by Haydn Collingwood, Roger Low, Vilnis Vesma and Haydn Young

Energy Management Trends 2022

As we say goodbye to 2021, we have asked four energy management professionals to look forward to energy management in 2022. Here are their views on the most important trends that will transform energy management processes and profession next year.

Haydn Collingwood, Technical & Innovation Manager at Vertex Services Group Ltd

Decarbonisation and electrification of buildings

I remember a time just a few years ago in 2017 when it was deemed a good idea to have co-generation on site in the form of CHP generators which operated on gas. Fast forward to 2021 and this ideal has been completely flipped on its head. Gas CHP may now be perceived as the energy friend turned villain due to the CO2 emissions it produces. There will hopefully be scope for hydrogen powered CHP in the future, but hydrogen is not yet economical without subsidies although the costs are falling.

A move away from gas fired boiler heating and carbon emitting plant to electric heating seems to be the new way forward. The UK has set a legally binding target to achieve net zero greenhouse gas emissions by 2050. Achieving this will require almost all heat within buildings to be decarbonised and heat in industry needs to be reduced to close to zero carbon emissions.

So how can we move away from gas to electric heating? It is possible by using current technologies such as heat reclaim chillers, air source heat pumps and industrial heat pumps, although admittedly it's much easier said than done due to funding.

The following recent CIBSE publications give an indication of the shift and the pace at which electrification in buildings is moving:

- AM16 CIBSE guide for heat pump installations in domestic buildings (published Sept 2021)
- TM 67 Electrification of buildings for net zero (published Nov 2021)
- AM17 CIBSE guide for heat pump installations in non-domestic properties (to be published in early 2022).

Digital transformation to drive sustainability

I am a huge advocate for reducing building energy wastage by utilising building energy management systems (BeMS). I have been fortunate to work with some great BMS engineers in the industry by implementing energy efficiency strategies across multiple buildings, some which have little to zero initial cost with swift payback periods.

The issue however with some of these continuous improvements and efficiency strategies is that they are near impossible to quantify in terms of kWh savings and cost savings without solid data to back them up.

I welcome the widespread adoption of digital solutions and platforms for monitoring energy performance and the broader sustainability scope such as environmental monitoring of spaces which has become more prevalent during the pandemic. Within the current phase of 'the return to the office', occupiers depend upon safe and healthy environments with accompanying indoor air quality information for peace of mind.

Access to data, data analytics, AI, and IoT are now all trending and gathering momentum. The industry needs data and digital dashboards to be able to visualise these savings but also pinpoint the exact areas where energy wastage is occurring. Based on experience and some statistics it is estimated that 15-20% of energy consumed in buildings annually is due to wastage.

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Once we identify these specific areas via digital means to the decision makers then this will no doubt drive sustainability initiatives.

Companies are implementing digital platforms to operate across their entire portfolio and this is accelerating data sharing which will assist in achieving the end goal of smart connected buildings and cities.

Environmental Social Governance

The importance of environmental, social and governance (ESG) matters have escalated in the wake of the pandemic, gaining increasing urgency amid rising energy costs across the UK and Europe. One of the main social-political issues forecast for 2022 and the next three to five years is centred around environmental issues (e.g., air quality/climate change).

In terms of sustainable property investment, the focus now seems to be turning a corner towards repurposing and refurbishment projects as these are a better fit for the values which ESG represent.

Companies are currently developing ESG management roles in order to realise their ESG strategies and commitments which are being closely monitored by investors and local communities alike.

Upskilling people with the relevant knowledge in the various branches of ESG will be key to success in this relatively new domain.

Roger Low FEMA MEI, Consultant Energy Manager at Speedwell Energy Services

Commodity prices

The increased and increasing commodity prices for fuel will continue to drive the smaller power suppliers out of the market, and with this reduce competition. However, I believe that one of the 'Big Six' will eventually consider the domestic market untenable for their shareholders, and withdraw from suppling domestic users, and concentrate on the commercial/industrial markets.

Energy industry

The Chinese banking system, which is heavily based on ownership of debt from building development in mainland China, will eventually burst in the same way as the US sub-prime market.

This will have a devastating effect on the energy industry, especially nuclear in the UK, as it is almost entirely reliant on Chinese funding for the new fleet; the UK government has already been persuaded to give EdF profit payments on the proposed Sizewell C plant during construction, to try and insulate the UK from the risk of Chinese financial collapse.

Self-generation

The high cost of energy supplied via the electric and gas grids, will persuade an increasing number of domestic users to opt for self-generation (via renewables mainly); along with the Government's change to the uniform business rates, reducing impact on development of renewables for business users, will initiate the 'Energy Death Spiral'.

This means running costs of the grids, with inflation and increased maintenance costs, will be shouldered by an ever decreasing number of grid users; again, making these users slowly drift towards self-generation.

Vilnis Vesma, Energy Consultant, Author and Trainer

I forsee growth in bogus energy-saving products and a shortage of energy-management expertise. But I hope that the trend for ever-fancier but functionally underwhelming software tools will be reversed.

Growth in bogus energy-saving products

The environmental imperative is motivating ever more organisations to look for energy saving. This creates fertile territory for unscrupulous merchants using pseudo-science and misdirection to peddle worthless products. It is not a new phenomenon: I can remember someone trying to sell me magnetic fuel conditioning when I was an energy manager in the 1980s and there are plenty of organisations today that have been inveigled into putting snake-oil products into their heating systems or fitting voltage reduction kit, just to give two examples. New scams in 2021 include a 'programmed' magnetic tape that you put on heating system pipework to 'structure' the water. It's profitable business for the masterminds, who make their money from selling licences and franchises to gullible but ignorant sales agents.

Why do I think the problem is likely to get worse in 2022? Partly because the hype around Net Zero is boosting demand. Partly because customers' representatives lack the scientific knowledge or engineering training to recognise and challenge nonsensical marketing claims, and even go so far as to propagate them with ill-considered testimonials. Sadly, also it is because even reputable agencies have recklessly endorsed useless products.

Can we reverse the trend? Only, I think, by developing basic scientific and engineering knowledge in the customer community.

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Shortage of energy-management expertise

Talking to friends in the energy consulting business it has been clear for a while that there is already a shortage of well-qualified individuals who can undertake energy surveys and audits even for walk-round exercises, let alone for detailed or investment-grade studies. This is likely to get worse for two reasons. One is the demand for building assessments connected with organisations' net-zero planning.

The second reason is the impending surge of work under the Energy Savings Opportunity Scheme. Some ESOS assessors have already withdrawn from the pool because of the stressful circumstances and unsustainable workload, and it's hard to see why anyone would want to step into that particular breach. Meanwhile the Environment Agency are known to be contemplating tighter standards for ESOS work. Depending how they go about it, this could push some 2023 survey work forward to 2022, to escape being covered by any new rules, or it might even persuade more assessors to bow out.

We need a national campaign of capacity-building and my prediction for 2022 is that there won't be one.

Fancier but less useful software tools

In the early days of applying personal computers to energy management, we had limited consumption data to work with, and software was quite limited in what it could do. But that software was also simple enough for 'amateurs' to deploy. That meant that people who were domain experts in energy could also be their own developers and sell software applications that did useful things.

As time went by, hardware speeded up, storage became virtually free, software tools of all sorts became more powerful and complex, and the professional software developer emerged as a class. This changed the rules of engagement because an energy business employing developers needs sales volume, so it needs salesmen, and salesmen need jazzy stuff to impress customers (think garish animated three-dimensional dashboards). At the same time automatic meter reading, and the growth of submetering (both good things in themselves) have created a tsunami of data which, in most cases, software developers are just passively rendering as pretty pictures.

My fear for 2022 is that there will be yet more hype about blockchain, the Internet of Things, and other frippery. My hope is that we see customers starting to demand that the results of large-scale energy data analysis are intelligently filtered, focussed and flagged as actionable information.

Haydn Young, Chair of Retail, Tech-Telecom & Media, Logistics & Finance - Sustainability & Energy Forums

I am excited about 2022. After two years of pandemic interruption the momentum is resurging as we push forward towards decarbonising our economy. Whilst COP26 may have stumbled, with nation states protecting their own interests, market forces have taken on the message to act on climate change. Now it is businesses and organisations who are doing the pushing, recognising their obligations alongside the opportunities that decarbonising will bring.

Having worked in the energy field for over 15 years, previously as an Energy Manager for a retailer, now leading collaboration forums of Energy & Sustainability practitioners, I have never been so enthusiastic about the UK's progression towards Net Zero than now. Public support is high, the financial backing is available and the Net Zero 2050 & 1.5°C target is still in reach.

So, what do I think will be the trends of 2022?

Race for renewables

Global demand growth for renewable energy is set to soar alongside an inevitable, and hopefully only short term, rise in material costs. The UK is a small buyer in a huge market and panel costs have already risen by 20% over the last 12 months alongside the rise in labour costs in the UK. The impact could be felt on self-generation capex projects pushing back the ROI by a year or more. For those looking for longer term renewable energy deals via Power Purchase Agreements the impact will be milder with the increased costs spread over the contract duration.

For those buying renewable power contracts from suppliers, increased demand is now raising the cost of REGOs which have been historically low. You should also anticipate increased scrutiny of the generation sources used by your suppliers. Buyers should question suppliers on their renewable energy procurement sources and whether they are buying the energy and certificates collectively from named generation sources.

Focusing on our fleets

With whole business decarbonising the 'end game', the focus for Energy & Sustainability Managers should be on areas whereby emissions remain stubbornly high, one being the transport fleet. Whilst cars, vans and LGVs are likely to be electrified during their natural fleet replacements, the challenge remains for the heavier forty-four tonne HGV fleet. Large fleet electrification is, possibly, two vehicle replacement cycles away and your immediate focus should be using renewable fuels such as Hydrotreated Vegetable Oil or Biomethane.

Looking forward, the UK Gov has commissioned consortia of businesses and academics looking at HGV Electric Road Systems and Hydrogen trials. Where possible, large fleet operators should get involved in these studies. Sustainability is a team sport, so get involved.

Electrification of heat

Except for a cluster of industrial businesses in the East of England; hydrogen seems too distant a possibility for many businesses to decarbonise their properties in the medium term. The emphasis then shifts to looking for sources to remove natural gas from our properties.

Whilst green gas will play a part, the drive towards electrification of heat seems inevitable through heat pumps. The only concern is how your local electricity network can cope with this increased demand and whether your property has the space available. This energy capacity challenge is clearly exacerbated by the need to electrify your vehicle fleet too. Start looking at your heat decarbonising options now.