

THE EMA MAGAZINE

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SMART METERING

An heretic view

HOW TO BALANCE THE GRID

CAREER IN ENERGY MANAGEMENT

with Rebecca Douglas

THE BEST OF AN EXCEPTIONAL TALENT AND INSPIRATION

in the energy management industry



Balancing the grid



EMEX post show report



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Chief Executive at The Energy Managers Association



THE EMA MAGAZINE

CEO's Welcome

Thanks for taking time to read the latest issue of The EMA Magazine.

We would like to start this issue with positive news that UK emissions were 42% below 1990 levels in 2016. This certainly deserves a pat on the UK's back. The not so positive grunt from me would be that the next steps are going to be really hard, if the UK Plc is to meet the 2050 target. I believe that it will have to be achieved through a fundamental shift in how we view energy.

A large number of companies take the risk of climate change within their business seriously, and some of them shared their energy management practices in the previous issues of this magazine.

However, there are many more organisations for whom impact on climate change seems somewhat distant. I worked on the 2009 Climate Change Act and 2020 seemed a lifetime away, now of course with less than two years to go it has a more urgent feel.

A great deal is expected to happen in terms of energy management and tackling climate change in the years to come, and no doubt that energy use reduction has to come front and centre.

Throughout this year, we look forward to bringing you more articles with the latest developments in the industry and also hope to hear your viewpoints.

Have an enjoyable read!

All the best,

Rupert Redesdale
CEO of the EMA



EDITORIAL

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ENERGY MARKET

by LORD RUPERT REDESDALE
Chief Executive at The Energy Managers Association



Could we expect 2018 to be a year of significant and transformative change in energy management?

We are now into 2018 but here are the EMA's top tips for the energy management trends and practices that will need your time this year.

Changes to Business Energy Efficiency Taxation Landscape

The new tax regime will be coming into play in first quarter 2019. The tax will replace the Carbon Reduction Commitment (CRC), and will be levied through the Climate Change Levy (CCL). Whilst the regime and the taxation levels are already set in stone, the mandatory reporting framework's consultation concluded only in early January, so keep abreast of the developments this year to get ready for 2019. The good news is that this reporting mechanism will include GHG reporting.

How does the new scheme differ from CRC reporting? The new mandatory report will likely be part of both a company's accounts and the company report supplied to Companies House. This means that energy efficiency measures will be a far higher priority for Boards.

The report as presently envisaged will not only be audited by the firms accountants, but the measures or lack of them will be on show to their shareholders and the wider community, through the company's annual report. These measures have been a top priority for the EMA and will raise the profile of energy managers more than any other measure in the last ten years.

Energy Savings Opportunity Scheme (ESOS)

Phase 1 of ESOS has had mixed reviews about its effectiveness. The reason for this is probably because for many companies it was seen as a bureaucratic exercise and if the company did not have an appetite for implementing the measures proposed, little happened. The evidence that the EMA gathered shows that where companies took the issue seriously, a lot of money was saved. The scheme is into its second phase, and to avoid a mad dash to comply with Phase 2 of ESOS in 2019, we recommend you start compliance preparations this year. Embrace the energy efficiency measures and consider having as much compliance work done in-house.

The Minimum Energy Efficiency Standard for Commercial Buildings (MEES)

From April, a new standard for minimum energy efficiency will come into force in a move by government to improve the energy efficiency of buildings and it will apply to rented commercial buildings. Under the MEES Regulations, the energy efficiency of a property recorded through the Energy Performance Certificate (EPC) will mean that all privately rented properties should be EPC graded from 'A' to 'E'. From 1 April 2018 a property owner will not be able to grant a new lease or tenancy of their property if the EPC rating is 'F' or 'G', and then from 1 April 2023

a property owner will not be able to continue to let their commercial property if the EPC rating is 'F' or 'G'. This covers commercial properties that are already let out on leases or tenancies.

Battery Storage

This year will be the transition year for batteries from concept to mainstream. The reason that batteries will be widely adopted in 2018, will be a change in the income stack. The real value of batteries based at sites, from commercial down to eventually domestic sites, is the ability to shift power from off peak to reduce demand at peak. The demand reduction will be paid for through Balancing Mechanism Units (BMUs). The trade in BMUs, especially as large parts of the grid are under stress, will turn batteries from a marginal economic case to profit centres. Energy managers will not have to buy the batteries; rather independent aggregators will pay sites to house batteries that will be used by the aggregator to reduce demand from the grid at peak periods which will earn BMUs. Energy managers will be in the happy position of making money from the use of batteries on their sites with no restriction on use or interruption to supply, with the added benefit of emergency backup if the grid goes down. There are a couple of regulatory changes that need to be introduced but these should come into force later in the year.

Transport

Transport will be important to energy managers in two areas, electric vehicles (EVs) and reporting. There has been a great deal of talk of the shift to an electric vehicle based transport system in the UK, in reality this will take a few years, however adoption will accelerate. 2018 will however be the year in which the problems of supplying power to EVs, through an overstretched grid, become a real issue. An electric vehicle basically doubles the power that a domestic house uses and this demand problem is exacerbated if your car is on charge at peak period. Therefore, if you as an energy manager are being persuaded to move your fleet to EV make sure you have the power capacity to meet the needs of charging points.

Reporting is going to be the second area that will affect energy managers. Transport is already an issue for ESOS, however it will also be part of the mandatory reporting mechanism of

the new tax regime discussed earlier. Transport has often been seen as outside the usual remit, but the new tax will put it firmly in the energy managers' bag. If, like the majority of energy managers, you are not sure how to deal with the complexities of the grey fleet, the EMA will be helping out by producing and running a training course. The energy use of transport that could include air travel is for many companies a large segment of their emission profile. 2018 is the year to start understanding exactly how much energy your company's transport need equates to.

Brexit

It would be impossible to avoid this one. However, just briefly, we would like to point out the need to understand how the rollercoaster that Brexit is will affect fuel prices. We are already feeling the inflationary effect that the fall in the value of Sterling had after the vote. However

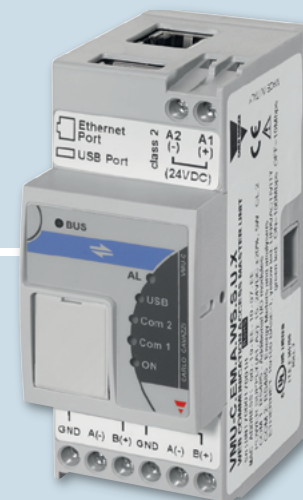
the second shock could be over tariffs. Will electricity and gas coming over the interconnectors and gas face a tariff hurdle? As yet, this issue has taken a backseat but it should not be ignored. The present rate of inflation is largely due to the increase in fuel prices, a direct result of the fall in the value of the pound. Tariffs will increase prices and so keeping an eye on the market's reaction to the ongoing talks will help you to budget, especially if it is not all plain sailing and a no deal scenario plays out. Price hikes will almost certainly follow if there is a threat of trade barriers, however the good news is energy efficiency becomes even more attractive, which would be a silver lining.

2018 will result in transformative change for our industry, and the EMA, through the work we do with Government and our members, hope that we will stimulate thinking and provoke discussions around your energy management practices.

CARLO GAVAZZI
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by **ROGER LOW FEMA MEI**
Chartered Energy Manager at Speedwell Energy Services



Smart Metering – A Heretic's View

Having worked some 20 years in energy management, the basic principles have remained the same, what I call the '3 Ms' - Monitor, Manage, Mitigate – and in that specific order; if you cannot do the first, then the next two are just guess work. Data gathering and analysis have always been the backbone of utilities management, making metering an essential technology, and its interpretation and understanding paramount.

This technology has developed gradually over the centuries (and it is centuries, as the first measuring valves came about during the steam age – 1700s onwards), via initial revolution, then evolution to provide more detailed and accurate data. As this development has progressed, metering technology ideas have come and gone, some leaving us with useful technology, and some falling by the wayside.

Burn the heretic

This is where I rattle a few cages, as in my view, Smart metering is running a very real risk of falling into the latter category, something that promised so much, but

has singularly failed to deliver. The reasons for this are the almost panicked rollout of the technology, and the failure to ensure that the new meters were accurate and reliable.

Taking the first issue, instead of taking a gradual phased approach of rolling out, using demonstrably reliable and accurate systems, persuading customers (both commercial and domestic) that they make sense and are in their interests, we have had what amounts to salesmen making indefensible claims and outright misleading statements or even with-holding information, such as deliberately not informing customers that they are not actually obliged to have them at all.

Even I have had this at home from one of the 'Big Six', telling me that I must have smart metering at home, only to be told by me that a) no I don't and b) as I live in a block of flats with a common supply, they cannot be fitted anyway at the moment.

This state of affairs damages the reputation of the industry, and leads customers to doubt the efficacy of good metering, making the task harder for us professional energy managers.

The second issue reflects badly on the metering industry.

ND Solutions last year released a report on the accuracy of the presently available Smart meters, and it does not make good reading; 70% of the meters tested in real life conditions failed to show accurate readings, most over-reading which of course can have dire financial consequences for customers – one even showed an inaccuracy rate of +400%.

“ **70% OF ALL THE SMART METERS MANUFACTURED CANNOT BE RELIED ON, SO THE ROLL OUT IS A SLOWLY DEVELOPING CAR CRASH, AND IT IS THE CUSTOMERS ON THE RECEIVING END.** ”



But the main point here is the scale of the failures, 70% of all the smart meters manufactured cannot be relied on, so the roll out is a slowly developing car crash, and it is the customers on the receiving end.

Blasphemy

The problem is that the usual rush to use the latest silver bullet answer to all our energy problems was nothing of the sort; politics being allowed to take precedence over basic quality control and good advice from professional energy managers being ignored. A situation that could and should have been avoided from the very start, by some simple basic concepts.

Taking the proper route would have been to test a number of the meters in real world scenarios over a two to three-year period, to establish any accuracy and reliability issues, instead of just relying on bench testing, which rarely if ever reflects actual reality of use in practice. Then making sure that there are well designed and tested products to enable all customers to receive them if they so choose, without having to develop a second and possibly third phase of roll out to complete these supplies; all with less risk of having to rectify issues from the first roll out.

But the question to this is – does the industry (primarily the Big Six) and Government have the sense to realise the issues, and to find a way to solve them?

Or will it be another expensive sticking plaster, that eventually comes unstuck, and makes the situation even worse?

Hallelujah

For larger commercial customers, there at least is some hope, in the form of aM&R; a proven technique, with reliable and accurate technology. For the rest, mainly domestic and SME customers, my recommendation is to avoid Smart metering unless the supplier can prove that their product is reliable and accurate, and I don't just mean taking the manufacturers claims at face value; even if this means having a consultant energy manager review the data against past usage data, and clamp on temporary meters.

This may sound complex, but can you really afford to spend money on energy, when you don't have to?

Authors' profile:

Roger trained originally as a maritime engineer, but diverted into estates management via vehicle fleet management, working with the Ministry of Defence from 1996. Following promotion and retraining, Roger became one of the MoD's small number of directly employed energy managers; eventually transferred to DIO; Roger now runs his own energy management consultancy business.



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by LORD RUPERT REDESDALE
Chief Executive at The Energy Managers Association



How to balance the grid?

The grid in the UK is a wondrous thing that is envied by many around the world and often taken as a model that should be emulated.

For decades, it has provided reliable power on demand to the extent that the idea of power cuts is alien to this generation; however, this could be about to change. The problem is simple: through closures we do not have the large-scale coal or nuclear assets that through over production kept a large margin between supply and demand. The closer the gap gets the more likely we will have power outages on a regular basis. Gaps in demand and supply are common around the globe; a clear example is the US which has major problems meeting demand shortfall.

The price for back up generation in California and Texas to fill the gap has hit between \$5,000 and \$8,000 a MWh. The highest price paid by the grid in the UK is around £1,500 but this was for a very short period. The funny thing about the approaching problem is that most politicians are convincing themselves that the mechanisms put in place through EMR (Electricity Market Reform), and specifically through CFD (Contract for Difference), will supply power at all times through price mechanisms. The closure of many generating assets will mean, in the not too distant future, this is really not the case.

The realisation that there will be a squeeze in the margin between supply and demand has been clear for decades. I may be showing my age but I remember debating this in the House of Lords in (I think) 2004. At that point the government's position was that although the winter of 2017 and 2018 was going to be tight, it was going to be addressed by four new nuclear power stations coming on line. This of course has not been the case, and latest thinking is that Hinkley Point C will

not be operational, if at all in the late 2020's, until early 2030. The debate has moved on and, although we are losing the last of our coal capacity at a faster rate than the government are predicting because the assets are so old they are uneconomic, we really have not built replacement capacity.

Gas power plant would be the obvious next step but, whilst Carrington came on line in 2016, few other plants are likely to be built in the short term because the price that gas plants can sell electricity at does not make them profitable.

Which financier is going to invest in a really expensive gas plant if a return is not assured over the medium to long term? Added to these concerns is the age of our nuclear fleet. Most are coming to the end of their operating lives despite recent changes to the safety limits on degradation of graphite cores.



So what is the plan? The government has turned to the markets through CFD. This mechanism allows the government, through auctions of power supply, to make sure that the cheapest price is obtained (which to be fair has worked) and to promote the technologies that will lead to security of supply (which really has

not). The big loser in this process is gas, and hence the appetite for building new gas plant is tepid at best. Renewables have done well, although under the present government this may well change.

The real winner to date has been diesel generation. This has to be the most perverse element of the CFD market. The most inefficient, carbon heavy and expensive form of generation has received preferential treatment under the CFD regime. Basically, Diesel Gen has done well because there are few other quick fixes.

This is not a long-term solution, but the generation markets that should be planned over decades are basically looking to next year rather than the needs of 2028. There is of course Hinkley point, which many think will solve the problem. This, more than anything, shows the total ignorance of most politicians of how the market works.

Agreeing to an 'insane', city description contract for incredibly expensive nuclear power will not solve the issue. Agreed Hinkley is a large plant but to tackle the problem a number would need to be built, which is not going to happen. This pattern for nuclear build has happened before. Sizewell B was meant to be the first of thirteen plants that never got built.

The real solution to our energy needs is not following the brute force, top down approach of the past but creating a decentralised generating system built around renewables and storage. I have set out in the past how batteries placed at sites could be paid for demand reduction at peak and will do so again next issue but, if we want to level the grid, storage and load shifting intermittent generation may be the only financially and environmental solution.

EMA Courses in 2018

Energy Management in Practice Training Programme

The EMA has produced a training programme for individuals interested to gain knowledge needed to operate effectively as an energy manager in a workplace.

The portfolio of practical courses features established as well as new EMA courses. Unless otherwise stated, the course will take place in London.

- Fundamentals of Energy Management: 1-2 March, 7-8 June, 4-5 October
- Energy Assessments, Measurements and Verification: 5 March, 11 June, 8 October
- Energy Management Strategy: 6 March, 12 June, 9 October
- Understanding and Delivering Behavioural Change Programme: 13 March, 5 June, 27 September
- Energy Procurement: 8 March, 23 May (Manchester), 14 Jun, 11 October
- ^{New} Monitoring, Targeting and Validation: 2 May (Birmingham)
- Water Management: 20 March, 19 June, 16 October
- ^{New} Waste Management: 17 April, 13 June, 2 October
- Lighting – Basic Understanding: 15 March, 20 June, 25 September (Birmingham), 30 October
- Energy Management Strategy: 27 January, 7 March, 6 June, 17 October
- ^{New} Battery Storage for Business: 19 April, 1 November
- ^{New} Essential HVAC Control and Optimisation: 9 May, 31 October
- ^{New} On-site Electricity Generation: : 12 April, 18 October (Birmingham)
- Regulatory and legal Compliance and Carbon Management: : Half day course starting in 2018
- Turning Data into Energy Savings: 21 March, 11 July, 6 November
- ^{New} EMA Energy Assessor: 25-27 April, 7-9 November
- Become an ESOS Lead Assessor: 20 April, 2 November

These courses are intended for candidates who are:

- Up-skilling their existing energy management knowledge and skills
- Re-skilling from other professions such as sustainability, environment, facilities and engineering
- Newly appointed energy managers
- Interested in becoming energy managers

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Theory combined with real-world applications

New opportunities to expand the knowledge of key energy management areas

The EMA range of practical, intensive and interactive courses has expanded with a handful of new courses to allow individuals to gain a more comprehensive knowledge of the energy management industry.

On-site Electricity Generation course, 12 April, London

On-site generation of electricity can be a good way of reducing grid consumption but the varying technologies, their suitability for implementation, income streams, ongoing costs and grid connection requirements can be complex and are different for each energy site.

This course aims to inform participants about:

- The main types of on-site generation and provide information on how to effectively deploy it and gain commercial benefit
- How the most common forms of on-site generation such as solar, wind and CHP can be specified, installed and operated
- How to effectively size the generation, how businesses could connect within an existing site
- The financial incentives and mechanisms available to each technology
- The process for applying for and obtaining permission from the local Distribution Network Operator (DNO) to connect

any type of generation and to understand how to find out whether export provision may be available

Waste Management course, 17 April, London

This new addition to the EMA courses highlights the importance of waste management within organisations and encourages participants to ensure that their waste management practices gain approval of relevant stakeholders and are managed in the most cost effective way.

The course offers an overview of:

- Waste legislation in the UK
- Waste disposal and recycling options
- Mapping waste streams/waste auditing
- Identification and improvement of opportunities
- Setting SMART waste targets and KPI's
- Measurement, monitoring and reporting waste data

Essential HVAC Control and Optimisation course, 9 May, London

Heating, ventilation and air conditioning (HVAC) systems are an essential part of most modern buildings and can consume a large part of any energy used. This course aims to inform participants about the

most widely used form of HVAC, their basic control and potential methods for optimising their operations for the least energy use while maintaining the comfort within buildings.

This course will describe and cover:

- Basic operation and control of systems such as boilers, air handlers, fan coil units, chillers, pumping systems and air conditioning, and relate them to energy consumption
- Potential control methodologies that can be used for optimisation such as speed, flow and differential temperature which can be used to optimise the use for lowest energy consumption while maintaining adequate temperatures and comfort levels. This will also include how many of these systems can be controlled via a BMS
- Implementation and correct use of variable speed drives across the range of HVAC systems
- The renewable version of some of the HVAC equipment such as biomass boilers and heat pumps

Whether participants have been working as energy management professionals for six months or 30 years, during the EMA courses they will benefit from up-to-date information as well as sharing and learning from each other's experience.

For more information about the EMA courses visit www.theema.org or e-mail jana.skodlova@theema.org.uk.



2018 DATES FOR THE EMA COURSES TO BECOME AN ENERGY MANAGER OR UP-SKILL AS AN ENERGY MANAGER:

1-2 March, London
Fundamentals of Energy Management

5 March, London
Energy Assessments, Measurements and Verification

6 March, London
Energy Management Strategy

8 March, London
Energy Procurement

13 March, London
Understanding and Delivering Behavioural Change Programme

15 March, London
Lighting – Basic Understanding

20 March, London
Water Management

21 March, London
Turning Data into Energy Savings

12 April, London
^{NEW*} On-site Electricity Generation

17 April, London
^{NEW*} Waste Management

19 April, London
^{NEW*} Battery Storage for Business

20 April, London
Become an ESOS Lead Assessor

25-27 April, London
^{NEW*} EMA Energy Assessor

2 May, Birmingham
^{NEW*} Monitoring, Targeting & Validation

9 May, London
^{NEW*} Essential HVAC Control and Optimisation

For more information, please contact the EMA on 0203 176 2834 or email [Jana at jana.skodlova@theema.org.uk](mailto:jana.skodlova@theema.org.uk)

JOB OPPORTUNITY

**Estates and Facilities Division
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Knowledge of Building Management Systems and of monitoring and targeting packages for energy analysis would be advantageous.

This appointment will be subject to a basic criminal record check from Disclosure Scotland.

Closing Date: 12 noon on 21 February 2018. Further particulars and an application form are available on our website: www.uea.ac.uk/hr/vacancies/ or Tel. 01603 593493.

The University is a Bronze Athena Swan Award holder, currently working towards Silver.



Career in Energy Management

The Energy Managers Association aims to encourage and enable more professionals to enter the world of energy management and environmental roles. Being an energy manager may not seem like the most obvious career for many. The EMA has taken on a challenge of changing the perception of energy management, by raising the sector's profile and sharing its members' - leading energy managers - insights into their career progress and achievements. In this issue we have asked Rebecca Douglas, Energy Manager at Tesco and the winner of the 2017 EMA Junior Energy Management Professional of the year about her career in energy management so far.

What made you choose energy management as a career?

I have always been interested in sustainability and human impact on the environment. This is why I studied Geography as my Undergraduate Degree and Environmental Protection and Management as my Masters Degree at the University of Edinburgh.

The opportunity to work at Tesco as an Energy Manager was a great prospect for me. I would have the chance to be involved in many different projects to help reduce the carbon footprint of the 3rd largest retailer in the world!

My career in Energy Management began with a collaborative project

between Global Action Plan (an environmental behaviour change charity) and Tesco. The project involved working with Store Colleagues and Management to improve energy efficiency though the way equipment is operated. The project was very successful and, to our delight, won the 2015 edie Sustainability Leaders Award for Employee Engagement and Behaviour Change.

Since then, I have worked on and been involved in a number of energy projects at Tesco.

“THE ENERGY WORLD IS EXCITING AND INVOLVES ADVANCES IN TECHNOLOGY, ENGAGING OTHERS TO WORK IN MORE EFFICIENT WAYS, SHARING KNOWLEDGE AND REDUCING OUR ENVIRONMENTAL IMPACT. I FEEL THAT THE MORE WE SHARE THE EXCITING PROJECTS THAT TAKE PLACE IN THIS SECTOR, THE MORE IT WILL INSPIRE OTHER PEOPLE TO GET INVOLVED.”

What does your role at Tesco entail?

At the moment, one of my main projects in Tesco is Energy Engagement with store colleagues.

Again, collaborating with Global Action Plan, we ran a 165 large store Energy Engagement trial called 'Energy Matters'. The programme focused specifically on energy reduction in two of the highest energy using areas in stores that are not controlled remotely: Bakery and Hot Counters. We focused on simple behaviours such as turning ovens

off when they were not in use and ensuring colleagues knew how long equipment took to heat up.

The 'Energy Matters' engagement programme trial was successful, and over a 6 week duration, we saw a 15.8% reduction in Bakery energy consumption compared with the control stores, which saw a 3.5% reduction. The successful trial was Highly Commended at the 2017 EMA Awards for Energy Reduction Project through Organisational Behaviour Change. The programme is now in the process of being rolled out to all large format stores.

I also look after Tesco's Climate Change Agreement (CCA), which we have in place for most of our Bakeries and Hot Counters. The Climate Change Agreement allows us to receive CCL discount and CRC avoidance on energy consumed at these sites.

I ensure savings retention and have also developed a robust plan to enhance Tesco's CCA benefit going forward. To do this, I have identified appropriate sites to add to our CCA and improved sub-metering allowing Tesco to increase the number of sites included in our CCA by 119 sites.

I also sit on the Property Trials Governance, and review proposed projects from an energy perspective. It is great to have an overview of all of the exciting projects that happen across the company and to be involved from an energy and environmental viewpoint.

What is the most exciting part of your job?

It is exciting to see how much energy and carbon can be saved from doing a project rolled out across many stores. Tesco is such a large company and small changes can make a big difference.

What is your biggest achievement to date?

Winning the EMA award for Junior Energy Management Professional of the Year. It was such an honour. I would really like to inspire and support other young people to get involved in the exciting world of Energy Management! I wouldn't have been able to be where I am today without the continuous help and support of my management, colleagues and mentors and I really hope that I am able to do the same for others.

What is the best approach to attract women into energy management sector?

Energy and Engineering can be a male dominated environment but I feel that this is changing. I am proud to be part of it and show that it's an area where females work too. I feel that anyone, whether male or female, should be encouraged to be involved in Energy Management.

The Energy world is exciting and involves advances in technology, engaging others to work in more efficient ways, sharing knowledge and reducing our environmental impact. I feel that the more we share the exciting projects that take place in this sector, the more it will inspire other people to get involved.



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The Best of an Exceptional Talent and Inspiration in the Energy Management Industry

The 2017 saw the 3rd annual EMA Energy Management Awards winners and highly commended revealed at a ceremony in November celebrating the most inspiring energy reduction projects, team, products, consultancy and key members of the energy management industry from the last 12 months.

The 2017 Awards' winners include:

Energy Manager of the Year
Tristan Wolfe – University of Aberdeen

Tristan has been involved in the energy, energy efficiency and renewable industries since 2003, in a variety of public and private sector roles. He joined the University of Aberdeen in September 2015 as an Energy Manager within the Estates Maintenance section and within this role he is responsible for ensuring that energy is utilised efficiently on site along with utilities bills validation, whilst also being responsible for carbon compliance and management, energy and sustainability awareness, identification and design of energy efficiency and renewable energy systems.



Junior Energy Management Professional of the Year
Rebecca Douglas – Tesco



Having undertaken Masters and Undergraduate Environmental and Sustainability degrees, Rebecca has very quickly built up her knowledge of energy management and the wider legislation and industry. This has enabled her to deliver significant results considering she has only been working in energy for 2 years. She has proven that passion, drive and desire to learn can supersede the need for a nuanced expertise or technical background. As a young woman in a highly male dominant environment, she has demonstrated huge levels of resilience, being a fantastic role model. Her commitment and determination is highly contagious - driving unprecedented collaboration between Energy, Engineering, Maintenance and Retail departments.

EMA Member of the Year
Scott Armstrong – Bourne Leisure Ltd

Scott is an experienced energy and sustainability professional having worked in various roles in these areas for the past 26 years. His experience includes 10 years with energy suppliers, 10 years with energy consultancy businesses and the past 6 years coordinating the energy and sustainability activities of the UK's largest holiday and holiday home ownership group, Bourne Leisure. In Scott's current role of Head of Energy and Sustainability, he oversees all activities in the areas of utility procurement, utility conservation, sustainable build, environmental legislation and utility budget forecasting across the 3 operating brands.



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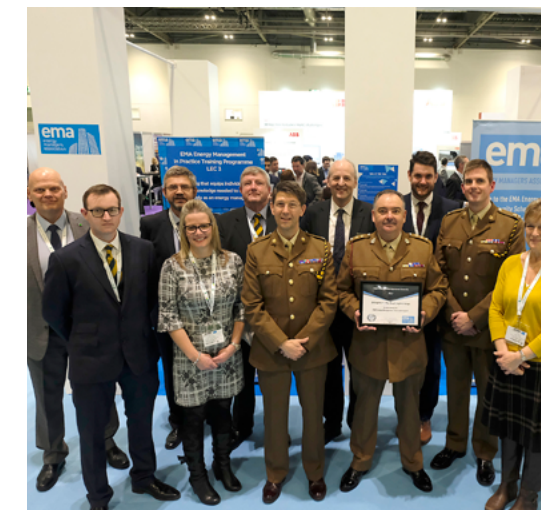
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Energy Management Team of the Year
29 Regiment – The Royal Logistic Corps Energy Management Team

The Energy Management Team at 29 Regiment, The Royal Logistic Corps is a partnership between Industry, DIO and the MOD who are all passionate, dedicated, determined and committed.

Inspiration, leadership, innovation, teamwork, cooperation and the added support of their primary and secondary school children's youth clubs have enabled them to become a highly effective and winning combination.



The Team has worked tirelessly in identifying and then pursuing "Spend to Save" investment opportunities which have had and will continue to have a significant reduction on energy and utility consumption figures.

Energy Reduction Project through Organisational Behaviour Change of the Year
Bourne Leisure Ltd

In February 2017, the Central Energy and Sustainability team from Bourne Leisure carried out an extensive Energy Management training project involving 60 representatives from throughout the company. Following a 2 day training course, which took place at our Bognor Regis Butlin's resort, several hours of follow-up course work was required by each delegate and this was assessed and graded by the EMA. The result was that 47 of our team achieved the EMA approved

LEC 2 Energy Reduction qualification and EMA approved LEC 3 Technical and Operational module in hospitality qualification.

These team members have now become their own site's 'Utility Champions'. Since the training, we have seen a 7% reduction on utility consumption compared to the same period in 2016, and we strongly believe that these savings are a direct result of the training and follow up coursework that occurred earlier this year.



Energy Management Consultancy Service of the Year
Energy and Technical Services Ltd (ETS)

Celebrating our 20th year in business next year, Energy and Technical Services Ltd (ETS) is an



award winning, multi-disciplinary consultancy practice, specialising in energy management, technical engineering and compliance. We work with clients across the UK and Ireland on a variety of energy and engineering projects ranging in value from small scale refurbishments to multi-million-pound upgrades. We are a national network of experts working with clients to develop and implement innovative solutions to the complex challenges associated with energy management. Our extensive resource of Senior Consulting Engineers allows us to connect expertise across services, sectors and geographies.

The Most Inspiring Energy Reduction Project of the Year
Royal Mail

The Fit for the Future Network's mission is to ensure that all organisations are sharing best practice and collaborating to become more sustainable.

We have more than 80 members ranging from charities and public sector organisations to businesses and public sector organisations. These include The National Trust, the RNLI, Oxfam GB, Tate and the RSPB.

The Network engages employees to bring about green behaviour change, and deliver emission and waste reduction initiatives through knowledge-sharing and collaboration.



Energy Reduction Product of the Year
OnGen - OnGen Expert



The OnGen Expert is an easily accessible online renewable/low carbon energy generation feasibility assessment tool that provides organisations with a quick and accurate evaluation of onsite energy opportunities across a property portfolio. Whether the drivers for unlocking the potential of onsite renewables are financial, part of a CSR strategy or to meet regulatory requirements the OnGen Expert is an easy and efficient pre-investment feasibility service. The platform addresses the challenge of falling government subsidies, traditionally expensive feasibility assessments and reveals the opportunities to save energy costs from emergent technologies such as battery storage.

Water Reduction Product of the Year
Aqualytics UK Ltd - Flowless

Flowless uses pattern recognition to analyse a building's water flow to provide property owners with data driven insights.

Flowless doesn't simply determine how much water a building consumes, but also identifies patterns in how that water is used.

This intelligence results in a mitigation of leaks and water damage, understanding of how water is used and a reduction of water bills (on average 20% per annum).



Amongst the Highly Commended are:

- Roederer Rose Lyne - University of Aberdeen - Junior Energy Management Professional
- Energy Management Team at Huntingdonshire District Council - Energy Management Team
- Sustainability Team at London Metropolitan University - Energy Management Team
- Energy Management Team at Hilton - Energy Management Team
- Highland Council - The Most Inspiring Energy Reduction Project
- Tesco - Energy Reduction Project through Organisational Behaviour Change.



Congratulations to all our winners and highly commended, who represent the best of the exceptional talent and inspiration in the energy management industry in the past year.

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by JASON FRANKS
Managing Director at HEELEC Ltd



EMEX Post Show Report

EMEX is very much the EMA's show; it is a way that we can get the members together and build our community. Through the seminars we hope we gave you a wide range of topics on which experts gave up to date presentations; one of the most interesting was on the simplification of energy taxes. EMEX has grown and developed over the last three years and we want your feedback on how we could make EMEX 2018 even better.

At EMEX, we're rather fortunate that we are able to separate seminars from sales presentations. The content of the theatres is uniquely programmed by Rupert (Lord Redesdale), the EMA, its board and surveys of the membership. There is a real desire by senior Energy Managers to ensure that the seminars are appealing and instructive to attendees, many of whom no longer attend other events. Not only do our attendees come to hear informative presentations but they are delighted to spend the rest of their time visiting the exhibitors, playing with new technology and hearing their pitches on how they can reduce their energy bills.

EMEX exhibitors and visitors tend to use a genuine face-to-face opportunity to prod and poke innovative products and have meaningful conversations with the common aim to reduce energy consumption. This means that they are only too happy to share contact information and pursue collaborations and deals during the weeks and months after the show.

Our marketing message has always been an extension of the programme. For example, if an attendee registers

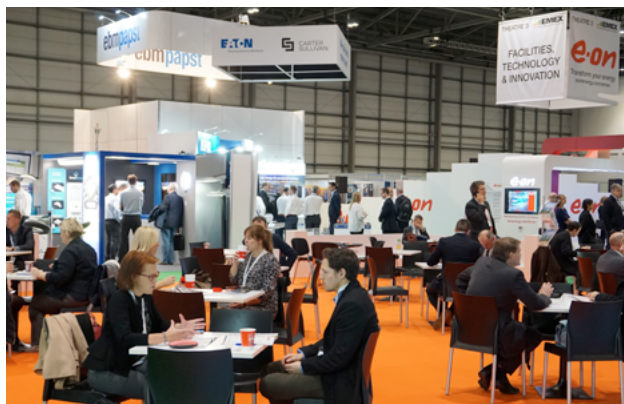
telling us they are interested in Demand Response then that's exactly the sessions we will inform them about in their pre-show emails. Or procurement, or new technologies, or behaviour change... and we'll give them case studies from relevant exhibitors too.

4,557 attendees graced the show over two days. That's 12% more than the year before and as one exhibitor said 'EMEX 2017 was one of the best trade shows we've attended in the last 4-5 years! The quality of delegates, the event organisation and the subsequent leads have proved to be excellent! Having spoken with my colleagues regarding EMEX 2018, it has been a 'no brainer' for us, we look forward to seeing you again at the ExCeL London in 2018!'

Here is a snapshot of EMEX in facts and figures:

“ 4,557 ATTENDEES GRACED THE SHOW OVER TWO DAYS. THAT'S 12% MORE THAN THE YEAR BEFORE AND AS ONE EXHIBITOR SAID 'EMEX 2017 WAS ONE OF THE BEST TRADE SHOWS WE'VE ATTENDED IN THE LAST 4-5 YEARS!' ”

- Attendees spend an average of nearly 5 hours in the show.
- There are over 100 speakers, 128 exhibitors, 74 seminar sessions, 10 hours of CPD credits and 1,000 attendees sit in each of the four seminar theatres.
- 7,000 square metres of carpet, 4,000 metres of temporary walls and over 600 spotlights and power sockets installed. Nearly 10,000 cups of coffee are drunk and several terabytes of data downloaded.
- Our attendees spend a combined £8bn on energy every year, which is almost half of the UK's total non-domestic energy consumption! And over 45% will spend six or seven figures on energy efficiency.



Reduce the energy consumption in your buildings



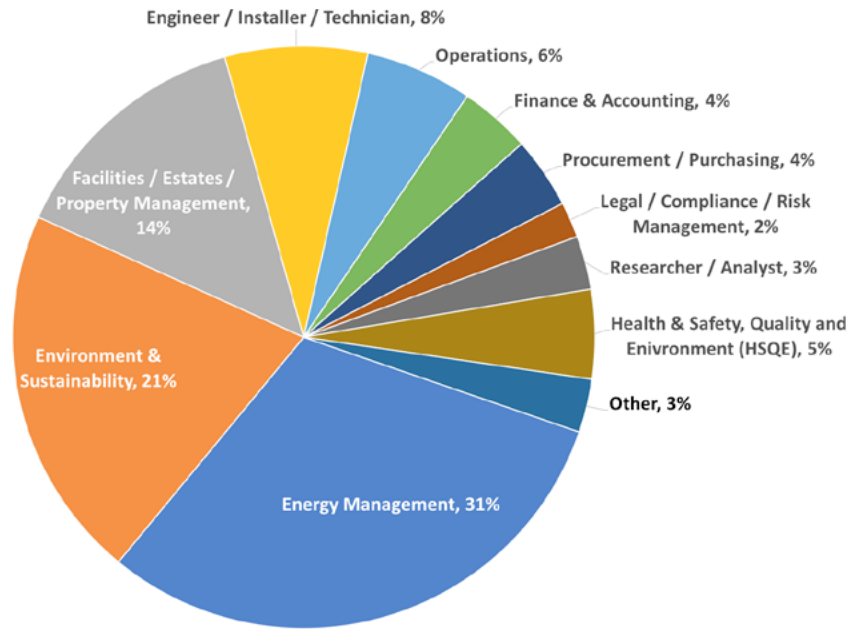
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The chart shows the primary job functions of attendees.



Here's what some of you have said about EMEX:

"Excellent show, was a good opportunity to both network and develop relationships with suppliers under one roof."

"With this being our first year exhibiting at EMEX, we had high expectations and we are pleased to say that we were not disappointed. The attendee portfolio was as promised which delivered some very engaging conversations and opportunities for us moving forward. Thank you to the EMEX team for a well organised and valuable event!"

"Energy management professionals are an important part of our business. We were happy to support the EMA and EMEX in 2014, and have been pleased to watch EMEX grow. Following another successful

event I'm delighted to be back in 2018."

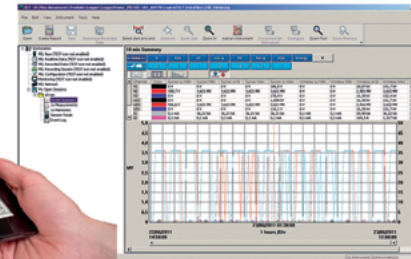
When it comes to important areas to watch over the coming months and year, here are the topics covered in the most attended sessions:

- Strategy for Energy Management in the Private Sector
- Lesson from Universities on Energy Management
- Empowering Women in Energy Management
- Bringing Energy Cost Control Back to the User
- Healthy Energy Management Practice in Hospitals
- Utilising your Building Assets to Improve Indoor Climate and Reduce Energy
- Optimise your Energy Use with DSR
- Maximising the Value of Flexibility
- The Great Policy Smog and how to navigate it
- Minimum Energy Efficiency Standards
- The importance of Investing in Team
- Energy Management Awards 2017
- Energy as a Service: Cutting Energy Spend and CO2 without Risk or Big Investment
- The Basics of Battery Storage Technology
- Balancing Mechanism Units: the Main Income Stream for Battery Storage
- Decarbonising Process Heat Applications via the Use of Biomass CHP
- The Economics of Linking your Organisation to Renewables
- the Retail Water Market
- Consumer Guide to Buyer Water and Water Efficiency
- What is Driving Energy Efficiency in the UK
- An Update on Streamlined Energy and Carbon Reporting
- Getting Ready for ISO 50001:2018/9
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EMEX

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A FULL SHOW INFOGRAPHIC IS AVAILABLE AT

www.emexlondon.com

Our vision at EMEX would not have become reality without the huge commitment and active contribution from our exhibitors, sponsors, contributors and partners including:



Many of the seminar presentations are available on the EMEX website, www.emxlondon.com.

It's great to see people and culture enter the conversation so strongly, and clearly battery storage supporting demand side response is a massive growth industry.

We've seen many companies launching new offering in the battery storage.

It's also important to note that getting 'value for money' hasn't left the top ten for the last few shows; in other words, energy management practitioners are adhering to the mantra of 'prove an opportunity exists before you take it!'

We're able to use this ranking in order to steer our editorial schedule for The EMA Magazine as well as topics to investigate further and report on again at future events.

I'd like to quote some other exhibitors and attendees whom we thank for their on-going support – they make it easy to confirm our return in 2017 doing even more for your energy management community:

"This is a very worthwhile event that continues to attract high quality delegates and enables us to have fruitful and insightful conversations with both existing and prospective customers. The conference content is rich and varied, I particularly value the contributions of "end users" that allow us to tailor our offering to better help tackle energy challenges they are facing." Wilson Power Solutions

"Thank you for all your help and support in making the show such a resounding success for us. We had a great couple of days with significant interest in Ecopilot from numerous high calibre potential clients." Kabona

"A great success for Circle Green. I look forward to catching up with you soon and also talking about what we can do with EMEX next year." Circle Green

"EMEX 2017 was ionSign's first experience as an exhibitor in UK and we felt very welcomed by the British energy management community. Excel was a great venue and the organisers relentlessly took care of us. Perfect event!" ionSign Oy

"EMEX was a success for Siemens in terms of quality delegates and content. I intend to be back in 2018." Siemens plc

We're enormously grateful to everyone who helps make EMEX the number one event in this market place. If you want to be more involved in 2018, please see our contact details on page 4 and join a very impressive line-up (see below).

Our energy management community plan to spend over £1bn on energy efficiency measures next year – that's an impressive figure and a great reason to continue sharing ideas and exhibiting the best products and services.

See you next year, 21–22 November 2018, at ExCeL London.

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by **CHRIS ASSELIN**
Communications Director at HEELEC Ltd



Energy Management Decisions – Expanding on the E.ON / EMA / EMEX Research Findings

The EMA's Chief Executive, Lord Redesdale, is delighted to report that a series of discussions that took place during EMEX, 22-23rd November 2017, led to a common ambition to deliver a Toolkit for Energy Decision Makers. This will provide organisations with a universal measure of their progress towards energy efficiency objectives.

An open panel discussion was fuelled by the survey results created in partnership with The EMA, EMEX and E.ON. The session was attended by over seventy energy management professionals, including representatives from Pontins, Virgin Atlantic, five local authorities and NHS Trusts, as well as architects, airports and BEIS – the Department of Business Energy and Industrial Strategy.

Richard Felgate, current EMA Chair, sat on the panel and said, "At the moment, the interest in energy efficiency for many businesses is being driven by the EMA, shows such as EMEX and magazines rather than government regulations and statutory requirements."

After the wider discussion, the conversation continued at a private round table. Lord Redesdale said that he was "delighted to host a round table at EMEX where I was joined by colleagues and EMA members from the Bank of England, Boots, IBM, PWC, HSBC Bank, Network Rail, Viridor and Mulalley & Co, as well my co-host Phil Gilbert, Director of Energy Solutions at E.ON."

The group looked at the findings of the research conducted over the summer into Energy Management

decision-making and how those working in large organisations can overcome their frustrations at internal barriers to convince their bosses to engage in carbon and energy reduction programmes. E.ON were able to add their wealth of relevant knowledge from working with a wide range of customers.

Dr. Vassia Paloumbi, Energy and Environment Manager, Bank of England, summed up the views of participants describing "an honest discussion behind closed doors. It was a great networking opportunity for all and the outcome should be positive for everyone working in energy efficiency."

The discussion confirmed the report findings that quantitative targets, benchmarks and decision-making processes could approve projects within just 3 months in the majority of cases. The most popular projects being considered included implementing Metering and Monitoring Systems, Lighting Solutions, BEMS, HVAC, DSR and On-site Storage.

However, the top five reasons for projects failing to take place are lack of funds, incentive or ROI, lack of CAPEX, inability to build a business case, organisational structure and corporate apathy.

In addition to the technical expertise and data analysis, the role of the energy management team is fast evolving. Influencing and negotiation, communication and stakeholder engagement skills are becoming ever more important. One energy manager in the room



explained that "building a business case with stakeholders around the business has become a pivotal part of my daily job!"

The discussion quickly pushed onto the current tools available to influence decisions. This highlighted the benefits to energy managers of both developing their interpersonal and commercial skills, as well as creating a toolkit to benchmark their progress against other organisations rather than an arbitrary internal KPI. The toolkit should enable board directors to quickly recognise the opportunities to both increase profits and reduce carbon emissions.

"There is currently no uniformity in reporting, meaning it's difficult to compare anything. A universal metric would be really useful but it must cater for both large and small businesses, different sectors and not penalise organisations that have already done a lot of energy management," said Wendi Wheeler, Energy and Carbon Strategy Manager at Network Rail. She added that it would be "great to have ready for EMEX next year in time for the new 2019 reporting mechanism."

Lord Redesdale plans to give updates when the group gets together

again. He said, "Energy management professionals need a universally recognised metric that shows at a glance where an organisation is in its energy management evolution. Besides, introducing this KPI will be a strong motivator and I am excited to get the group together again to develop it. Let's knock down some walls in the boardroom."

Phil Gilbert, Director of Energy Solutions at E.ON, said, "We are especially delighted to support research that has a positive outcome with well structured next steps that can be positive for our customers and the industry."



by **PROF. JACOB TOMPKINS OBE**
Chief Technology Officer at The Water Retail Company



Saving £ - One Drop at a Time

Water is not something people generally think about in a work context, in fact even many energy and facilities managers often do not give it much thought. The main reason for thinking about water certainly isn't the unit price, but it is more likely to be the total bill. Other reasons can include the risk of interruptions to supply, water quality or sorting out billing errors.

Water and sewerage costs can be between 1-2% of a company's turnover. The English water retail market margin is around 6% with some retailers offering margins of as low as 1%. To put this into perspective, for a company with an annual turnover of one million pounds this only equates to a saving of £500 by simply switching water retailers. But if, instead of minimising the unit price, the same business focusses on water efficiency it is a very different story. Savings of 10-25% can be achieved through no-cost/low-cost water reduction techniques and technologies. So, the same company with an annual turnover of one million pounds could save at least £2,500 per year through basic water efficiency.

Below are some basic introductory measures that any company could take to cut their water use, which will not only reduce energy consumption but lead to other efficiencies as well.

1. Engage within your own business

Talk to your staff and colleagues about water, put water on the Board agenda and ask senior management to develop a water plan for the organisation. Buy-in across the company ensures that measures are implemented and that

there is financial and management support. Your staff probably know more about how water is used in your business than any external consultant and if they are engaged, large savings can be made from day one through behaviour changes.

2. Know your flow

Identify where you get your water from; where, how and why it is being used in the organisation; and where it goes to. This is not about numbers, it is just a simple flow diagram mapping the flow of water through the business. This is a great way of identifying where savings can be made and where value can be added.

“ EXPERIENCE SHOWS THAT JUST BY PUTTING A PLAN INTO ACTION YOU CAN START TO MAKE SAVINGS AS PEOPLE START TO PAY ATTENTION TO WATER. ”

3. Check your bills

Bring together all your bills for water, wastewater, drainage, and effluent. Remember to include any boreholes or abstraction licences you may have. A basic graph of your bills will enable you to identify trends in water use and also things like leaks. You can also check if you are on the right tariff, if you have the right size meter and if your sewer charges are based on the right return to sewer allowances. It also means you know how much you are paying for water and wastewater so you can make informed choices about which retailer to choose in the new water market and about investment.

4. Do a water audit

Once you know where your water comes from, how it is used and where it goes, and you have the bills and meter readings associated with all these steps, you can do a basic water audit. You can also start to look at consumption per FTE (full time employee equivalent), or per ALA (allowable lettable area of the business), or per unit of production, or per customer, visitor, or overnight stay. By normalising water use against these parameters you can start to benchmark or compare with other sites or against industry standards.

5. Develop a water plan and set some targets

Using the data gathered so far, discuss water at the Board, develop a water plan, appoint a water champion(s), and set some targets that will be reported back to the Board. This does not need to be hard, the plan and targets can be simple and easy to achieve. Experience shows that just by putting a plan into action you can start to make savings as people start to pay attention to water. The plan could even be as simple as starting a water awareness campaign or switching retailers.

6. Measure and monitor

Put in place a monitoring regime to check your savings, this can be as easy as ensuring regular meter readings are taken and plotting a monthly graph, or can involve sub-metering and monitoring. If you want something more sophisticated then ask your water retailer if they can help with the installation of meters that can send regular information to your devices and systems. Meters can range from simple manual read meters to automatic meters or more sophisticated meters that can

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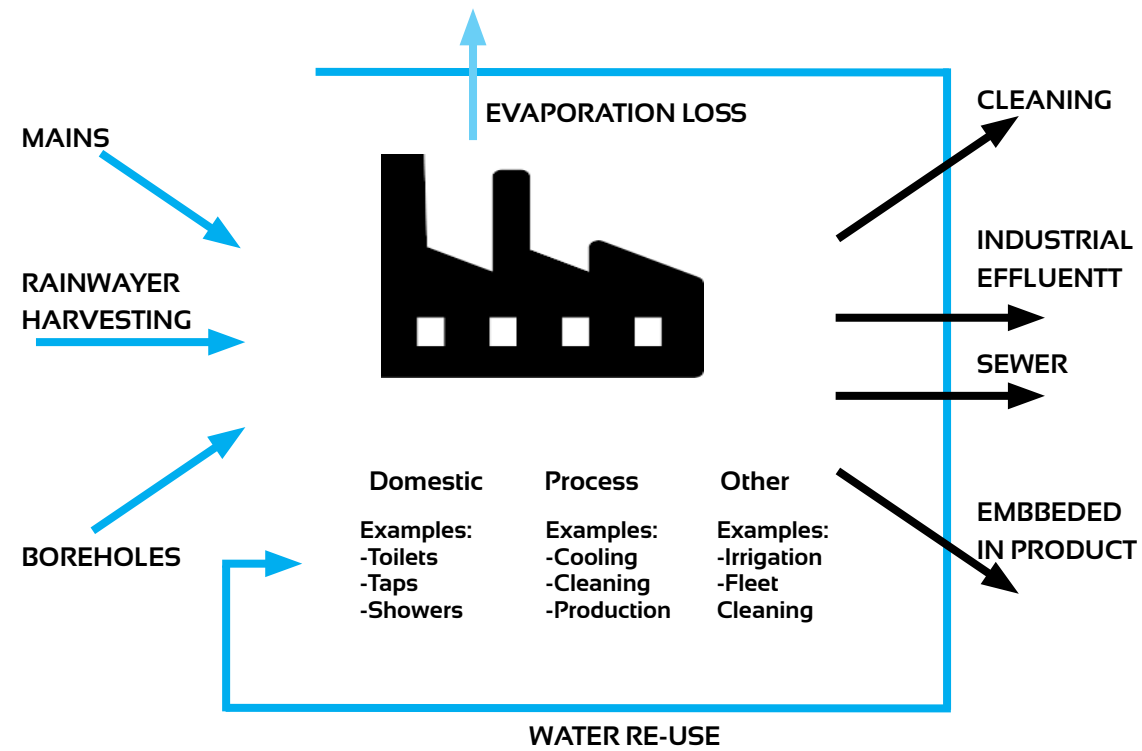
monitor consumption, learn how your business uses water and then alert you if there is a leak or unusual consumption patterns. Some of these sophisticated systems can even switch off the water if they detect a leak. The more data you have, the more you can control your water use and check your bills. As saving water can also lead to savings in energy and wastage or time efficiency it is

- or you can adjust the flow rate with the isolation valve under the sink.

At the same time, you can put up posters encouraging staff to report dripping taps and not to overfill the kettle. Check the impact of your actions in your water use and bills.

8. Try some more advanced water

of water and in monetary sense you can highlight how this benefits the business, the environment and safeguards jobs. It is also crucial to provide senior management with feedback to show that water savings are straightforward and cost effective. Think about rewarding staff with a share of the savings, or rewarding individuals if they provide suggestions for further water



worth tracking these too.

7. Try some basic water efficiency measures

Before leaping in and refitting your whole business, try some simple no-cost/low-cost water efficiency measures. The best place to start is in the washrooms by fitting:

- cistern displacement devices (you can get these free from most water companies) - these can save one to three litres per flush on older toilets
- aerated shower heads (ranging from about £5 to £25) can save up to 50% shower water and save on energy too
- tap regulators
- restrictors or atomisers can save between 10% and 90% on your tap flows (these range from free to a few pounds each)

efficiency

Heating and cooling systems often use water and these can be optimised to save large amounts of water. Outdoor irrigation can use lots of water. Process water use is specific to each type of business but anywhere where there is heated or cooled water can offer lots of savings on water and energy.

Process cleaning is also a big area for potential savings. See if your water retailer is interested in piloting some new water saving technologies and if they are not look at switching to one who can.

9. Share the savings

Provide staff with feedback and make it relevant. By promoting the savings achieved in terms of the amount

efficiency measures.

10. Boast about what you have done

Apply for industry awards for reduced water consumption, write about your achievements in your newsletter and local paper, and tell your customers via your website.

Environment is high on the agenda and it is important for Government and regulators, but more importantly it shows your customers and supply chain that you take corporate responsibility and the environment seriously. It also boosts morale amongst your workforce, who will feel great about working for an environmentally friendly company!

the Water Retail company



Save on your water bill by switching to us and becoming more water efficient

Call us on 020 3808 6608 | www.wesavewater.co.uk

A forest scene with a utility pole emitting sparks, a flying eagle, a deer, and a bear.

ANIMALS HAPPEN

81% of businesses suffered unplanned power outages last year, so make sure your business is better protected.

Power on with Energy Resilience
centricabusinesssolutions.com/resilience

Source: online survey of energy solution decision-makers and influencers in mid-sized organisations in the USA, UK, Ireland and Italy; conducted by Circle Research for Centrica.

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