESOS Lead Assessors.

In terms of practicalities, completing the EMA ESOS Lead Assessor process can normally be achieved within 3-4 weeks of attending the course. To discuss the process further please contact Jana Skodlova on jana.skodlova@theema.org.uk or 0203 176 2834.

Becoming an ESOS Lead Assessor is a great way to demonstrate your professional ability and help you step up to the next level in your career. As you reach this stage of the career path, you can state your sector focus, such as transport, building, industrial processes etc. allowing you to provide even more value and experience to the organisation you're working for.



The Business Water Market - 2 years on

The business water market opened to competition in England (and sort of in Wales depending on how much water you use) on 1st April 2017. According to the market operator MOSL, by the end of January 2019 there had been 210,732 supply point switches, representing 7.9% of the 2,672,519 supply points in the market, consisting of about 1.2 million customers. This represents a switching rate of 16% in terms of consumption which roughly means that at least 90% of businesses are still with their incumbent retailer and haven't engaged in the market.

Given that we are two years into the market this is not a large amount of switching. If you consider this, alongside the fact that customer complaints are higher than pre-market levels and continuing to rise, then I am not sure anyone would say that the water market in England and Wales is thriving.

The aim of the opening of the water market to competition was to unleash the power to deliver competition and innovation, resulting in more competitive pricing, better services and environmental benefits. That has not happened.

On paper, there are around 50 retailers, but 8 of these are self-supply, 23 aren't really trading in the market and only 19 are actively trading retailers you can actually choose from. But 9 of the 19 are incumbent retailers linked to the wholesaler or have purchased the

wholesaler's customer book, which leaves 10 that are independent new entrants operating across the whole market.

There are lists of market participants and retailers on both the official Open Water and MOSL websites, but some retailers are missing and it is not easy to identify who is actually trading and who they are. To further add to the confusion there is a whole section of Third Party Intermediaries (TPIs) some of whom are allowed to wear retailers' clothes without having to bother with the licence applications or regulations that licenced retailers have to undertake and observe.

credit terms imposed on retailers and the charging of VAT by wholesalers means that retailers have neither had the liquidity or resources to deliver the kind of services to customers that was envisaged.

Strangely, despite all the statements claiming the market is all about customers, no one seems to care much about customers. It is true that big customers like supermarket chains, spurred on by TPIs, have been able to demand lower prices and payment terms of 100 days plus. But they are probably doing themselves a dis-service here as the only companies that can win these contracts are the big incumbents with rich parents. Smaller retailers

don't have the liquidity to meet the credit and VAT requirements to pay for the water for 100 days. The result is that large consumers are restricting themselves to a small segment of the retail offering, and may be missing out on water efficiency

and service improvements that cannot affordably be offered at low margins.

At the same time, smaller customers are struggling to get any value from the new market as the narrow margins mean that retailers find it hard to take on smaller customers. This means that very few SMEs have the chance to move away from the incumbent retailers and in some cases, retailers have been asking SMEs to pay months in advance.

So, we are in a situation where the absurdly complex and draconian system the regulators have put in place to protect wholesalers is in part being funded by SMEs. In this brave new world of the market, the mechanism to ensure no risk

“ THIS REPRESENTS A SWITCHING RATE OF 16% IN TERMS OF CONSUMPTION WHICH ROUGHLY MEANS THAT AT LEAST 90% OF BUSINESSES ARE STILL WITH THEIR INCUMBENT RETAILER AND HAVEN'T ENGAGED IN THE MARKET. ”

So, we have a market where there are:

- Retailers who are not trading;
- Retailers who have no customers;
- Customers who are so fed up with the market that they have become their own retailer;
- Other companies who give a very good impression that they are retailers when they are not.

Is it any wonder that customers are confused and that the vast majority have not switched, or aren't even aware of the market? The fact that it is not that easy to even find who the retailers are should give you an idea of how the market is functioning.

The very poor quality of data in the market, the low margins, onerous

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to massive multi-billion pound wholesale companies is effectively being funded by new entrant retailers, hairdressers and metal fabricators – great job everyone!

It is not surprising that rather than a blossoming of new innovative retailers we are seeing mergers of the bigger players resulting in a few large retailers dominating the market. This results in a race to the bottom in terms of lowest value and cheapest price, while a lack of liquidity stifles innovation, and the market tying itself in knots with the labyrinthine rules it created. In practice, this means that bowls clubs, allotment societies, and newsagents pay the same bills they did before but having to pay months in advance, whilst the only beneficiaries are wholesalers and big chains, and even for them it is a short-term benefit.

The one area that the regulator (Ofwat) holds up as a success is self-serve, and surely it's a rum situation when the poster child for the success of the market are companies that have decided that the market options are so bad that they would rather do it themselves! But then some of the self-serve customers are also beginning to realise that the poor design of the market messes up this option too. Self-serve companies have to pay VAT, and also provide credit support to the wholesalers. Either this wasn't properly thought through or someone was having a great laugh when this process was devised.

So, if you are a customer what does this all mean?

Well, frankly the vast majority of customers still aren't aware of the market.

My advice is firstly, businesses should look at the opportunities to get lower costs and better service in the new market, as despite what I have said there are opportunities if you can find them. Retailers have very different offerings, which mean that smaller customers may benefit from the investment in automation made by some of the retailers and larger customers may prefer the hands

on service or shared water efficiency savings that the market offers.

Secondly, if companies want to find these bespoke deals then perhaps they should look beyond TPIs or brokers, who tend to deal mainly with the larger retailers. There are some very good TPIs and yes most of them will find you the lowest price, but in the case of water the lowest unit price does not mean the best value. Water efficiency and better water management can deliver much larger savings than a small cut in unit prices.

Thirdly, check your bills and allowances. Now that wholesalers are at arm's length, they are taking

“ **THE RESULT IS THAT LARGE CONSUMERS ARE RESTRICTING THEMSELVES TO A SMALL SEGMENT OF THE RETAIL OFFERING, AND MAY BE MISSING OUT ON WATER EFFICIENCY AND SERVICE IMPROVEMENTS THAT CANNOT AFFORDABLY BE OFFERED AT LOW MARGINS.** ”

actions that will increase the bills for businesses as they don't have to deal with the consequences. We are already seeing things like non-return to sewer allowances being undone.

Fourthly, beware of what looks like a great deal as some retailers appear to offer lower unit rates but have hidden their margins in the standing charges. Look at the whole bill not just the



headline unit rates, and also look at break clauses and contract terms as you don't want to be trapped if you make a mistake.

Finally, shop around. The market is currently dominated by a few large companies. These companies may appear to offer what you need, but is it worth looking at the smaller companies who may be able to offer a more tailored service? It's worth picking up the phone to talk to all the retailers before making a decision or looking at a wider pool of retailers before deciding on a shortlist, and if you try and call a retailer but can't get through to a human then you might want to ask if that is the sort of retailer you want to be with when something goes wrong!

Author's profile:

Jacob Tompkins is the co-founder and Chief Technology Officer at The Water Retail Company, one of the new entrants licensed water retailers. He was the founder and CEO of the water efficiency NGO Waterwise and previously worked at Water UK and the National Farmers' Union as a water specialist.

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In the Spotlight

Energy management is a broad subject and when it comes to job description can cover a variety of activities. The EMA gathers energy management professionals from across industries and in this regular section will interview energy management professionals about their role. This month we are shining the spotlight on Luke Olly, Energy and Environment Lead at Central England Co-op.



How did you become interested in energy management?

After completing a Geography degree, I realised the significant impact we were having on the planet in so many ways but in particular the damage of climate change and the risks it poses. To solve this problem I saw energy production

and management as a key area so set about looking at how I could become more involved in the sector.

What does your role at Co-op entail?

My role can be broken into two areas of focus. Firstly, doing business well, looking at our compliance processes, utility billing and risk management. Secondly, looking at how we can manage our environmental impact through innovation in technologies and new processes, such as redesigning our refrigeration cabinets and working with new machine learning programs.

What is the most exciting part of your job?

I enjoy finding or developing solutions that deliver significant improvements to our operations and environmental impact. Working with partners both internally and externally that are passionate about what they're doing and harnessing that energy to drive our business forward.

As a regional, rather than national, retailer with around 400 trading sites across the wider Midlands area we're very agile so I get to be involved in a broad set of topics such as food waste and plastic reduction alongside carbon, waste and water management. There's a drive for change within the business so we

can often get solutions trialled and rolled out far quicker than larger organisations, meaning that I believe we can be more innovative than our competitors.

What is the most frustrating part of your job?

I don't often get frustrated but competing for resource to deliver on a change that I believe the business would benefit from can be a challenge.

There are always other projects the business can spend time and money on, things that other people are passionate about, so I have to make sure my ideas are communicated effectively to take opportunities when they are there.

Can you describe your typical day?

I'll spend a few hours working on billing or compliance issues, a large and varied estate that is constantly changing means there's always some utility related problem to solve. I also have reports coming in from external contractors that highlight inefficiencies within our estate that I review regularly, then send out action requests to site managers.

The rest of my time is then spent on identifying technologies and processes, trialling them and project managing their roll out.

This can mean I have a list of 10-20 projects in various stages of their development, such as LED lighting schemes, refrigeration gas changes and new HVAC & refrigeration control strategies, so I'll fill my time engaging with stakeholders, planning, writing business cases and strategies or some other communication, visiting sites or attending industry events.

“ THERE ARE ALWAYS OTHER PROJECTS THE BUSINESS CAN SPEND TIME AND MONEY ON, THINGS THAT OTHER PEOPLE ARE PASSIONATE ABOUT, SO I HAVE TO MAKE SURE MY IDEAS ARE COMMUNICATED EFFECTIVELY TO TAKE OPPORTUNITIES WHEN THEY ARE THERE. ”

What drives you?

Knowing that what I'm doing is making a measurable improvement to the world my children are growing up in.

What qualities should a good energy manager possess?

Inquisitiveness – always being prepared to ask questions until you are satisfied with the answer and comfortable with dealing with change and new things.

Foresight – understanding the best path for your business so you can set strategies that are clear and enable investment to be well made by your business.

Personable – able to mix with a broad set of people and get them to trust you and work with you so you can influence decisions and even be in the room when they're made.

What is your greatest contribution to the energy management sector or your current role?

Putting doors on chilled refrigerated cabinets isn't particularly innovative or new but we've done it on over 90% of our estate leading to huge energy savings, most recently installing 3,200 doors & associated LED cabinet lighting, saving over £500k per year. This has benefitted our old estate but it's also meant that in our new builds we have been able to redesign the chilled refrigerated cabinets to be more than 60% more efficient than other manufactures, further shrinking the size of the refrigeration system we need.

I regularly meet other energy managers from our sector and I hope the benefits we've shown through this work



will mean more retailers will start putting doors on their cabinets.

Which energy efficient innovation can revolutionise the global economy?

Artificial Intelligence (AI) and machine learning has the ability to completely change an energy manager's role and bring significant savings. Metering, sub-metering and the development of Internet of Things devices mean that energy managers have access to huge amounts of data, but doing something with that takes a lot of resource, meaning benefits are not fully realised. AI can change this and give energy managers the ability to make data led decisions at a speed and scale previously never possible.

“DON'T FOCUS TOO MUCH ON THE TECHNOLOGIES, RATHER CONCENTRATE ON THE RISKS TO THE BUSINESS IF NOTHING IS DONE AND THEN IDENTIFY WHAT THE BUSINESS WANTS TO ACHIEVE.”

What advice would you give to someone looking to craft an energy management strategy?

Strategies are more about a direction of travel and bringing people with you on that journey. Don't focus too much on the technologies, rather concentrate on the risks to the business if nothing is done and then

identify what the business wants to achieve. If this is made clear then discussions around costs, methods and technologies will be far more productive.

What plans are there for 2019?

We have an AI trial that I'm hoping to go fully live that analyses electricity & gas half hourly data on bulk, picking up issues such as irregular usage when benchmarked with historical consumption and normalised against external temperatures. Something which I'd much prefer to get a computer to do than me! I then aim to ensure controls and settings across HVAC and refrigeration are all consistent which I should then be able to feed into the AI system. This would further develop its predictive abilities, enabling us to move towards a predictive maintenance regime, rather than the often reactive process we currently have.

Author's profile:

Luke gave up the idea of being a guitar rock god to save the planet. He now spends his days looking for problems to solve such as high fuel bills, waste and getting people living more sustainably as Energy & Environment Manager at Central England Co-operative and trustee at ecobirmingham.

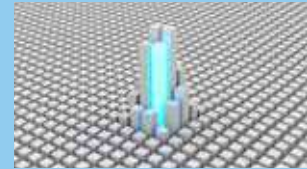
New Energy Management Courses

How can Energy Management in Building Services course be used as a company benefit?

For any organisation and energy manager, it is important that the building they occupy or manage works to its greatest potential, to increase its efficiency and to ensure the cost is kept to a minimum. Even the most efficiently running building sometimes requires a little boost; perhaps a thorough review of the ways that the energy is consumed, or processes and types of equipment used in the buildings.

The EMA Energy Management in Building Services course has been designed to assist you in getting the most from your building, and provides an introduction to many of the most common energy consuming systems found in existing buildings and their operations. Some of the legislation that may apply in buildings such as Minimum Energy Efficiency

Standard (MEES) will also be covered during the course. The ultimate aim is to optimise the building's performance, and therefore the following areas will also be discussed during the training day: heating and cooling systems (including recovery) hot water systems, air handling and conditioning systems, lighting and their associated control systems as well as renewable and low carbon generation systems producing heat and power.



EMA Energy Management In Building Services Course
 Length: 2 days (09:30-16:00)
 Date: 9-10 May
 Location: London
 Price: £750+VAT

What to expect from a course in Energy Auditing?

For a number of reasons, be it ESOS compliance or environmental due diligence, an internal energy audit could be used to identify a potential programme of efficiency projects or just to understand how your building or process is currently operating and at what cost. A good energy auditing techniques and an in-house knowledge is fundamental.

Starting your energy auditing task does not have to be a step into the unknown, despite it being a relatively specialist skill. The EMA Energy Auditing Techniques course offers guidance through the basic techniques (from initial data analysis through to the on-site process or equipment identification and operational review) and the key elements to look out for during an audit.

During the course, the main types of opportunities that are likely to be identified and the types of equipment that can be replaced or upgraded will be explained. The course will also discuss the control of energy consuming processes and equipment, as well as where much of the savings can be made. The course will conclude with the basic outcomes of an audit in relation to reporting and calculation of savings and return on investments.



EMA Energy Auditing Techniques Course
 Length: 1 day (09:30-16:00)
 Date: 13 November
 Location: London
 Price: £450+VAT

The EMA training courses are run by skilled and inspiring trainers, each with at least fifteen years' experience in the subject they are delivering, so you come away with practical tools that you can apply straight away. Your course attendance will be a varied and interactive experience with practical exercises which you may utilise during your future projects, and a way forward to achieving your professional objectives.

To apply to attend the EMA Energy Management training courses, please visit www.theema.org.uk or contact jana.skodlova@theema.org.uk.

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	30 TH	Water Management
MAY	9-10 TH	Energy Management in Building Services ^{*NEW}
JUNE	4 TH	Energy Management Strategy and Plan
	5 TH	Waste Management
	11 TH	Essential HVAC Control and Optimisation (Bristol)
	13 TH	Energy Procurement (Manchester)
OCTOBER	1 ST	Energy Procurement
	3-4 TH	Fundamentals of Energy Management
	8 TH	Energy Monitoring, Targeting and Validation
	9 TH	Essential HVAC Control and Optimisation
NOVEMBER	5 TH	Battery Storage for Business
	6 TH	Water Management
	6 TH	Understanding and Delivering Behavioural Change Programme
	12 TH	Lighting – Basic Understanding
	13 TH	Energy Auditing Techniques ^{*NEW}
	13 TH	Turning Data into Energy Savings
	19 TH	On-site Electricity Generation
21-22 ND	Energy Management in Building Services	

Please note that all courses take place in London unless otherwise stated.

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Energy Management at the World's Busiest Single Runway Airport

In this regular feature, we focus on how organisations across different industries approach energy management. In this issue, we are exploring the world of the aviation industry with Martin Bilton, the Utilities Manager at Gatwick Airport.



Located in West Sussex, Gatwick Airport Ltd (GAL) operates the world's busiest single runway with 280,000 air traffic movements and over 46 million passengers per annum; around 53 airlines offer over 228 worldwide destinations.

The airport consumes circa 155GWh of electricity and 60GWh of gas

annually and uses energy 24 hours a day to operate the airfield, 2 terminals and operations of the more than 120 businesses based here. The airport has extensive private HV and LV networks as well as making substantial use of regional supply networks for gas and water. The largest percentages of energy is used to light, heat and cool buildings; whilst airport buildings also have large number of lifts, escalators and passenger walkways plus some unique systems such as baggage handling, fixed electrical ground power for aircraft and lighting for stands, taxiways, car parks and the runway.

What does energy management mean at Gatwick Airport?

Energy management is a critical aspect of planning and operational management that needs to cover a broad set of business issues. In practice this means that we have to have a focus on at least four things:

Energy systems are an essential enabler for business change and growth; this means almost continuously reviewing our development plans to ensure our systems have sufficient capacity and expandability to change and adapt our facilities to meet the

needs of passengers, airlines and associated commercial businesses.

Energy systems provide an important, if hidden, aspect of operational resilience that are built-in to support a 24/7 operation with very little downtime as well as protect the operation from 'foreseeable' issues or events. This means designing-in resilience, expandability, redundancy, standby and back-up systems as well as having operational contingences.

Energy efficiency is a key component of operational efficiency and sustainability so the Gatwick engineering team gets involved early in airport development projects to influence the scope and set the right technical standards for project designers. A current example of this approach is the Pier 6 extension project where early involvement has led to adopting a goal of BREEAM Excellent, designing in passive energy reduction measures, a rainwater harvesting system for toilet flushing and a low carbon electric air source heat pump for generating heating and domestic hot water. We collaborate with the sustainability team to devise challenging targets and then monitor these on a regular basis. Once a project is delivered, Engineering strive to maintain, and if possible optimise, the efficiency of the systems as they operate day to day. This includes expanding and improving our metering systems as an intrinsic aspect of energy management.

Energy management also means managing cost; this means having flexible and environmentally evaluated gas and power contracts, appropriate risk management strategy as well as dealing with the basics of bill validation, budgeting and forecasting. Additionally, because an airport operation requires lots of organisations to work together on the same site, there is



also a significant focus on supplying energy to our tenants and managing the related income.

How does Gatwick Airport deal with energy management?

As you can see from how we define Energy Management, we try to incorporate it into how we work, operate and plan. Our Engineering team takes the lead on energy management, with teamwork across other departments including Development, Planning and Sustainability, Procurement, Finance and Environmental Health and Safety.

At a strategic level, Gatwick's sustainability strategy, called "Decade of Change", includes 10 year targets for energy efficiency and renewable energy. Today, Gatwick uses 12% less energy than in 2010, and is 40% more energy efficient on a per passenger basis. We have also purchased 100% certified renewable electricity since 2013.

We produce an airport master plan every five or six years which provides a strategic 'look forward' at airport development opportunities; and our capital investment programme (CIP) sets out the investments in infrastructure, facilities and systems needed to support such plans. The CIP includes investments in energy systems capacity reinforcement, resilience improvements and facility upgrades or asset replacement. This means energy efficiency can be factored into strategic investment and the replacement of outdated, obsolete or life expired mechanical, HVAC, electrical systems or indeed building fabric components.

Technical standards play a key role in how we operationalise energy efficiency. For every element of the CIP, a specific project scope will be developed that includes Gatwick's 'technical standards' which cover all aspects of the airport's system design requirements including those for energy efficiency and energy metering. Energy contract and cost management is a partnership between our Engineering, Procurement and Commercial teams. Engineering manages the airport's overall utility budget, forecasting and invoice validation. Engineering and Procurement manage energy contract negotiation and renewal as well as risk management strategy. The commercial team manages airport tenant energy and water related income; they have invested huge effort in improving the processes and systems around all aspects of manual and AMR meter read technology, web portal data storage, billing and reporting.

Another key aspect of energy management is our external accreditations: ISO14001, the Carbon Trust Standard for Energy/Carbon, and Airport Carbon Accreditation. Gatwick was also the first airport in the world to join RE100, the global campaign to promote renewable electricity.

What areas of every day's business at Gatwick are most challenging in terms of energy management?

An airport is a complex environment with many stakeholders and competing business requirements and this presents challenges, but also makes it an exciting environment to work in. We have a strategic focus on power resilience, having sufficient power capacity where it is needed, and it is an ongoing challenge to link metering communications to reporting platforms. I think the energy efficiency challenge is an interesting one although I doubt it is unique to an airport! I always say we are not short on energy efficiency ideas, I only need to walk around with my 'energy manager' eyes open.

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The challenge is (a) having sufficient resource to scope and cost the best solutions, (b) translate those best ideas into compelling business cases when delivering work at an airport is expensive and energy is still comparatively cheap and (c) access to funding when there is huge competition for the capital needed to maintain and grow the business. Where teams have kept detailed maintenance costs for specific assets or where we can leverage the support of other teams to see the benefit of improving assets, this can often really help support the business case.

For example where you see a good opportunity to replace normal lighting, but when you look into the detail, the escape lighting or ceilings also need attention, suddenly the project is no longer just about energy efficiency. This means, if we are to succeed in terms of energy efficiency, departments need to work together to identify the best projects. I also believe that control system optimisation skills i.e. the skills to modify the BMS, lighting and other control systems are in short supply and often lacking within maintenance contracts. This is certainly something I continue to try to tackle at Gatwick.

How is energy management viewed by the organisation's stakeholders?

Our stakeholders expect us to manage the airport safely and efficiently, and to minimise or mitigate our environmental impact. Our energy strategy incorporates these expectations, hence our integrated focus on energy resilience, cost management, energy efficiency and cleaner energy.

We have set ourselves high standards and robust targets, and we aim to meet or exceed them. We report annually on our energy performance in our Decade of Change sustainability report and also have detailed internal performance metrics and reporting as well.

Can you describe an energy management project that reflects the organisation's principles and/or corporate responsibility when it comes to energy management and the environment?

The project that springs to mind for me is one related to upgrading the lighting for our external long-stay and staff car parks. The engineering manager responsible for external lighting worked-up a design solution with a manufacturer for a 'single fitting' induction light & integrated control system for over 2,000 fittings. The £0.9m project provided a good business case with around £200k savings from the previous energy and maintenance costs; it was funded by Gatwick and the project delivery was managed by the manager that inceptioned the solution. Additionally, the project introduced a software monitoring & control system for every fitting that means the maintenance team now has full visibility of car park lighting, any faults and programming functionality from one screen.

Why I think this reflects Gatwick's approach is that I feel the project delivered on multiple fronts; energy efficiency and carbon reduction; asset standardisation for the maintenance team; a high quality light output with low glare for the car park users as well as setting a future technical standard for how we should monitor and control external lighting systems.

What is in the pipeline for the future?

Our Capital Investment Plan includes a number of projects either in development or delivery which will enhance our energy infrastructure and our energy efficiency. For example, we are investing £5 million over five years on electric vehicle infrastructure which involves identifying the most suitable locations for power supply and charge-points from the operational, spatial and efficient utilisation points of view. The shift to electric vehicles will use more electricity and we will apply efficiency principles to the technology options as with any other functional use.

Our Property team has recently started a full refurbishment of the on-site airport fire station, a great opportunity for energy efficiency improvements. They also have plans to upgrade HVAC plant in a couple of office buildings and a busy programme of office refurbishments.

The Terminals team will shortly start delivery of a complex project to replace ceilings & lighting in South Terminal Check-in. The Baggage projects team are in full swing delivering new hold baggage screening machines; once

this work is complete they have future work planned for significant lighting upgrades to baggage areas.

The Engineering team will continue with the power resilience work stream and also the boiler decentralisation programme in South Terminal where old 1960s boiler plant and associated high temperature hot water network is being gradually replaced with modular gas boiler & low temperature hot water plantroom solutions. In 2020 we reach the end of our first 10 year 'Decade of Change' sustainability plan. We will get the chance to reflect on our sustainability performance, recognise the hard work, innovations and successes of colleagues over ten years, take important learning for where things did or didn't go as planned; ultimately leading onto to us setting new goals for 2030 and beyond!

Author's profile:

Martin is a Chartered Engineer, member of the Energy Institute and has over 25 years' experience in airport engineering roles covering mechanical services design, asset maintenance, contract and cost management. As Gatwick Airport's Utilities Manager since 2009, Martin is closely involved in scoping business cases for energy projects including lighting projects, HVAC & boiler replacement and exploring options for site generation technology.





Monitoring Baseload Consumption across Hundreds of Meters

A recent BBC news article¹ reported the findings of a study on the impact of renewables compared to energy efficiency on our electricity consumption since the 2005 peak. While renewables have reduced fossil fuel energy by 95 TWh, energy efficiency has reduced demand by 103 TWh.

Energy efficiency can often be improved through low-cost solutions. This article will focus on the energy savings achievable through simple main meter monitoring using a single alert type to target energy waste. I ran an energy management cycle from energy alerts, desktop and site investigations, business cases, managing resolutions, M&V of results, continual monitoring and re-benchmarking for continual improvement.

The project operation was based in Bristol with me providing every part of the alert cycle with a senior consulting engineer as an advisor and key account manager. The client, the National Estate and Facilities Manager, was introduced into current

work streams, data management tools, analytics and energy project management processes quickly in order to provide the requirements for this project that included access to kWh per half hour (HH) data in the form of a day+1 file and site information such as addresses, floor area and site contact details.

Locations with their details were created on an energy management platform with the HH data uploading via email each day where the configured alerts were generated.

The client in question has c.200 warehouse retail sites with the utilities being used for HVAC, lighting and small power only. Energy and facilities management across the whole portfolio is outsourced to third party providers with the FM provider's work force c. 10 sites per a Facilities Manager. Operating hours vary, but general principle is 6 hours on a Sunday with 12 hours every other day, winged by up to an hour of staff occupancy. Requirements for out-of-hours (OOH) consumption is minimal.

“ENERGY EFFICIENCY CAN OFTEN BE IMPROVED THROUGH LOW-COST SOLUTIONS.”

Project aim

The goal of this project was to find and realise opportunities for energy savings through the kWh per half hour data from main utility meters. Staged objectives for the project were:

- Introduce historical and daily HH data into the energy management platform,
- benchmark the current HH profile for each site,
- create and review alerts on the HH data,
- investigate causes for high consumption leading to alerts,
- manage the resolution of determined issues,
- measure and verify the cost avoidance.



Due to the occupancy profile of the sites and the nature of the sites having minimal requirements for OOH consumption, the alert type discussed in this article was based on this period. High consumption during OOH may be a result of a baseload increase, controls misuse such as overrides or operational faults by BMS or personnel. Other alerts for separate times of the day or for different measures were used in conjunction with this alert but this article will focus on the OOH alert.

“ **IN ORDER TO FOCUS ENERGY EFFICIENCY IMPROVEMENTS, I CONCENTRATED INVESTIGATIONS ON RECURRING, SIGNIFICANT ISSUES I.E. 3 HOURS STRAIGHT EACH NIGHT, EVERY NIGHT FOR A WEEK.** ”

From benchmarking to resolutions

Data received daily from the client's data collector was sorted into the energy management platform where it was then available for detailed analysis and review.

Benchmarks would be created from energy consumption patterns and knowledge of the typical asset specification and operation patterns. These benchmarks would be the foundation of our monitoring and targeting process.

The platform was set up to provide alerts based on these benchmarks, allowing for high or irregular energy consumption to be discovered through minimal data manipulation. In order to focus energy efficiency improvements, I concentrated investigations on recurring, significant issues i.e. 3 hours straight each night, every night for a week.

Once streamlined, investigations into the alerts would begin. Consisting of desktop investigations focussing around knowledge collection from onsite personnel such as site managers or facility managers around potential or known causes. In the instance of this project, I could also dial into all operational Building Management Systems (BMS) in order to review schedules, setpoints and control operations such as overrides and last man out controls.

Managing the resolutions, tracked through opportunity logs, would vary substantially dependent on the opportunity. Actions to resolve an issue could range from monitoring an operational change, to organising site visits from specialist BMS control engineers alongside the client's FM technicians in order to find the complete resolution between equipment and controls.

Measurement and verification of the resolution was important to ensure that the savings impact was realised and maintained.

Over a designated time period of 3 months, the savings achieved were monitored to confirm the continuation of the result. If the consumption was to revert to previous patterns or change drastically, the process would return to the investigation stage.

The importance of accurate data

The first consideration in order to increase the effectiveness of this project was to ensure the accuracy and completeness of the data. As I could have received and filtered

“ **THE ACCURACY OF THE BENCHMARK WAS ALSO AN INFLUENCING FACTOR ON THE EFFECTIVENESS OF THIS PROJECT.** ”

hundreds of alerts, their origin was important and should not have been due to erroneous data. Vice versa, missing data may have led to missed issues. While data completeness was monitored separately through regular data checks, the alerts were filtered based on the number of consecutive alerts and those with a full week of alerts had the previous month's

data sense-checked on the energy management platform.

The accuracy of the benchmark was also an influencing factor on the effectiveness of this project. If the benchmark was too lenient, too few alerts may have been raised or alternately too strict and too many alerts may have been raised.

Due to the targeting of alerts to non-trading consumption, the main concern was that the benchmark is too low or strict and causing too many alerts from sites with only the necessary overnight equipment running.

The main challenge when investigating OOH issues was that they occurred when the site was unoccupied. Some of the issues and remedies discovered were post-energy efficiency installation works, for example LED fitouts (including stand-alone lighting controls) and BMS installations. Complications arising from the completion of these projects were discovered through the energy management platform's alert system.

The BMS and energy profile were not able to directly indicate the cause of the higher consumption therefore we were next relying on the site manager's knowledge of their new energy systems and what was still on when they left the premises (despite following usual shut down procedures). To gain a more technical insight we would question the site's

FM. However, their visibility of what is running overnight is limited due to their working hours and travel requirements.

Stakeholders

Stakeholder engagement became important when investigating the issue through site personnel and changing their operational habits. An example is one site having sections of lighting overridden and staff were manually switching the override due

to incorrect BMS settings, leading to these sections of lighting being left on overnight frequently. The staff was unaware that if the issue was raised, I would be able to alter the settings, eliminating the requirement for manual switching and reducing the risk of unnecessary OOH consumption.

Stakeholder buy-in was also important when discovering an issue that requires a cost to discover and fix. At one site an emergency override had been used in the back of the warehouse.

This subsequently overrides the BMS controls and requires resetting by a BMS engineer on site. Due to this learning, a 12-hour reset of the emergency override was implemented to avoid the situation again. If used the BMS will be overridden for 12-hours before reverting, without the need of the additional cost of a BMS engineer site visit.

The benchmark or site-specific historical data can be used to provide predicted savings, indicating the baseload that can be achieved and therefore the cost savings that can be achieved over time.

Often the solution is very low cost, sometimes these examples will be used alongside the solutions that require a cost (rarely high) in order to demonstrate the positive impact the resolutions have across the portfolio.

Savings

After 16 weeks of the process, over £200k avoidance in annual electricity cost was achieved due to remedies discovered and realised. Few of these remedies required a site visit and most were resolvable via desktop actions. Including the cost of the analyst for the time worked and the cost of any site work required, the cost of running this project could have been paid for more than 20 times over in the first year.

“ AFTER 16 WEEKS OF THE PROCESS, OVER £200K AVOIDANCE IN ANNUAL ELECTRICITY COST WAS ACHIEVED DUE TO REMEDIES DISCOVERED AND REALISED. ”

What Next?

The future of this project is set to continue, alongside other alerts and other measures being used to manage the portfolio's energy and increase efficiency. From analysis into the portfolio in comparison to the current benchmark, a further £105k+ savings have been forecast to be available across the estate in OOH consumption alone. The added benefit of these alerts is to maintain the efficiencies already discovered. As well as finding further areas to save cost, it will also ensure savings are maintained.

Whilst we currently operate at a set threshold, this threshold could be considered lenient. A future aim will be to reduce the benchmark and achieve a higher level of efficiency. As well as reducing the site OOH threshold kWh being used to raise alerts, one area in which to tighten the benchmark is to adjust the filtering rules currently set to streamline the alerts. This will mean targeting sites sooner after alerts are raised and discover perhaps alternative controls issues.

This project has helped bring into light further projects that could be undertaken such as a CAPEX initiative bringing mezzanine AC units under the control of the BMS during the warmer months, highlighted significantly by our recent warm summer.

Author's profile

Simon Baker completed his Master's studies at UWE in Environmental Consultancy where he began a placement with ETS. 4 years later, he continues to develop his professional career with ETS, becoming a Certified Measurement and Verification Professional (CMVP) along the way. Simon is experienced in delivering M&V plans across a range of sectors including commercial, retail and industrial.

¹<https://www.bbc.co.uk/news/science-environment-46741346>

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Multi-Academy Trust Loans Deliver Results for Academies

A recent collaborative energy project between Ormiston Academies Trust and Brooke Weston Trust has demonstrated that there is huge potential for other schools and academies across the UK to follow suit and reduce energy costs and CO2 emissions. The data gathered from the first six months has shown that the project should leave a legacy of over £2 million of free electricity.

Ormiston Academies Trust and Brooke Weston Trust, sponsors of over 40 academies across England, aim to provide all young people with access to the highest academic, social and practical skills required to achieve their full potential, whether going on to study at a leading university or entering the world of work.

Brooke Weston Trust is made up of ten academies, including five primary and five secondary academies, employing circa 1000 employees. Buildings range in age from the 1890's to three new builds which are less than 10 years old. Of the primary academies, all of them (bar the new build) have had extensive refurbishments and alterations over the building lifetimes. Meanwhile, Ormiston Academy

Trust (OAT) is made up of over 38 academies covering a large geographical area across England. The Trust employs over 4000 staff across their academies and central office. The condition and age of the school buildings within the OAT portfolio are mixed with some buildings benefitting from recent large capital investments via government programmes and others being slowly refurbished over a number of years using funding from within the trust.

With Brooke Weston Trust and Ormiston Trust spending over £2.7 million per year on energy and needing to spend over £1 million on lighting replacement over the next five years, an energy efficiency programme was put into place for the pilot to:

- reduce the trusts' energy bills;
- complement current plans for the school condition allocation;
- reduce the impact the trusts' estate had on environment in terms of CO2 emissions;
- deliver a procurement model and benchmark data that would allow the project to be replicated by other Multi-Academy Trusts (MATs).

In 2016, the Education and Skills Funding Agency (ESFA) launched the Multi-Academy Trust Loans Pilot Project. The aim of the project was to determine if MATs could collaborate to achieve long-term benefits for the trusts' estates and to investigate the long-term strategic difference this approach had on their estates.

A detailed study was carried out to determine which technologies would bring the best return on investment. This study indicated that replacing lighting with LEDs in 13 academies across both trusts would reduce electricity costs by an estimated 30%. In addition, the installation of 50kW photovoltaic arrays (PV panels) on the roofs of each of the academies would further reduce electricity costs and generate income. On average, a 50kW solar PV installation will make around £7,500 per year through payments from energy suppliers, exporting power to the grid and savings on in-house electricity bills offering an excellent return on investment.

More importantly, it was demonstrated that investment would be zero cost to the academies over the nine-year term of the loan and, with warranties in place for 10 years for the lighting and 25 years for the PV panels, ensured the loans could



be repaid and long-term legacy delivered.

Delivering the works

To date, over 500kWp and 1800 panels has been installed across eight schools, reducing carbon emissions by nearly seven thousand tonnes during the lifetime of the systems. The generated electricity from the PV cells is providing electricity at approximately 5.2p per unit with the excess being exported back into the National Grid.

Prior to commencing the works, a detailed structural survey was carried out to give an analysis of wind load, snow load and any ballast required. Furthermore, a 3D model of each building was completed enabling panel layout, shading and string layout to be planned in detail. Each system was designed to allow for safe access for maintenance purposes as well as ensuring that the generation meter was located in an easily accessible position to allow for easy reading of the energy generated.

Performance comparisons were completed using different panels, mounting systems and inverters. Once an optimum design was selected, the data were checked using the inverter manufacturer's own software as well as manual calculations. The pedigree of the manufacturers selected was investigated to ensure they had a good reputation, after-sales support and that they were bankable. MCS approved certificates, data sheets and technical manuals were reviewed and saved on file.

Phase One and Phase Two of the project took place over the course of 2018. All installations have been carried out in a timely and effective manner with no disruption to the students or day-to-day running of the academies.

The project is currently in phase Three of the works with the entire project expected to be completed by April 2019. The PV panels which will have the capacity to generate over 700,000 kWh of electricity per annum for the next 25 years will save the trusts over £2 million after the loan has been repaid

regardless of the changes to the Feed-in Tariff (FIT) scheme.

In the first 12 months of the projects delivered, the PV panels have generated over 160MW of electricity to save over 87 tonnes of carbon which is equivalent to a saving of over £12,000.

Lessons learnt

There have been a few lessons learned for the academies in starting this project. Firstly, it has been realised that the project has delivered greater savings than initially forecast as collaborative procurement secured increased PV panels capacity, which will provide an additional £700,000 of electricity savings over the life of the project. In addition to this, utilising frameworks to procure the services required made the process cost-effective, repeatable and scalable. What's more, the academies will benefit as the market is able to offer long-term warranties which are for longer than the period of the loans reducing the hardware replacement risk.

It was also identified that some of the academies were surveyed three or four times and this cost is not always clear in the project costs. We have found that detailed surveys should only be taken after the partner is chosen to reduce the total project management cost.

Understanding site management undertaken by the Trusts has the potential to make the project smoother on-site, reduce cost and speed up decision-making. Also necessary is independent verification of works before payments are made.

There have also been a few learning points on this venture with regards to working in collaboration with another trust and for any other MATs looking to work together on a joint project we would make the following recommendations:

1. Appoint a PV specialist early to enable schemes to be developed from an informed position. Use one site as the sample against which to tender against.
2. Decide the investment rationale (legacy or to reduce utility cost now) and use that to shape the project brief from a commercial perspective.
3. Ensure that an allowance is made for DNO engagement, registration

with OfGEM, processing of ROO-FIT & FITs.

4. Ensure that you have early engagement with planners regarding planning permissions and Landlords licence to alter.

5. Build the performance monitoring in from the start. Make sure that the data flows can be interrogated at a site and Trust level - generation meter data & consumption data - both pre-investment and post investment to demonstrate return or savings.

The future is bright

This is the first project of its kind where two Academy Trusts have joined forces to submit a joint funding and installation bid, enabling us to get better deals from suppliers as we had more buying power when compared to a single trust.

The project will also contribute towards achieving the Department of Business, Energy and Industrial Strategy's 2030 carbon reduction targets. These targets aim to reduce carbon by 57% of the 1990 equivalent levels through investing in clean, smart and flexible power.

It has also been a perfect example of tried and tested technologies and processes being used to create environmental benefits for the next and future generations. As we all know budgets are tight in the public sector and this is where projects like this can play a crucial role to create further income streams.

The outcomes achieved provide a benchmark and make a strong case for MATs coming together and working collaboratively to maintain cost effective and efficient estates in the long term.

Author's profile:

Matt has worked for Brooke Weston Trust for 10 years. Over that time he has led and delivered a number of projects, alongside annual refurbishment and condition based maintenance schemes from roofing to electrical installations to heating systems to nurseries. Day to day he provides support and strategic guidance to the Trust and the Building Managers across the property portfolio.



Methodist Homes Case Study



Methodist Homes (MHA) run 90 care homes, 72 retirement living schemes and 61 Live at Home schemes providing care to over 18,000 people throughout the UK.

Like many housing associations, MHA were seeking new ways to save money on energy and provide value to their residents.

Solution

A full analysis of the MHA portfolio was carried out to allow us to identify which type of procurement contract and bureau services would help the housing association to meet their goals.

Outcome

We were able to significantly reduce the administration burden of managing the MHA's energy strategy through various services, some of these included:

ESOS Compliance

- Provision of a qualified ESOS lead assessor.
- Collation of annual energy consumption.
- On-site ESOS Compliant Energy Audits.
- Full Energy consumption profiling.
- Creation and maintenance of the required comprehensive Evidence Pack.
- Provision of full site energy survey reports detailing all energy efficiency improvements available. Our ESOS service identified over £27k worth of savings for Phase 1.

Semi-Flexible Procurement

- Energy was purchased on a quarterly or half-yearly basis, which left MHA in a position to benefit from a falling market. They saved approximately 30% on their energy bills as a result.

Bill Validation

- Utility invoice and query management helped improve their billing accuracy, resulting in the identification and recovery of over £127,000 in billing errors.
- Identification and correction of incorrect meter readings.
- VAT and CCL corrections.
- Change of tenancy (COT).
- Disconnection and reminder notices.
- Supplier account reconciliations.

Energy Management Software

- MHA had access to our unique online energy dashboard which displays energy management and financial reports, copies of utility invoices and billing queries. This software allowed them to define accurate budgets for energy expenditure and easily identify high consumption sites, so corrective action could be made.

If you would like to find out more or would like to discuss ESOS Phase 2, simply call us on 01772 689 250 or email us at hello@inspiredenergy.co.uk



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